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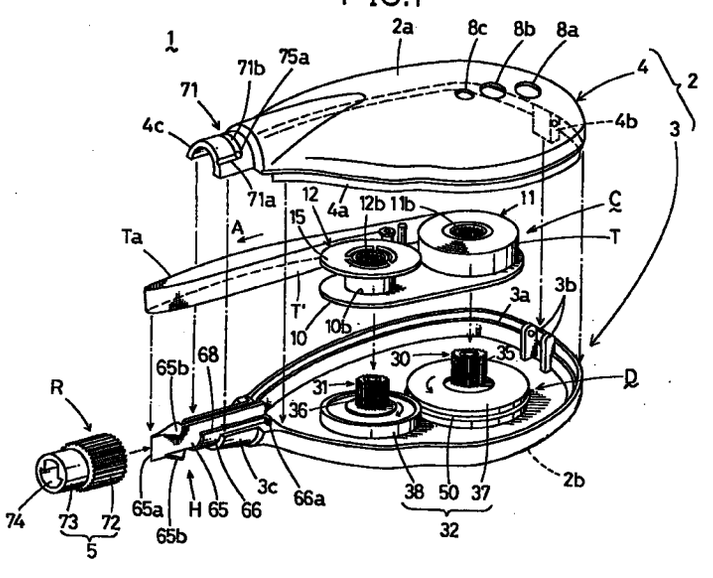
(54) Tape cartridge for coating film transfer tool and coating film transfer tool

(57) A tape cartridge detachably attached to a refill type coating film transfer tool that allows replacement of coating film transfer tapes, and formed in a compact size and simple structure using fewer components. The tape cartridge has a compact size and simple structure, comprising a pay-out reel (11) with a coating film transfer tape (T) wound thereabout and a winding reel (12) for collecting a used tape (T') rotatably provided in a support base (10) in a form of a flat plate, and the reels (11, 12) are detachably engaged, respectively, with a pay-out rotation part (30) and a winding rotation part (31) rotatably provided in a case (2) of the coating film transfer tool for integral movement therewith. In order to replace a tape cartridge (C), the support base (10) is placed on the rotation parts (30, 31), while the reels (11, 12) are in engagement with the rotation parts (30, 31), respectively, then, the tape (T) is set to a head (H).

FIG.1



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Description

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a tape cartridge for coating film transfer tool and a coating film transfer tool, and more particularly to a refill type coating film transfer tool allowing replacement of coating film transfer tapes for transferring such coating film as corrective paint layer and adhesive layer on the coating film transfer tape to a sheet surface and the like.

Description of the Related Art

As examples of conventional coating film transfer tool, the inventors have already proposed a coating film transfer tool disclosed in Japanese Laid-open Patent No. 5-138097 and Japanese Laid-open Utility Model No. 5-13800, for example.

Both coating film transfer tools are used mainly as an erasing tool for correcting errors and the like, and a pay-out reel (c) with a coating film transfer tape (b) wound thereabout and a winding reel (d) for collecting the coating film transfer tape (b) after use are provided rotatably in a case (a) that is held by hand for operation thereof as shown in FIGs. 26 (a) and (b). In a leading end of the case (a), a coating film transfer head (f) is provided projectingly for pressing the coating film transfer tape (b) onto a transfer area (correction area in a sheet surface) (e). The coating film transfer tape (b) paid out from the pay-out reel (c) is arranged such that it is dragged through the pressing part (g) in a leading end of the head (f) and windingly held about the winding reel (d).

In such case, the case (a) is a depressed box geometrically and dimensionally sufficient for containing the pay-out reel (c) and winding reel (d). Flat front and back surfaces of the case (a), that is, front and back surfaces with respect to the sheet surface of FIGs. 26 (a) and (b) provide gripping surfaces for manually operating the tool.

In a coating film transfer tool shown in FIG. 26 (a), the pressing part (g) in a leading end of the head (f) is arranged such that the coating film transfer tape (b) is guided as it is wound about the pay-out reel (c) and winding reel (d), and the tool is constructed for allowing so-called vertical pulling use that is suitable for correcting, for example, a part of such sentence written in a vertical line in Japanese and the like. On the other hand, in a coating film transfer tool shown in FIG. 26 (b), the pressing part (g) of head (f) is arranged such that the coating film transfer tape (b) is guided generally facing against the gripping surface of case (a), and the tool is constructed for allowing so-called lateral pulling use that is suitable for correcting, for example, a part of such sentence written in a lateral line in English and the like.

Then, in order to erase an error by using the coating film transfer tools, the gripping surfaces of case (a) are held by fingers, and the case (a) is moved in the specified direction (shown by arrow in FIG. 26 (a) or vertical to the sheet surface in FIG. 26 (b)), respectively, while the coating film transfer tape (b) is tightly pressed against the correction area (e). In such manner, a corrective paint layer of the coating film transfer tape (b) in the pressing part (g) of head (f) is applied onto the correction area (e), a letter or the like in the area is erased, and the used coating film (b) is collected by the winding reel (d).

Incidentally, effective use of earth resources has been particularly emphasized in these days, and it is desirable in a coating film transfer tool of the type to have so-called refill type structure for allowing replacement of the coating film transfer tape (b) only that is a consumable supply, because saving of resources is demanded.

In this respect, in a coating film transfer tool of vertical pulling type shown in FIG. 26 (a), various tape cartridges replaceably employed in the case (a) are proposed. Such tape cartridges provided as a consumable supply can be generally classified to structures composed of a combination of four components in total, that is, the coating film transfer tape (b), the pay-out reel (c), winding reel (d) and head (f) and a combination of three components in total, that is the coating film transfer tape (b), pay-out reel (c), and winding reel (d).

In a tape cartridge of the former type, all four components (b), (c), (d) and (f) are provided in a plastic container, and they are completely replaced for a used cartridge. On the other hand, in a tape cartridge of the latter type, the three components (b), (c) and (d) are temporarily held by a holding member which is removed in replacement of a used tape cartridge.

However, either type of the tape cartridge has such problem as described below, and further modification has been demanded.

That is, in the former, most of main components of the coating film transfer tool are replaced as consumable items, and all such components are housed in a plastic container, therefore, many components are used, the structure thereof is complex and bulky, and the cost for manufacturing the replacement parts themselves is high. Thus, such advantage of the refill type as saving of resources and reduction of running cost cannot be sufficiently achieved. Besides, as the plastic container itself is relatively bulky because of the structure, it leads to increase in size of a coating film transfer tool, and has been disadvantageous for providing portableness and easy operation.

In the case of the latter, because a holding member for temporarily holding the components is used, and replacement thereof is relatively complicated as well as troublesome, it is required to be more or less familiar with the operation, and easy and proper replacement cannot be assured, therefore, to all general users.

Moreover, in the coating film transfer tool of lateral pulling type shown in FIG. 26 (b), because the pressing part (g) of head (f) guides the coating film transfer tape (b) with the tape generally facing against the gripping surface of the case (a), it has been practically impossible

to provide a refill type structure for allowing replacement of the coating film transfer tape (b) only.

That is, in the coating film transfer tool, because of the structure, the coating film transfer tape (b) is necessarily twisted 90° in the head (f). Therefore, it is also difficult for a manufacturer to automatically assemble the tool, which is actually assembled manually by skilled workers.

On the other hand, in order to provide a refill type structure for allowing replacement of the coating film transfer tape (b) that is a consumable item, it is required that disassembly and assembly of a coating film transfer tool and replacement of the coating film transfer tape (b) are basically achieved by a user. Thus, it has been an essential issue to develop such structure that the series of operations can be easily, rapidly and properly conducted by a general user to allow replacement of the coating film transfer tape (b).

BRIEF SUMMARY OF THE INVENTION

It is a primary object of the invention to provide a novel tape cartridge that eliminates the conventional problems for a coating film transfer tool.

It is other object of the invention to provide a tape cartridge comprising fewer components in a small and simple structure for achieving a compact coating film transfer tool and allowing easy, rapid and proper replacement.

It is further object of the invention to provide a coating film transfer tool of refill type used as a kind of stationery and allowing easy replacement of coating film transfer tapes.

It is a different object of the invention to provide a coating film transfer tool of such refill type for lateral pulling use.

A tape cartridge according to the invention comprises a pay-out reel with a coating film transfer tape wound thereabout and a winding reel for collecting the coating film transfer tape after use provided rotatably on a support base in a form of a flat plate, wherein the reels are removably and integrally rotatably engaged, respectively, in a pay-out rotation part and winding rotation part that is provided rotatably in the case. Preferably, the support base comprises a thin plate member having a sufficient strength for holding the reels with a spacing corresponding to the rotation parts, and is arranged such that one of the surfaces of the support base provides a running and guiding surface for the coating film transfer tape.

A coating film transfer head for pressing the coating film transfer tape to the transfer area may be also provided on the support base, and in this case, the coating film transfer tape paid out from the pay-out reel is wound on the winding reel through the leading end pressing part of the head.

A coating film transfer tool according to the invention is constructed for removably and replaceably containing the tape cartridge in a case hand-held for operation, wherein a pay-out rotation part and a winding rotation part are rotatably attached in the case, respectively, the pay-out reel and winding reel of the tape cartridge are removably placed on the rotation parts, respectively.

The coating film transfer head for pressing the coating film transfer tape of the tape cartridge on the transfer area is projected at the leading end of the case or is provided on the support base of the tape cartridge. The case has a pair of confronting gripping surfaces so as to be held in hand like a writing tool.

The head is rotatably operative between a coating film transfer tape replacement position and application position as well as being fixed at an angle for vertical pulling use, and the pressing part in the leading end of the head guides the coating film transfer tape as it is wound about the pay-out reel and winding reel in the coating film replacement position and as it generally faces against gripping surfaces of the case of the case in the application position.

Now, in the case of a tape cartridge according to the invention, because the pay-out and winding reels are attached to the support base, replacement is conducted for each support base.

In such case, replacement is completed by placing the support base on the rotation parts with the reels held in engagement with the pay-out and winding rotation parts of the coating film transfer tool, and setting a coating film transfer tape to the coating film transfer head of the case.

In the case of the coating film transfer head disposed on the support base, while both reels are engaged with a pay-out rotation part and a winding rotation part of the case main body of the coating film transfer tool and the head is set on the head holding part provided at the leading end of the case main body, the support base is mounted on the rotation parts, thereby the replacement job is completed.

In addition, in a coating film transfer tool according to the invention, as the head is rotatably operative between a coating film transfer tape replacement position and an application position, the pressing part in a leading end of the head guides the coating film transfer tape as it is wound about the pay-out and winding reels in the coating film transfer tape replacement position and as it generally faces against gripping surfaces of the case in the application position, two requirements conventionally unachievable, that is, lateral pulling use and replacement of coating film transfer tapes can be met simultaneously in a structure.

In other words, because a coating film transfer tape is guided by the pressing part of the head as the tape generally faces against gripping surfaces of the case during use, the coating film transfer tape can be pressed tightly against a sheet surface or the like by means of the pressing part of the head by holding the case itself in an attitude similar to that of a writing tool, and a corrective paint layer of the coating film transfer tape is transferred to the sheet surface or the like by moving the case later-

ally or in the right or left direction with respect to the sheet surface or the like.

In replacement of a coating film transfer tape, firstly the head is rotated from the application position to the coating film transfer tape replacement position. In such manner, as the coating film transfer tape in the head part is operated from 90° twisted to parallel state in relation to the winding attitude of the pay-out and winding reels so that the coating film transfer tape can be easily detached with respect to the head, the tape cartridge can be replaced by opening the case in that state.

Here, such expression that the coating film transfer tape "generally faces against gripping surfaces of the case" means that front and back surfaces of a coating film transfer tape generally face against gripping surfaces of the case, that is, the front and back surfaces of the coating film transfer tape are generally in the same direction as that of gripping surfaces of the case or in parallel therewith, which applies throughout the specification.

The above and other objects and features of the invention will be clearly appreciated by reading a detailed description of embodiments of the invention in connection with attached drawings and novel features of the invention depicted in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded perspective view of an erasing tool in embodiment 1 of the invention.

FIG. 2 is a perspective view of a tape cartridge for use with the erasing tool.

FIG. 3 is a front view of the tape cartridge.

FIG. 4 is a sectional view of a tape cartridge taken along a line I-I of FIG. 3.

FIG. 5 is an exploded perspective view showing the tape cartridge.

FIG. 6 is a sectional view for explaining attachment of the tape cartridge to a tape driving part.

FIG. 7 is an exploded perspective view showing the internal structure of a case body of the erasing tool.

FIG. 8 is a magnified perspective view for explaining operation of a backstop arrangement in the erasing tool.

FIG. 9 is perspective views showing the structure of a rotationally operated part in the erasing tool, FIG. 9 (a) showing a relation between a coating film transfer head and the rotationally operated part, and FIG. 9 (b) a positioning element in the rotation part.

FIG. 10 is a partly cut-open front view showing the coating film transfer head and rotationally operated part in the erasing tool, when the coating film transfer head is in an application position.

FIG. 11 is perspective views for explaining operation of the rotationally operated part, FIG. 11 (a) showing a cap member attached to a cylindrical leading end of a case, and FIG. 11 (b) rotating operation of the cap member.

FIG. 12 is perspective views showing an appearance of the erasing tool, FIG. 12 (a) showing a state when the coating film transfer head is in a coating film transfer tape replacement position, and FIG. 12 (b) when the head is in an application position.

FIG. 13 is front views showing an inside of the erasing tool, FIG. 13 (a) showing a state when a coating film transfer head is in a coating film transfer tape replacement position, and FIG. 13 (b) when the head is in an application position.

FIG. 14 is perspective views for explaining how to use the erasing tool, FIG. 14 (a) showing vertical pulling use, and FIG. 14 (b) lateral pulling use.

FIG. 15 is an exploded perspective view of an erasing tool in embodiment 2 of the invention.

FIG. 16 is a perspective view showing a tape cartridge of the erasing tool.

FIG. 17 is a front view of the tape cartridge.

FIG. 18 is a sectional view along line II-II in FIG. 17 showing the tape cartridge.

FIG. 19 is an exploded perspective view of the tape cartridge.

FIG. 20 is a sectional view for explaining the mounting procedure of the tape cartridge on the tape drive unit.

FIG. 21 is an exploded perspective view of an internal structure of a case main body of the erasing tool.

FIG. 22 shows the clutch mechanism of the erasing tool, FIG. 22 (a) being a sectional view and FIG. 22 (b) being a perspective view showing a friction member of the clutch mechanism.

FIG. 23 shows the mounting structure of coating film transfer head of the erasing tool, FIG. 23 (a) being a front view showing a partial section of the relation between the coating film transfer head and head mounting part of support base, specifically showing the coating film transfer head at the coating film transfer tape replacement position, and FIG. 23 (b) being a partially cut-away front view showing the relation between the coating film transfer head and rotationally operated part of the case, specifically showing the coating film transfer head at the application position.

FIG. 24 is a magnified side view of a modified example of the leading end pressing part of the coating film transfer head of the erasing tool.

FIG. 25 is a perspective view showing a modified example of an interlocking part of the tape drive unit in the erasing tool in embodiment 1.

FIG. 26 is a partially cut-away front view of an internal structure of a conventional erasing tool.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, preferred embodiments of the invention are described in detail below.

FIG. 1 through FIG. 25 show the tape cartridge and coating film transfer tool according to the invention, and same reference numerals throughout the drawings represent identical or similar constituent members or elements.

Embodiment 1

A coating film transfer tool as embodiment 1 of the invention is depicted in FIG. 1 through FIG. 14.

The coating film transfer tool 1 is particularly used as an erasing tool for correcting errors or the like, and is of a cartridge type or refill type structure for allowing replacement of a coating film transfer tape T as a consumable supply.

The erasing tool 1 comprises, as shown in FIG. 1, a tape cartridge C, tape driving part D, coating film transfer head H and rotationally operated part R attached to a case 2 that can be hand-held for operation. In the erasing tool 1, the head 1 can be rotationally operated between a coating film transfer tape replacement position (and vertical pulling position) X shown in FIGs. 12 (a) and 13 (a) and an application position (lateral pulling position) in FIGs. 12 (b) and 13 (b). The parts are described one by one below.

I. Case 2:

The case 2 is formed in a flat box-like shape as shown, and has a front geometry and dimensions sufficient for incorporating the tape cartridge C and tape driving part D. As described later, flat front and back surfaces 2a, 2b of the case 2 provide gripping surfaces for manually holding the tool during operation.

The case 2 is a plastic molding obtained by injection or other molding method, and comprises disassemble blocks of a main case body 3 and a cap 4. For this purpose, in an opening of the main case body 3, a fitting recess 3a is provided over the entire circumference thereof, and a fitting rib 4a is formed in the cap 4 so that it can be received by the fitting recess 3a for engagement therewith. In a rear end of the main case body 3, an engagement part 3b, and an engagement claw 4b is formed for engagement with the engagement part 3b in the cap 4. The main case body 3 and cap 4 have semicylindrical halves 3c and 4c in a leading end thereof, respectively, and the semicylindrical halves 3c, 4c are connected and integrated by a cap member 5, which will be described later.

Thus, for assembling the case 2, first of all, the engagement part 3b is brought in engagement with the engagement claw 4b in the cap 4, then the semicylindrical halves 3c, 4c are assembled and integrated with each other, while the fitting rib 4a is fitted in the fitting recess 3a. Finally, by fitting the cap member 5 over the assembled part (cylindrical leading end) 6, assembly of the case 2 is completed.

In addition, the main case body 3 has an access window 7 (see FIG. 7) for adjustment of a coating film transfer tape T, when it is loose, as described below. The cap 4 has three balance confirmation windows 8a to 8c for confirming a remaining amount of the coating film transfer tape T.

II. Tape cartridge C:

The tape cartridge C is a component replaceable as a consumable item. The detailed structure of tape cartridge C is shown in FIGs. 2 to 5. The tape cartridge C comprises a pay-out reel 11 with the coating film transfer tape T wound thereabout and a winding reel 12 for collecting used coating film transfer tape T' which are rotatably provided in a support base 11. The tape cartridge C is detachably attached to the tape driving part D of case 3, as shown in FIG. 6.

The support base 10 comprises a thin flat plate, and is materially and dimensionally selected to be as thin and compact as possible within a range of providing a strength sufficient for holding the reels 11, 12. In other words, the support base 10 is required to function for holding the reels 11, 12 only until they are attached to the tape driving part D, and desired to be as thin and compact as possible, as far as a minimum strength for achieving the function is assured.

In an embodiment shown, the support base 10 is made of AS (acrylonitrile-styrene) resin or ABS (acrylonitrile-butadiene-styrene) resin, and dimensionally set to a thickness of 1 mm or less. A front surface of the support base 10 is formed with a part extending geometrically along an outer circumference of the reels 11, 12, as shown in FIG. 3. A surface or upper surface 10a of the support base 10 serves as a running and guiding surface of the coating film transfer tape T.

The pay-out reel 11 and winding reel 12 are provided with hollow drum parts 11a, 12a, respectively, for winding the coating film transfer tape T thereabout. The drum parts 11a, 12a is provided with attachment holes 11b, 12b having such tooth profile engagement part as serration or spline in the center.

The drum parts 11a, 12a of the reels 11, 12 are rotatably supported with support ends thereof in support holes 10b, 10c of the support base 10. Practically, annular fitting grooves 13,13 are formed in a support end of the drum parts 11a, 12a, respectively, and the fitting grooves 13,13 are rotatably fitted and supported in an inner diametric edge of the support holes 10b, 10c. In this connection, in an outer circumferential part of the support holes 10b, 10c, as shown in FIG. 5, a plurality of slits 14, 14 ... are radially extended for inserting the drum parts, respectively.

The coating film transfer tape T is wound about an outer circumference of the drum part 11a in the pay-out reel 11, and a leading end in the pay-out side is connected to an outer circumference of the drum part 12a in the winding reel 12. The coating film transfer tape T structurally consists of, for example, a film base (about 25 to 38 μm thick) of such plastic material as polyester and acetate films or paper, such release agent layer as vinyl chloride-vinyl acetate copolymer resin and low molecular polyethylene formed in one side of the film base, a white corrective paint layer over the release agent layer and such adhesive (pressure sensitive adhesive) layer as pressure sensitive polyurethane further

applied over the paint layer (detailed structure not shown). For the corrective paint layer, so-called dry type paint is employed that allows writing in a corrected area immediately after the paint is transferred.

While a free end of the drum part 11a in the pay-out reel 11 is left as it is to be an open end, a free end of the drum part 12a in the winding reel 12 is provided with a guide flange 15 for running the tape.

Such structure is employed because it is desired in the side of pay-out reel 11 that the free end of drum part 11a should have no flange in order to smoothly wind the coating film transfer tape T during a manufacturing process, while the coating film transfer tape T can be smoothly paid out even without a guide flange. On the other hand, in the side of winding reel 12, the guide flange 15 is essential to smoothly wind and collect the coating film transfer tape T'. If the guide flange is absent, it is difficult to wind the coating film transfer tape T' in alignment about the outer circumference of drum part 12a, because it goes out of control, and the coating film transfer tape T' wound and collected may, in the worst case, disturb rotation of the winding reel 12, causing an inoperative condition of the erasing tool 1.

As shown in FIG. 6, the reels 11, 12 are positioned in the support base 10 such that the attachment holes 11b, 12b are coaxial, respectively, with the pay-out rotation part 30 and winding rotation part 31 in the tape driving part D.

Additionally, a mounting flange 10d is formed integrally with the support base 10 in the vicinity of attachment positions of the reels 11, 12, and a pair of guide pins 20, 21 are integrally provided upright in the mounting flange for guiding the coating film transfer tape T. The guide pin 20 is for guiding the coating film transfer tape T paid out of the pay-out reel 11, and the other guide pin 21 is for guiding the coating film transfer tape T' that is wound and collected by the winding reel 12.

Further, a collared guide roller 22 is freely rotatably pivoted by the guide pin 21 in the winding side. By means of such arrangement, guiding of the coating film transfer tape T' is enhanced for smoothly winding it in alignment, and such problem can be surely avoided that the coating film transfer tape T' is wound about the guide pin 21, even when a part of the coating film is left in the coating film transfer tape T' due to a failure in film transfer. A similar guide roller may be also attached to the guide pin 20 in the pay-out side.

A leading pay-out end portion Ta of the coating film transfer tape T comprises a film base without any coating film so that it is easily set to the case 2, and is set in such condition that a part of its length corresponding to a distance between the pay-out reel 11 to the position of head H is already paid out. In order to maintain the setting condition, a stopper 25 as shown by a two-dot long and two short dashes line in FIGs. 3 and 4 is employed.

The stopper 25 is made of a material similar to that of the support base 10. The stopper 25 is formed in such shape and dimensions, as shown in the figures, that it extends over the attachment holes 11b, 12b of reels 11, 12, and provided with a pair of engagement projections 25a, 25b in a lower surface thereof. Then, by removable fitting engagement between the engagement projections 25a, 25b and the attachment holes 11b, 12b, respectively, the reels 11, 12 are stopped and held against rotation. The stopper 25 may be made of paper.

Thus, in the tape cartridge C constructed in such manner, as shown in FIGs. 6 (a) and (b), the support base 10 is rested on the rotation parts 30, 31 of the tape driving part D with the reels 11, 12 fitted to the rotation parts 30, 31. The reels 11, 12 are thereby detachably set to the rotation parts 30, 31, respectively for integral rotation therewith by a single operation. On the other hand, by simply lifting the support base 10, the reels 11, 12 can be easily removed from the rotation parts 30, 31 through a single operation.

III. Tape driving part D:

The tape driving part D is provided in the main case body 3. The tape driving part D comprises, as shown in FIGs. 6 and 7, mainly the pay-out rotation part 30 for rotatably driving the pay-out reel 11, a winding rotation part 31 for rotatably driving the winding reel 12 and an interlocking part 32 for interlocking the rotation parts 30, 31.

The pay-out rotation part 30 and winding rotation part 31 comprise hollow rotating shafts 35, 36 formed integrally with rotating disks 37, 38, respectively. The rotating shafts 35, 36 are freely rotatably supported by hollow support shafts 39, 40 provided upright in an inner surface of the main case body 3.

In an outer circumference of the rotating shafts 35, 36, a toothed engagement part such as serration and spline is formed, respectively, in correspondence with the toothed engagement part of attachment holes 11b, 12b in the pay-out reel 11 and winding reel 12, as shown in the figures. Then, the pay-out reel 11 and winding reel 12 are attached to the rotating shafts 35, 36 for integral rotation therewith, as described above, as the attachment holes 11b, 12b are disengageably fitted with and supported by the engagement parts.

The interlocking part 32 is for interlocking the winding rotation part 31 and pay-out rotation part 30, and comprises the rotating disks 37, 38 and slide means 50.

The slide means 50 serves for transferring rotational movement between the rotation parts 30, 31, and functioning additionally as slide means to synchronize pay-out and winding speeds of the coating film transfer tape T in the pay-out and winding reels 11, 12, and practically comprise a frictional member, for example, an O ring of silicone rubber and the like. The frictional member 50 is attached to an outer circumference of the rotating disk 37 in the driving side, and frictionally engage with an outer circumference of the other rotating disk 38 in the driven side.

For reducing a cost associated with the frictional member 50, the frictional member 50 may be attached, in a not shown manner, to an outer circumferential part

of the rotating disk 38 in the driven side, which has an outer diameter less than that of the rotating disk 37. In such case, the frictional member 50 frictionally engages with the outer circumference of rotating disk 37.

The ratio of rotation or the ratio of outer diameter between the rotating disks 37, 38 in the driving and driven sides is appropriately determined, considering a winding diameter of the coating film transfer tape T in the reels 11, 12, so that the coating film transfer tape T can be smoothly paid out, and wound.

Accordingly, by pressing action of the head H, as will be described later, when a tensile force (in the direction of arrow A) applied to the coating film transfer tape T acts as a rotational torque to the pay-out reel 11, the pay-out reel 11 and thereby the rotating disk 37 in the pay-out rotation part 30 are rotated. The rotational torque effects rotation of the rotating disk 38 of winding rotation part 31 that is in the driven side and further interlockingly the winding reel 12 by means of a frictional force of the frictional member 50, and the used coating film transfer tape T' is, therefore, automatically wound.

In this case, the ratio of rotation (corresponding to the ratio of outer diameter) between the rotating disks 37 and 38 in the driving and driven sides is unchanged at any time, while the ratio of outer diameter between the coating film transfer tape T about the pay-out reel 11 and the coating film transfer tape T' about the winding reel 12 shows a time-course change, and is inconstant. It means that the outer diameter of the coating film transfer tape T about the pay-out reel 11 is gradually reduced as the tape is used, while the outer diameter of the coating film transfer tape T' about the winding reel 12 is increased on the contrary.

Therefore, the winding speed of the winding reel 12 is increased in comparison with the pay-out speed of pay-out reel 11 as time elapses, and the rotational torque acting to the pay-out reel 11 is also gradually increased, because the speeds comes to be asynchronous with each other. Then, as the rotational torque overcomes the frictional force of the frictional member 50, and the rotating disk 37 in the driving side rotatively slips in relation to the rotating disk 38 in the driven side, the pay-out speed and winding speed are synchronized with each other, and a smooth driving of the coating film transfer tape T is assured.

As shown in FIGs. 7 and 8, the winding rotation part 31 is provided with a backstop mechanism 60 for preventing reverse rotation of the reels 11, 12. The backstop mechanism 60 comprises an engagement claw 60a provided in the rotating disk 38 and multiple backstop claws 60b, 60b ... arranged in the form of a ring concentric with the hollow supporting shaft 40 in an inner surface of the main case body 3. Thus, when the reels 11, 12 are turned in the direction of arrow in FIG. 8, the engagement claw 60a is elastically changed in shape, and gets over the backstop claws 60b, 60b ... to allow the normal rotation. On the contrary, when the reels 11, 12 are turned in the direction opposite to that of the arrow, the engagement claw 60a is engaged with one of the backstop claws 60b, 60b ..., and prevents the inverse rotation. The backstop mechanism may be employed in the pay-out rotation part 30.

In association with the backstop mechanism 60, a tension correcting dial 61 is provided in the pay-out rotation part 30 for maintaining the coating film transfer tape T under a proper tension, as shown in FIG. 7. The tension correcting dial 61 comprises multiple notches 61a, 61a ... formed in a lower part of the rotating disk 37 over an entire length of an outer circumference thereof. In correspondence with the tension correcting dial 61, the access window 7 is provided in the main case body 3, and the tension of the coating film transfer tape T is appropriately corrected by manually rotating the tension correcting dial through the access window 7.

IV. Coating film transfer head H:

The coating film transfer head H is for pressing the coating film transfer tape T against such correction area (transfer area) as an error in a sheet surface, and is attached to an inner circumference of the cylindrical leading end 6 in the case 2 for rotation about the axis.

The head H is made of a plastic material having some degree of elasticity, and comprises a head body 65 for guiding and pressing the coating film transfer tape T and a bearing part 66 held in the cylindrical leading end 6.

The head body 65 is a thin plate slightly wider than the coating film transfer tape T, and is tapered in section such that it is gradually reduced in thickness toward a leading end thereof, and a leading end 65a of the head body provides a pressing part for pressing the coating film transfer tape T. In addition, the head body 65 is formed with guide flanges 65b, 65b in either edge thereof for guiding the coating film transfer tape T.

The bearing part 66 has an arcuate section open in an upper part thereof to form a semicylindrical shape, as shown in FIGs. 1, 7, 9 (a) and 10, and is rotatably supported in the semicylindrical halves 3c, 4c of case 2. Further, an arcuate flange 66a is formed in a base end of the bearing part 66 for axial positioning, and is rotatably fitted to a cylindrical engagement groove 67 in the semicylindrical halves 3c 4c. By means of such arrangement, the head H is axially positioned in the cylindrical leading end 6 of case 2, and rotatably attached about the axis.

The head main body 65 is integrally provided as shown in the drawing in the middle portion of the semicylindrical bearing 66. An open end 68 of the bearing 66 is a tape setting aperture into the head main body 65. This tape setting aperture 68 is located so that the coating film transfer tape T may be directly inserted in the state being wound about the both reels 11, 12 when the head H is at the coating film transfer tape replacement position X, so that the coating film transfer tape T may be set easily in the head main body 65.

V. Rotationally operated part R:

The rotationally operated part R is for rotationally operating the head H, and comprise a cap member 5 detachably attached to the cylindrical leading end 6 and a positioning part 71 provided in an outer circumference of the cylindrical leading end 6.

The cap member 5 is an integral molding of plastic material, and comprises a base part 72 fitted over the cylindrical leading end 6 and an engagement part 73 integrally engaged with the head H in the rotating direction.

The base part 72 serves as an assembly fixing member for the case 2 and a rotationally operated part. a cylindrical bore of the base part 72 is set such that the base part can be rotatably fitted over the outer circumference of cylindrical leading end 6, and multiple toothed anti-slip ribs are formed in an outer circumference thereof. The engagement part 73 is provided with a through hole 74 for receiving the head H. The through hole 74 is dimensionally configured such that the cap member 5 and the head H are integrally engaged with each other in the rotating direction, when the head H is received through the hole, as shown in FIG. 10.

The positioning part 71 is for resiliently positioning and fixing the cap member 5 in position in the direction of rotation, and is provided in a pair opposing to each other in an outer circumference of the cylindrical leading end 6. The pair of positioning parts 71, 71 has an identical structure, and the positioning part 71 in the side of cylindrical half 4c in the cap 4 is described below.

The positioning part 71 comprises, as shown in FIGs. 9 and 10, a fit-in guide groove 71a extending linearly in the axial direction of the cylindrical leading end 6 and an anchor guide groove 71b extending from an end of the fit-in guide groove 71a in the circumferential direction of the cylindrical leading end 6. In the embodiment shown, the anchor guide groove 71b is formed in a range of central angle of 90° of the cylindrical leading end 6, as shown in FIG. 10, and provided with a first and second engagement parts 75a and 75b in either end thereof.

The first and second engagement parts 75a and 75b are formed as recesses deeper than the guide grooves 71a, 71b. The engagement recesses 75a, 75b are disengageably engaged with an engagement projection (engagement part) 76 that is provided in an inner circumference of the cap member 5. In other words, the engagement projection 76 is geometrically and dimensionally set such that it is guided along the guide grooves 71a, 71b, while it is elastically changed in shape to some relative extent, and fitted in the engagement recesses 75a, 75b through elastic restoration.

The engagement projection 76 and engagement recesses 75a, 75b are positionally set for engagement with each other in such relation as described below.

Thus, when the engagement projection 76 of the cap member 5 is in engagement with the first engagement recess 75a, the head H is in a coating film transfer tape replacement position (vertical pulling position) X, as shown in FIGs. 12 (a) and 13 (a). In such state, the pressing part 65a of the head H guides the coating film transfer tape T in a same attitude as it is wound about the payout and winding reels 11 and 12, that is, with front and back surfaces of the coating film transfer tape T oriented generally perpendicularly (transversely) to the gripping surfaces 2a, 2b.

On the other hand, when the engagement projection 76 is in engagement with the second engagement recess 75b (see FIG. 10), the head H is, as shown in FIGs. 12 (b) and 13 (b), in an application position (lateral pulling position) Y. In such state, the pressing part 65a of the head H guides the coating film transfer tape T in such attitude that it is generally faced against the gripping surfaces 2a, 2b of case 2, that is, with the front and back surfaces of coating film transfer tape T facing in the direction approximately same as that of (in parallel with) the gripping surfaces 2a, 2b.

Now, operation of the erasing tool 1 constructed in such manner is described below.

A. Operation:

As shown in FIG. 11 (b), the tool can be used in two different ways by rotating the cap member 5, and selectively positioning the head H in one of two positions, the vertical pulling position X (see FIGs. 12 (a) and 13 (a)) and lateral pulling position Y (see FIGs. 12 (b) and 13 (b)).

1. Vertical pulling use: (See FIG. 14 (a))

This is suitable for partially correcting a sentence vertically written, for example, in Japanese. For such operation, as shown in the figure, the gripping surfaces 2a, 2b of case 2 are held by fingers like a writing tool. Then, with the tool held in such attitude, the pressing part 65a of head H is brought into contact with the starting end (upper end) of a correction area (transfer area) 80 containing an error or the like to be corrected in a sheet surface, then the case 2 is moved vertically or downward in relation to the sheet surface, and stopped at the terminal end (lower end) of the correction area 80.

In such operation, the corrective paint layer (white) of coating film transfer tape T in the pressing part 65a of head H is separated from the film base, and transferred to cover the correction area 80. The error or the like is thereby erased, and a correct letter can be readily written on the white corrective paint layer.

2. Lateral pulling use: (See FIG. 14 (b))

This is suitable for partially correcting a sentence laterally written, for example, in English. For such operation, as shown in the figure, the gripping surfaces 2a, 2b of case 2 are held by fingers like a writing tool, and the pressing part 35a of head H is brought into contact with the starting end (left end) of a correction area 80 with the tool held, as described above. Then, by moving the case

2 laterally or rightward in relation to the sheet surface, and stopping it at the terminal end (right end) of the correction area, an error or the like is erased, and a correct letter can be readily written in that area.

B. Replacement of tape cartridge C:

When the coating film transfer tape T is completely used, and wound by the winding reel 12 for collection from the pay-out reel 11, the tape cartridge C should be replaced with a new one according to the following steps.

i) The head H is put into the coating film transfer tape replacement position X. That is, although no operation is required when the head H is in the vertical pulling position X, if it is in the lateral pulling position Y, the cap member 5 should be rotated, and the head H is rotationally moved from the lateral pulling position Y to the coating film transfer tape replacement position X.

As a result, the position of the coating film transfer tape T in the head H portion is manipulated to be in a parallel state to the winding position of the pay-out reel 11 and winding reel 12 as shown in FIG. 13 (a), so that attaching or detaching of the coating film transfer tape T in the head H may be easy through the tape setting aperture 68.

ii) The case 2 is disassembled, and opened. In this operation, first the cap member 5 is pulled off the cylindrical leading end 6 of case 2, as shown in FIG. 11 (a), then the semicylindrical half 4c is lifted with the cap 4 positioned in the upper side, and the cap 4 is removed from the main case body 3.

iii) The used tape cartridge C (empty pay-out reel 11 and winding reel 7 with the used coating film transfer tape T' collected thereabout) is detached, removing the coating film transfer tape T from a setting position of the head H.

In this operation, by simply lifting the support base 10, the pay-out reel 11 and winding reel 12 are simultaneously removed from the pay-out rotation part 30 and winding rotation part 31 of the tape driving part D.

iv) An unused new tape cartridge C (pay-out reel 11 with an unused coating film transfer tape T wound thereabout and winding reel 12) is placed as described above, then the coating film transfer tape T is set to a specified position.

In this operation, because the guide pins 20, 21 are provided in the support base 10, and setting of the coating film transfer tape T to the guide pins 20, 21 is already completed during manufacturing process of the tape cartridge C, it is only required to set the coating film transfer tape T such that it passes through the pressing part 65a of the head H.

Besides, as the coating film transfer tape T is set with the paid-out leading end Ta paid out beforehand by a length corresponding to a distance of the pay-out reel 11 to the head H, the setting operation is easily and surely completed only by inserting the paid-out leading end Ta from an upper side of the head body 65 of the head H, and positioning it in both sides of the head body, as shown in FIG. 1. After the setting operation is completed, the stopper 25 is removed from the tape cartridge C.

By the setting operation, the coating film transfer tape T is set in such manner that it is paid out of the pay-out reel 11, inverted through the pressing part 65a of head H via the guide pin 20, and wound about the winding reel 12 via the guide pin 21, as shown in FIG. 3.

The head H may be once removed, and reattached after the sequential steps for setting the tape may be performed.

v) Then, by closing and assembling the case 2 again according to above steps in reverse order, replacement of the used tape cartridge with a new one is completed.

Embodiment 2

The coating film transfer tool according to embodiment 2 is shown in FIG. 15 through FIG. 23, and same or similar constituent parts as in embodiment 1 are identified with same reference numerals as in embodiment 1.

The coating film transfer tool 101 is an erasing tool having the same refill structure as in embodiment 1, but is slightly modified in structure, including the provision of the coating film transfer head H in the tape cartridge C.

The erasing tool 101 comprises, as shown in FIG. 15, a tape cartridge C having a coating film transfer head H, tape driving part D, and rotationally operated part R attached to a case 2 that can be hand-held for operation. In the erasing tool 101, the head H can be rotationally operated between a coating film transfer tape replacement position (and vertical pulling position) X shown in FIGs. 12 (a) and 13 (a) and an application position (lateral pulling position) Y in FIGs. 12 (b) and 13 (b). The component parts are described one by one below.

I. Case 2:

The case 2 is formed in a flat box-like shape as shown, and has front contour and width dimensions sufficient for incorporating the tape cartridge C and tape driving part D. As described later, flat front and back surfaces 2a, 2b of the case 2 provide gripping surfaces for manually holding the tool during operation.

The case 2 is a plastic molding obtained by injection or other molding method, and comprises divided blocks of a main case body 3 and a cap 4. For this purpose, in an opening of the main case body 3, a fitting recess 3a is provided over the entire circumference thereof, and an engagement part 3b is provided at the rear end. A fitting rib 4a of the cap 4 is fitted to the fitting recess 3a, and an engagement claw 4b of the cap 4 is engaged with the engagement part 3b. At the leading ends of the case main body 3 and cap 4, cylindrical halves 3c and 4c to

be combined integrally by a cap member 5 are provided respectively.

For assembling the case 2, first of all, the engagement claw 4b in the cap 4 is brought in engagement with the engagement claw in the case main body 3, and the cylindrical halves 3c, 4c are assembled and integrated with each other, while the fitting rib 4a is fitted in the fitting recess 3a, then the cap member 5 is fitted into this assembled portion (cylindrical leading end) 6, thereby completing the assembly. Although not shown, instead of the engagement structure of the engagement part 3b and engagement claw 4b, the cap 4 may be pivoted to the case main body 3 so as to be free to open and close in the vertical direction.

The cap 4 has three remainder monitor windows 8a to 8c for monitoring the remaining amount of the coating film transfer tape T.

II. Tape cartridge C:

The tape cartridge C is a component replaceable as a consumable item. Its detailed structure is shown in FIGs. 16 to 19. The tape cartridge C comprises a pay-out reel 11 with the coating film transfer tape T wound thereabout, a winding reel 12 for collecting used coating film transfer tape T', and the coating film transfer head H for pressing the coating film transfer tape T onto a transfer area, all mounted on a support base 10, being detachably attached to the tape driving part D of the case main body 3 as shown in FIG. 20.

The support base 10 is composed of a thin flat plate, and its material and dimensions are selected to be as thin and compact as possible within a range of providing a strength sufficient for holding the reels 11, 12 and the coating film transfer head H. In other words, the support base 10 is required to function for holding the reels 11, 12 and head H at corresponding positions only until they are attached to the tape driving part D and the cylindrical leading end 6 as the head holding part. Therefore, the support base 10 is desired to be as thin and compact as possible, as far as a minimum strength for achieving the function is assured.

In the illustrated embodiment, the support base 10 is made of AS (acrylonitrile-styrene) resin or ABS (acrylonitrile-butadiene-styrene) resin. The thickness of the support base 10 is set at 1 mm or less. A front shape of the support base 10 is nearly an oval form along the outer circumference of the reels 11, 12, as shown in FIG. 17. At the leading end portion of the support base 10, a head mounting part 90 is provided integrally. A surface or upper surface 10a of the support base 10 serves as a running and guiding surface of the coating film transfer tape T.

The pay-out reel 11 and winding reel 12 are provided with hollow drum parts 11a, 12a, respectively, for winding the coating film transfer tape T thereabout. The drum parts 11a, 12a have, in their center, attachment holes 11b, 12b with such tooth profile engagement parts as serration or spline.

The drum parts 11a, 12a of the reels 11, 12 are rotatably supported with support ends thereof in support holes 10b, 10c of the support base 10. Specifically, annular fitting grooves 13, 13 are formed in a support end of the drum parts 11a, 12a, respectively. These fitting grooves 13, 13 are rotatably fitted and supported in an inner edge of the support holes 10b, 10c. In this connection, in an outer circumferential part of the support holes 10b, 10c, as shown in FIG. 19, a plurality of slits 14, 14 ... are radially extended for inserting the drum parts, respectively.

The coating film transfer tape T is wound about an outer circumference of the drum part 11a in the pay-out reel 11. The coating film transfer tape T is guided through the coating film transfer head H, and its leading end is connected to an outer circumference of the drum part 12a in the winding reel 12.

The specific construction of the coating film transfer tape T is same as in embodiment 1.

A free end of the drum part 11a in the pay-out reel 11 is left as an open end. A free end of the drum part 12a in the winding reel 12 is provided with a guide flange 15 for running the tape.

In this relation, moreover, the support base 10 is provided with a tape protective wall 17 for protecting the outer circumference of the coating film transfer tape T wound about the pay-out reel 11. This tape protective wall 17 is a thin plate having a same thickness as the support base 10. The tape protective wall 17 is provided upright and integrally along the rear edge of the support base 10 so as to cover the outer circumference of the pay-out reel 11, more specifically, the outer circumference of the coating film transfer tape T wound thereabout.

By this tape protective wall 17, when assembling the tape cartridge C, the coating film transfer tape T is prevented from being dislocated from the pay-out reel 11 accidentally, and when handling the tape cartridge C, it covers and protects the coating film layer on the outermost surface of the coating film transfer tape T, that is, the corrective paint layer. This tape protective wall 17 may be provided at least over the shown range, from the viewpoint of lightening, downsizing and simplifying the structure of the tape cartridge C, but a specific forming range may be adequately varied depending on the purpose.

As shown in FIG. 20, the configuration of the reels 11, 12 on the support base 10 is determined so that the attachment holes 11b, 12b are coaxial, respectively, with the pay-out rotation part 30 and winding rotation part 31 of the tape driving part D mentioned below.

Additionally, a pair of guide pins 20, 21 are integrally provided upright for guiding the coating film transfer tape T, in the support base 10 near the mounting positions of the reels 11, 12. The guide pin 20 is for guiding the coating film transfer tape T paid out of the pay-out reel 11. The other guide pin 21 is for guiding the coating film transfer tape T' that is taken up on the winding reel 12.

Further, a collared guide roller 22 is freely rotatably pivoted on the guide pin 21 at the winding side. By means of such arrangement, smooth and neat winding guide of the coating film transfer tape T' is encouraged, and if there is a coating film lever over on the coating film transfer tape T' due to transfer faire, the trouble of the coating film transfer tape T' being wound into the guide pin 21 can be avoided securely. A similar guide roller may be also attached to the guide pin 20 of the pay-out side.

Besides, to prevent loosening of the coating film transfer tape T before mounting, the pay-out reel 11 and winding reel 12 are prevented from rotating by a stopper 25 as indicated by double dot chain line in FIGs. 17 and 18. This stopper 25 is made of a material similar to that of the support base 10. The stopper 25 is formed in such shape and dimensions, as shown in the figures, that it extends over the attachment holes 11b, 12b of reels 11, 12, and provided with a pair of engagement projections 25a, 25b in a lower surface thereof. Then, by removable fitting engagement between the engagement projections 25a, 25b and the attachment holes 11b, 12b, respectively, the reels 11, 12 are stopped and held against rotation. The stopper 25 may be made of paper.

III. Coating film transfer head H:

The coating film transfer head H is designed to press the coating film transfer tape T onto a correction area (transfer area) of an error or the like on the sheet of paper. This head H is mounted on a head mounting part 90 of the support base 10 rotatably about its axial center.

The head H is a plastic integral forming having a certain elasticity. The head H consists of a head main body 65 for guiding and pressing the coating film transfer tape T, and a bearing 66 borne rotatably.

The head main body 65 is a thin plate slightly wider than the coating film transfer tape T. The head main body 65 is tapered in section so as to be gradually thin toward the leading end, and its leading end 65a is the pressing part for pressing the coating film transfer tape T. At both edges of the head main body 65, guide flanges 65b, 65b are formed for guiding the running of the coating film transfer tape T.

The bearing 66 is semicylindrical with an arcuate section and an open top as shown in FIG. 23. In the central part of this semicylindrical bearing 66, the head main body 65 is formed integrally as shown in the drawing. The open part 31a of this bearing 31 is a tape setting opening to the head main body 65. The tape setting opening 68 is disposed so that the coating film transfer tape T may be directly inserted in the state being wound about the reels 11, 12 when the head H is at the coating film transfer tape replacement position X, and it is designed so that setting of the coating film transfer tape T in the head main body 65 may be easy.

The basal end portion of the bearing 66 is rotatably supported on the head mounting part 90, and the remaining leading end portion is rotatably supported on the cylindrical leading end 6 of the case 2 when mounting onto the case 2.

In addition, as shown in FIG. 23 (a), in the mounting structure of the bearing 66 onto the head mounting part 90, a positioning protrusion 92 is projected on the outer circumference of the basal end portion of the bearing 66. At the leading end 90a of the head mounting part 90 for supporting the bearing 66, an engagement opening 93 to be engaged with the protrusion 92 is extended in the circumferential direction.

By the engagement of the protrusion 92 and engagement opening 93, the head H is positioned in the axial direction in the head mounting part 66, and is mounted rotatably about its axial center. Hence, while maintaining a simple structure, the ease of operation when replacing the tape by the user is assured.

The rotational range of the head H in this case is defined by the circumferential length of the engagement opening 93 engaged with the protrusion 92, and in the illustrated example, more specifically, it is set corresponding to the rotational operation range of the head H by the rotationally operated part R mentioned later.

Consecutively to the leading end 90a of the head mounting part 90, a mounting part main body 90b is provided. This mounting part main body 90b has an inside cylindrical guide surface corresponding to the inside cylindrical surface of the bearing 66, thereby a tape guide part for guiding the coating film transfer tape T in cooperation with the guide pins 20, 21 is formed. This tape guide part 90b makes the job easy and secure when setting the coating film transfer tape T on the guide pins 20, 21 and head H when assembling the tape cartridge C. Moreover, the tape guide part 90b prevents, same as the tape protective wall 17, the coating film transfer tape T from being dislocated unexpectedly from the setting state, and covers and protects, when handling the tape cartridge C, the coating film layer on the outermost surface of the coating film transfer tape T, that is, the corrective paint layer.

In thus constituted tape cartridge C, as shown in FIG. 20 (a) (b), it is set by one touch by mounting the support base 10 on the both rotation parts 30, 31 while engaging the both reels 11, 12 and the head H with the both rotation parts 30, 31 of the tape driving part D and the cylindrical half 3c of the case main body 3 from the upper side, respectively. On the other hand, by directly lifting the support base 10 to the upper side, the reels 11, 12 and head H can be easily detached instantly from the rotation parts 30, 31 and cylindrical half 3c, respectively.

IV. Tape driving part D:

The tape driving part D is provided in the main case body 3. The tape driving part D comprises mainly, as shown in FIGs. 20 and 21, a pay-out rotation part 30 for rotatably driving the pay-out reel 11, a winding rotation part 31 for rotatably driving the winding reel 12, an inter-

locking part 32 for interlocking the rotation parts 30, 31, and a clutch mechanism 33.

The pay-out rotation part 30 comprises a drive side rotary gear 44 for composing the interlocking part 32, and a driven member 46.

A hollow rotary shaft 44a of the drive side rotary gear 44 is rotatably borne on a hollow support shaft 47 provided upright on the inner side of the case main body 3. At the leading end of the hollow support shaft 47, a stopper is provided for preventing the rotary shaft 44a from slipping out.

The driven member 46 composes a tape winding part together with the drum 11a of the pay-out reel 11, and is formed in a hollow cylindrical shape. This driven member 46 is rotatably provided on the rotary shaft 44a of the drive side rotary gear 44. On the outer circumference of the driven member 46, a toothed engagement part 46a such as serration and spline is formed as shown in the drawing. At the leading end of the rotary shaft 44a, a stopper is provided to prevent the driven member 46 from slipping out.

The winding rotation part 31 has a driven side rotary gear 48 for composing the interlocking part 42. A hollow rotary shaft 48a of the rotary gear 48 is rotatably borne on a hollow support shaft 49 provided upright on the inner surface of the case main body 3. At the leading end of the hollow support shaft 49, a stopper is provided for preventing the rotary shaft 48a from slipping out. On the outer circumference of the rotary shaft 48a, a toothed engagement part 55 such as serration and spline is formed.

The interlocking part 32 is composed of the drive side rotary gear 44 and driven side rotary gear 48. The both rotary gears 44, 48 are engaged with each other at a specific gear ratio. Accordingly, the winding rotation part 31 is rotated in interlock with the pay-out rotation part 30 always at a specific rotation ratio. This rotation ratio, that is, the gear ratio of the both gears 44 and 48 is determined properly so that the coating film transfer tape T may be paid out and wound smoothly, in consideration of the winding diameters of the coating film transfer tape T on the pay-out reel 11 and winding reel 12.

The clutch mechanism 33 is designed to synchronize the pay-out speed and winding speed of the coating film transfer tape T in the pay-out reel 11 and winding reel 12, and is provided in the pay-out rotation part 30.

A specific constitution of the clutch mechanism 33 is shown in FIG. 22 (a). The clutch mechanism 33 has a friction member 51 interposed between the drive side rotary gear 44 and driven member 46.

As the friction member 51, an elastomer O-ring as shown in FIG. 22 (b) is used. The O-ring 51 composes a power transmission part between the drive side rotary gear 44 as the rotation driving part, and the driven member 46 as the tape winding part 45. This O-ring 51 is specifically a silicone rubber ring having a circular section. The O-ring 51 is elastically interposed between the confronting end surfaces in the axial direction of both members 44, 46, and these three members contact mutually in frictional engagement state.

Therefore, in power transmission of the clutch mechanism 33, the frictional force by thrust load acting between the both members 44, 46 is utilized. This frictional force is set to the optimum value mainly by properly adjusting the distance between the engagement surfaces of the both members 44, 46, and the diameter of the section of the O-ring 51.

Moreover, as shown in FIG. 21, the winding rotation part 31 is provided with a reverse rotation preventive mechanism 60 for preventing reverse rotation of the both reels 11, 12, same as in embodiment 1. The specific structure of the reverse rotation preventive mechanism 60 is, as mentioned above, shown in FIG. 8.

Although not shown in the drawings, in relation to the reverse rotation preventive mechanism 60, a conventional rewinding mechanism may be provided in the tape driving part D for correcting the looseness of the coating film transfer tape T.

Accordingly, by pressing action of the coating film transfer head H described later, when a tensile force (in the direction of arrow A) applied to the coating film transfer tape T acts as a rotational torque to the pay-out reel 11, the drive side rotary gear 44 is rotated through the tape winding parts 45 (11a and 46) of the pay-out reel 11, and clutch mechanism 33. The rotational torque effects rotation of the driven side rotary gear 48 and further the winding reel 12 in interlock through the interlock part 32, thereby winding up the coating film transfer tape T' automatically after use.

In this case, the ratio of rotation (corresponding to the ratio of outer diameters) between the drive side rotary gear 44 and driven side rotary gear 48 is unchanged at any time, while the ratio of outer diameter between the coating film transfer tape T about the pay-out reel 11 and the coating film transfer tape T' about the winding reel 12 changes in the time course, and is inconstant. It means that the outer diameter of the coating film transfer tape T about the pay-out reel 11 is gradually reduced as the tape is used, while the outer diameter of the coating film transfer tape T' about the winding reel 12 is increased on the contrary.

Therefore, the winding speed of the winding reel 12 is increased in comparison with the pay-out speed of pay-out reel 11 as time elapses, and the synchronism of the two speeds is broken and the rotational torque acting to the pay-out reel 11 is also gradually increased. Then, as the rotational torque overcomes the frictional force of the clutch mechanism 33, and the tape winding parts 45 (11a, 46) slip and rotate relatively on the drive side rotary gear 44. As a result, the rotational torque difference between the reels 11 and 12 is canceled, and the pay-out speed and winding speed are mutually synchronized, thereby assuring smooth running of the coating film transfer tape T.

V. Rotationally operated part R:

The rotationally operated part R is for rotationally operating the head H of the tape cartridge C. The rotationally operated part R comprises a cap member 5 as an operating member detachably attached to the cylindrical leading end 6, and a positioning part 71 provided on an outer circumference of the cylindrical leading end 6.

The cap member 5 is an integral molding of plastic material, and comprises a base part 72 fitted over the cylindrical leading end 6, and an engagement part 73 integrally engaged with the head H in the rotating direction.

The base part 72 serves as an assembly fixing member for the case 2 and as a rotationally operated part. A cylindrical bore of the base part 72 is set so that it can be rotatably fitted over the outer circumference of cylindrical leading end 6, and that multiple toothed anti-slip ribs are formed on an outer circumference thereof as shown in the drawing. The engagement part 73 is provided with a through hole 74 for receiving the head H. The shape and dimension of the through hole 74 are set so that the cap member 5 and the head H are integrally engaged with each other in the rotating direction, when the head H is inserted, as shown in FIG. 23 (b).

The positioning part 71 is for resiliently positioning and fixing the cap member 5 in position in the direction of rotation. A pair of positioning parts 71, 71 are provided at the confronting positions on the outer circumference of the cylindrical leading end 6. The pair of positioning parts 71, 71 are identical in structure, and the positioning part 71 on the side of cylindrical half 4c in the cap 4 is described below.

The positioning part 71 comprises, as shown in FIG. 9, a fit-in guide groove 71a extending linearly in the axial direction of the cylindrical leading end 6, and an anchor guide groove 71b extending from an end of the fit-in guide groove 71a in the circumferential direction of the cylindrical leading end 6. In the embodiment shown, the anchor guide groove 71b is formed in a range of central angle of 90° of the cylindrical leading end 6, as shown in FIG. 23 (b). Moreover, first and second engagement parts 75a and 75b are provided at both ends of the anchor guide groove 71b.

The first and second engagement parts 75a and 75b are formed as recesses deeper than the guide grooves 71a, 71b. The engagement recesses 75a, 75b are disengageably engaged with an engagement projection 76 that is provided on an inner circumference of the cap member 5. In other words, the shape and dimension of the engagement projection 76 are set so that it is guided along the guide grooves 71a, 71b, while it is elastically changed in shape to some relative extent, and fitted in the engagement recesses 75a, 75b through elastic restoration.

The engagement configuration of the engagement projection 76 and engagement recesses 75a, 75b is set same as in embodiment 1.

That is, when the engagement projection 76 of cap member 5 is in engagement with the first engagement recess 75a, the head H is in a coating film transfer tape replacement position (vertical pulling position) X, as shown in FIGs. 12 (a) and 13 (a). In such state, the pressing part 65a of head H guides the coating film transfer tape T in a same attitude as it is wound about the payout reel 11 and winding reel 12, that is, with front and back surfaces of the coating film transfer tape T oriented generally perpendicularly (orthogonally) to the gripping surfaces 2a, 2b.

On the other hand, when the engagement projection 76 is in engagement with the second engagement recess 75b (see FIG. 23 (b)), the head H is, as shown in FIGs. 12 (b) and 13 (b), in an application position (lateral pulling position) Y. In such state, the pressing part 65a of head H guides the coating film transfer tape T in such attitude that it is generally faced against the gripping surfaces 2a, 2b of case 2, that is, with the front and back surfaces of coating film transfer tape T facing in the direction approximately same as that of (in parallel with) the gripping surfaces 2a, 2b.

In this way, when the head H is at the coating film transfer tape replacement position X, the cap member 5 is fitted onto the cylindrical leading end 6 of the case 2 as shown in FIG. 11 (a), and from this state, by rotating and operating the cap member 5 together with the head H from the coating film transfer tape replacement position X to the application position Y, the case 2 is assembled and fixed.

Now, operation of the erasing tool 101 constructed in such manner is described below.

A. Operation:

As shown in FIG. 11 (b), the tool 101 can be used in two different ways by rotating the cap member 5, and selectively positioning the head H in one of two positions, the vertical pulling position X (see FIGs. 12 (a) and 13 (a)) and lateral pulling position Y (see FIGs. 12 (b) and 13 (b)).

(i) Vertical pulling use: (See FIG. 14 (a))

This is suitable for partially correcting a sentence vertically written, for example, in Japanese. For such operation, as shown in the figure, the gripping surfaces 2a, 2b of case 2 are held by fingers like a writing tool, and in this state, the pressing part 65a of head H is brought into contact with the starting end (upper end) of a correction area (transfer area) 80 containing an error or the like to be corrected on a sheet surface. Then the case 2 is moved vertically or downward in relation to the sheet surface, and stopped at the terminal end (lower end) of the correction area 80.

In such operation, the corrective paint layer (white) of coating film transfer tape T in the pressing part 65a of head H is separated from the film base, and transferred to cover the correction area 80. The error or the like of

the correction area 80 is thereby erased, and a correct letter can be readily written thereon.

(ii) Lateral pulling use: (See FIG. 14 (b))

This is suitable for partially correcting a sentence laterally written, for example, in English. For such operation, as shown in the figure, the gripping surfaces 2a, 2b of case 2 are held by fingers like a writing tool, and the pressing part 65a of head H is brought into contact with the starting end (left end) of a correction area 80 with the tool held, as described above. Then, by moving the case 2 laterally or rightward in relation to the sheet surface, and stopping it at the terminal end (right end) of the correction area 80, an error or the like is erased, and a correct letter can be readily written thereon.

B. Replacement of tape cartridge C:

When the coating film transfer tape T is completely used, and wound on the winding reel 12 being collected from the pay-out reel 11, the tape cartridge C should be replaced with a new one according to the following steps.

(i) The case 3 is disassembled and opened. First, the cap member 5 is drawn out from the cylindrical leading end 6 of the case 2 as shown in FIG. 11 (a).

In this case, when the head H is at the vertical pulling operation position, that is, at the coating film transfer tape replacement position X, the cap member 5 can be pulled out directly. On the other hand, when the head H is at the lateral pulling operation position Y, by rotating the cap member 5, the head H is pulled out after rotating from the lateral pulling operation position Y to the coating film transfer tape replacement position X.

In succession, when the cap 4 is at the upper side, the cylindrical half 4c is lifted to the upper side, and the cap 4 is detached from the case main body 3, or opened.

(ii) The used tape cartridge C (empty pay-out reel 11 + winding reel 12 collecting used coating film transfer tape T' + head H) is directly taken out of the case main body 3.

That is, by lifting the support base 10 directly to the upper side, the pay-out reel 11, winding reel 12, and head H are simultaneously detached from the pay-out rotation part 30 and winding rotation part 31 of the tape driving part D, and the cylindrical half 3c of the case main body 3.

(iii) A new tape cartridge C (pay-out reel 11 winding a new coating film transfer tape T + winding reel 12 + head H) is mounted on the case main body 3 in the above procedure.

That is, the guide pins 20, 21, and head H are provided in the support base 10, and setting of the coating film transfer tape T on the guide pins 20, 21 and head H is already completed in the production step of tape cartridge C. Therefore, when replacing this tape, it is only enough to set the tape cartridge C in the case main body 3.

(iv) Then by assembling the case 2 again in the reverse procedure of the above, replacement of used and new tape cartridges is over.

As shown in the drawing, since the rotating range of the head H is set corresponding to the rotational operation range of the head H by the cap member 5, even for an inexperienced user, it is easy and secure to position the head H into the cylindrical half 3c in job (iii) and rotate the cap member 5 in succeeding job

(iv). Hence, ease of operation for replacing the tapes is assured, and misoperation is effectively prevented.

The embodiment described above is only a preferred mode of carrying out the invention, and it is appreciated that the invention is not limited thereto, and various design modifications may be made in the invention without departing from the spirits and scope thereof. For example, modifications described below are possible.

Tape cartridge C:

(1) By employing a film base formed in one side thereof with an adhesive layer over a release agent layer as the coating film transfer tape T, the tool can be used as an adhesive applicator for transferring only the adhesive layer to a sheet surface and the like.

In this case, for easy and secure transfer of the adhesive layer, as shown in FIG. 24, a transfer roller 110 is rotatably attached as a leading end pressing part to the leading end of the head main body 65 of the head H by means of a support pin 111, and it is more preferably when it is constituted so that the transfer roller 110 presses the coating film transfer tape T while rotating.

(2) As the specific structure of the support base 10, it is not limited by the illustrated example alone, as far as it is composed of a thin wall plate member having enough strength for keeping the both reels 11, 12 at an interval corresponding to the both rotation parts 30, 31 of the tape drive unit D in embodiment 1, or as far as it is composed of a thin wall plate member having enough strength for keeping the both reels 11, 12 and the head H corresponding to the both rotation parts 30, 31 of the tape drive unit D and the cylindrical leading end 6 of the case main body 3 in embodiment 2.

For example, in embodiment 1, the support base 10 may be composed of a paper board material, and in this case, from the viewpoint of keeping strength, the guide pins 20, 21 are preferred to be provided at the case main body 3 side. Correspondingly thereto, the support base 10 is provided with a

notch or insertion hole (not shown) as the portion for inserting the guide pins 20, 21.

(3) Although the free end of drum part 11a in the pay-out reel 11 is an open end in the embodiment shown, considering a manufacturing process and cost of the tape cartridge C, it may be arranged such that a guide flange 120 for tape running similar to that of the winding reel 12 may be removably attached to the free end of drum part 11a, as shown by a double dot chain line in FIG. 4 and FIG. 18.

With such arrangement, the guide flange 120 can be removed when winding the coating film transfer tape T. Then, by attaching the guide flange 120 after winding of the tape is completed, the coating film transfer tape T can be more smoothly paid out, or when conveying or replacing the tape cartridge C, the trouble of the coating film transfer tape T dislocating out of the drum 11a can be securely prevented.

Basic structure of the coating film transfer tool 1:

(4) The specific structure of the interlock part 32 is not limited to the illustrated example alone, but may be properly modified.

For example, the structure for making use of the frictional force by radial load is employed in embodiment 1, and the structure for making use of frictional force by thrust load is employed in embodiment 2, but either structure may be freely selected depending on the purpose.

Moreover, instead of the interlock part 32 in embodiment 1, as shown in FIG. 25, the friction member 50 comprising O-ring may be omitted for reduction of product cost.

That is, the interlock parts 32 shown in FIGs. 25 (a) and (b) are both provided with anti-skid parts 130, 131 on the outer circumference of the drive side rotary disk 37, and are composed so that the anti-skid parts 130, 131 may be elastically and frictionally engaged with the outer circumference of the rotary disk 38 of the driven side. The anti-skid parts 130, 131 have a certain elasticity in the radial direction of the rotary disk 37.

The anti-skid part 130 shown in FIG. 25 (a) has plural elastic frictional parts 130a, 130a, ... provided at equal intervals on the whole circumference of the rotary disk 37. A notch 130b between the elastic frictional parts 130a, 130a is slightly inclined with respect to the radial direction of the rotary disk 37. Accordingly, each elastic frictional part 130a is free to deform elastically slightly in the radial direction of the rotary disk 37, and its outer circumference is elastically and frictionally engaged with the outer circumference of the rotary disk 38.

On the other hand, the anti-skid part 131 shown in FIG. 25 (b) has the outer circumference of the rotary disk 37 in an annular elastic frictional part 131a, and this elastic frictional part 131a is supported by plural support ribs 131b, 131b, ... These support ribs 131b, 131b, ... are extended with a slight inclination with respect to the radial direction of the rotary disk 37. As a result, the elastic frictional part 131a is free to deform elastically slightly in the radial direction of the rotary disk 37, and its outer circumference is elastically and frictionally engaged with the outer circumference of the rotary disk 38.

(5) Incidentally, the interlock part 32 in embodiment 1 has both rotation transmission function and sliding function, but as disclosed in Japanese Utility Model Publication No. 5-13800 or Japanese Patent Publication No. 5-58097, these functions may be provided independently.

(6) In the illustrated embodiment, the head H can be rotated to both vertical pulling operation position X and lateral pulling operation position Y, so that vertical pulling use and lateral pulling use can be freely selected, but the invention may be also applied to the coating film transfer tool of the structure fixed to either method of use. For example, in the structure for lateral pulling use only, the vertical pulling operation position X in the illustrated embodiment is omitted, so that the first and second engagement parts 75a, 75b may be omitted.

As specifically described herein, in the tape cartridge of the invention, a pay-out reel mounting a coating film transfer tape and a winding reel for collecting the coating film transfer tape after use are rotatably provided on a support base of a thin wall flat plate, and the both reels are designed to be engaged, detachably and integrally rotatably, with pay-out rotation part and winding rotation part provided rotatably in the case, and therefore the used and new cartridges can be replaced easily, promptly and securely, by a single touch, together with the support base.

That is, while the reels are being engaged with the pay-out rotation part and winding rotation part of the case main body, only by putting the support base on the both rotation parts and setting the coating film transfer tape on the coating film transfer head of the case main body, replacement job is over. Therefore, for a general user, not requiring skill in job, easy and secure replacement job is guaranteed.

In particular, this replacement job may be done easily and securely, without having to set the coating film transfer tape on the head by the user, as far as the coating film transfer head for pressing the coating film tape onto the transfer area is provided in the support base, and the coating film transfer tape being paid out from the pay-out reel is designed to be wound about the winding reel through the leading end pressing part of the head.

Still more, the support base is a thin wall flat plate, and constituent parts including the both reels are held by this support base only, and therefore the number of parts may be reduced, the structure is small and compact, and the product cost is lowered. As a result, while sufficiently making the advantage of the refill structure

capable of saving resources and lowering the running cost, the coating film transfer tool itself can be reduced in size, and its portability and ease of hand-held operation can be maintained.

Besides, in the coating film transfer tool of the invention, the head can be rotated between the coating film transfer tape replacement position and application position, and when the leading end pressing part of the head is at the coating film transfer tape replacement position, the coating film transfer tape is guided as being wound on the pay-out reel and winding reel, and when the leading end pressing part of the head is at the application position, the coating film transfer tape is guided as being nearly opposite to the gripping surfaces of the case, thereby the structure is realized to satisfy the two hitherto impossible requests of lateral pulling use and replacement of coating film transfer tape.

The practical embodiment shown in the detailed description of the invention is taken only for clarifying technical details of the invention only, and the invention, therefore, is not limited to the embodiment described above, and should not be understood in a narrow sense, but should be understood in a broad sense that various modifications may be made in the invention within the spirits thereof and the scope defined by the claims.

Claims

1. A tape cartridge for use with a coating film transfer tool for transferring a coating film on a coating film transfer tape to a sheet surface and the like, which may be replaceably placed in a case of the coating film transfer tool comprising:

   a thin and flat support base having a geometric shape and dimensions for allowing accommodation in the case;

   a pay-out reel rotatably provided in the support base, and having the coating film transfer tape wound thereabout; and

   a winding reel rotatably provided in the support base for collecting the coating film transfer tape after use,

   wherein the reels are constructed such that they are detachably engaged and integrally rotatable with a pay-out rotation part and a winding rotation part provided rotatably in the case.

2. A tape cartridge for use with a coating film transfer tool according to claim 1,

   wherein the support base comprises a thin plate having a strength sufficient for holding the pay-out reel and the winding reel with a spacing corresponding to the rotation parts, and provides a guide surface for running the coating film transfer tape in one side thereof.

3. A tape cartridge for use with a coating film transfer tool according to claim 1,

   wherein a tape protective wall of a thin plate is provided in the support base upright and integrally so as to cover the outer circumference of the pay-out reel.

4. A tape cartridge for use with a coating film transfer tool according to claim 1,

   wherein the pay-out reel is rotatably supported in a support end of drum part thereof by the support base, and

   the winding reel is rotatably supported in a support end of drum part thereof by the support base, and provided with a tape guide flange in a free end thereof.

5. A tape cartridge for use with a coating film transfer tool according to claim 4,

   wherein the free end of the drum part of the pay-out reel is an open end the tape guide flange is provided at the free end of the drum part of the take-up reel.

6. A tape cartridge for use with a coating film transfer tool according to claim 5,

   wherein a tape guide flange is detachably attached to the free end of drum part of the pay-out reel.

7. A tape cartridge for use with a coating film transfer tool according to claim 1,

   wherein the support base is provided with a guide pin for guiding the coating film transfer tape that is paid out of the pay-out reel and a guide pin for guiding the coating film transfer tape that is wound by the winding reel.

8. A tape cartridge for use with a coating film transfer tool according to claim 7,

   wherein a guide roller for rotationally guiding the coating film transfer tape is freely rotatably supported by the guide pin at least in the winding side.

9. A tape cartridge for use with a coating film transfer tool according to claim 1,

   wherein the support base is provided with a receiving part for receiving a guide pin that is provided in the case of the coating film transfer tool for guiding the coating film transfer tape.

10. A tape cartridge for use with a coating film transfer tool according to claim 1,

    wherein a stopper for stopping and holding the reels against rotation is detachably provided.

11. A tape cartridge for use with a coating film transfer tool according to claim 1,

    wherein a paid-out leading end of the coating film transfer tape comprises a film base without a coating film, and set with a length corresponding to

a distance between the pay-out reel and a head of the case paid out.

12. A tape cartridge for use with a coating film transfer tool according to claim 1,

wherein the support base is provided with a coating film transfer head for pressing the coating film transfer tape paid out from the pay-out reel onto a transfer area,

the coating film transfer tape paid out from the pay-out reel is wound on the winding reel through the leading end pressing part of the head, and

the head is held, detachably and projectively, in the head holding part provided in the leading end of the case.

13. A tape cartridge for use with a coating film transfer tool according to claim 12,

wherein the head is supported, rotatably between the coating film transfer tape replacement position and application position, in the head mounting part integrally provided in the support base, and

the leading end pressing part of the head is designed to guide the coating film transfer tape in a same attitude as it is wound about the pay-out reel and winding reel, at the coating film transfer tape replacement position.

14. A tape cartridge for transferring a coating film according to claim 13,

wherein the head consists of the head main body having the leading end pressing part, and a bearing rotatably borne on the head mounting part,

the bearing is semicylindrical having a tape setting opening to the head main body, and

the tape setting opening is located so as to pass the coating film transfer tape in a state being wound on the pay-out reel and winding reel when the head is at the coating film transfer tape replacement position.

15. A tape cartridge for transferring a coating film according to claim 14,

wherein a transfer roller for composing the leading end pressing part is rotatably attached to the leading end of the head main body.

16. A tape cartridge for transferring a coating film according to claim 14,

wherein the head mounting part of the support base has a tape guide part having a cylindrical guide surface corresponding to the inside cylindrical surface of the bearing of the head.

17. A tape cartridge for transferring a coating film according to claim 1,

wherein the coating film transfer tape forms a releasing agent layer on one side of a film base, and a white corrective paint layer is formed thereon, and a pressure sensitive adhesive agent layer is formed further thereon.

18. A tape cartridge for transferring a coating film according to claim 1,

wherein the coating film transfer tape forms an adhesive layer, through a releasing agent layer, on one side of a film base.

19. A coating film transfer tool comprising:

a case having a shape and dimensions for allowing operation by holding it with one hand, and having a pair of confronting gripping surfaces for allowing to be held by hand like holding a writing tool;

a pay-out rotation part rotatably provided in the case;

a winding rotation part rotatably provided in the case;

a tape cartridge with a pay-out reel and a winding reel detachably engaged, respectively, with the rotation parts for integral rotation therewith; and

a coating film transfer head projecting from a leading end of the case for pressing a coating film transfer tape in the pay-out reel against a transfer area,

wherein the tape cartridge comprises a support base in a form of a flat plate having a geometric shape and dimensions for allowing accommodation in the case, the pay-out reel rotatably provided in the support base for paying out the coating film transfer tape that is wound thereabout and the winding reel rotatably provided in the support base for collecting the coating film transfer tape after use, and

the coating film transfer tape paid out of the pay-out reel passes through a pressing part of the head, and is wound about the winding reel.

20. A coating film transfer tool according to claim 19,

wherein the head is fixedly projected in a leading end of the case such that the pressing part in the leading end thereof guides the coating film transfer tape as it is wound about the pay-out and winding reels.

21. A coating film transfer tool according to claim 19,

wherein the head is rotatably operated between a coating film transfer tape replacement position and an application position, and

the pressing part in the leading end of the head is arranged such that it guides the coating film transfer tape as it is wound about the pay-out and winding reels in the coating film transfer tape replacement position, and guides the tape as it generally faces against gripping surfaces of the case in the application position.

22. A coating film transfer tool according to claim 21,

wherein the head consists of the head main body having the leading end pressing part, and a

bearing rotatably borne on the head mounting part,

the bearing is semicylindrical having a tape setting opening to the head main body, and

the tape setting opening is located so as to pass the coating film transfer tape in a state being wound on the pay-out reel and winding reel when the head is at the coating film transfer tape replacement position.

23. A coating film transfer tool comprising:

a case having a shape and dimensions for allowing operation by holding it with one hand, and having a pair of confronting gripping surfaces for allowing to be held by hand like holding a writing tool;

a pay-out rotation part rotatably provided in the case;

a winding rotation part rotatably provided in the case;

a tape cartridge detachably installed in the both rotation part; and

a head holding part provided at the leading end of the case for positioning and holding a coating film transfer head,

wherein the tape cartridge comprises:

a support base in a form of a flat plate having a geometric shape and dimensions for allowing accommodation in the case,

a pay-out reel rotatably provided in the support base winding the coating film transfer tape thereabout,

the coating film transfer head provided in the support base for pressing the coating film transfer tape paid out from the pay-out reel onto a transfer area, and

a winding reel rotatably provided in the support base for taking up and collecting the coating film transfer tape after use by way of the coating film transfer head,

the pay-out reel and winding reel are structured to be detachably and integrally rotatably engaged with the pay-out rotation part and winding rotation part, respectively, and

the head is held in the head holding part, detachably and in a projecting form.

24. A coating film transfer tool according to claim 23,

wherein the head holding part has an operation member for rotating and operating the head between the coating film transfer tape replacement position and the application position.

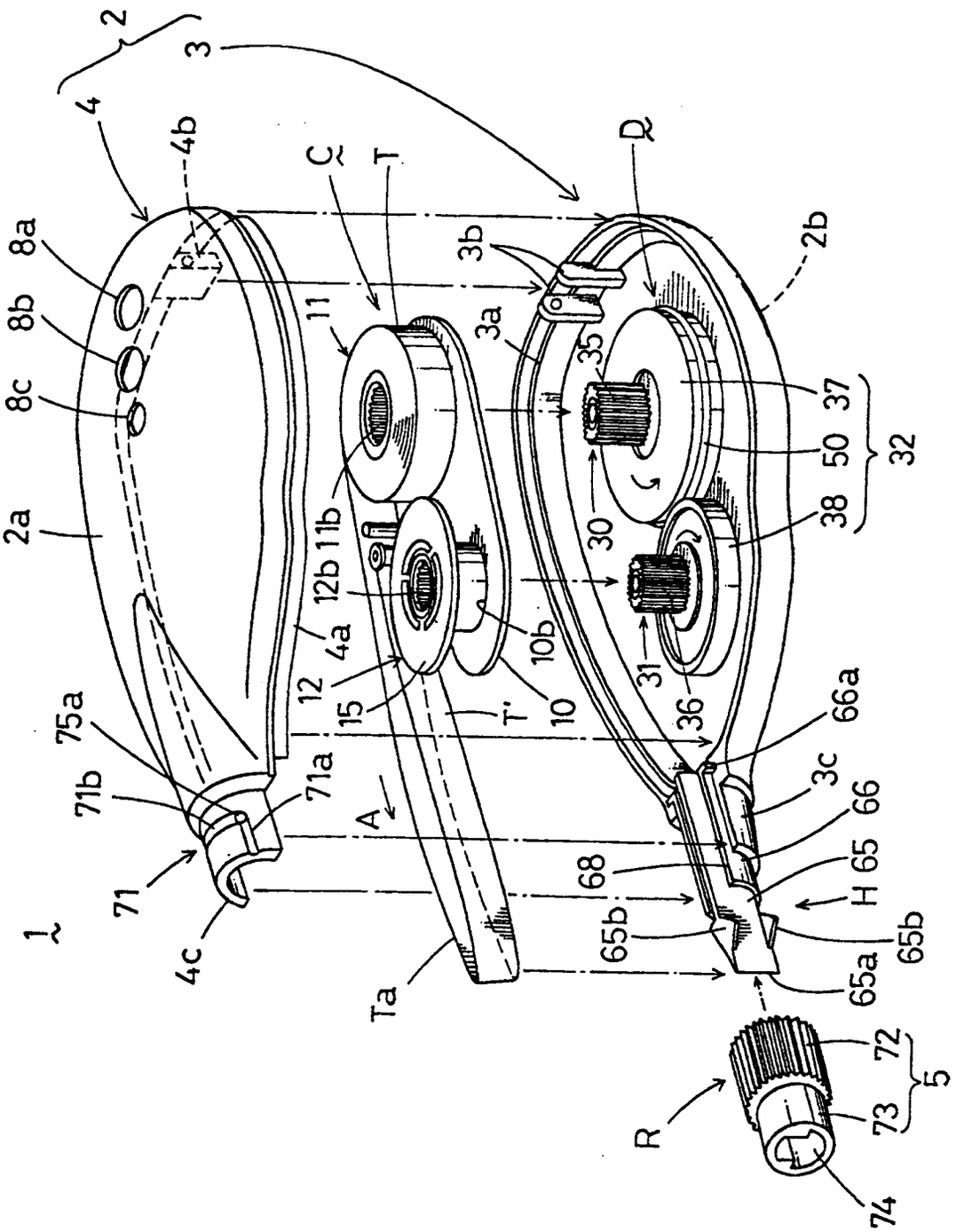
25. A coating film transfer tool according to claim 24,

wherein the operation member can be engaged with the head holding part when the head is at the coating film transfer tape replacement position, and is designed to assemble and fix the case by rotating and operating the head from the coating film transfer tape replacement position to the application position.

26. A coating film transfer tool according to claim 23,

wherein the leading end pressing part of the head is designed to guide the coating film transfer tape nearly opposite to the gripping surfaces of the case.

FIG.1


1
2
3
4
4b
4c
4a
2a
2b
8a
8b
8c
C
T
D
11
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12b
11b
10
10b
15
T'
Ta
A
3a
3b
35
37
50
32
38
30
31
36
66a
3c
66
68
65
H
65b
65a
71
71a
71b
75a
5
72
73
74
R

FIG.2

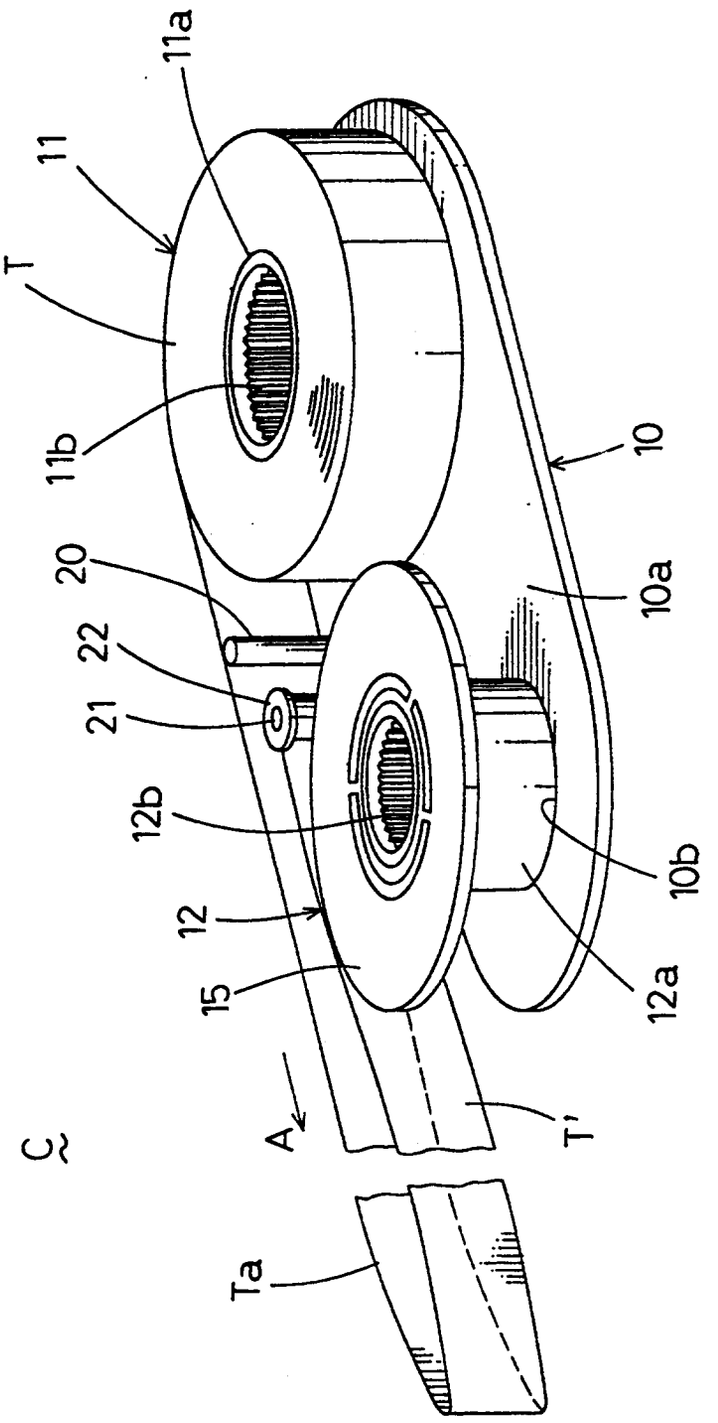
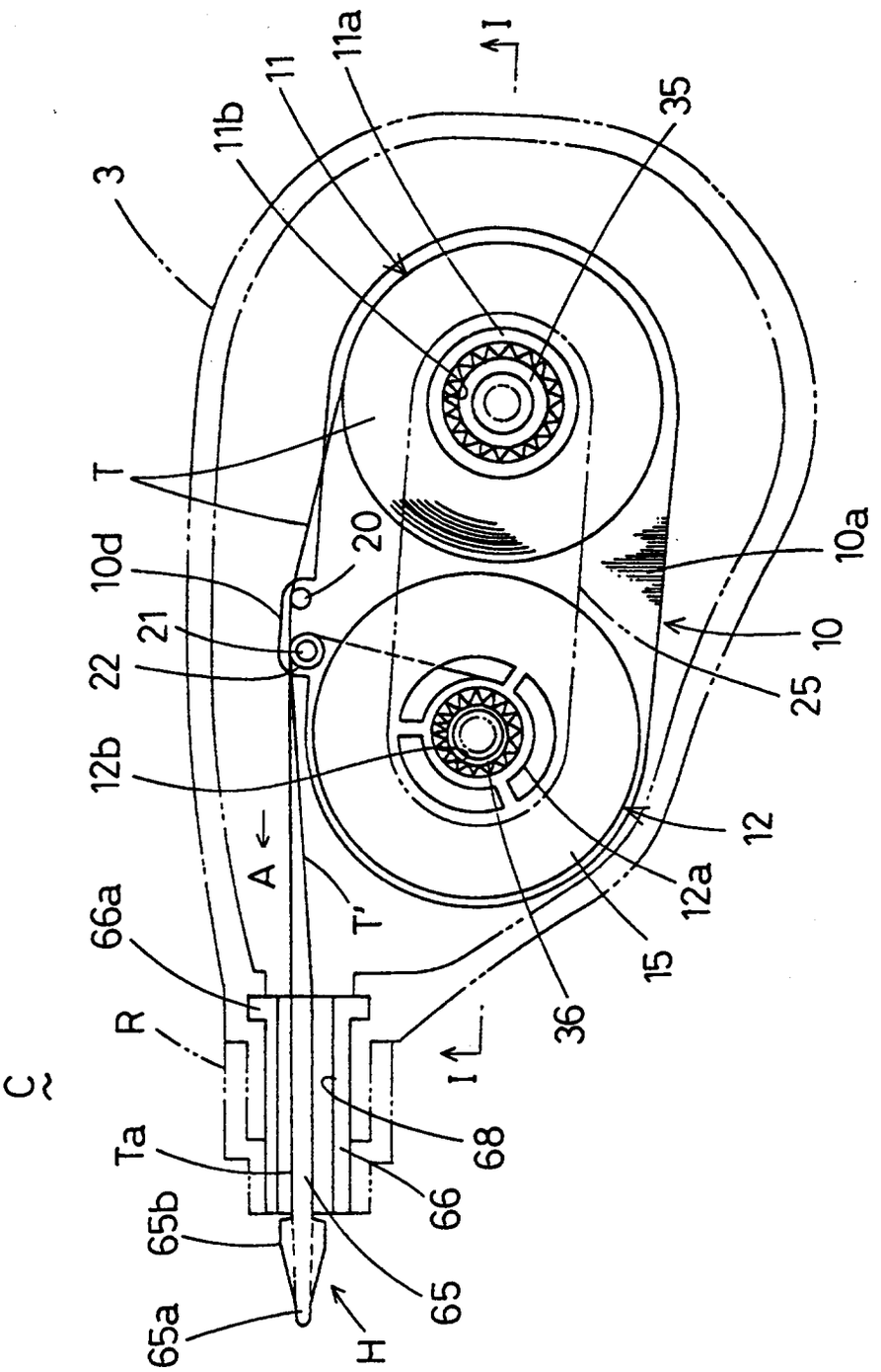


FIG.3


C
R
Ta
65b
65a
H
65
66
68
66a
A
T'
I
I
36
15
12a
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21
10d
20
T
3
11b
11
11a
35
25
10
10a

FIG.4

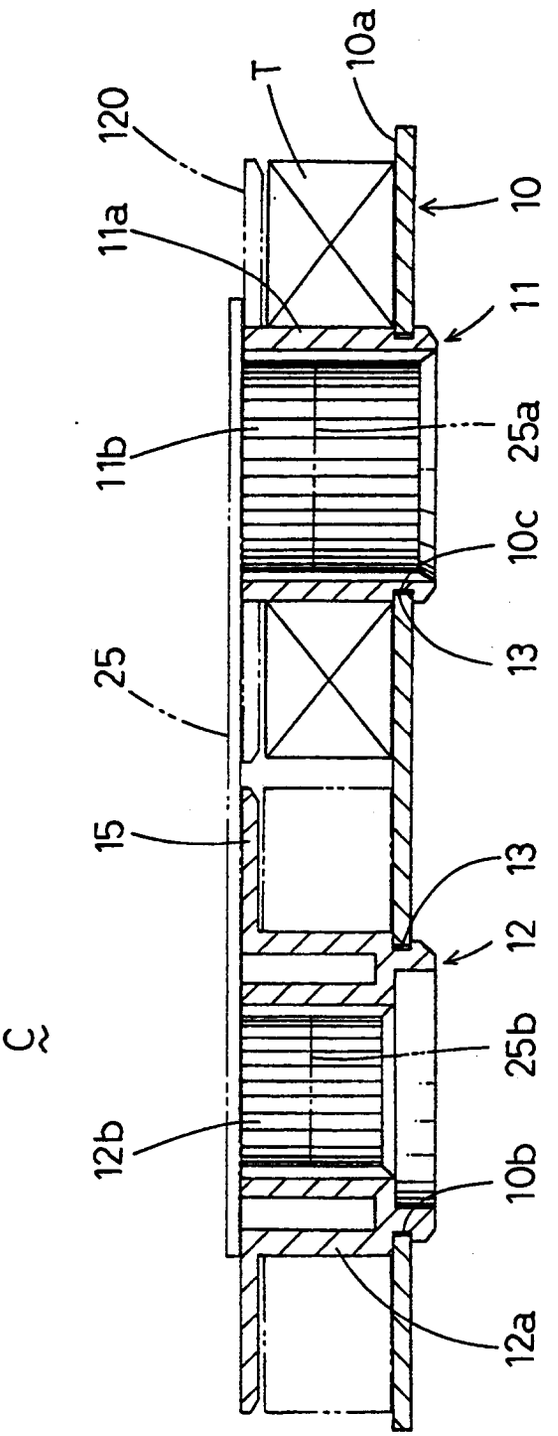


FIG.5

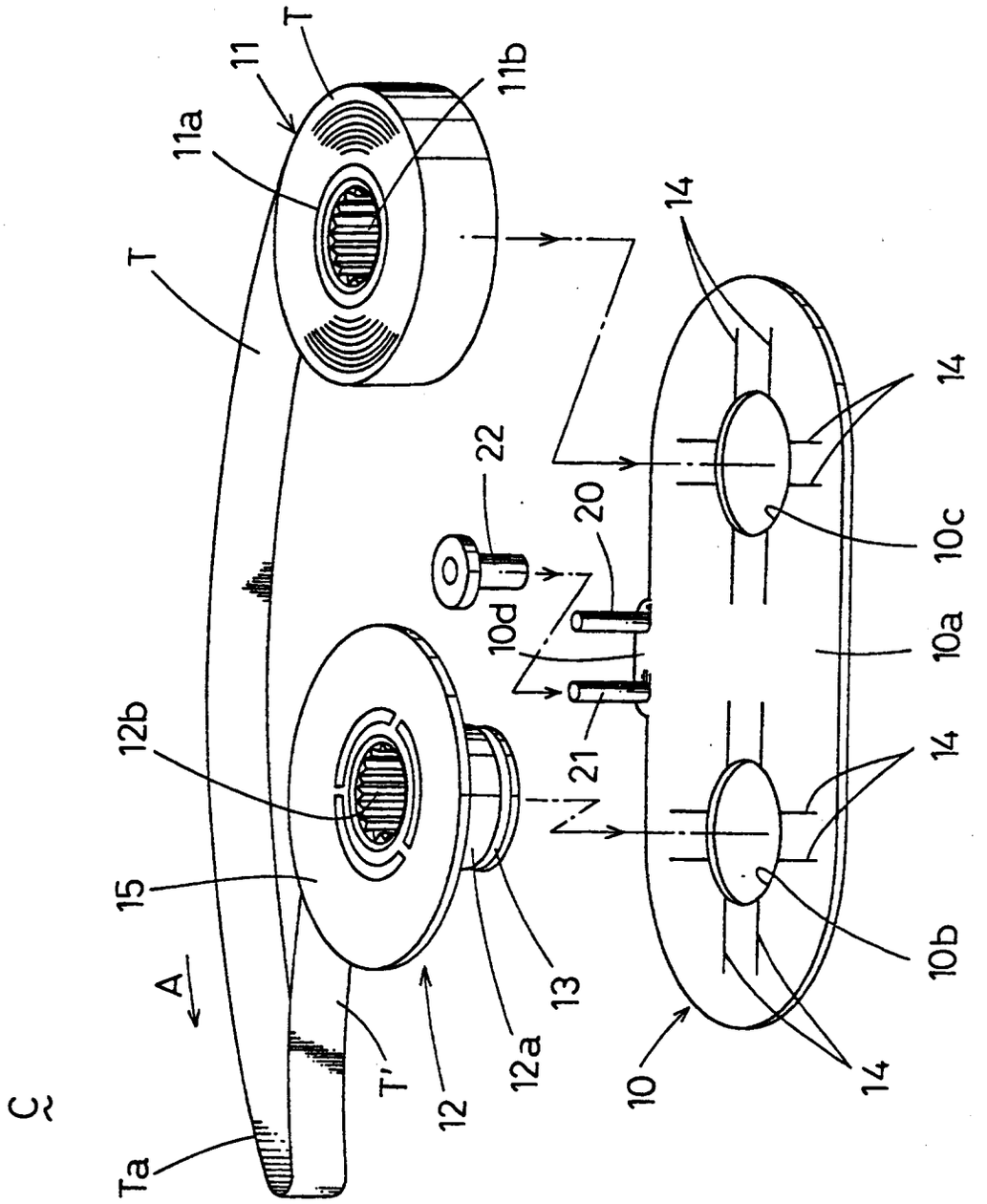
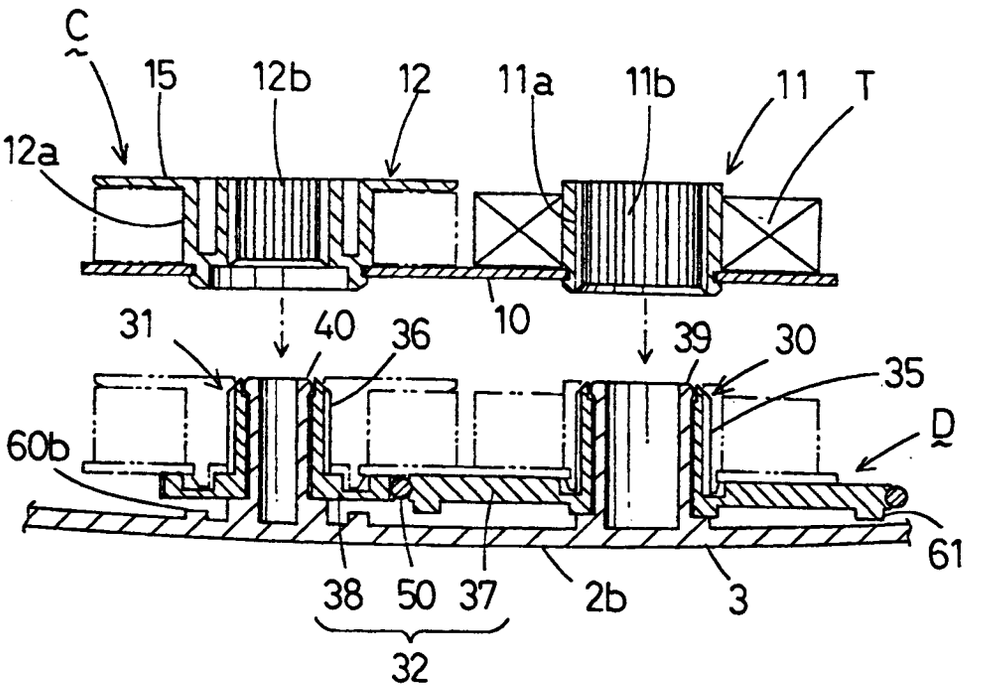
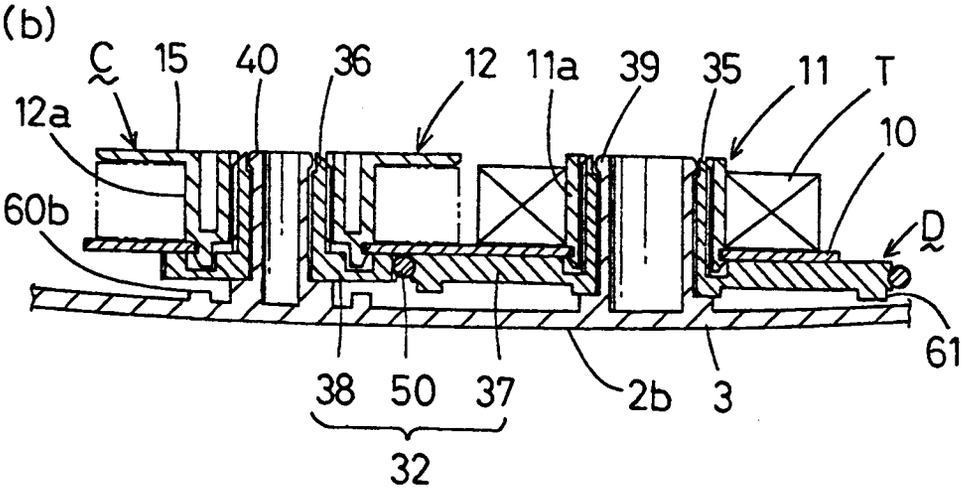


FIG.6

(a)


C
15
12b
12
11a
11b
11
T
12a
31
40
36
10
39
30
35
D
60b
61
38
50
37
2b
3
32

(b)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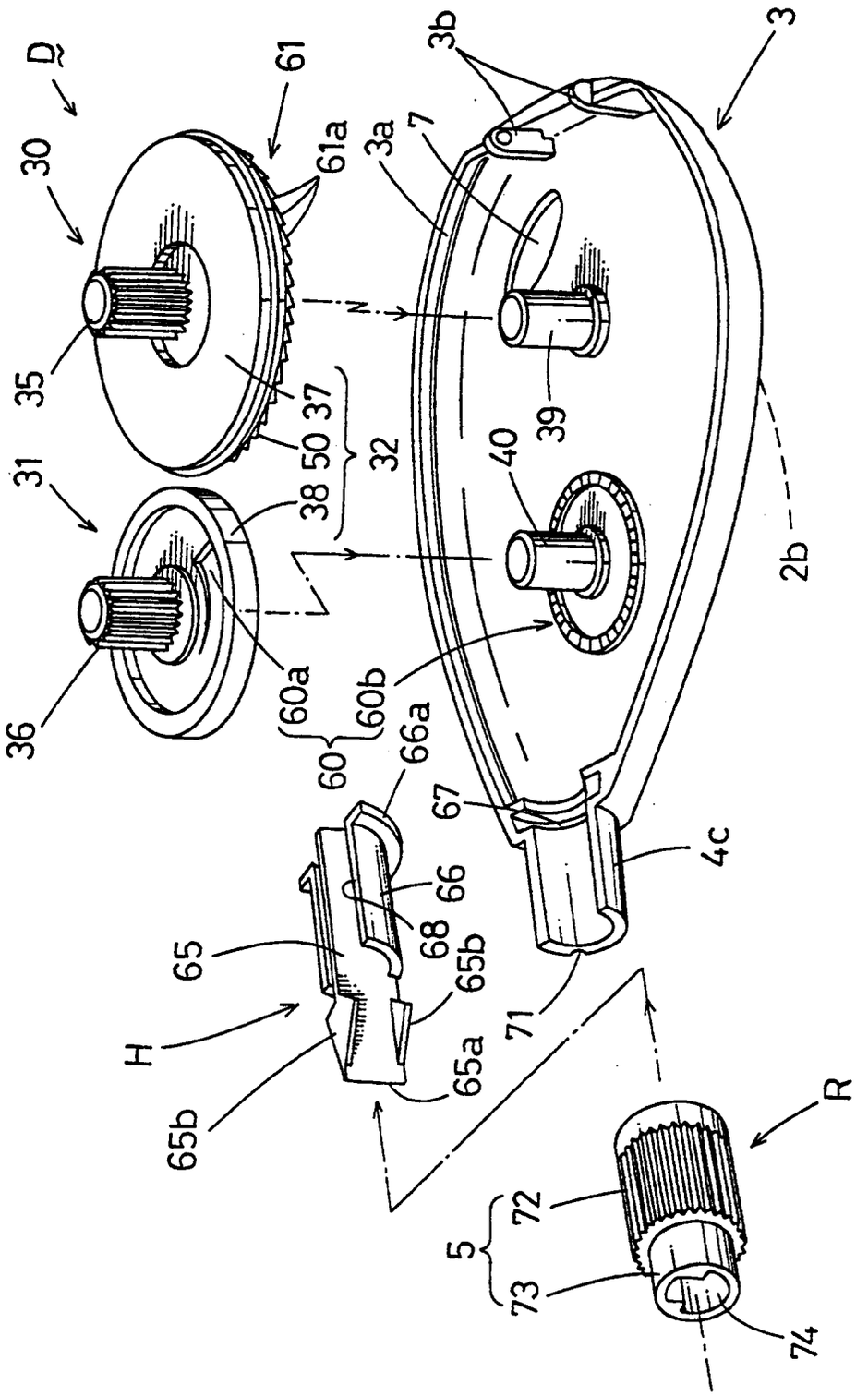
36
12
11a
39
35
11
T
12a
10
60b
D
61
38
50
37
2b
3
32

FIG.7


D
30
61
61a
3b
3
3a
7
35
N
39
37
50
32
31
38
40
2b
36
60a
60b
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66a
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4c
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68
65
65b
H
65a
71
R
5
72
73
74

FIG.8

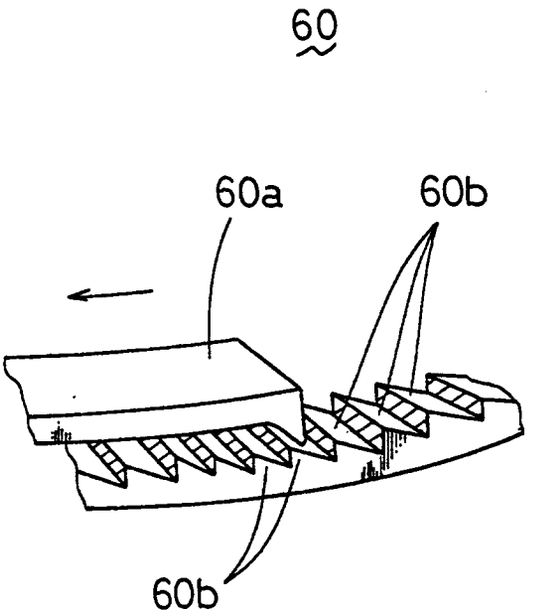
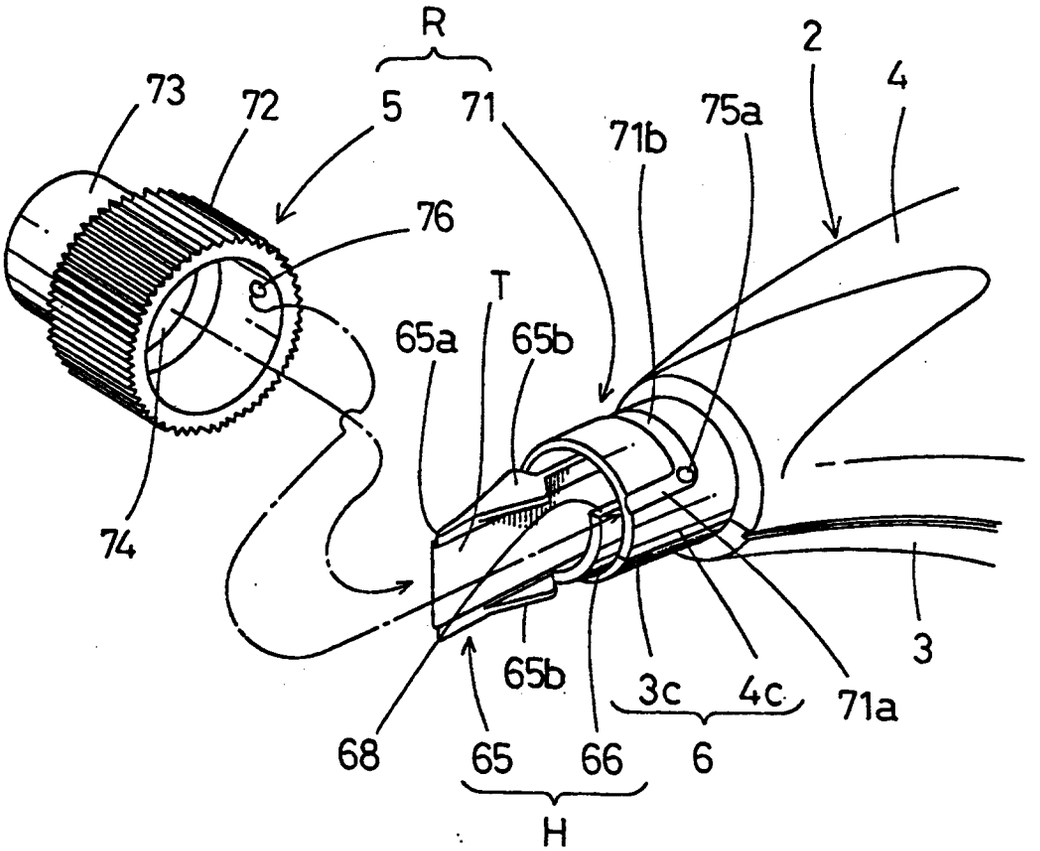


FIG.9

(a)


R
73
72
5
71
2
4
71b
75a
76
T
65a
65b
74
65b
3c
4c
71a
3
68
65
66
6
H

(b)

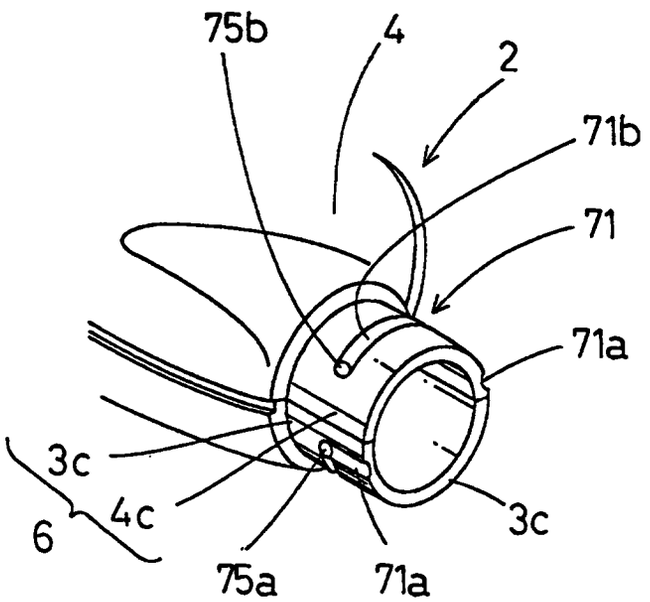

75b
4
2
71b
71
71a
3c
4c
6
3c
75a
71a

FIG.10

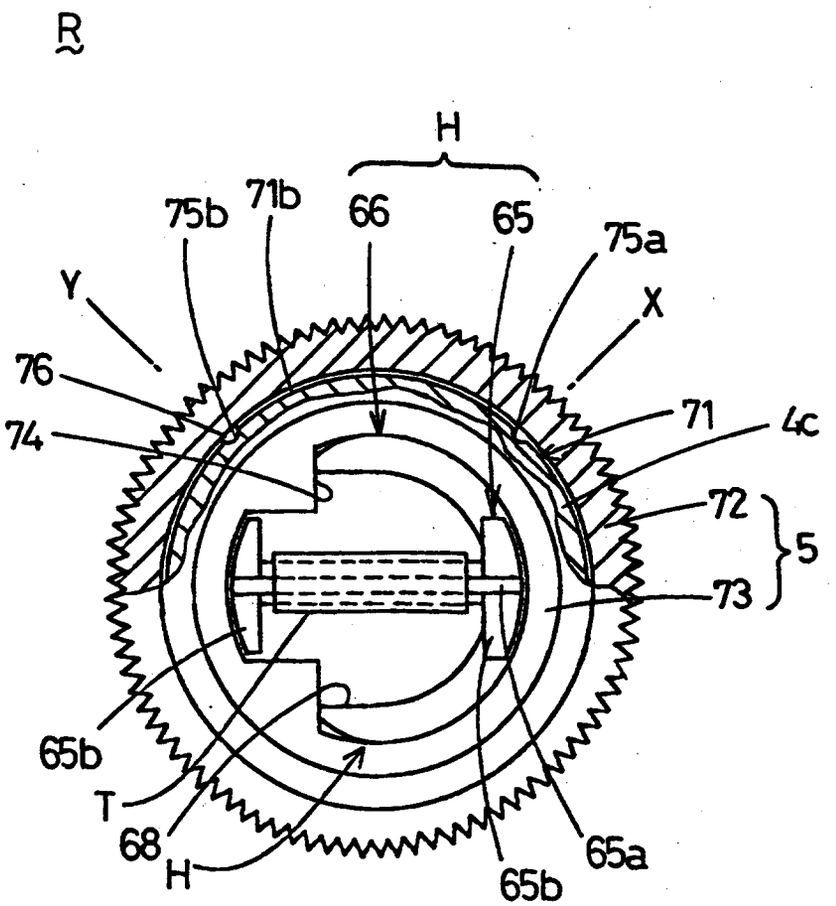
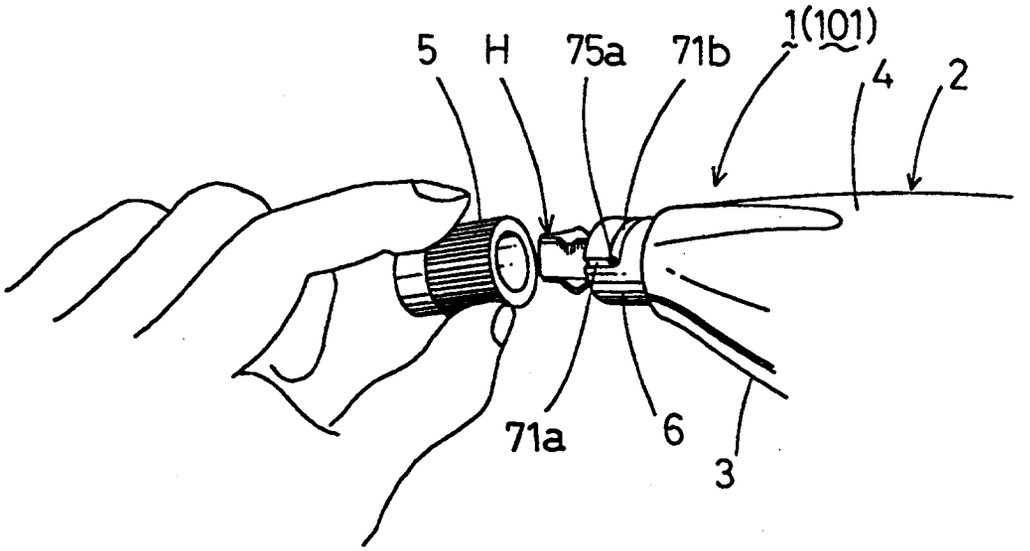


FIG.11

(a)



(b)

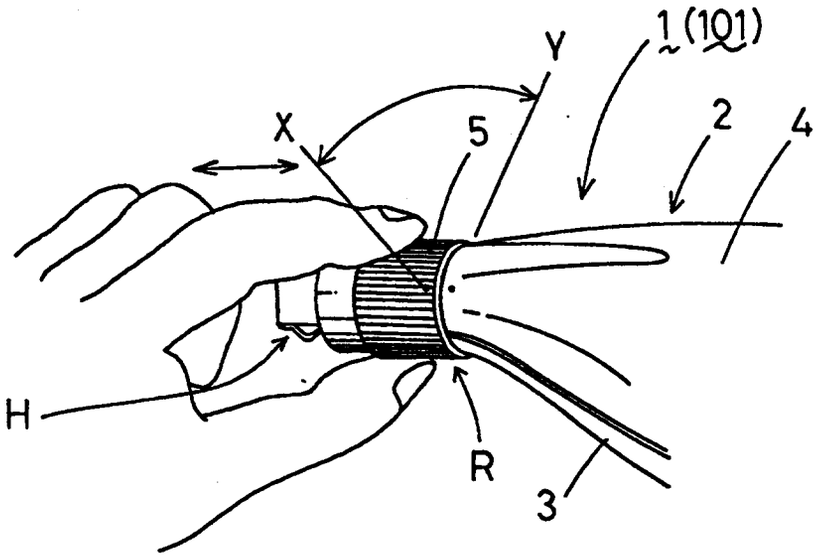


FIG.12

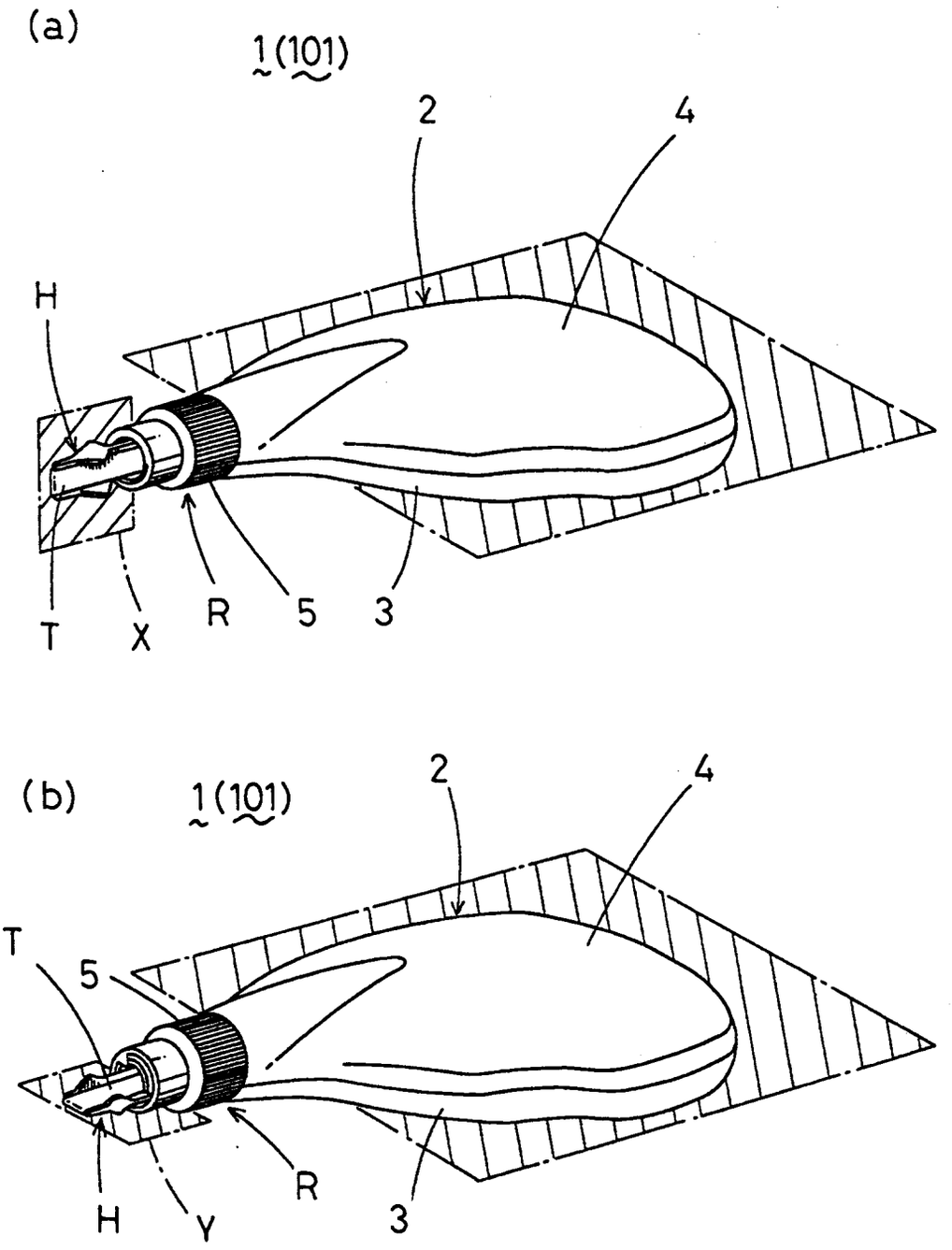
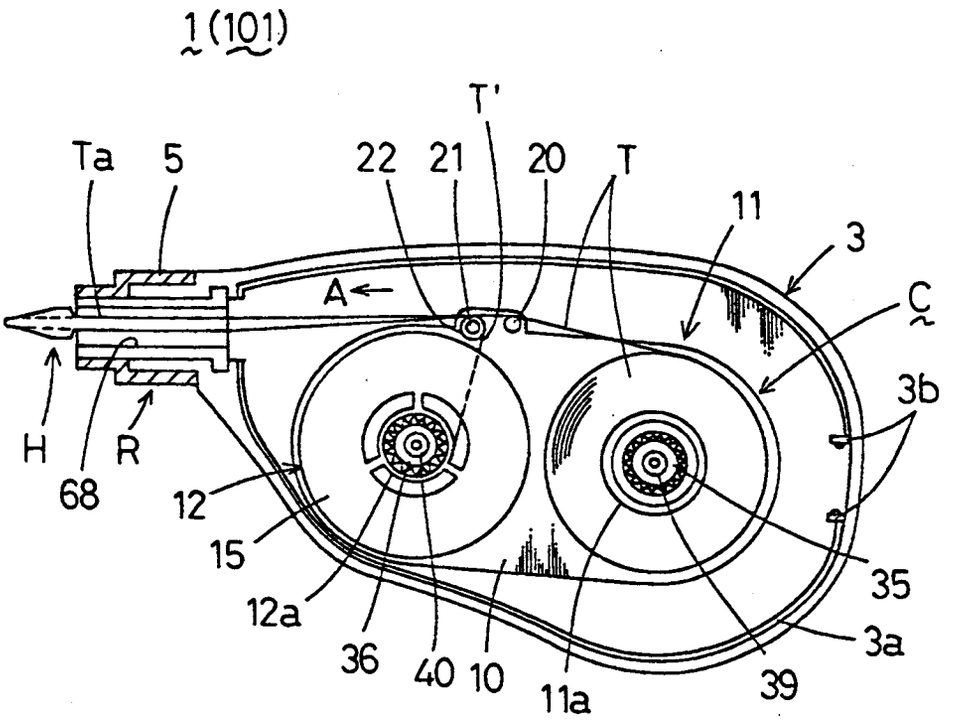


FIG.13

(a)


1(101)
T'
Ta
5
22
21
20
T
11
3
A
C
3b
H
R
68
12
15
12a
36
40
10
11a
39
35
3a

(b)

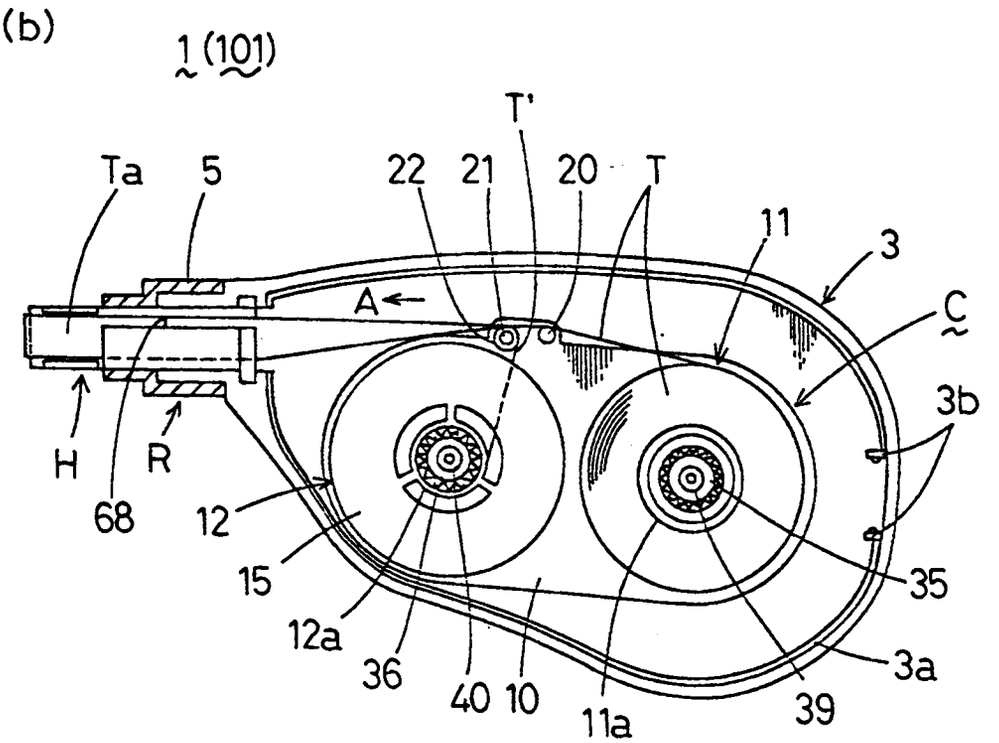

1(101)
T'
Ta
5
22
21
20
T
11
3
A
C
3b
H
R
68
12
15
12a
36
40
10
11a
39
35
3a

FIG.14

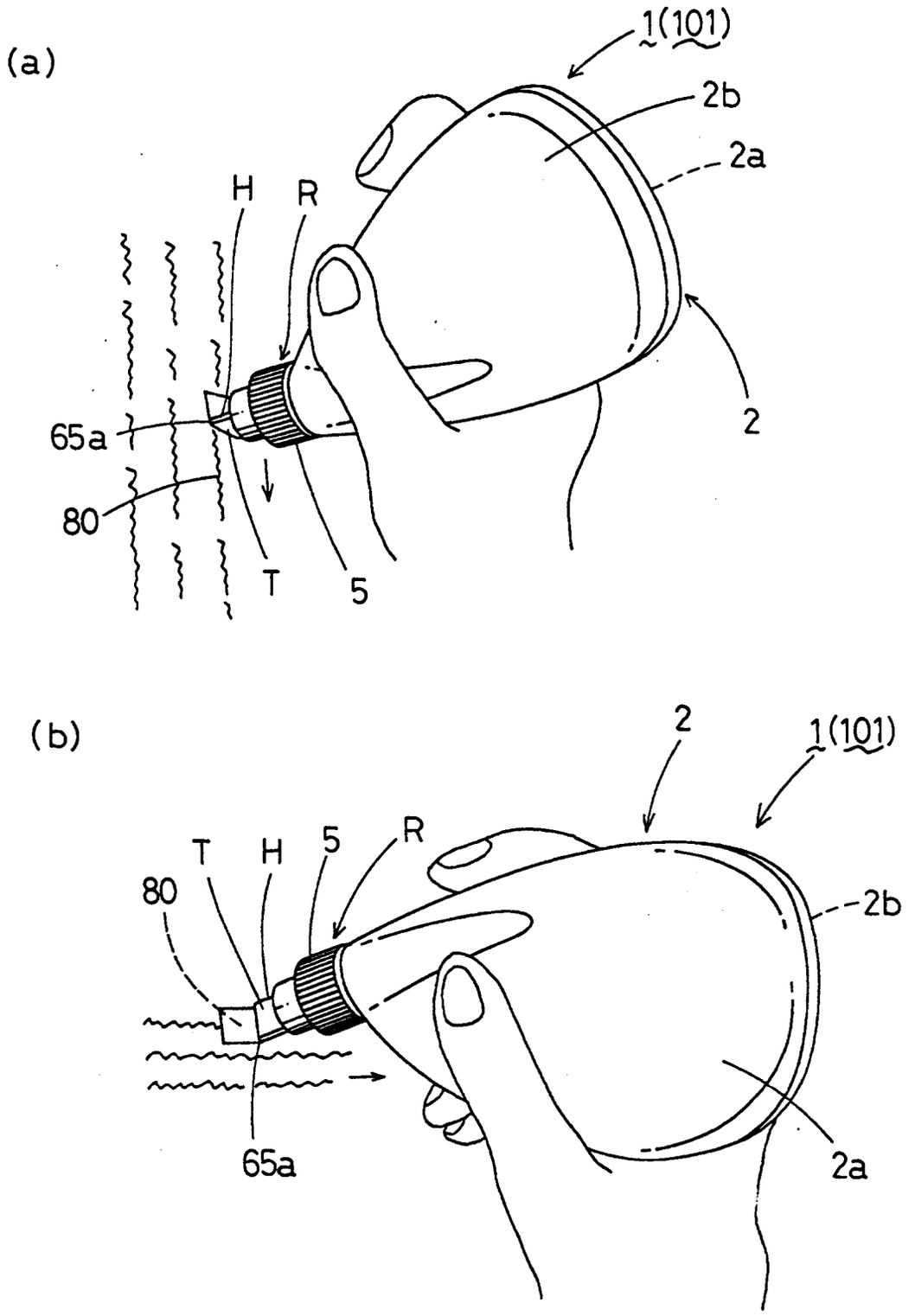


FIG.15

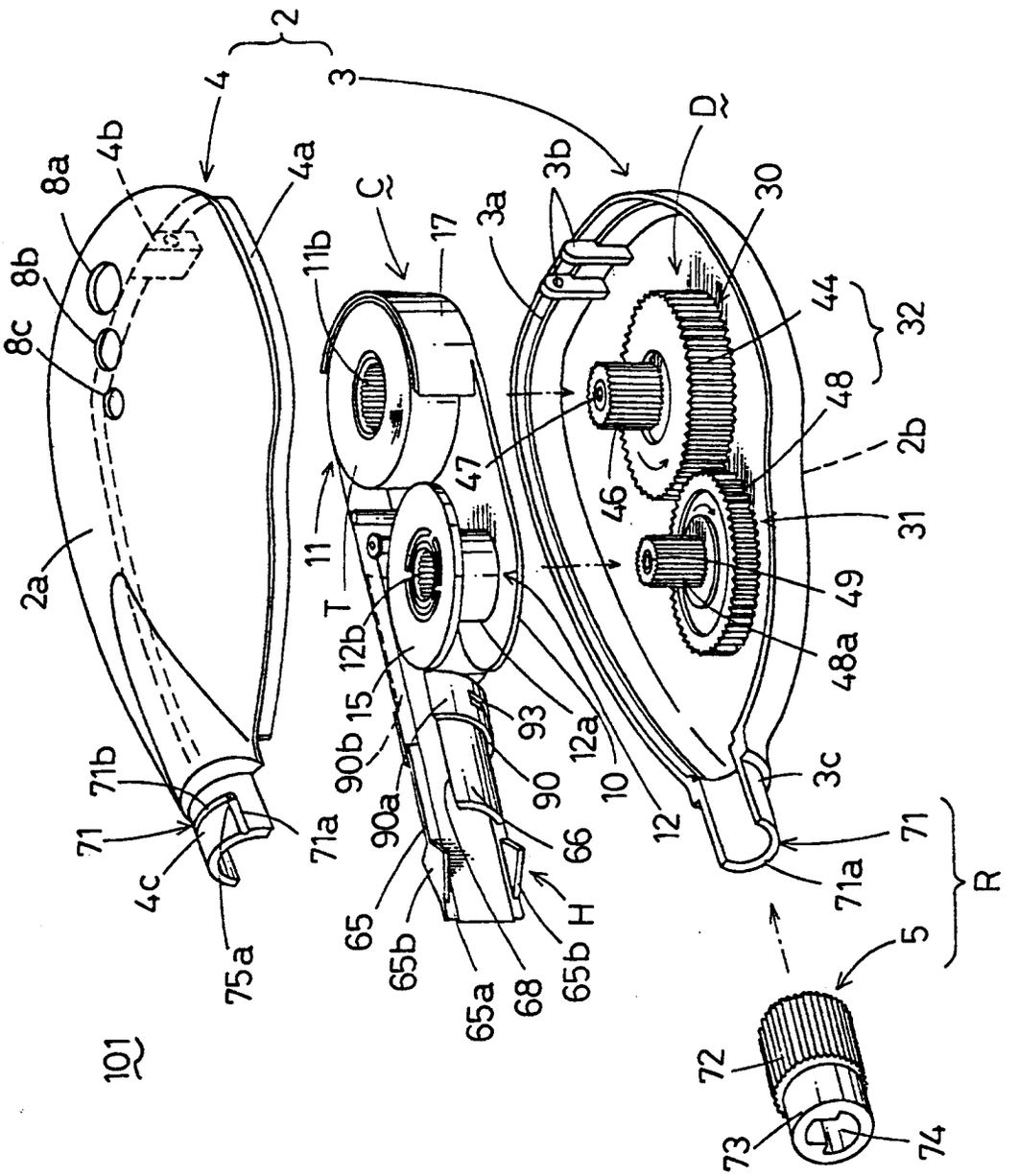

101
2
4
3
4b
8a
8b
8c
4a
2a
71b
71
4c
75a
71a
C
11b
17
3a
3b
11
T
12b
15
90b
90a
65
65b
65a
68
65b
H
66
90
93
12a
10
12
D
30
44
32
48
2b
47
46
31
49
48a
3c
71
71a
R
5
72
73
74

FIG.16

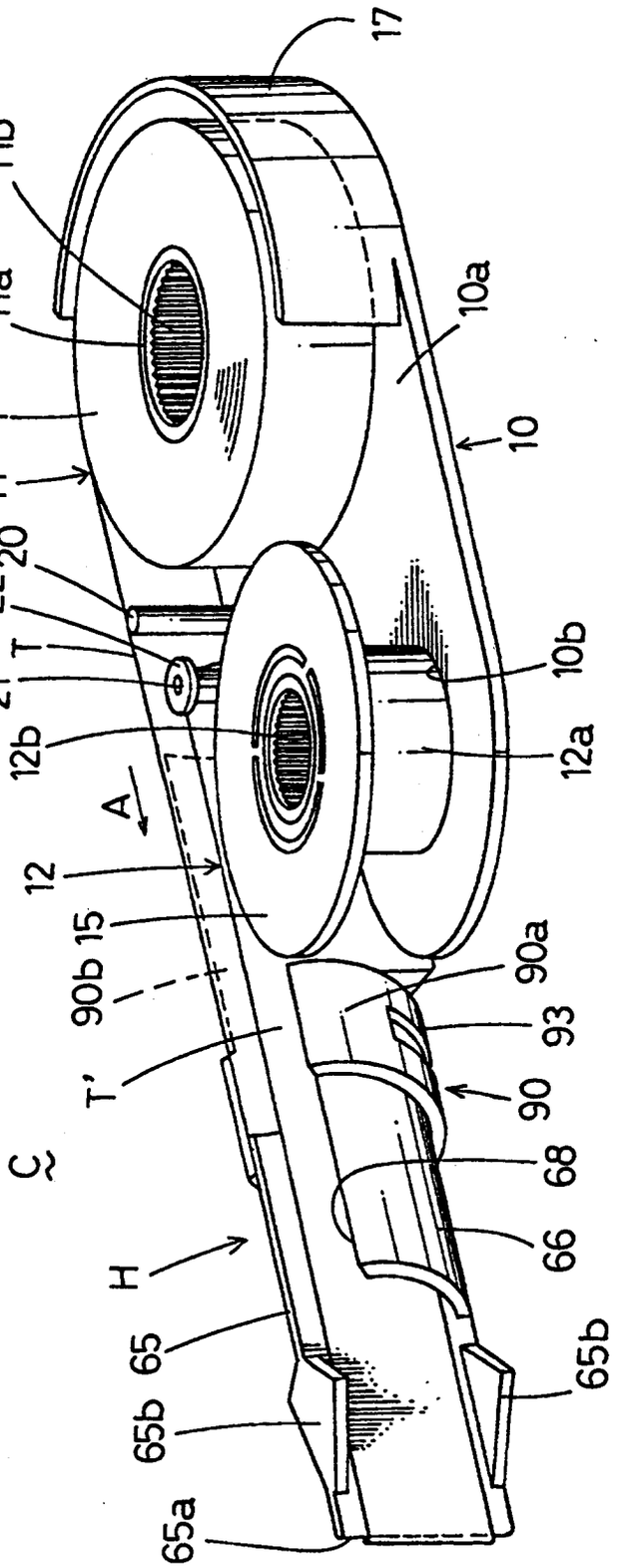

17
11b
11a
10a
T
10
11
20
22
T
21
10b
12b
12a
A
12
15
90a
90b
93
T'
90
68
66
H
65
65b
65b
65a

FIG.17

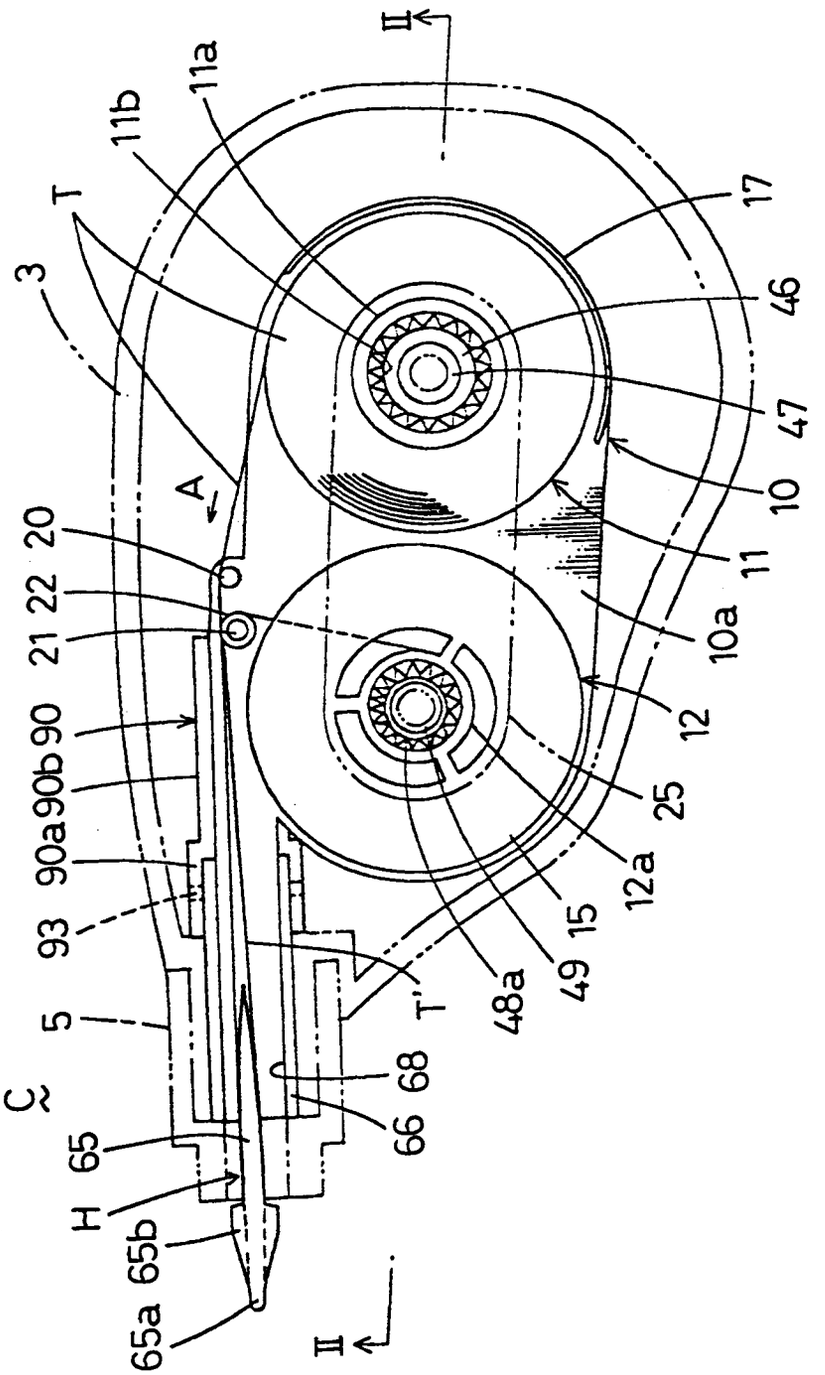

II
11a
11b
T
3
17
46
47
10
A
20
21
22
11
10a
12
90
90b
90a
93
25
12a
15
49
48a
T'
5
68
66
C
65
H
65b
65a
II

FIG.18

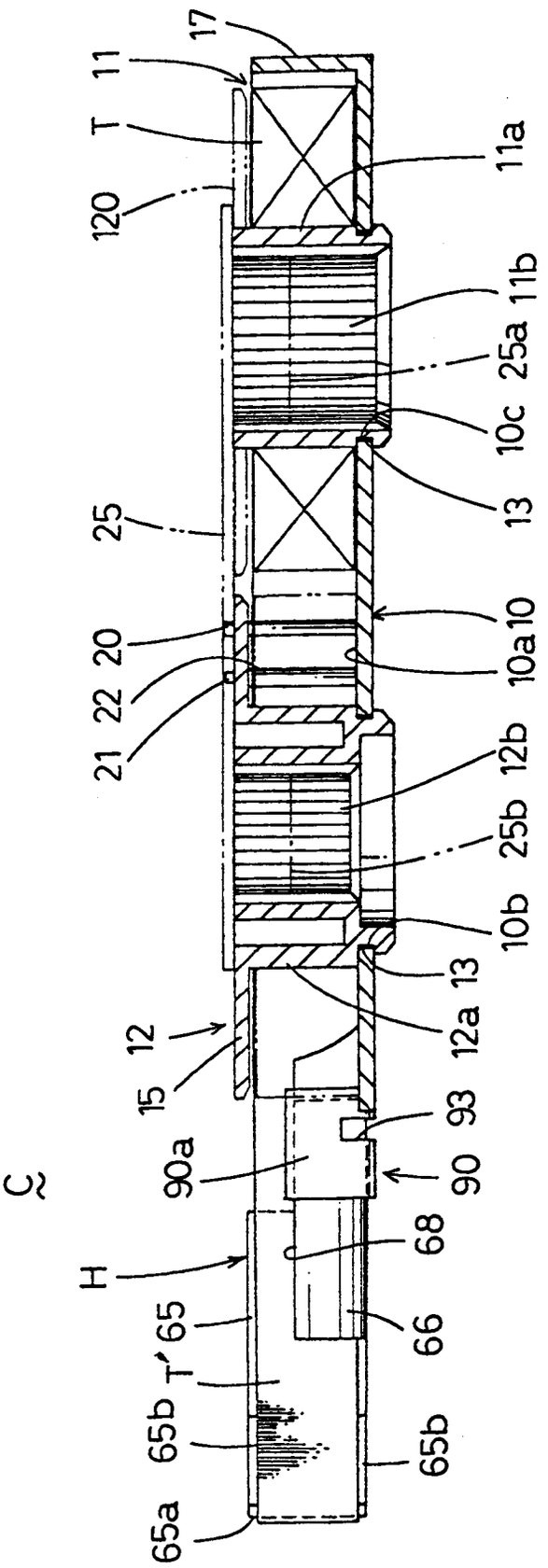

17
11
T
120
11a
11b
25a
10c
13
25
10
10a
20
22
21
12b
25b
10b
13
12a
12
15
93
90a
90
68
H
65
66
T'
65b
65b
65a

FIG.19

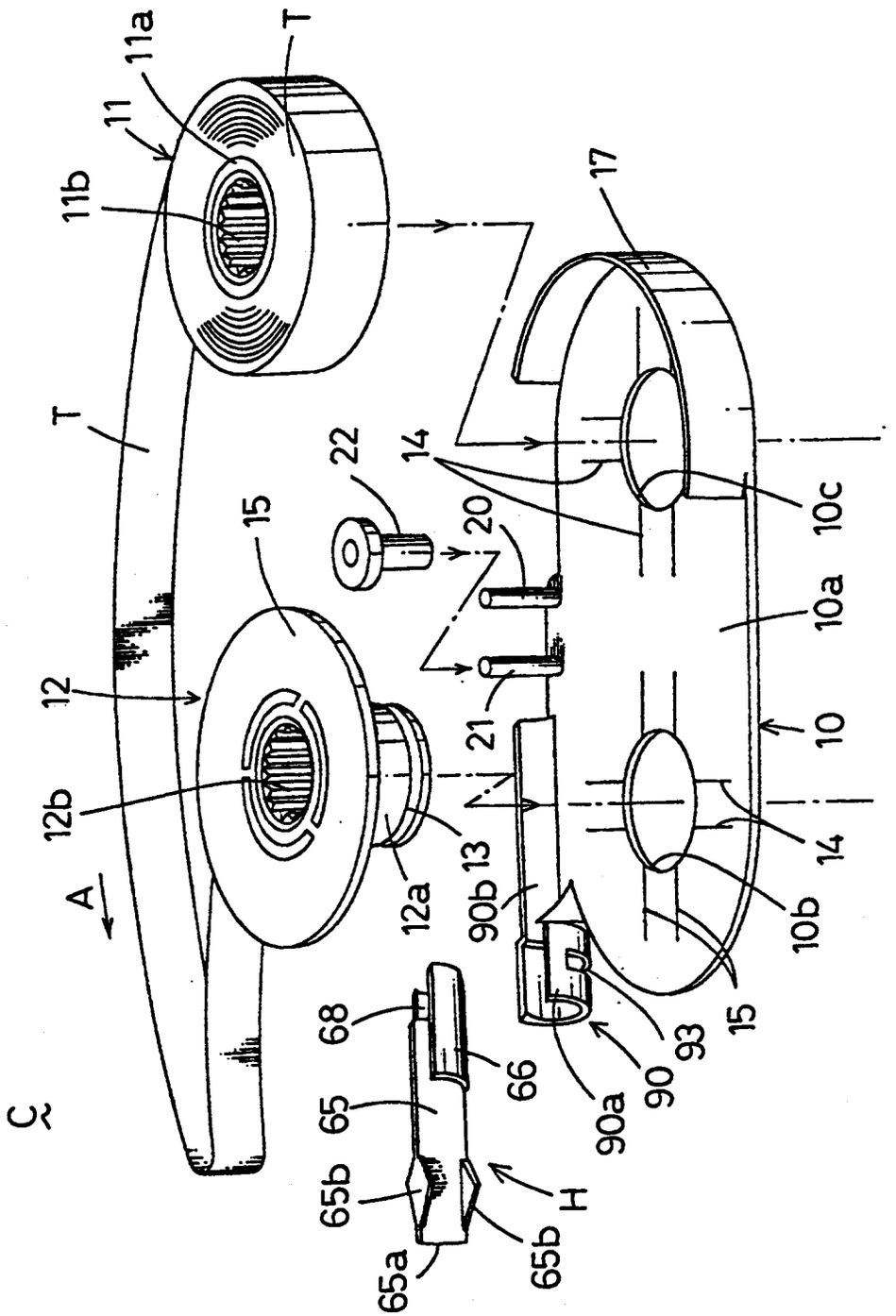

11a
T
11
11b
17
T
22
14
15
20
10c
10a
12
21
10
12b
13
14
A
12a
90b
10b
15
68
66
93
65
90
90a
65b
H
65b
65a

FIG.20

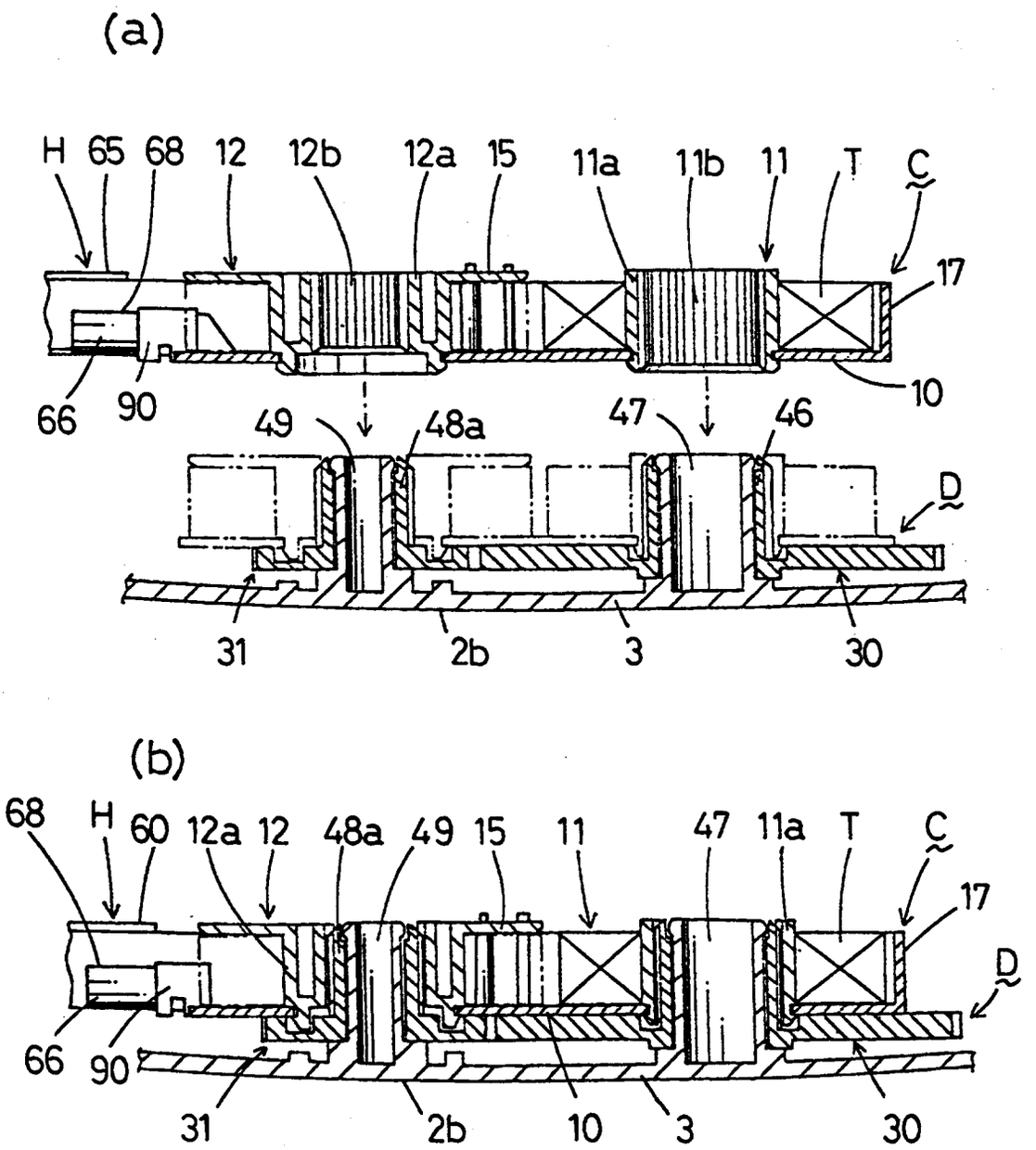

(a)
H
65
68
12
12b
12a
15
11a
11b
11
T
C
17
10
66
90
49
48a
47
46
D
31
2b
3
30
(b)
68
H
60
12a
12
48a
49
15
11
47
11a
T
C
17
D
66
90
31
2b
10
3
30

FIG.21

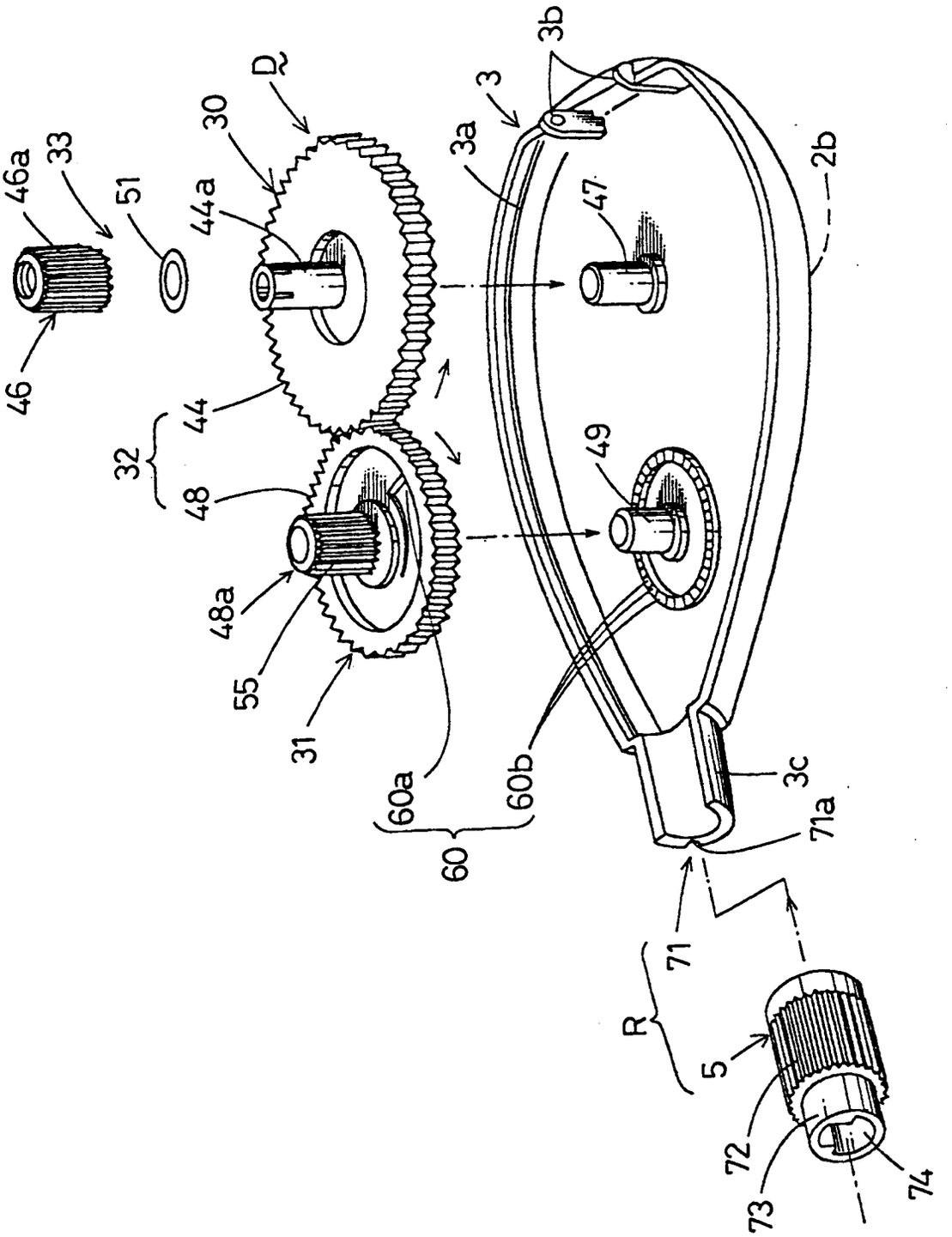
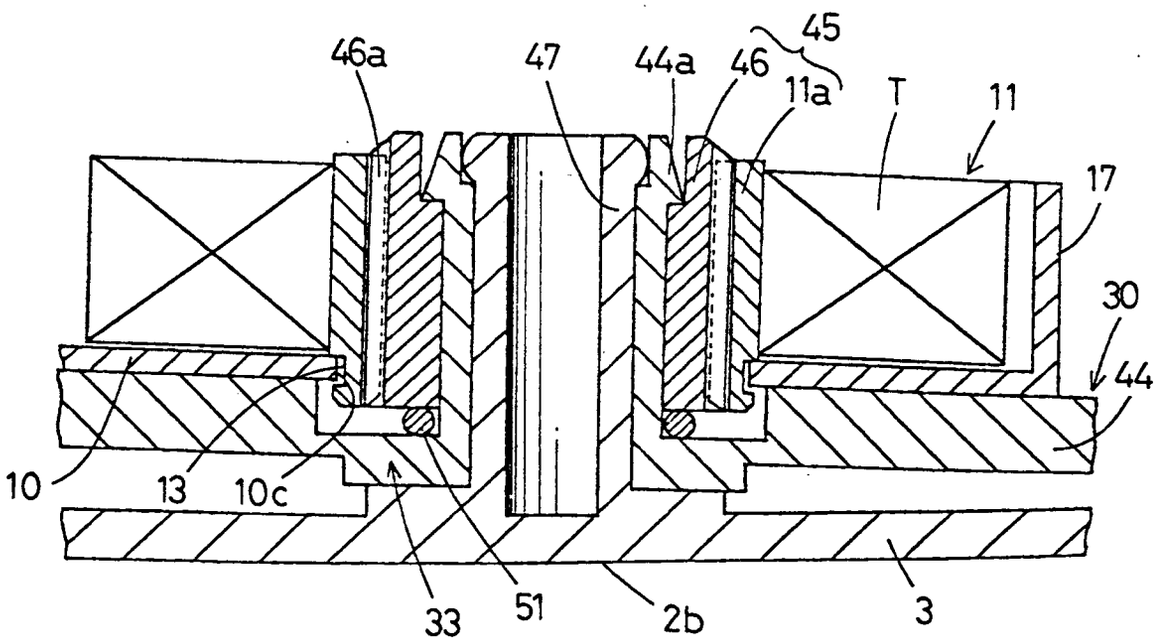

D
30
44a
44
32
48
48a
55
31
60a
60
60b
3
3a
3b
2b
47
49
3c
71a
71
R
5
72
73
74
46
46a
33
51

FIG.22

(a)



(b)

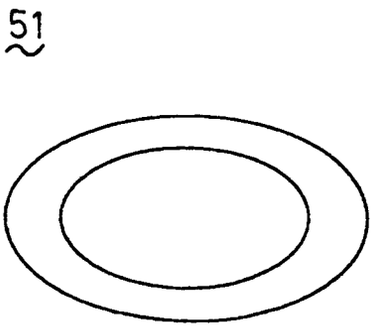
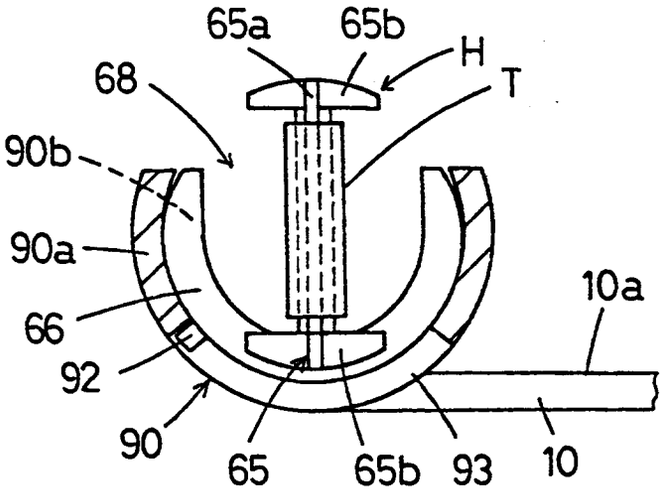


FIG.23

(a)


65a
65b
H
T
68
90b
90a
66
92
90
65
65b
93
10
10a

(b)

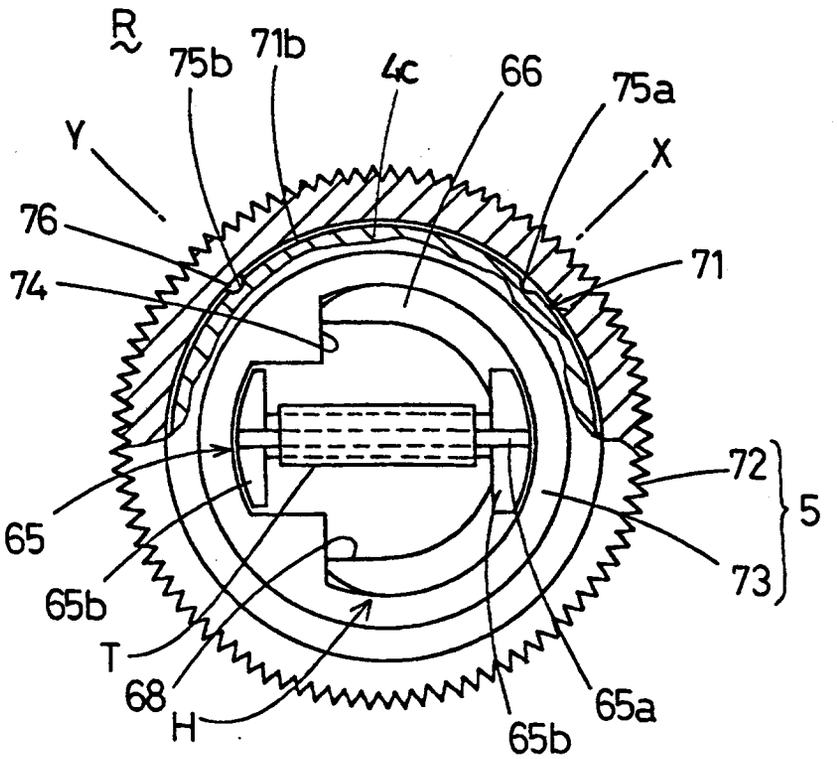

R
75b
71b
4c
66
75a
Y
X
76
74
71
72
5
73
65
65b
T
68
H
65b
65a

FIG. 24

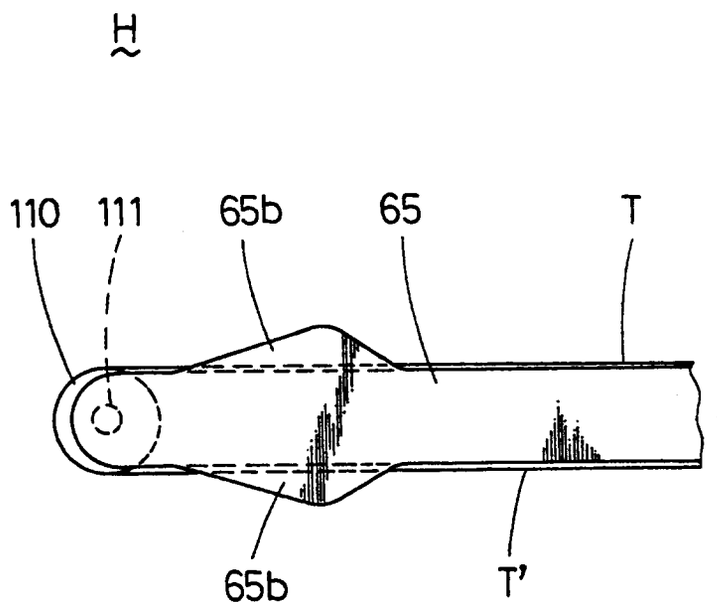


FIG.25

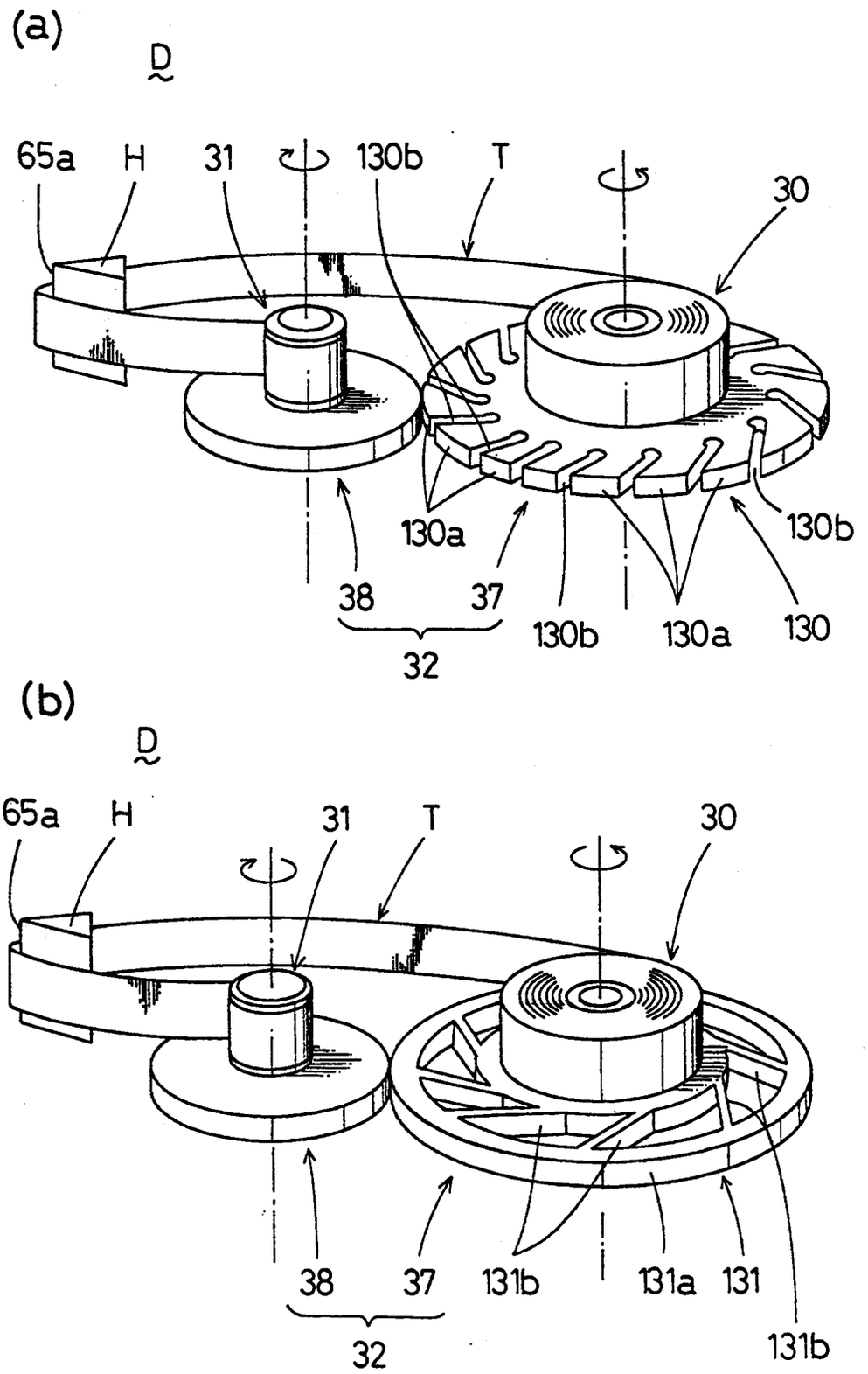
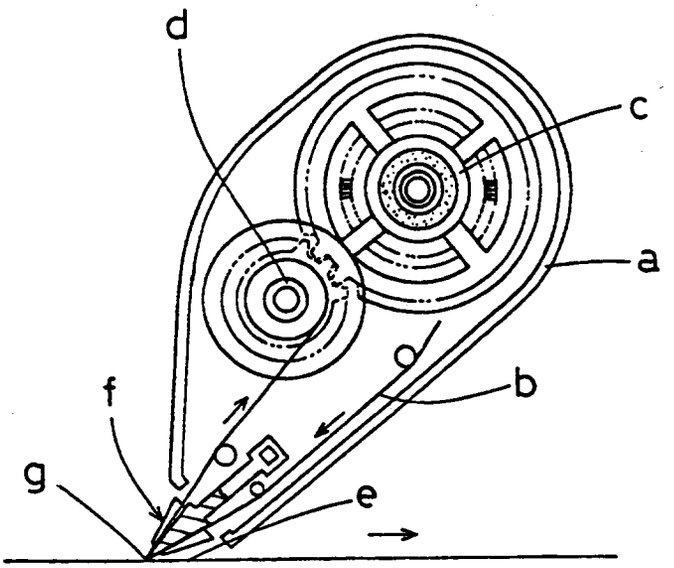

(a)
D
65a
H
31
130b
T
30
130a
130b
38
37
130b
130a
130
32
(b)
D
65a
H
31
T
30
38
37
131b
131a
131
131b
32

FIG.26

(a)



(b)