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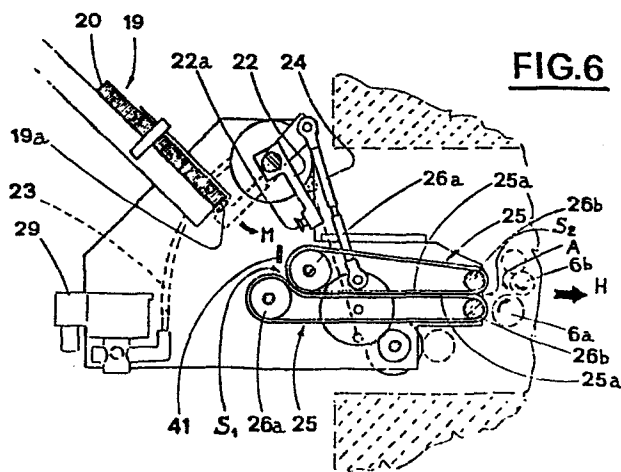
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64 Attachment to be coupled to instruction leaflet folding devices to feed folded instruction leaflets to the pickup means of the said devices

57 The attachment 50 comprises an adjustable magazine 17, containing a pile 19 of folded instruction leaflets 20 of any size, pickup means 22 and 22a for picking up the instruction leaflet at the bottom of the pile and positioning it at a first station S1, a conveyor 25 for transferring the leaflet from the station S1 to a second station S2, means 27 and 28 for driving the said conveyor, means for operating the pickup means.

The folding device, which the attachment 50 is designed to be coupled to, has a seat 10 which, at a folded leaflet feed station A, the means 6 to pick up the said leaflets operate in.

When attachment 50 is inserted into the said seat 10, the second station S2 is positioned at station A, the driving means 27 and 28 are activated by transmission means 13 and 14 built into the device and finally, the means 40 for activating the said pickup instruments with corresponding means built into the device, are linked up.



Attachment to be coupled to instruction leaflet folding
devices to feed folded instruction leaflets
to the pickup means of the said devices

In the packaging of pharmaceutical products, such as blisters, medicine bottles, tubes, etc, it is known that the product is inserted into the container (carton) together with a leaflet on which the characteristics of the product and the instructions for its correct use are printed in a suitable language.

The leaflet is folded several times so as to become smaller, sufficiently stiff and easier to insert into the container.

Pharmaceutical packaging systems are provided, upstream of the product insertion station, with any of a number of devices designed to feed the leaflets according to the required specifications.

The known devices are principally of the kind illustrated in figures 1, 2, 3, attached hereto.

In figure 1, 1 indicates a reel of tape 2 with sections printed without interruptions on one side (or both sides) of it, each printed section corresponding to a leaflet.

The tape 2 is fed by tensioning rollers 3 to a cutting instrument (housed in the casing 4 and not illustrated inasmuch as it is known) which cuts the tape at the line separating two consecutive printed sections.

Suitable rollers (referred to generically inasmuch as they are known) operate in conjunction with folding pockets 5, also of known kind, to fold each leaflet a predetermined

number of times.

At a feed station A, the folded leaflet is picked up by a pair of counter-rotating rollers 6a and 6b, associated to the line that transfers the leaflet to the station where the said leaflet is inserted into the corresponding container.

In the packaging of pharmaceuticals, the necessity often arises of making small lots of articles (meaning by "article" container + product + leaflet) with a different leaflet, either because the instructions must be in another language or because the leaflet is required in an unusual size.

Changing the leaflet means removing the reel 1, taking the tape 2 off the tensioning rollers 3 and rewinding it back onto the reel, fitting a new reel with the required instructions and/or of the required size and, finally, unreeling the end of the tape from the new reel and feeding it to the tape pickup means (not illustrated) by way of the rollers 3.

Since the lot of articles does not usually use up the entire reel of leaflets, when the lot is finished, the reel must be removed and stored away again for future use.

This procedure gives rise to multifold problems.

Indeed, used occasionally (and stored in a warehouse the rest of the time), a reel may after a time lose some of its characteristic qualities (variations in relative humidity for example), with all the undesirable consequences that this entails, such as the non optimal folding of leaflets

for example.

The difficulties are even worse when the instructions on the reel that is stored away are superseded by revised instructions.

Another problem is that if the leaflets are too long (the length of the leaflets being the width of the tape) for the folding pockets of the device to handle or have to be folded in an unusual way (e.g., lengthwise), it is necessary to replace the entire device with another device suited to the unusual dimensions, the cost of which is not always compensated by the number of articles made in a particular lot.

This is a weakness of the known device just described in that the device is unable to satisfy certain market requirements, however occasional.

Another known device is illustrated in figure 2. In this device, there is a magazine 7 designed to contain a pile 8 of flat, unfolded leaflets.

Suitable feed means, not illustrated, pick up the leaflet at the bottom of the pile 8. The said leaflet is transferred to folding pockets 5 which fold it several times and then to the counter-rotating rollers 6a and 6b (station A) as in the device illustrated in Fig.1.

As in the previous case, here again, when small lots have to be made with leaflets with special instructions and/or of unusual size, the pile 8 must be replaced with another pile or, in extreme cases, the whole device must be replaced with

one suited to the particular purpose.

5 In some cases, whether the solution adopted is that illustrated in figure 1 or that in figure 2, the entire device is replaced with a magazine (or feeder) that supplies folded leaflets to the aforementioned feed station A: the high cost of such a solution when the market requires unusual leaflets or cards instead of leaflets.

10 The object of this invention is to provide an attachment to be coupled to known devices for folding instruction leaflets and to replace the said known devices in feeding folded leaflets to the pickup means of the devices, the said attachment being driven by the same means that drives the
15 devices, and being also universal, that is, designed to supply leaflets of any size and folded in any way.

The said object is achieved with an attachment, to be coupled to instruction leaflet folding devices, for feeding
20 folded leaflets to the pickup means built into the said devices, in which the said devices have a seat accessible from the outside and housing - in its inner front section, at the feed station facing it - the means for picking up the folded instruction leaflets, and housing also the means for
25 driving the said pickup means. The aforementioned attachment is characterized by the fact of comprising: a casing fitted into the aforementioned seat; means for attaching the said casing, fitted into the said seat, to the device associated to the latter; an adjustable magazine, fitted to the said
30 casing, and used for housing a pile of folded instruction leaflets; pickup means, attached to the said casing, for picking up the leaflet at the bottom of the pile and trans-

ferring it to a first station; a conveyor, linked to the said casing, for transferring each leaflet from the first station to a second station, the latter coinciding with the aforementioned feed station consequent upon the inserting of the casing into the said seat; means for driving the aforementioned conveyor, linked to the said casing and activated by the aforementioned pickup drive means when the casing is inserted into the seat; means for activating the said pickup means in synchrony with the equipment located downstream of the aforementioned pickup means.

The characteristics of the invention that do not emerge from what has been stated above, are emphasized hereinafter with reference to the accompanying illustrations, in which:

- Figures 1 and 2 show diagrammatically perspective views of two known instruction leaflet folding devices, while Figure 3 illustrates one of the said devices without the folding pockets;

- Figure 4 illustrates the attachment that is the object of this invention in perspective and with some of its parts removed;

- Figure 5 shows a perspective view of the attachment coupled to a known folding device.

- Figure 6 shows diagrammatically a side view of the attachment coupled as in Figure 5, while Figure 6a shows diagrammatically the gearing of the attachment.

With reference to Figures 1, 2, and 3, and to complete the introductory description given above, it is emphasized that both the devices illustrated in Figures 1 and 2 have a seat 10, accessible from the outside, delimited laterally by two walls 11 with corresponding parallel guides 12, designed to

receive the longitudinal edges of the folding pockets 5.

5 The inner front section of the seat 10 houses the said counter-rotating rollers 6a and 6b (pickup means) that pick up the folded leaflets present in the aforementioned feed station A. Rollers 6 are driven by known gearing 13 and it is emphasized that gear wheel 14 is accessible from the outside.

10 The attachment 50 that is the object of this invention is described hereinafter with reference to Figures 4, 5, and 6.

15 The said attachment is made up of a casing 15 with a section 16 protruding from each side of the casing, the said protruding sections being designed to fit into guides 12 when the casing is inserted into the seat 10.

20 A magazine 17 is attached to casing 15 at an angle, the cross section of the said magazine being adjustable by varying one or other, or both, of its dimensions using known means 18.

25 The said magazine is designed to house a pile 19 of leaflets 20 that are already folded (in any way) in at least one sense. Each leaflet has printed on it, in an appropriate language, the characteristics and/or instructions for use of a corresponding pharmaceutical product: suitable cards may be used instead of leaflets.

30 The bottom of the pile 19 is supported by known means 19a which allow only the leaflet 20 at the bottom of the pile to be picked up.

The casing 15 rotatably supports a shaft 21, placed cross-wise from one side of the casing to the other, to which are splined the pickup means, consisting for example, of two parallel arms 22 with suction pads 22a on the ends, the suction being provided by known means through a distributor 40 of known kind (integral with the casing 15 (Fig.6)) and an associated hose 23, mentioned in a little more detail later.

Shaft 21 is made to swing by known means 24, the said swinging motion being such as to move suction pads 22a to a limit point at which they come into contact with the leaflet at the bottom of the pile. Pad suction is timed so as to be turned on when the pads come into contact with the leaflet. Arms 22 then swing back through M (Figure 6) carrying the leaflet out the magazine on the suction pads.

As a result of the said swinging motion, the leaflet is transferred to a first station S1, within the casing, where the suction pads are turned off.

To be more precise, the suction pads 22a are turned off when the leaflet they are carrying reaches vertical plate 41, the function of which is multifold; in fact, the vertical plate facilitates the detachment of the leaflet from the suction pads and flattens out any creases that may have formed on the leaflet: in other terms, the leaflet comes to be in practically vertical position as it had been in the magazine 17.

The leaflet 20 drops off the suction pads 22a and is "caught" between the matching branches 25a of two pairs of belts 25 that are looped around rollers 26a and 26b, driving

- roller and driven roller, respectively. To facilitate the insertion of the leaflet 20 between the branches 25a when the dropping leaflet reaches them, the mouth of the said branches is curved upwards: this is achieved by offsetting the driving rollers 26a as illustrated in Figure 6. The movement of branches 25a in H direction causes the leaflet 20 to be transferred from the first station S1 to a second station S2.
- 10 The rotation of driving rollers 26a and the operation of means 24 is achieved by gearing 27 (see Figure 6a) linked to a control pinion 28, having the same pitch as the gear wheel 14 and located on the outer side of one of the casing sides.
- 15 The attachment 50 is dimensioned in such a way that, when the casing 15 is inserted into seat 10, the protruding sections 16 fit into guides 12, the pinion 28 meshes with gear wheel 14 and, finally, the second station S2 is positioned at feed station A.
- 20 It should be stressed that the hose 23 may be connected to a valve 29, built into the attachment 50 and in turn connectable to a vacuum source associated to the device illustrated in Figures 1 and 2 or may be connected to a valve associated to the latter device.
- 25 The description hereafter turns to the applications and working of the attachment that is the object of this invention.
- 30 As stated in the introduction hereto, the devices illustrated in Figures 1 and 2 are designed to feed standard, folded instruction leaflets to feed station A. This is the

normal operation of the said devices and the said systems (not illustrated inasmuch as they are known) make up pharmaceutical articles using the aforementioned standard leaflets.

5

When an order is made for a limited number of articles with non standard leaflets (differing in the language of the instructions and/or size and/or number of folds), the user can resort to this attachment 50 and proceed as described hereinafter.

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In the case of the device illustrated in Figure 1, the user uncouples the folding pockets 5 from guides 12 and stops the feeding of tape 2. In the case of the device illustrated in Figure 2, the user takes the magazine 7 off the casing 4 and then uncouples the folding pockets 5 from guides 12.

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In both cases, this gives access to seat 10 which attachment 50 can be coupled to as described above.

25

After inserting the attachment, the hose 23 can be connected in one of the two ways already described.

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The aforementioned systems can now be activated, which in turn activates the gearing 13 and the associated gear wheel 14 and, consequently, the attachment 50. The timing of the swinging of arm 22 in relation to the article packaging systems located downstream of rollers 6 does not create difficulties for a technician experienced in this field.

The leaflets 20 picked up intermittently from the bottom of the magazine 17 are fed to rollers 6a and 6b at station A:

when the required number of "unusual" articles has been made up, the attachment 50 can be removed from the associated device and the "standard" working parts refitted.

5 The attachment that is the object of this invention is universal, that is, it can be used to feed station A with folded leaflets of any thickness, width or length, by adjusting the dimensions of magazine 17 to the size of the leaflet required.

10 The attachment makes the device it is coupled to more versatile.

15 Indeed, with the attachment 50 used in conjunction with the aforementioned device, it is sufficient to keep as many stocks of leaflets 20 or cards as are necessary to meet particular market requirements, provided the said leaflets or cards are not too large or too small to be handled by rollers 6a and 6b and by the means (not illustrated) located
20 downstream of the rollers.

This has the notable advantage of enabling users to reduce their stock of each type of leaflet to a minimum, and another undoubted advantage lies in the fact that the
25 attachment can be adjusted quickly and easily to any market requirement.

If the leaflets 20 or cards that have to be inserted in the container are not in stock, it is sufficient to order them,
30 provided only that their size can be handled by the pickup rollers 6a and 6b and by the means downstream of these.

It is again stressed that this attachment does not call for

any alterations to be made to the device it is coupled to: in other terms, it is activated and driven by means the device is already provided with.

5 Yet another advantage of the attachment 50 lies in the fact that it can satisfy the requirements of several different folding devices.

10 The casing 15 can be attached to the casing 4 of the associated device by means other than described above, for example, means that attach the casing 15 to the bottom of seat 1, or that attach casing 15 to walls 11, or a combination of both the means just referred to, or any other means known to any person experienced in this field.

15 It is understood that the description given herein is purely an unlimited example and thus that eventual variations in the constructional details described, (for example, if the gear wheel 14 is located on the side opposite that illustrated in figure 3, the matching pinion will be on the other
20 side of the casing 15), all fall within the framework of protection afforded to the invention as claimed hereinafter.

25

Claims:

1. Attachment to be coupled to instruction leaflet folding devices, for feeding folded leaflets to the pickup means built into the said devices, in which the said devices have a seat 10 accessible from the outside and housing - in its
5 inner front section, at the feed station A facing it - the means 6 for picking up the folded instruction leaflets, the seat 10 also housing the means 13, 14 for driving the said pickup means 6; the aforementioned attachment being characterized by the fact of comprising: a casing 15 fitted
10 into the aforementioned seat 10; means for attaching the said casing, fitted into the said seat 10, to the device associated to the latter; an adjustable magazine 17, fitted to the said casing 15, and used for housing a pile 19 of folded instruction leaflets; pickup means 22,22a, attached
15 to the said casing 15, for picking up the leaflet 20 at the bottom of the pile 19 and transferring the said leaflet 20 to a first station S1; a conveyor 25,25a, linked to the said casing 15, for transferring each leaflet 20 from the first station S1 to a second station S2, the latter coinciding
20 with the aforementioned feed station A when the casing 15 is inserted into the said seat 10; means 27 for driving the aforementioned conveyor, the said means being linked to the said casing and activated by the aforementioned drive means 13,14 when the casing is inserted into the seat; means for
25 activating the aforementioned pickup means 6 in synchrony with the equipment located downstream of the said pickup means.

2. Attachment according to Claim 1, characterized by the
30 fact that the aforementioned conveyor consists of two belts

25 looped around corresponding driving roller 26a and driven roller 26b with two branches 25a that are constantly in contact with each other and located between the aforementioned first and second stations S1 and S2, the said branches being
5 designed to receive a folded instruction leaflet 20 at the first station S1 and to transfer the said leaflet to the said second station S2.

3. Attachment according to Claim 2 characterized by the fact
10 that the initial section of the aforementioned touching branches 25a is curved upwards in such a way that, at station S1, the said branches receive between them the said leaflets 20 with the short sides positioned almost vertically.

15 4. Attachment according to Claim 3 characterized by the fact that located above the first station S1 there is a vertical plate 41 at which the aforementioned pickup means transferring the leaflet from the bottom of the pile, are turned off
20 so as to let the leaflet drop into the upturned mouth of the aforementioned touching branches 25a.

5. Attachment according to Claim 1 wherein the aforementioned means for driving the pickup means 6 have at least
25 one gear wheel 14 accessible from the aforementioned seat, characterized by the fact that the said drive means are operated by a pinion 28, having the same pitch as the gear wheel, the said pinion 28 meshing with the said gear wheel 14 when the casing 15 is inserted in the aforementioned seat
30 10.

6. Attachment according to Claim 1 characterized by the fact

that the aforementioned pickup means consist of at least one arm 22 that is made to swing by a shaft 21 perpendicular to the direction of motion H of the aforementioned conveyor 25 and associated to the aforementioned pickup drive means, the
5 said arm 22 having suction means 22a on its free end, the said suction means being turned on in synchrony with the swinging of the arm to its limit position in such a way that the said suction means comes into contact with the leaflet at the bottom of the pile, pulls the leaflet out of the mag-
10 azine and carries it to the first station S1.

7. Attachment according to Claim 5 characterized by the fact that the aforementioned pinion 28 is located on the outside of one of the sides of the casing 15.

15 8. Attachment according to Claim 1 wherein the vertical sides 11 delimiting the said seat 10 have on them parallel guides 12 and characterized by the fact that the means to fit the said casing 15 into the seat of the device the
20 attachment is coupled to consists of two protruding sections 16 projecting from the casing sides which fit into the corresponding guides 12 when the said casing is inserted into the aforementioned seat.

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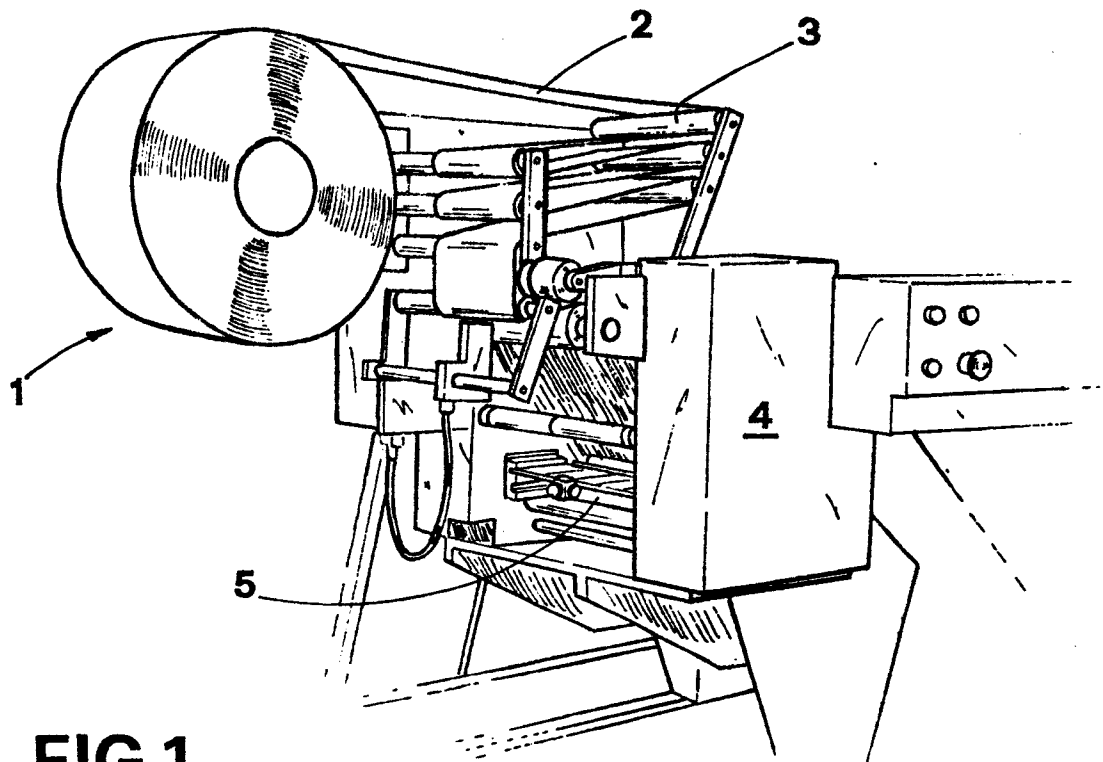
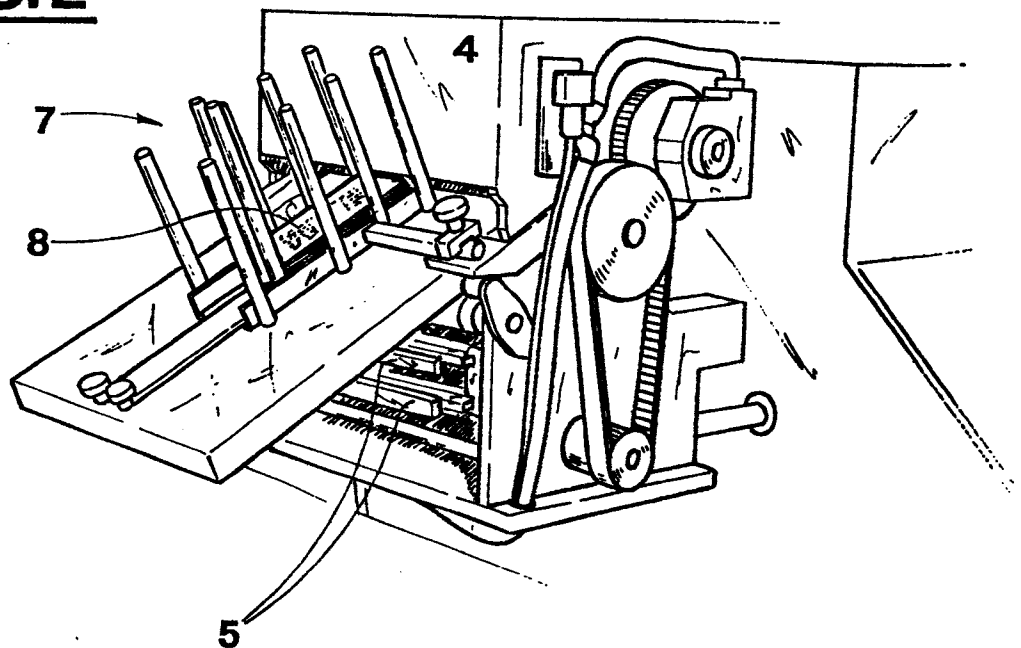


FIG. 1

FIG. 2



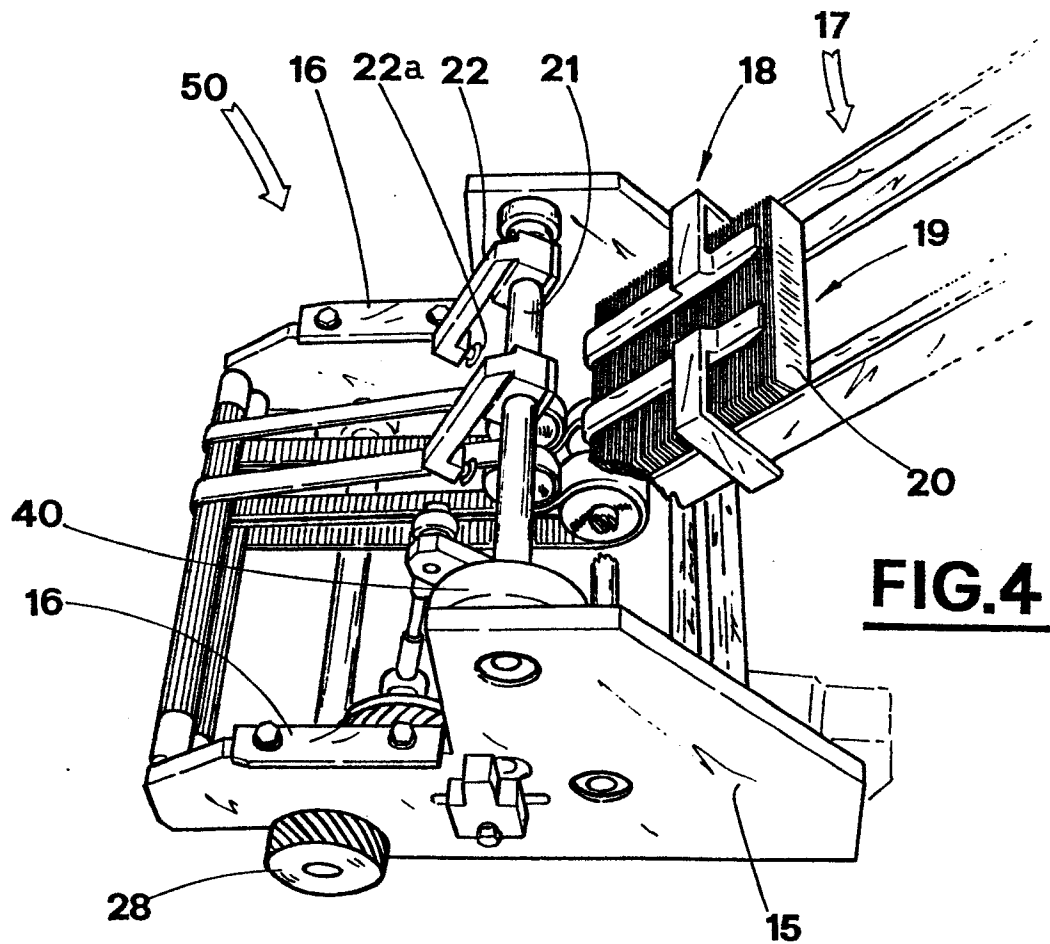
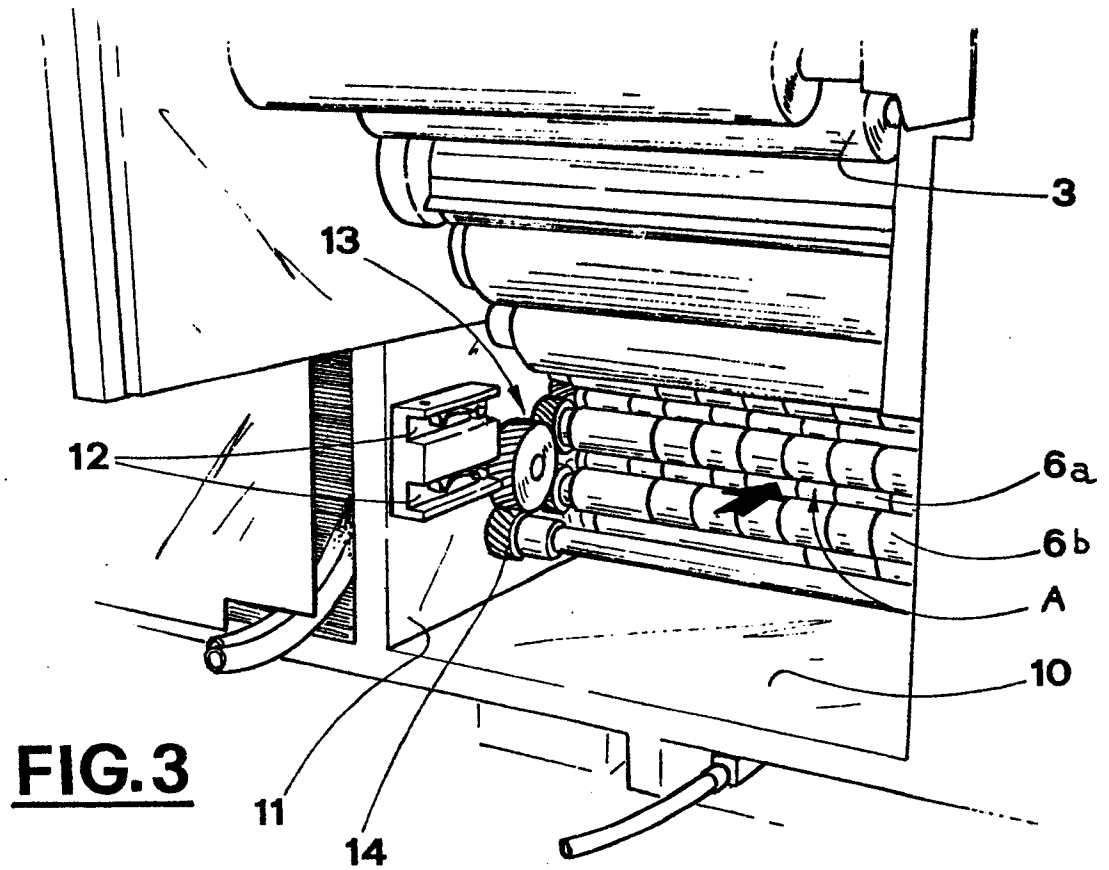
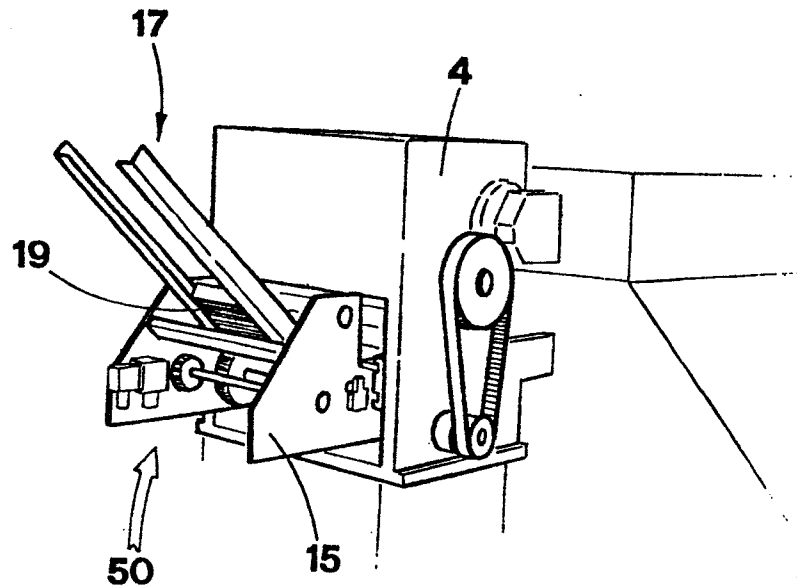


FIG.5**FIG.6a**