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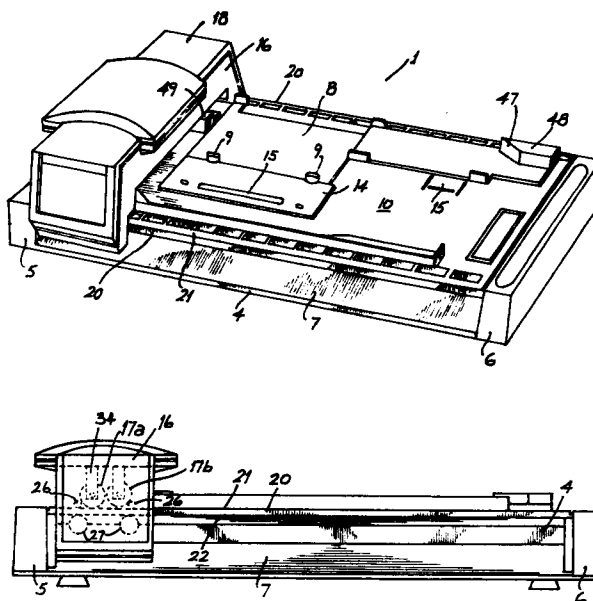
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Imprinter apparatus.

An imprinter (1, 60) for imprinting characters from a credit card (2) onto a docket (3) comprises a base (4) of plastics material, and a carrier (16, 70) slidably movable across the base (4) having imprinter rollers (17a, 17b) to imprint characters onto the docket (3).

The base (4) has a receiving area (8), to receive a credit card and a flat upwardly facing panel (10), to receive a docket (3). The carrier (16, 70) transversely spans the base (4) and is longitudinally slidably movable over the document supporting panel (10) from a start position at one end of the panel (10) to a reversing return position at the other end of the panel (10) and back to the start position. Cam blocks (48, 49, 68) integrally moulded with the base (4) cooperate with cam followers (42, 61, 62) mounted in the carrier (16, 70) to move the imprinter rollers (17a, 17b) from a raised inactive position to a lowered imprinting position engaging a docket (3) to imprint characters from the credit card (2), merchants plate (14) and dating mechanism onto the docket (3) during movement of the carrier member (16, 70) between the start and return positions.

Track means (20) are provided on the base (4), and the carrier (16, 70) includes four pairs of spaced apart roller bearings (26, 27) which engage opposing faces (21, 22) of the track means (20) with a pinch action enabling smooth movement of the carrier (16, 70) over the base (4).



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The invention relates to an imprinter for imprinting characters from a character source member such as a credit card onto a document of the type comprising a base member having means for receiving a character source member and
5 means for receiving a document, a carrier supporting imprinting means to press the document against the character source member, the carrier being slidably movable over the base member on a track means provided on the base member.

The invention is characterised in that the carrier includes
10 a pair of spaced-apart bearing means which engage opposing faces of the track means with a pinch action.

One advantage of the invention is that by virtue of the fact that the bearing means engages the track with a pinch action a particularly smooth movement of the carrier over
15 the base member is achieved.

In one embodiment of the invention the track means comprises a pair of elongate track members on opposed sides of the base member, each track member having outwardly directed track faces.

20 This arrangement provides smooth movement over the length of travel of the carrier.

In a particularly preferred embodiment of the invention the bearing means comprises bearing rollers engaging opposite track faces of the track means with a pinch action embracing the track faces therebetween.

- 5 The rollers assist in providing a smooth movement of the carrier across the base.

Preferably the track faces comprise an upper track face and a lower track face, the lower track face being inclined at an angle to the upper track face, and one of the bearing rollers
10 is a tapered roller to engage the inclined track face.

This arrangement provides a particularly smooth action and by virtue of the fact that the lower track face and roller are tapered facilitates adjustment of the pinch action.

In one embodiment of the invention the bearing means comprises at least one pair of pinch rollers, namely an upper
15 pinch roller and a lower pinch roller, at opposite sides of the carrier member located outwardly of and bearing inwardly against the track means.

Preferably two pairs of pinch rollers are provided to engage
20 the track means.

This assists in balancing the carrier member and in providing a smooth operation.

Typically the lower pinch rollers are of tapered inwardly convergent conical configuration.

The advantage of this type of roller is that it provides a particularly good pinch action and smooth operation while
5 allowing adjustment for maintaining pinch action as the rollers and/or track faces become worn.

In a particularly preferred embodiment of the invention the means for receiving a document comprises a flat upwardly facing panel forming a document supporting surface.

10 In a preferred embodiment of the invention the document supporting panel and the track means are an integral plastic body having the track means formed therein.

The integral plastics construction facilitates ease and cheapness of manufacture and assembly and provides an imprinter of
15 robust construction.

Preferably the carrier member is a reciprocative carrier member transversely spanning the base member and movable longitudinally over the document supporting panel from a start position adjacent one end of the panel to a reversing return
20 position adjacent the other end of the panel, the imprinter roller means comprising at least one imprinter roller for engaging a document when positioned on the panel overlying a character source member during movement of the carrier member between the start and return positions.

In one embodiment of the invention the base member and carrier member include co-operating means for moving the imprinter roller from a raised inactive position to a lower-
ed imprinting position engaging the document to imprint
5 characters from a character source member onto a document during movement of the carrier member between the start and return positions.

In one embodiment of the invention the imprinter roller is mounted on a stepped diameter shaft, the shaft being
10 mounted in shaft support members of the carrier member in which the shaft is slidable axially to raise and lower the imprinter roller between print and non-print positions so that the imprinter roller prints in only one direction of travel of the carrier member.

15 Preferably the co-operating means comprises cam follower members on the carrier member for axially shifting the shaft and cam abutment formations positioned on the base member to engage the cam follower members at the return and

start positions of the carrier member to activate the cam follower members to move the shaft.

In a preferred embodiment of the invention the roller means comprises two imprinter rollers for selectively engaging
5 a document, one of the rollers engaging the document during movement of the carrier in one direction and the other of the rollers engaging the document during movement of the carrier in the other direction.

The particular advantage of this arrangement is that good
10 quality printing is achieved of the characters from both a credit card and merchants plate. Often the characters on these two sources are worn to varying degrees so that a single pass with a roller gives weak print from one or other source.

15 In one embodiment of the invention a single cam abutment is provided and link means are provided between the cam followers for movement of both shafts when one of the cam followers engages the cam abutment.

The advantage of providing a single cam abutment instead of
20 two abutments is that this reduces the height that the abutment surfaces project from the base and hence the overall height is decreased.

In another embodiment of the invention a pair of cam abutments are provided, one to engage each follower of each shaft.

Preferably stop means are provided at each end of the track means to retain the carrier on the track, each of the stop means being formed by a handle and one of the handles being releasably mounted to the base.

- 5 The advantage in having one of the handles removable is that the carrier may then be easily removed for maintenance.

In another embodiment of the invention the base member includes an inclined skirt portion for receiving an advertising indicia, logo or decals.

- 10 In a further embodiment of the invention adjustment means are provided for varying the gripping pressure with which the bearing means grip the track means.

This arrangement allows the pinch pressure to be adjusted to accommodate wear of the rollers and/or track faces.

- 15 The invention will be more clearly understood from the following description of an embodiment thereof, given by way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of an imprinter
according to the invention;

Fig. 2 is a plan view of the imprinter of Fig. 1;

Fig. 3 is a plan view of the imprinter of Fig. 1
with the carrier at the end of its advance stroke;

5

Fig. 4 is a side elevational view of the imprinter
of Fig. 1 with the carriage in the position of
Fig. 2;

Fig. 5 is a side elevational view of the imprinter
with the carriage in the position of Fig. 3;

10

Fig. 6 is a sectional end view of the imprinter of
Fig. 1;

Fig. 7 is a sectional end view similar to Fig. 6
of portion of the imprinter in a different position;

Fig. 8 is a perspective view of the carrier of the
imprinter of Fig. 1 in an inverted position;

15

Fig. 9 is a fragmentary plan view of a detail of
the imprinter of Fig. 1;

Fig. 10 is a fragmentary perspective view of por-
tion of the detail of Fig. 9;

Fig. 11 is a perspective view of another portion of the detail of Fig. 9;

Fig. 12 is a perspective view of an imprinter according to another embodiment of the invention;

5 Fig. 13 is a perspective view of portion of the imprinter of Fig. 12;

Fig. 14 is a perspective view of a carrier of another imprinter according to the invention;

10 Fig. 15 is a plan view of a detail of the carrier of Fig. 14; and

Fig. 16 is a perspective view of a detail of the carrier of Fig. 14.

Referring to the drawings, and initially to Figs. 1 to 11 there is illustrated an imprinter apparatus according to the invention, indicated generally by the reference numeral 1. In this case, the imprinter apparatus is for imprinting embossed characters from a character source member such as a credit card 2 onto a document such as a docket 3. The apparatus 1 is manually operated and comprises a base 4 of injection moulded plastics material with a pair of handles 5 and 6 at both ends. The handle 6 is integrally moulded with the base 4, and the handle 5 is removable as will be des-

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cribed in more detail below. The base 4 includes an inclined skirt portion 7 for receiving an advertising indica, logo or decals. A receiving means, in this case a receiving area 8 to receive a credit card 2 indicated by broken lines in Fig. 2, is moulded into the base
5 4. A pair of biasing posts 9 extend upwardly from the base and bias the card 2 into the receiving area 8. The posts 9 may be spring loaded to allow the posts to be readily depressed. Means to receive a docket 3 illustrated by broken lines in Fig. 2, is provided by a flat upwardly
10 facing panel 10 forming part of and integrally moulded with the base 4. A merchant's plate 14 with the merchant's details is mounted in the base 4, and a dating mechanism may be mounted in the base 4 for imprinting the date onto
15 the docket. Two alternative locations 15 for the dating mechanism are illustrated in Figs. 1 to 3.

A carrier 16 with imprinter means which in this case is provided by a pair of imprinter rollers 17a and 17b, transversely spans the base 4 and is longitudinally slidably
20 movable over the document supporting panel 10 from a start position at one end of the panel 10 as illustrated in Figs. 1, 2 and 4 to a reversing return position at the other end of the panel 10 as illustrated in Figs. 3 and 5 and back to the start position to imprint the characters on the
25 credit card 2, the merchant's plate 14 and dating mechanism, onto the docket 3. The carrier 16 comprises a housing of

injection moulded plastics material which is covered by a thin cover 18 also of injection moulded plastics material.

Track means comprising a pair of track members 20 at opposite sides of the base 4 longitudinally spanning the length of the base 4 for guiding the carrier member 16 during its movement. The track members 20 are of plastics material and are integrally moulded with the docket receiving panel 10. Each track member 20 comprise opposite outwardly directed track faces, namely an upper track face 21 which in this case is substantially flat, and a lower track face 22 which is inclined at an angle to the upper track face 21.

The carrier 16 includes a pair of spaced-apart bearing means which engage the opposing track faces 21,22 of the track members 20 with a pinch action embracing the track members 20 therebetween. In this case there are four pairs of bearing means, two pair for each of the track members 20. Each bearing means in this case comprises at least one, and in this case two pairs of pinch rollers, each pair of rollers comprising an upper pinch roller 26 which is of cylindrical shape and engages the upper face 21 of the track 20 and a lower pinch roller 27 which is of tapered shape and engages the lower face 22 of the track 20.

The pinch rollers 26,27 are rotatable on shafts 28 which are secured in the sides of the carrier 16 by a press fit action. The ends of the shafts 28 are barbed or knurled for secure fitting. The tapered pinch rollers 27 are re-
5 movable from the shafts 28 to accommodate spacer washers (not shown) mounted behind the rollers 27 for altering the gripping pressure with which the pinch rollers 26,27 grip the track 20. A retaining member 29 is releasably mounted on the carrier 16 to retain and accommodate removal
10 of the tapered rollers 27. Each retaining member 29 in this case comprises a pin 30 which engages a corresponding hole (not shown) in the carrier member 16 with a type of bayonet action. Thus, by rotating the retaining member 29 in the direction of the arrows A of Fig. 8 the retaining
15 member 29 may be removed to remove the tapered rollers 27.

The imprinter rollers 17a and b are rotatable on stepped diameter shafts 31 and 32 respectively which are mounted in the carrier 16 so that they may be moved towards and away from the base 4 in use, so that the rollers 17a,17b
20 may alternatively print one on the outward travel stroke, and the other on the return travel stroke. The direction of the outward travel stroke is indicated by the direction of the arrow B in Fig. 2, while the return stroke is indicated by the arrow C, also of Fig. 2. The shafts 31 and 32 are
25 mounted in support members 34, also moulded integrally with the carrier 16. Each member 34 has an open ended slot 35 to engage the shafts 31 and 32. A pin 36 in the base of

each slot 35 is provided to bear on the shafts 31 and 32, see Figs. 6 and 7. Springs 37 bias the shafts 31 and 32 against the pins 36 in the slots 35. The shafts 31 and 32 are provided with stepped diameters at 40 adjacent the support members 34 and the larger and smaller diameter portions of the shaft are joined by a tapered portion 41. Thus, on sliding the shafts axially through the slots 35, the height at which the rollers 17a and b are set above the base 4, is varied. When the pins 36 bear on the larger diameter of the shafts 31 and 32, the rollers are pressed downwardly against the base 4, however, when the pins bear on the smaller diameter of the shafts 31 and 32, the rollers are retracted back up from the base 4.

Means for raising and lowering the rollers 17 by moving the shafts 31 and 32 axially, are provided in this case by a single cam follower 42 extending from a cam follower block member 43. The cam follower block 43 includes a side-wardly projecting tongue 44 which engages in a complementary shaped channel groove 45 provided in a second cam follower block 46 to facilitate movement between the blocks 43,46. The cam follower 42 engages a single cam provided by a cam surface 47 on a cam block 48 integrally moulded with the base 4. It will be apparent that the cam surface 47 is provided in the line of travel of the carrier 16, and when the cam follower 42 engages the surface 47 both cam follower blocks 43,46 are moved thereby causing the rollers 17a, 17b to alter their positions

substantially simultaneously. By virtue of the fact that a single cam surface and cam follower is provided, the full height of the cam may be used so that the minimum available height is used by the cam. It is particularly
5 important to reduce the height of the cam to a minimum as there is only a relatively small fixed height available for printing.

A second cam block 49 with a cam surface 50 is moulded integrally with the base and acts on the cam follower
10 42 to return the shafts 31 and 32, and in turn the rollers 17a,17b to their reset position for printing the next transaction.

Returning now to the base 4 and the handles 5 and 6, as already mentioned, the handle 6 is moulded integrally
15 with the base 4. However, the handle 5 is removable to open one end of each of the tracks 20 so that the carrier may be removed for any repairs or adjustments which may have to be carried out. For example, should it be necessary to remove or replace an imprinter
20 rollers or to vary the pressure of the pinch rollers 17a,17b on the tracks 20 by the addition or removal of washers (not shown) on the shafts 28 of the tapered rollers 27. Fig. 11 illustrates the handle 5 and as can be seen, a dovetail projection 55 is provided which slidably engages corresponding dovetail slot 56 in the
25 base 4. Further spring clips 57 on the base 4 engage the handle 5 through slots 58, thus locking the handle 5 firmly in position. To remove the handle, the handle 5 is slid downwardly of the base 4

and removed. It will be appreciated that any suitable joint may be employed between the handle 5 and the base 4 to facilitate ease of removal.

5 In use, the credit card 2 is positioned in the credit card receiving area 8, and the docket 3 is placed on the docket supporting panel 10. The carrier 16 is then moved over the base in the direction of the arrow B with the roller 17b in the down position to imprint the embossed characters on the credit card 2 onto the docket 3, and the roller 17a in
10 the up position, thus clearing the data on the merchant's plate 14 and the date. When the carrier 16 has moved to the full extent of its travel outwardly in the direction of the arrow B and is in the reversing return position illustrated in Fig. 3, the cam follower 42 on engaging the cam sur-
15 face 47, slides the shafts 31 and 32 axially, thereby raising the roller 17b and lowering the roller 17a to imprint the characters on the merchant's plate 14 and the date mechanism on the docket 3 on the return stroke C. On returning to the position illustrated in Fig. 2, the
20 cam follower 42 on engaging the cam surface 50 axially slides the shafts 31 and 32 so that the rollers 17a, 17b are again in position to print on the outward stroke for the next transaction.

Referring to Figs. 12 and 13, there is illustrated imprinter apparatus according to another embodiment of the invention, indicated generally by the reference numeral 60. The imprinter apparatus 60 is of similar construction to the apparatus described above with reference to Figs. 1 to 11 and like parts are assigned the same reference numerals. In this case, means for raising and lowering the rollers 17a and 17b by moving the shafts 31 and 32 axially, are provided by a pair of cam followers 61,62 which extend upwardly from a pair of cam follower blocks 63,64 respectively. The cam followers 61,62 engage cams provided by a pair of upwardly extending cam surfaces 66,67 on a cam block 68 integrally moulded with the base 4. As will be apparent from Fig. 12 the cam surfaces 66,67 are provided in the line of travel of the carrier, and the surface 66 is arranged before the surface 67. The spacing between the two surfaces is substantially similar to the spacing between the cam followers 61 and 62, thus, both cam 61,62 followers engage the surfaces 66,67 at substantially the same time, thereby causing the rollers 17a, 17b to alter their positions substantially simultaneously. By virtue of the fact that two cam surfaces are provided, the length of travel which the carrier would otherwise have to travel, is shortened. Thus, a shorter base may be provided.

Referring to Figs. 14 to 16, there is illustrated an alternative construction of carrier 70 similar to the carrier

described above with particular reference to Figs. 12 and 13 and like parts are assigned the same reference numerals. In this case a self compensating retaining member 71 is provided for the lower

5 pinch roller 27. The self compensating member 71 comprises a pair of wedges 72 each having an elongated slot 73 in which the shafts 28 of the tapered rollers 27 are mounted. The wedges 72 are linked by a leaf spring 74 which urges the wedges against the back of the rollers

10 27 to alter the gripping pressure with which the pinch rollers grip the track 20. The member 71 essentially provides a self compensating member to take up any wear on the rollers.

It will be appreciated that the gripping pressure of the

15 pinch rollers on the tracks 20 may be set by any suitable means. For example, by means of an eccentric shaft moving the roller shaft upwardly and downwardly as required.

It will be appreciated that while a particular shape and construction of apparatus has been described, the apparatus

20 could be of any other suitable shape and construction. Further, it will be appreciated that while one of the handles has been described as being removably mounted to the base, both handles if desired could be removably mounted. Further, it is envisaged in certain cases that neither handles may

25 be removably mounted. It is also envisaged that where one or both handles are to be removably mounted, other suitable

means for releasably mounting them may be provided.

Further, it will be appreciated that any other arrangement or construction of receiving areas for the card and docket could be provided. Similarly, other suitable cams and camming surfaces and cam followers could be provided besides those described.

Further, it will be appreciated that other suitable support means for supporting the shafts of the imprinter rollers could be provided, and other suitable means for raising and lowering the rollers could similarly be used without departing from the scope of the invention. It will also of course be appreciated that other shapes and constructions of track could be provided, and similarly, other suitable shapes and constructions of pinch rollers or pinch bearing means could be provided.

Further, it will be appreciated that while the apparatus has been described for imprinting characters embossed on a credit card onto a docket, the device could be used for any form of printing or imprinting.

CLAIMS

1. An imprinter (1,60) for imprinting characters from a character source member such as a credit card (2) onto a document (3), comprising a base member (4) having means (8) for receiving a character source member (2) and means (10) for receiving a document (3), a carrier (16,70) supporting imprinter means (17a,17b) to press the document (3) against the character source member (2), the carrier (16,70) being slidably movable over the base member (4) on a track means (20) provided on the base member (4), wherein the carrier (16,70) includes a pair of spaced-apart bearing means (26,27) which engage opposing faces (21,22) of the track means (20) with a pinch action.
2. An imprinter (1,60) as claimed in claim 1 wherein the track means (20) comprises a pair of elongate track members (20) on opposed sides of the base member (4), each track member (20) having outwardly directed track faces (21,22).
3. An imprinter (1,60) as claimed in any of claims 1 to 3 wherein the bearing means (26,27) comprises bearing rollers (26,27) engaging opposite track faces (21,22) of the track means (20) with a pinch action embracing the track faces (21,22) therebetween.

4. An imprinter (1,60) as claimed in claim 3 wherein the track faces (21,22) comprise an upper track face (21) and a lower track face (22), the lower track face (22) being inclined at an angle to the upper track face (21), and one of the bearing rollers (27) is a tapered roller (27) to engage the inclined track face (22).
5
5. An imprinter (1,60) as claimed in any of claims 1 to 4 wherein the bearing means (26,27) comprises at least one pair of pinch rollers, (26,27) namely an upper pinch roller (26) and a lower pinch roller (27), at opposite sides
10 of the carrier member located outwardly of and bearing inwardly against the track means (21,22).
6. An imprinter (1,60) as claimed in claim 5 wherein two pairs of pinch rollers (26,27) are provided to engage
15 the track means (21,22).
7. An imprinter (1,60) as claimed in claim 5 or 6 wherein the lower pinch (27) rollers are of tapered inwardly convergent conical configuration.
8. An imprinter (1,60) as claimed in any of claims
20 1 to 6 wherein the means (10) for receiving a document comprises a flat upwardly facing panel (10) forming a document supporting face.

9. An imprinter (1,60) as claimed in claim 8 wherein the document supporting panel (10) and the track means (20) are an integral plastic body having the track means (20) formed therein.

5 10. An imprinter (1,60) as claimed in any of claims 8 or 9 wherein the carrier member (16,70) is a reciprocative carrier member (16,70) transversely spanning the base member (4) and movable longitudinally over the document supporting panel (10) from a start position adjacent one end
10 of the panel (10) to a reversing return position adjacent the other end of the panel (10), the imprinter roller means (17a,17b) comprising at least one imprinter roller (17a,17b) for engaging a document (3) when positioned on the panel (10) overlying a character source member (2)
15 during movement of the carrier member (16,70) between the start and return positions.

11. An imprinter (1,60) as claimed in claim 10 wherein the base member (4) and carrier member (16,70) include cooperating means (42,43,47,48,49,50,61,62,66,67,68) for moving
20 the imprinter roller (17a,17b) from a raised inactive position to a lowered imprinting position engaging a document (3) to imprint characters from a character source member (2) onto a document (3) during movement of the carrier member (16,70) between the start and return positions.

12. An imprinter (1,60) as claimed in claim 11 wherein the imprinter roller (17a,17b) is mounted on a stepped diameter shaft (31,32), the shaft (31,32) being mounted in shaft support members (34) of the carrier member (16,70) in which the shaft (31,32) is slidable axially to raise and lower the imprinter roller (17a,17b) between print and non-print positions so that the imprinter roller (17a,17b) prints in only one direction of travel of the carrier member (16,70).
- 10 13. An imprinter (1,60) as claimed in claim 11 or 12 wherein the co-operating means comprises cam follower members (42,61,62) on the carrier member (16,70) for axially shifting the shaft (31,32) and cam abutment formations (47,66,67) positioned on the base member (4) to engage the cam follower members (42,61,62) at the return and start positions of the carrier member (16,70) to activate the cam follower members (42,61,62) to move the shaft.
- 15 14. An imprinter (1,60) as claimed in any preceding claim wherein the roller means (17a,17b) comprises two imprinter rollers (17a,17b) for selectively engaging a document (3), one of the rollers (17a) engaging a document (3) during movement of the carrier (16,70) in one direction and the other of the rollers (17b) engaging a document (3) during movement of the carrier (16,70) in the other direction.
- 20
- 25

15. An imprinter (1,60) as claimed in claim 14 when dependent on claim 13 wherein a single cam abutment (47) is provided and link means (44,45) are provided between the cam followers (42,43,46) for movement of both shafts (31,32) when one of the cam followers (42) engages the cam abutment (47).

16. An imprinter (1,60) as claimed in claim 14 when dependent on claim 13 wherein a pair of cam abutments (66,67) are provided, one to engage each follower (61,62) of each shaft (31,32).

17. An imprinter (1,60) as claimed in any preceding claim wherein stop means (5,6) are provided at each end of the track means (20) to retain the carrier (16,70) on the track (20), each of the stop means (5,6) being formed by a handle (5,6) and one (5) of the handles being releasably mounted to the base (4).

18. An imprinter (1,60) as claimed in any preceding claim wherein the base member (4) includes an inclined skirt portion (7) for receiving an advertising indicia, logo or decals.

19. An imprinter (1,60) as claimed in any preceding claim wherein adjustment means (71,72,74) are provided for varying the gripping pressure with which the bearing means (26,27) grip the track means (20).

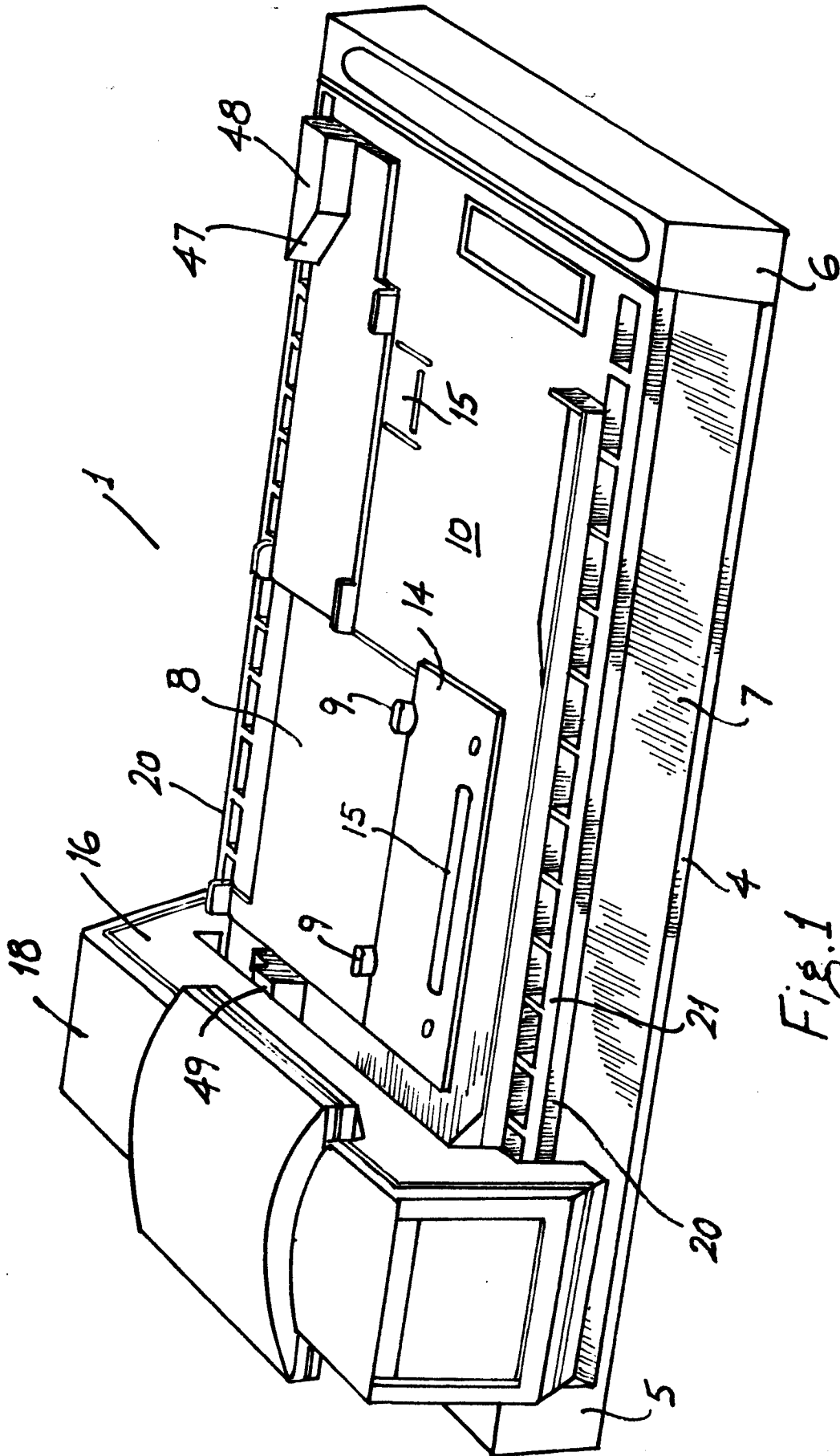
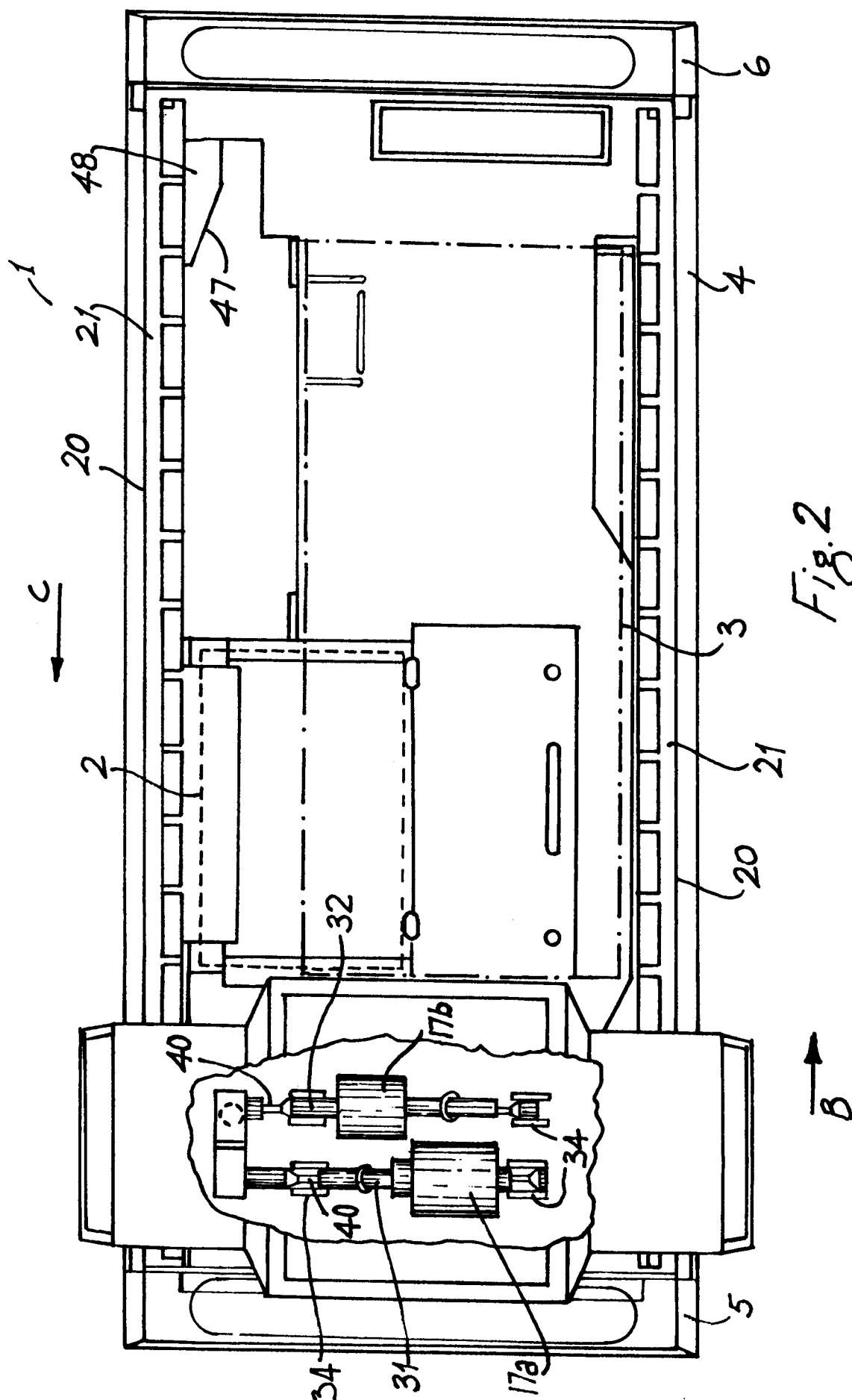


Fig. 1



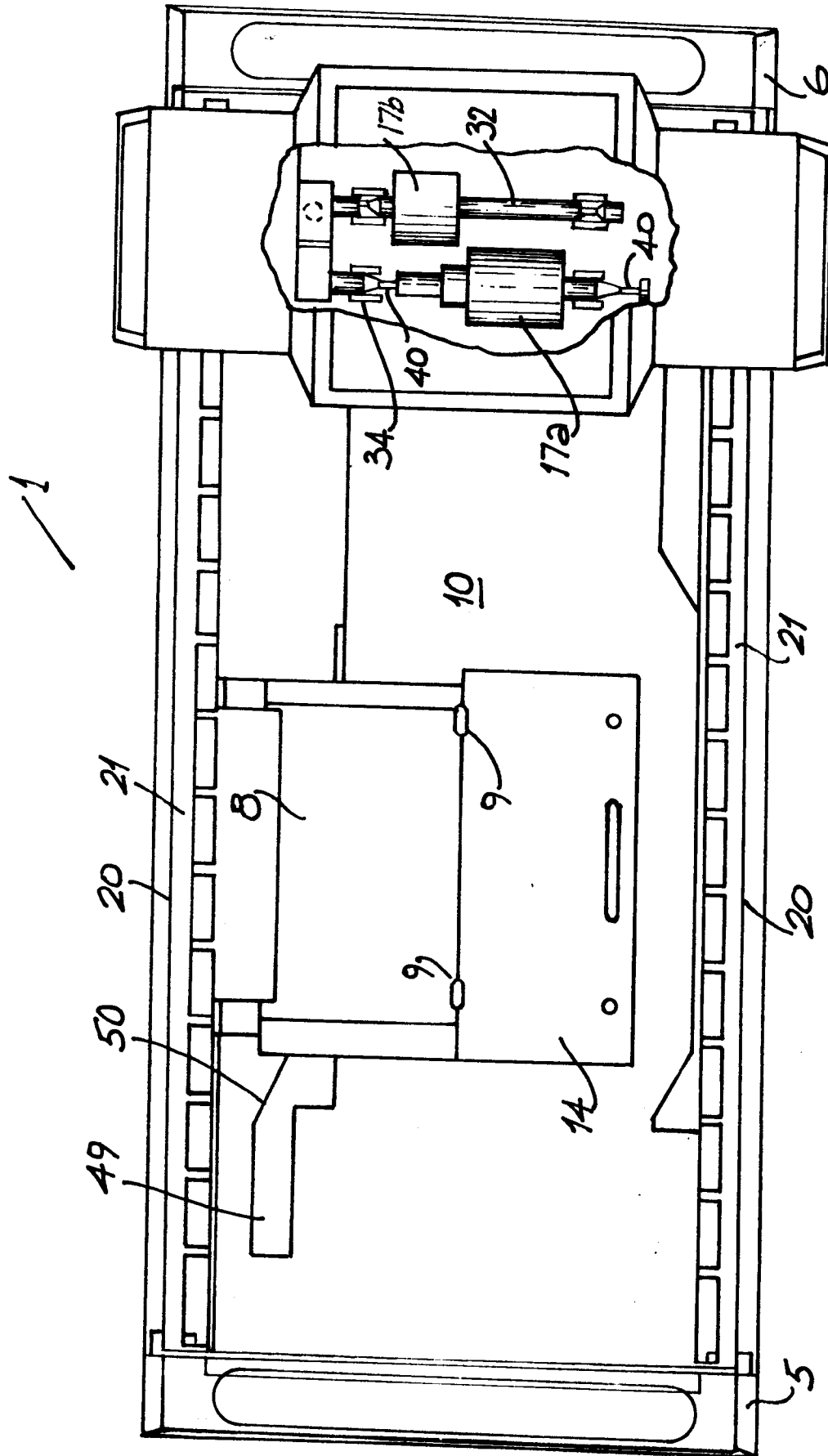
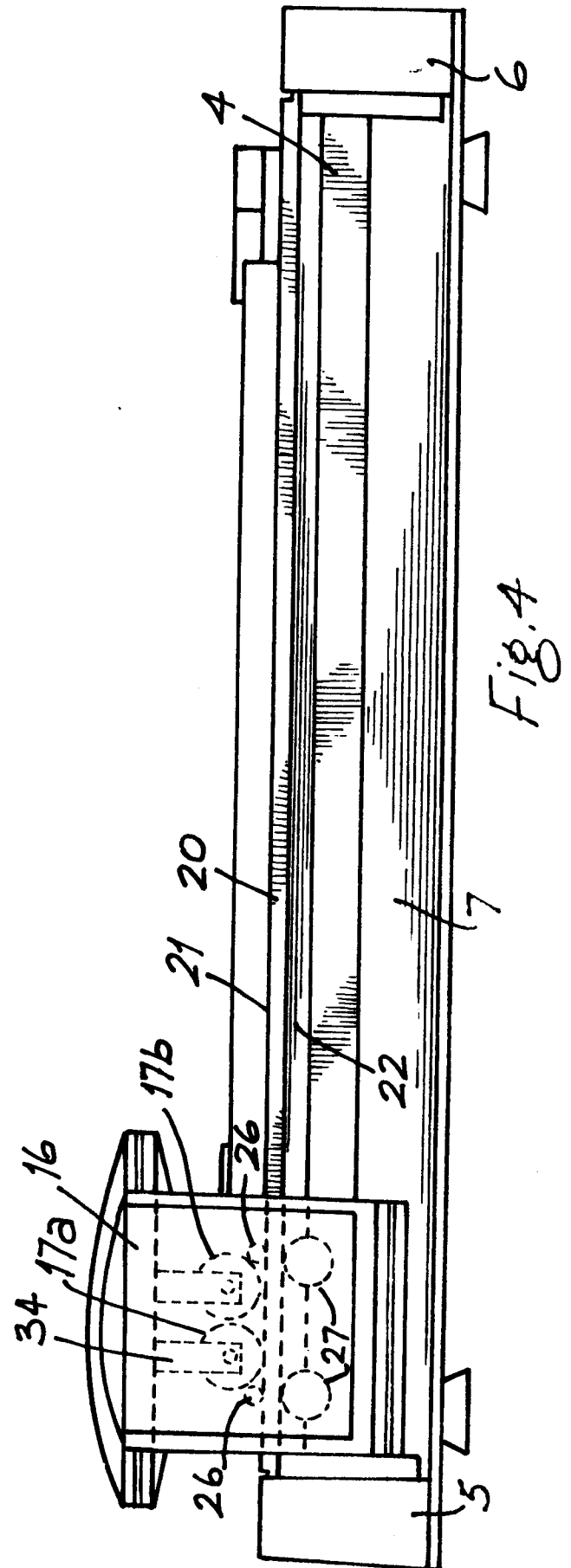
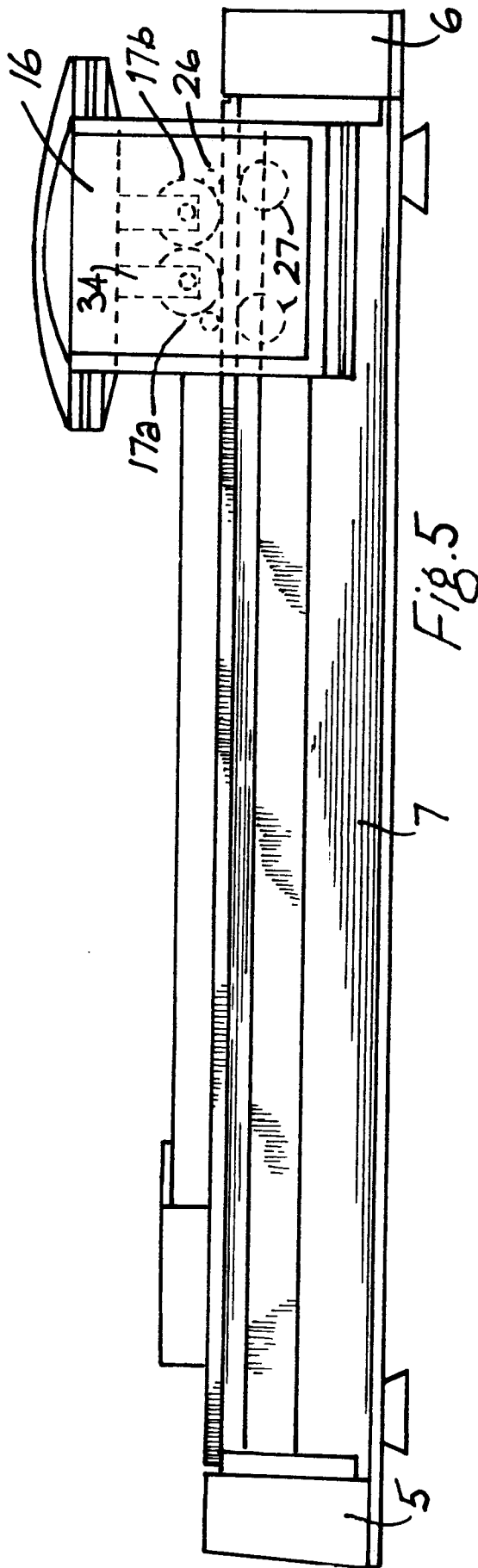
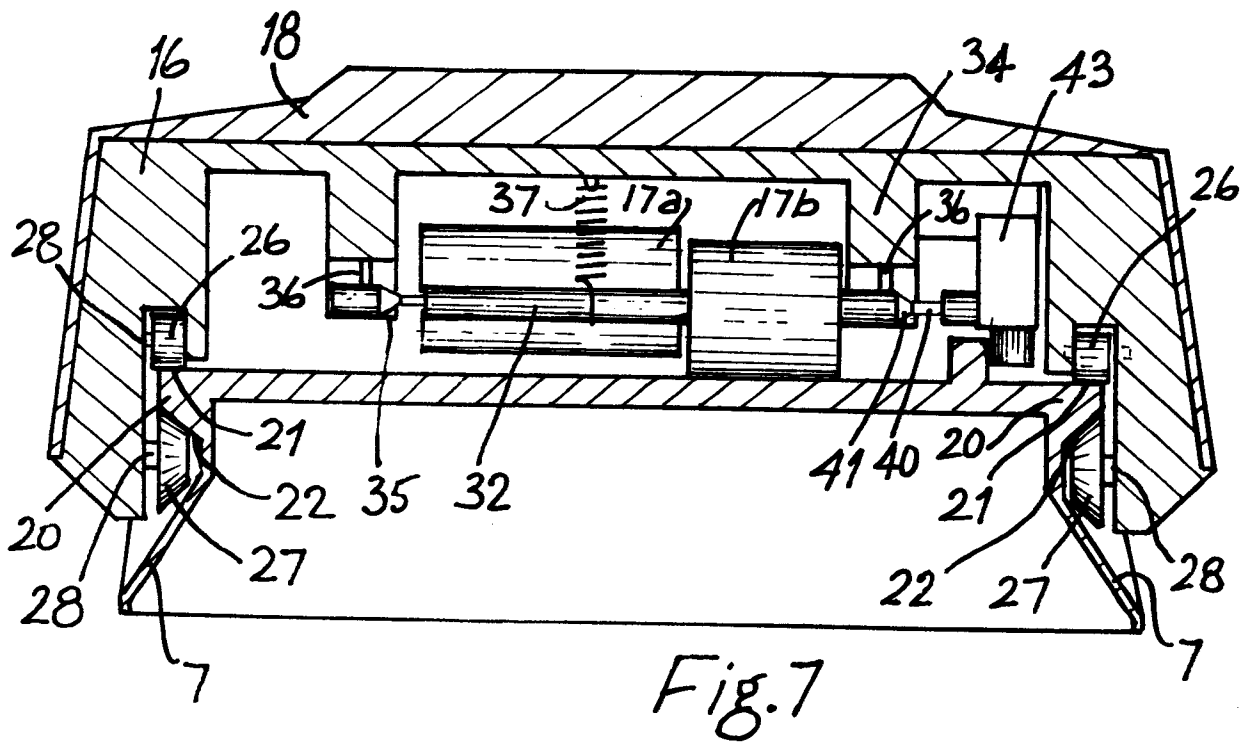
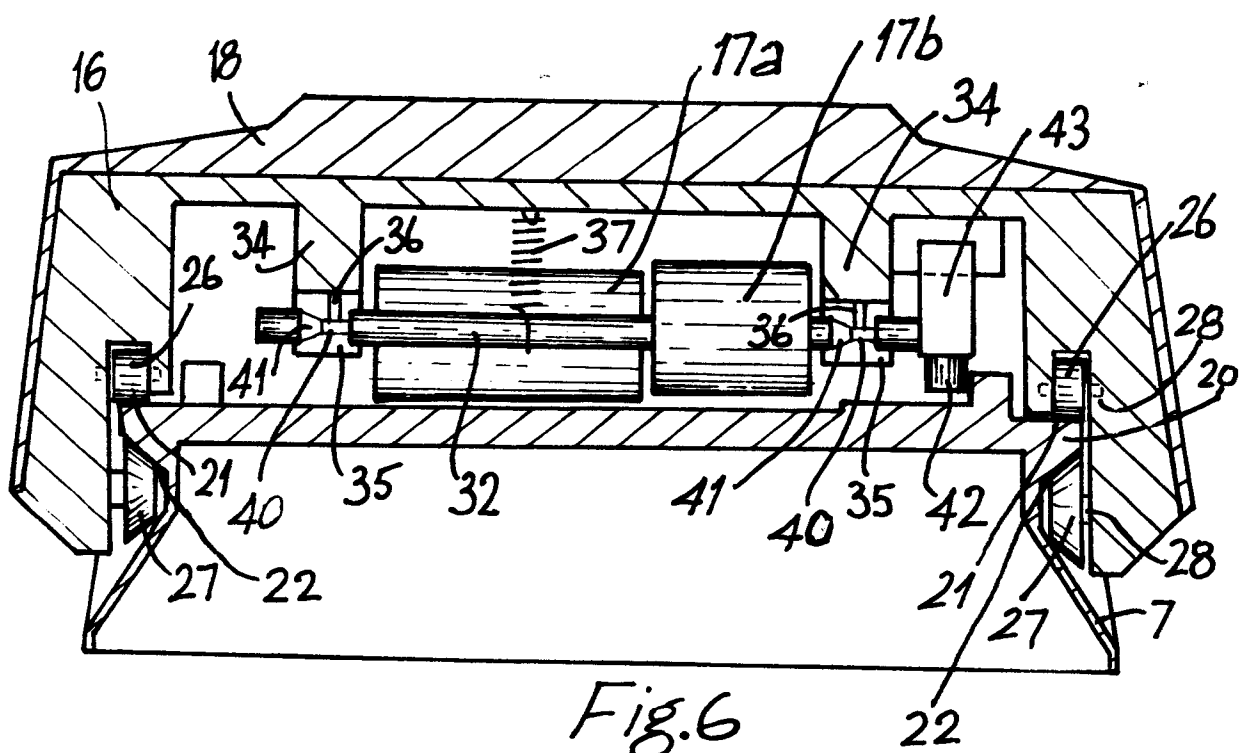
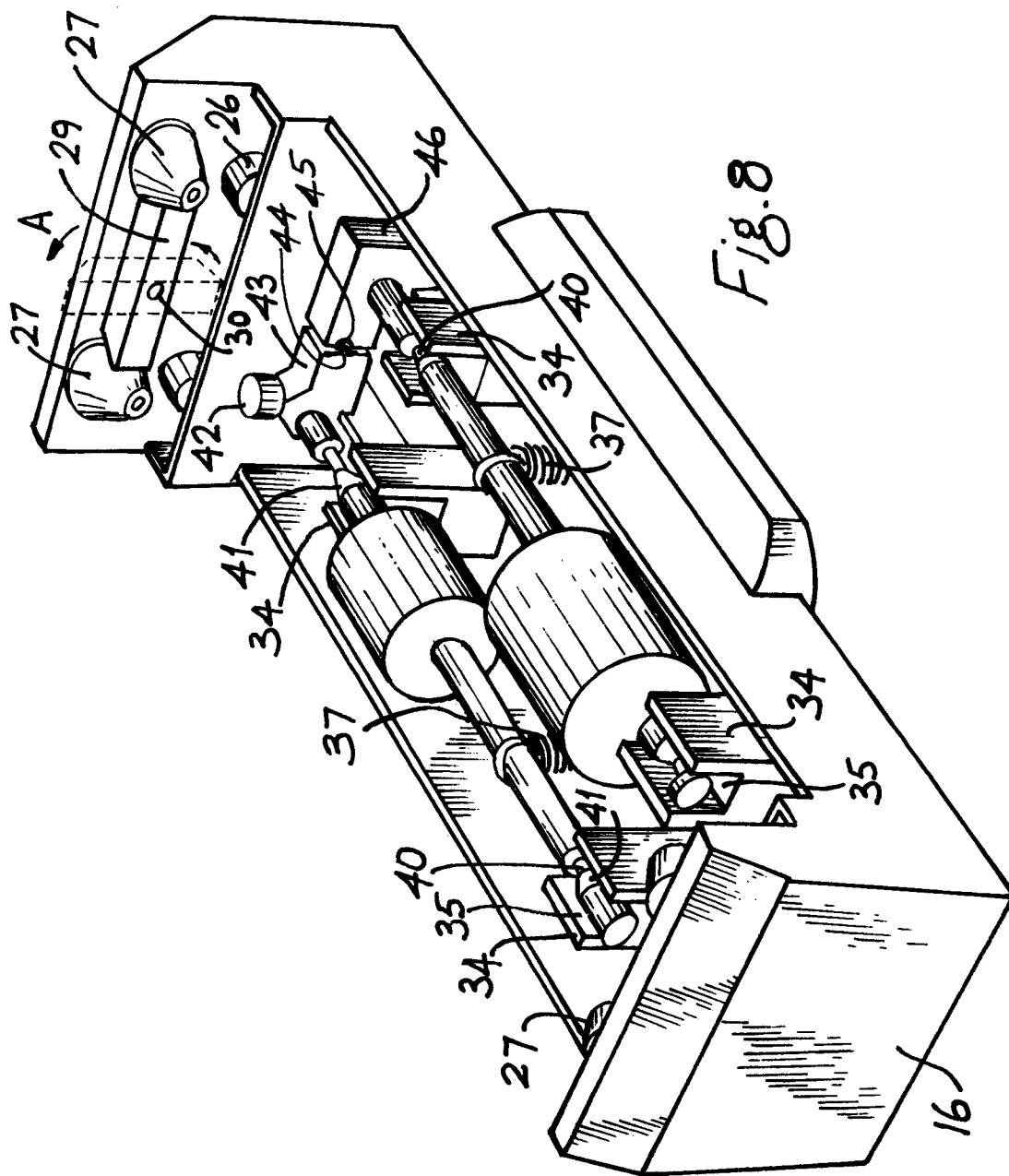


Fig. 3







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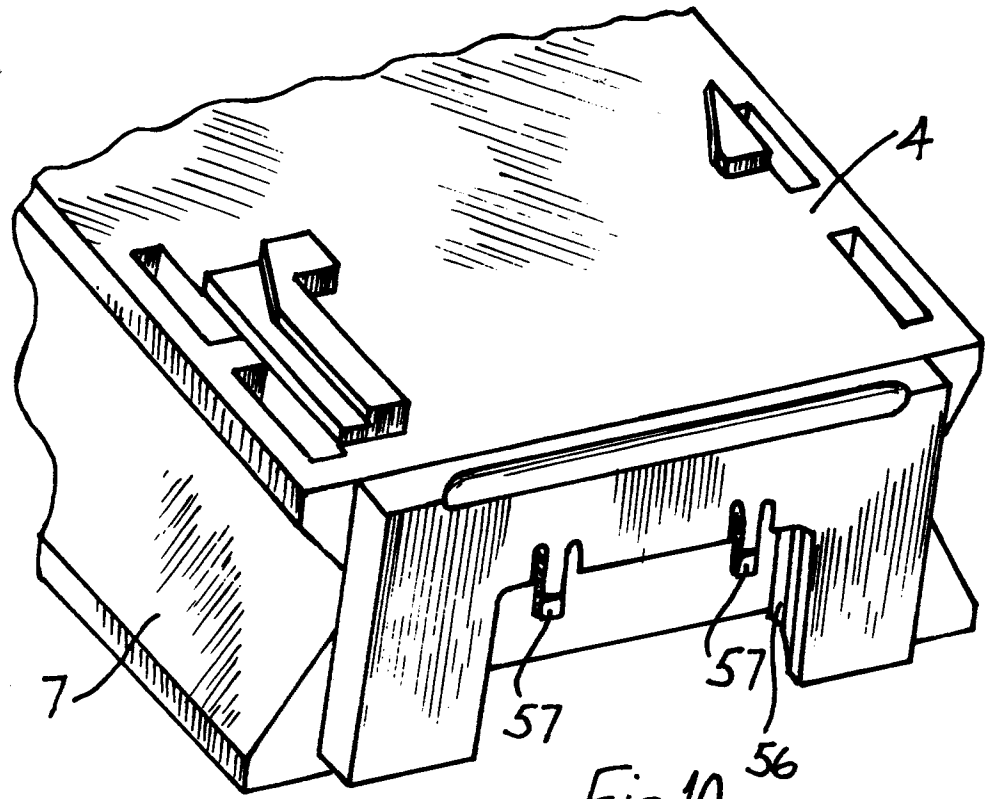


Fig. 10

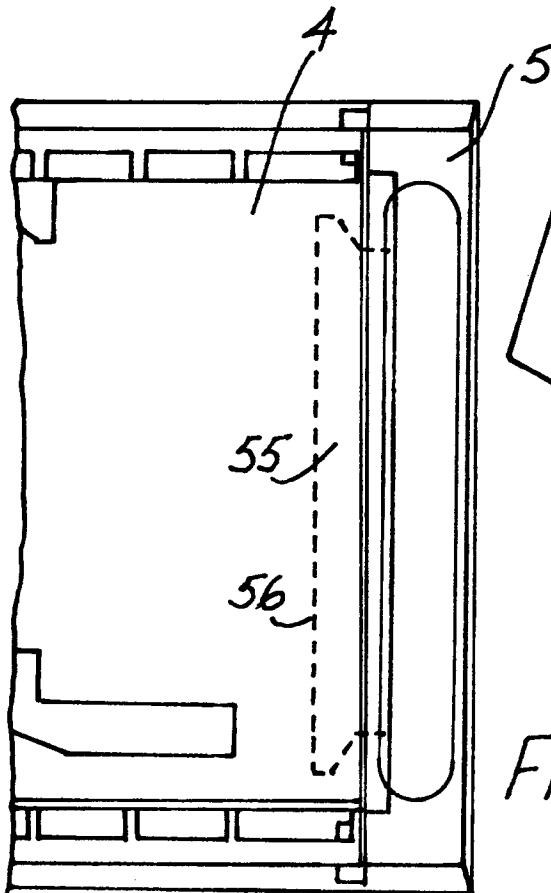


Fig. 9

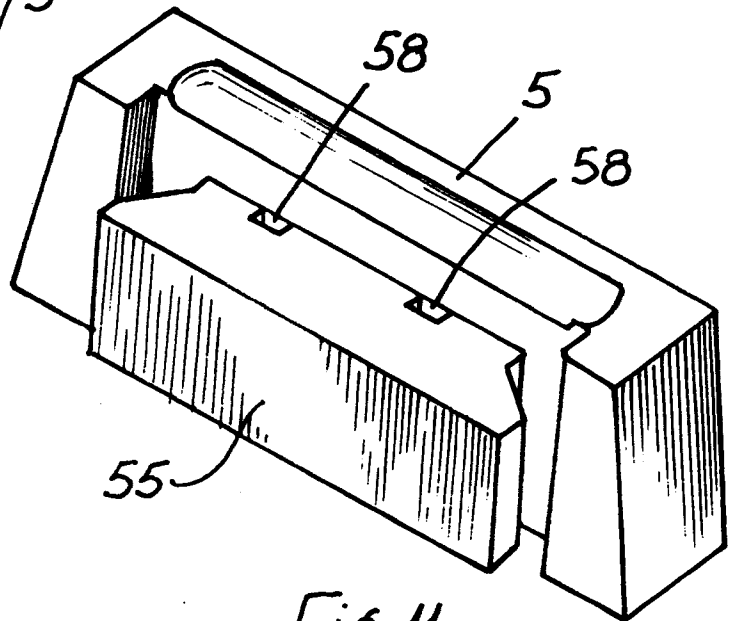


Fig. 11

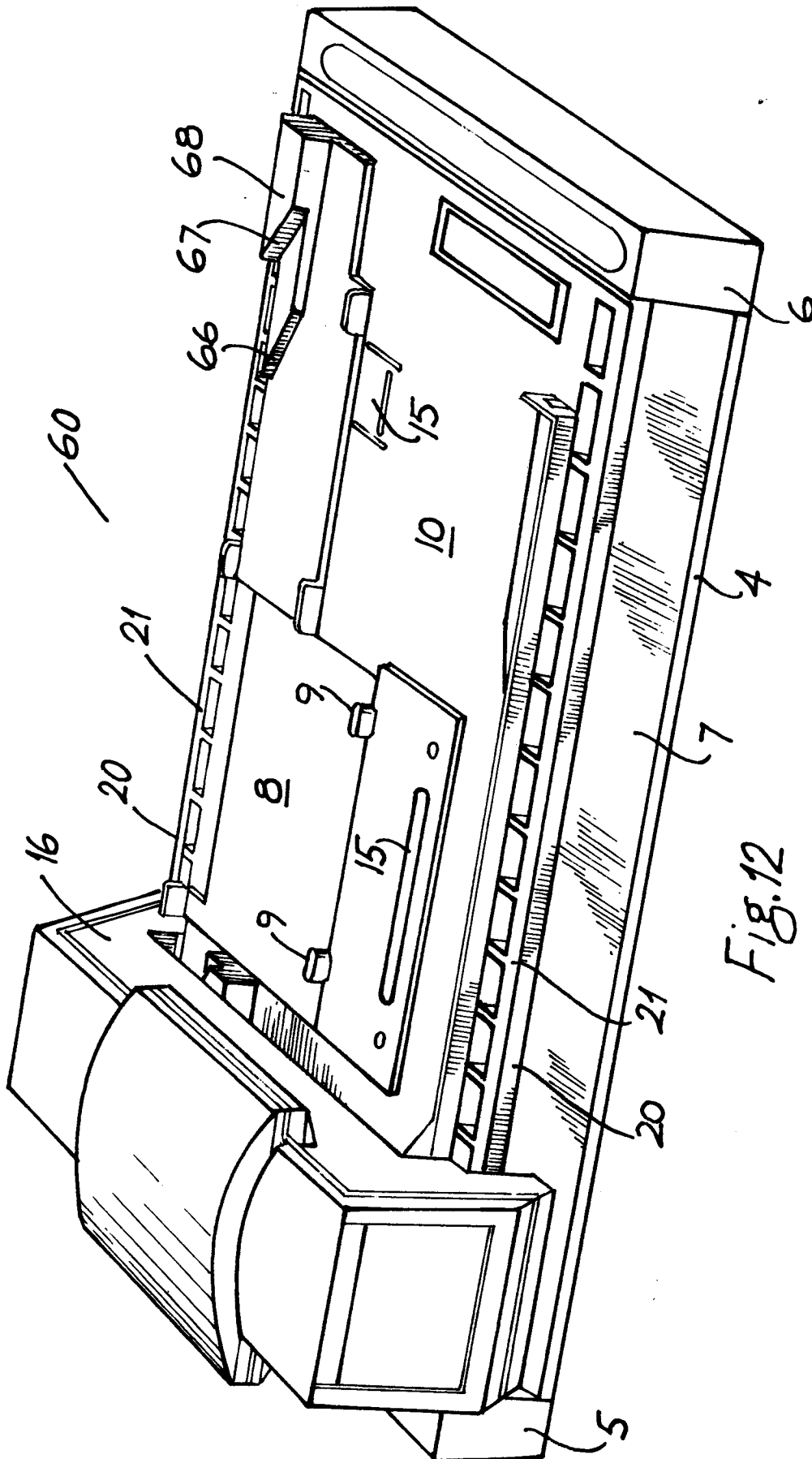
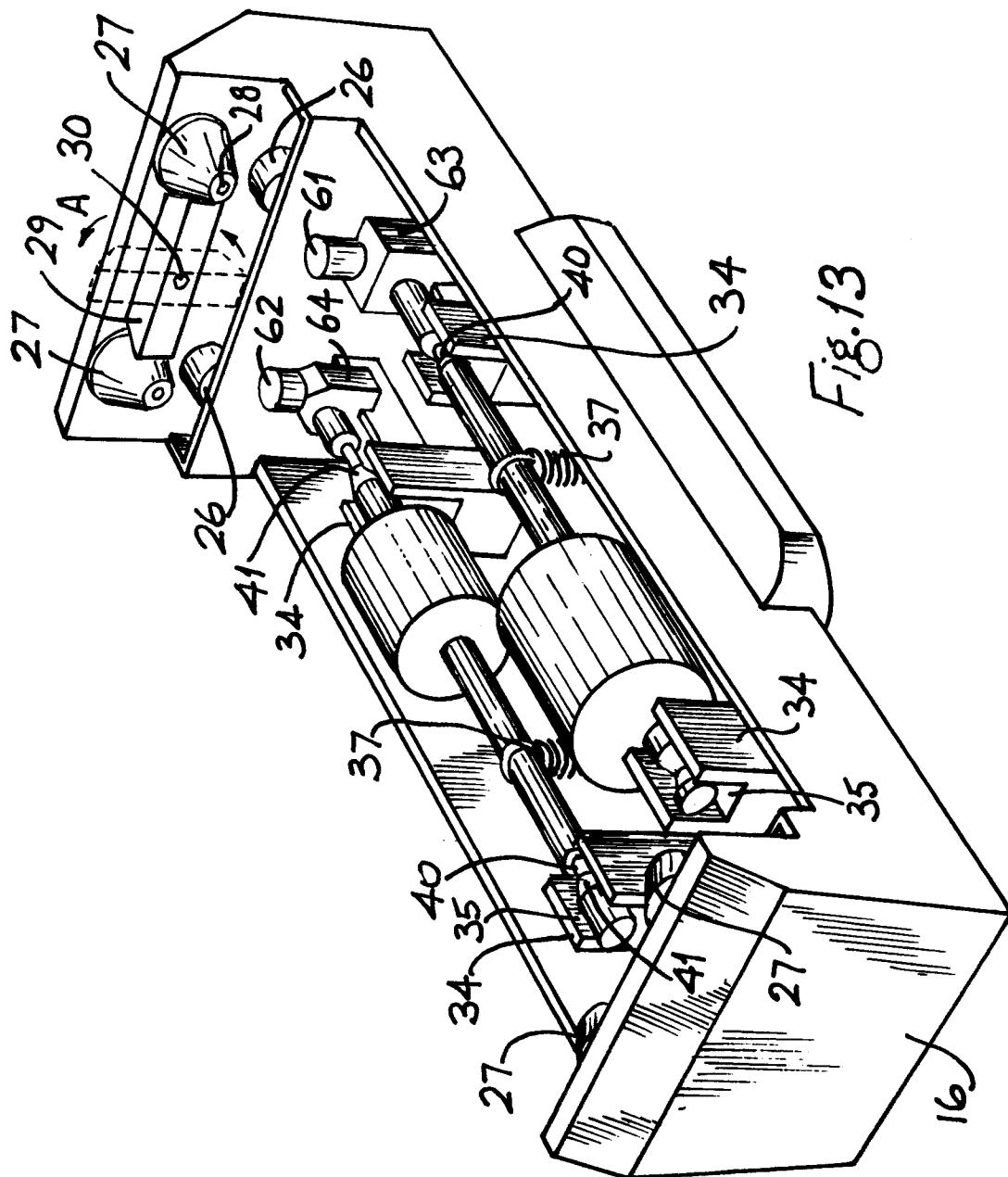


Fig. 12



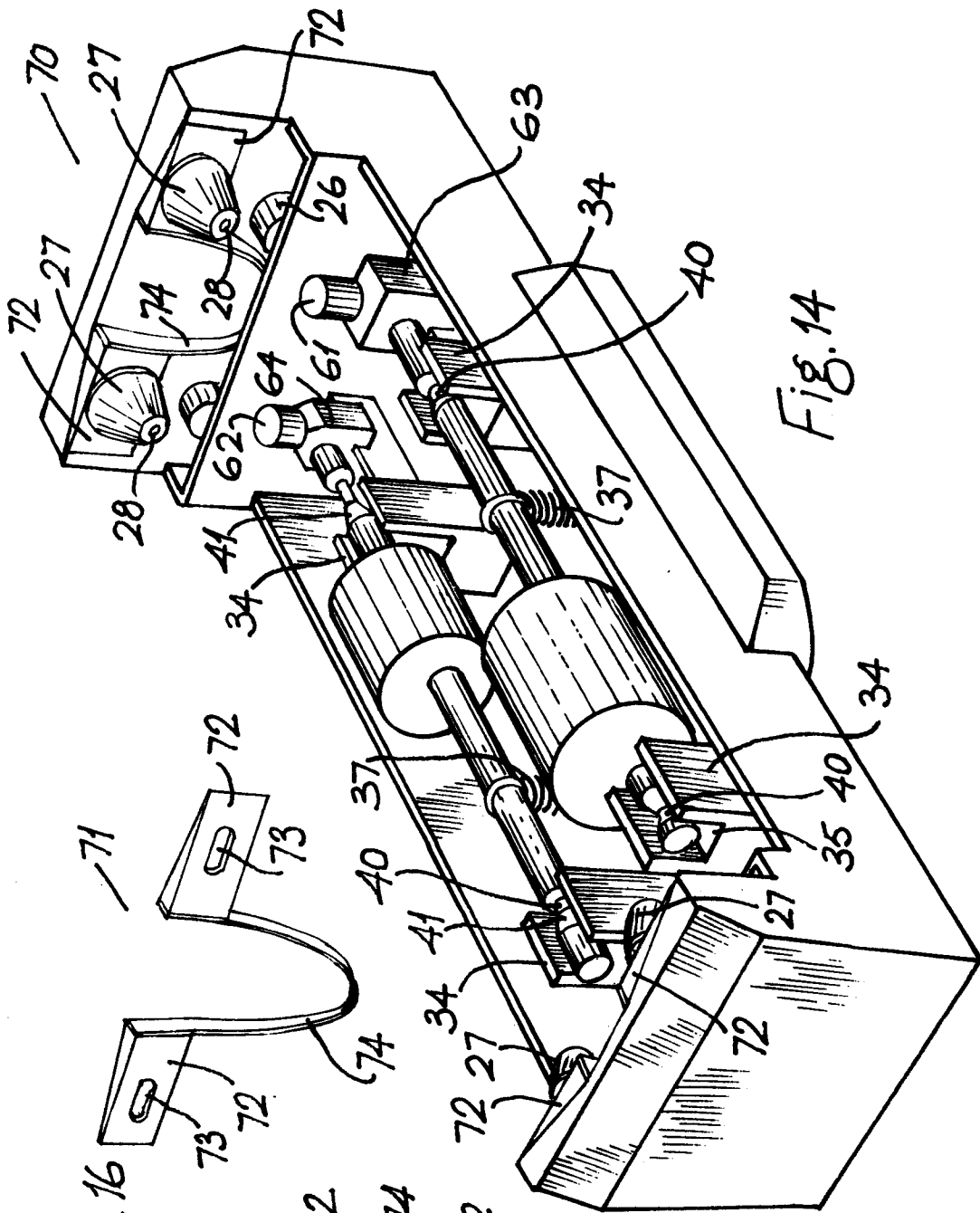


Fig. 14

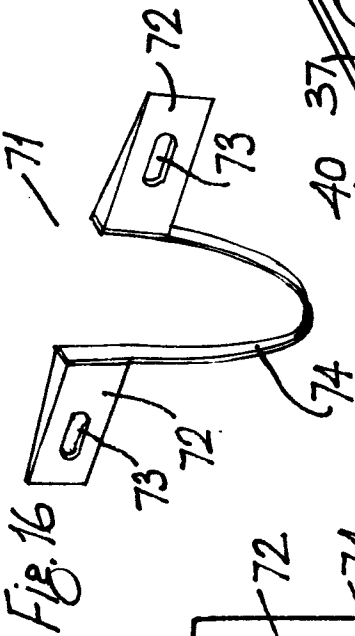


Fig. 15

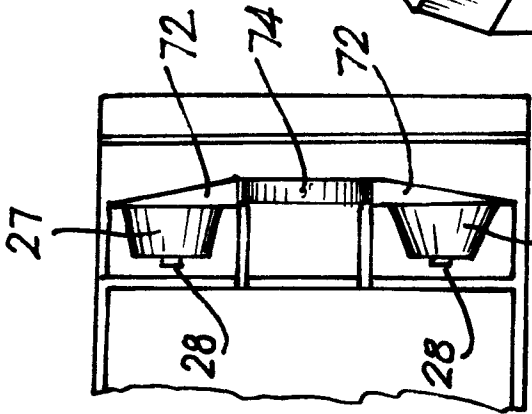


Fig. 16