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(54) **Machinery for wrapping books, magazines and the like with paper**

Maschine zum Umwickeln von Büchern, Zeitschriften und dergleichen mit Papier

Machine pour envelopper des livres, des périodiques et similaires avec du papier

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## Description

**[0001]** For several years magazines and books have been sold in polyethylene wrappers, which are an effective means of protection from any damage which could occur during transportation.

**[0002]** A wrapping machine used to wrap these articles as well as similar articles, is described, for example, in the Italian patent no. 1,196.631 dated 19th September 1986, owned by C.M.C. S.r.l.

**[0003]** In this automatic machine magazines, or other similar objects, are taken one by one and wrapped in an PVC wrapper cut and sealed in proper manner.

**[0004]** Growing concern for environmental pollution and a certain degree of aversion to the widespread use of plastic materials, which are considered dangerous pollutants because they are not biodegradable, however, has led to the study and designing of machines for wrapping newspapers, magazines and the like, with paper and other similar materials.

**[0005]** Patent document GB-A-222108 has for its object a machine intended for wrapping magazines; catalogues or other printed matters, with a wide band, closed and labelled.

**[0006]** The articles travel therein by stages, under control of two rows of transporting grippers. The wrapper paper is unwound across the path of the print that is advanced against the paper and inserted in a loop formed by the latter.

**[0007]** Then a knife cuts the paper off while the other end of the wrapper is supplied with gum by a gumming device and turned over upon the other extremity which has been curved by the combined action of raising and pressing devices so as to produce a tensioning of the band.

**[0008]** Lastly, the wrapped article is labelled and delivered.

**[0009]** The object of this invention is a totally automatic wrapping machine for newspapers, magazines, books and similar articles, which uses any kind of paper to wrap these articles and which works with a very high wrapping speed.

**[0010]** This is obtained by the features present in claim 1.

**[0011]** First of all, the machine includes a magazine drawing device, which takes the magazines, one by one, from a pile; this is followed, in sequence, by another device that opens the first page of each magazine while one or more feeders may introduce an insert inside the opened magazine: There are two rolls of paper, preferably placed in the lower part of the machine and provided with a lateral unwinding device: the paper is unrolled lengthwise underneath the object to be wrapped, the magazine for example, which then passes under a small motorised presser belt aimed at keeping it at the right distance from the foregoing magazine, in a correct position.

**[0012]** While the magazines are kept at a fixed dis-

tance from one another, a hot melt glue spraying device, controlled by photocells and an encoder, applies glue, crosswise, on the wrapping paper between two subsequent magazines.

**[0013]** While the magazine or other object advances along the line, the longitudinal edges of the sheet of paper are folded upwards towards the centre of the object, while another glue spraying device applies glue lengthwise. The magazine or other object then passes under a pressing pad and between two transverse rollers as defined in claim 1, which apply, the necessary pressure on a crosswise strip between two magazine, previously glued, in order to stick crosswise the two layers of paper to each other. A cutting means then cuts the paper between the sequence of magazines, while a spacing out presser belt moves forward the magazines as soon as they are severed.

**[0014]** Following is a more detailed description of the foregoing machine, which makes reference to the attached illustrations:

Fig. 1 shows a front view of the machine.

Fig. 2 shows a view of the machine from the top.

Fig. 3 shows a detail of the transverse strip presser and of the cutting means.

Fig. 4 shows a detail of the wrapping device for larger-sized objects.

**[0015]** With reference to the above illustrations, the machine includes the following elements: a magazine drawing device (1), which takes the magazines, one by one, from a pile, an opening device (2), which opens the first page of each magazine, and one or more feeders (3) which may introduce an insert inside the opened magazine.

**[0016]** The wrapping paper, or other similar material employed, consists of rolls (8), provided from a lateral unwinding device, which are preferably placed in the lower part of the machine; the paper, therefore, is unrolled lengthwise underneath the object to be wrapped, such as the magazines, for examples, which then pass, at a fixed distance the one from the other, under a small motorised presser belt (4). A first hot-melt glue spraying device (5), controlled by photocells and an encoder, then applies two strips of glue crosswise, between one magazine and the other. As the magazine or other object advances along the line, the edges of the sheet of paper are folded towards the centre, while a second glue spraying device (7), also controlled by photocells and encoder, sprays the glue lengthwise.

**[0017]** The longitudinal edges of the wrapping are then gradually closed one over the other, as the magazine advances along the line, where it passes under a pressing pad (9) and between two transverse rollers which apply the necessary pressure to the strip between

two magazines, so as to ensure that the two layers of paper, previously glued, effectively stick together. A cutting means (17, 18) then cuts the paper cross-wise, while a spacing out presser belt (12) move forward the magazines so as to space them out. This sequence is completed by a labelling machine, which applies address tags and the like.

**[0018]** As previously explained, this machine is particularly suitable for wrapping magazines and similar articles. In order to adapt it to larger object, such as books, a special unit (23) has been designed, this unit being shown in Figure 4.

**[0019]** The special unit (23) includes glue spraying devices (22) which apply glue along the sides of the packages parallel to the advancement direction.

**[0020]** The special unit (23) is placed at the end of the processing sequence, and receive magazines already in a open ended wrapping (19), carrying them forward beneath the two gluing machines (22) which spray a certain amount of glue on side surfaces of the package that is left free by e.g. the book.

**[0021]** Two folding blades (25) close the paper edges thus producing a wrapping that is well finished and also strong and resistant

**[0022]** Any movement of the book, or other object contained in the package, is thus prevented.

### Claims

1. A machine for paper wrapping newspaper, magazines and similar articles, the said machine including an article drawing device (1) which takes the articles one by one from a pile, and a lateral unwinding device providing the paper wrapping material from rolls (8) and setting it under the articles, the machine including the combination of:

a small motorised presser belt (4) which keeps the articles at the right distance one from the other;

a hot melt glue spraying device (5) that applies a strip of glue between one article and the following one;

a further glue spraying device (7) that applies glue lengthwise over the edges of the wrapping sheet of paper folded towards the centre over the article;

two folding blades that gradually close the edges of the wrapping sheet over each other;

a pressing pad (9) and a pair of transverse rollers (15,16), each provided with a protrusion extending along the whole length of the respective transverse roller, the rollers being respectively located above and underneath the wrapping sheet of paper such that the protrusions cooperate to press the glued strip of the wrapping sheet of paper between each pair of articles;

a cutting means (17,18) which cuts the sheet of paper crosswise between each article and the following one;

an adequate press consisting of a moving apart belt (12), situated above the wrapped articles, that moves apart each wrapped article from the following one.

2. A paper wrapping machine as in claim 1, **characterised in that** the paper wrapping material is provided by rolls (8) situated in the lower part of the machine and provided with a lateral unwinding device.
3. A paper wrapping machine as in claim 1, **characterised in that** the first hot-melt glue spraying device (5) and the second glue spraying device (7) are controlled by means of respective photocells and encoders.
4. A paper wrapping machine as in claim 1, **characterised in that** it further includes an opening device (2), which opens the first page of each newspaper, magazine or similar article, and one or more feeders (3) which introduce an insert in the opened newspaper, magazine or similar article.
5. A paper wrapping machine as in claim 1, **characterised in that** it includes a special unit for wrapping larger articles (19), said unit including two auxiliary glue spraying devices (22) designed to spray glue sidewise on the edges of a package containing a larger article (19) already in an open ended wrapping, that is left free by the said article (19), and two folding blades which fold the said edges to complete the package.

### Patentansprüche

1. Maschine zum Einwickeln von Zeitungen, Zeitschriften und ähnlichen Artikeln mit Papier, wobei die genannte Maschine eine Artikelentnahmevorrichtung (1) umfaßt, welche die Artikel einzeln von einem Stapel aufnimmt, sowie eine seitliche Abwickelvorrichtung, welche das Papiereinwickelmaterial von Rollen (8) abzieht und unter den Artikeln anordnet; die Maschine ist **dadurch gekennzeichnet, daß** sie die Kombination der folgenden Merkmale umfaßt:

ein kleines motorisch angetriebenes Andrückband (4), welches die Artikel im passenden Abstand voneinander hält; eine Heißleimsprühvorrichtung (5), mit der ein Streifen Leim quer auf dem Papier zwischen einem und dem folgenden Artikel aufgetragen wird;

eine weitere Leimsprühvorrichtung (7), welche den Leim längsseits an den Rändern des zur Mitte hin über den Artikel gefalteten Einwickelpapierbogens aufträgt;

zwei Faltelemente, welche die Ränder des Einwickelbogens schrittweise übereinander schließen;

einen Andrückstempel (9) und ein Paar von querseitigen Streifenanpreßrollen (15, 16), jede davon mit einem Vorsprung ausgestattet, der sich entlang der gesamten Länge der zugehörigen querseitigen Streifenanpreßrollen (15, 16) erstreckt, die Rollen (8) sind jeweils oberhalb und unterhalb des Verpackungsbogens aus Papier angeordnet, so daß die Vorsprünge derart zusammenwirken, daß der geleiimte Streifen des Einwickelpapierbogens zwischen jedem Paar von Artikeln eingepreßt ist;

Schneidemittel (17, 18), welche den Papierbogen zwischen einem Artikel und dem folgenden Artikel in Querrichtung trennen;

eine zugehörige Presse weist ein Abfuhrband (12) auf, das oberhalb der verpackten Artikel derart angeordnet ist, daß jeder eingepackte Artikel vom folgenden Artikel wegbewegt wird.

2. Maschine zum Einwickeln mit Papier gemäß Patentanspruch 1, **dadurch gekennzeichnet, daß** das Papiereinwickelmaterial durch Rollen (8) zugeführt wird, die sich im unteren Teil der Maschine befinden und mit einer seitlichen Abwickelvorrichtung versehen sind.
3. Maschine zum Einwickeln mit Papier gemäß Patentanspruch 1, **dadurch gekennzeichnet, daß** die erste Heißleimsprühvorrichtung (5) und die zweite Leimsprühvorrichtung (7) durch entsprechende Fotozellen und Geber gesteuert werden.
4. Maschine zum Einwickeln mit Papier gemäß Patentanspruch 1, **dadurch gekennzeichnet, daß** sie zusätzlich eine Öffnungsvorrichtung (2) umfaßt, welche die erste Seite einer jeden Zeitung, Zeitschrift oder ähnlichen Artikel öffnet, sowie einen oder mehrere Eingabevorrichtungen (3), welche eine Beilage in die geöffnete Zeitung, Zeitschrift oder ähnlichen Artikel einführen.
5. Maschine zum Einwickeln mit Papier gemäß Patentanspruch 1, **dadurch gekennzeichnet, daß** sie außerdem eine spezielle Einheit zum Einwickeln größerer Artikel (19) umfaßt, wobei diese Einheit zwei zusätzliche Leimsprühvorrichtungen (22) zum Leimauftrag seitlich auf den Rändern einer Pak-

kung umfaßt, welche einen bereits eingewickelten größeren Artikel (19) enthält, wobei der genannte Artikel (19) das Ende des Wickels freiläßt, sowie aus zwei Faltelementen, welche die genannten Ränder falten, um die Packung zu vervollständigen.

## Revendications

1. Machine pour envelopper de papier les journaux, magazines et articles analogues, ladite machine comprenant un dispositif d'extraction d'articles (1), qui prélève les articles un à un dans une pile, et un dispositif de déroulement latéral qui fournit le matériau d'enveloppement en papier à partir de rouleaux (8) et le place sous les articles, la machine comprenant la combinaison :

d'une petite courroie de pression à moteur (4) qui maintient les articles à la distance exacte l'un de l'autre,

d'un dispositif de pulvérisation de colle thermofusible (5) qui applique une bande de colle entre un article et le suivant,

d'un second dispositif de pulvérisation de colle (7) qui applique de la colle dans le sens de la longueur sur les bords de la feuille de papier d'enveloppement qui sont pliés en direction du milieu par-dessus l'article,

de deux lames de pliage qui ferment progressivement les bords de la feuille d'enveloppement l'un par-dessus l'autre,

d'un patin de pression (9) et d'une paire de rouleaux transversaux (15, 16), chacun étant muni d'une saillie s'étendant le long de toute la longueur de chacun des rouleaux transversaux, les rouleaux transversaux étant respectivement situés sur et sous la feuille de papier d'enveloppement de manière à ce que la saillie coopère pour comprimer la bande de colle de la feuille de papier d'enveloppement entre chaque paire d'articles,

de moyens de coupe (17, 18) qui découpent la feuille de papier transversalement entre chaque article et le suivant et

d'une presse adéquate consistant en une courroie d'espacement (12), située sur les articles enveloppés, qui espace chaque article enveloppé vis-à-vis du suivant.

2. Machine d'enveloppement au moyen de papier selon la revendication 1, **caractérisée en ce que** la matière d'enveloppement en papier est fournie par des rouleaux (8) disposés dans la partie inférieure de la machine et pourvus d'un dispositif de déroulement latéral.
3. Machine d'enveloppement au moyen de papier se-

lon la revendication 1, **caractérisée en ce que** le premier dispositif de pulvérisation de colle thermodurcissable (5) et le second dispositif de pulvérisation de colle (7) sont commandés au moyen de cellules photoélectriques et de moyens de codage respectifs. 5

4. Machine d'enveloppement au moyen de papier selon la revendication 1, **caractérisée en ce qu'elle** comprend en outre un dispositif d'ouverture (2), qui ouvre la première page de chaque journal, magazine ou article analogue, et un ou plusieurs dispositifs d'alimentation (3) qui introduisent un encart dans le journal, magazine ou article analogue ouvert. 10

5. Machine d'enveloppement au moyen de papier selon la revendication 1, **caractérisée en ce qu'elle** comprend une unité spéciale pour des articles à envelopper (19) plus grands, ladite unité comprenant deux dispositifs auxiliaires de pulvérisation de colle (22), agencés de façon à pulvériser de la colle latéralement sur les bords d'un emballage contenant un article (19) plus grand déjà placé dans l'emballage présentant ses extrémités ouvertes, qui sont laissés libres par ledit article (19), et deux lames de pliage qui plient lesdits bords de façon à achever l'emballage. 15 20 25

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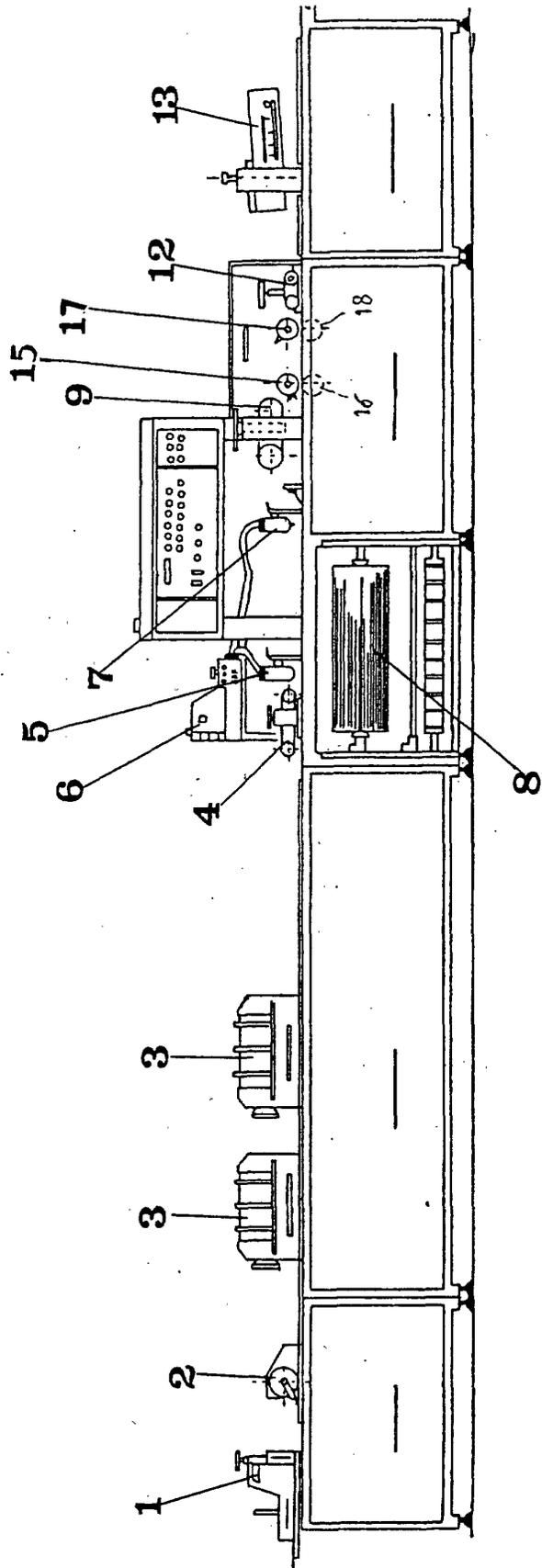


FIG 1

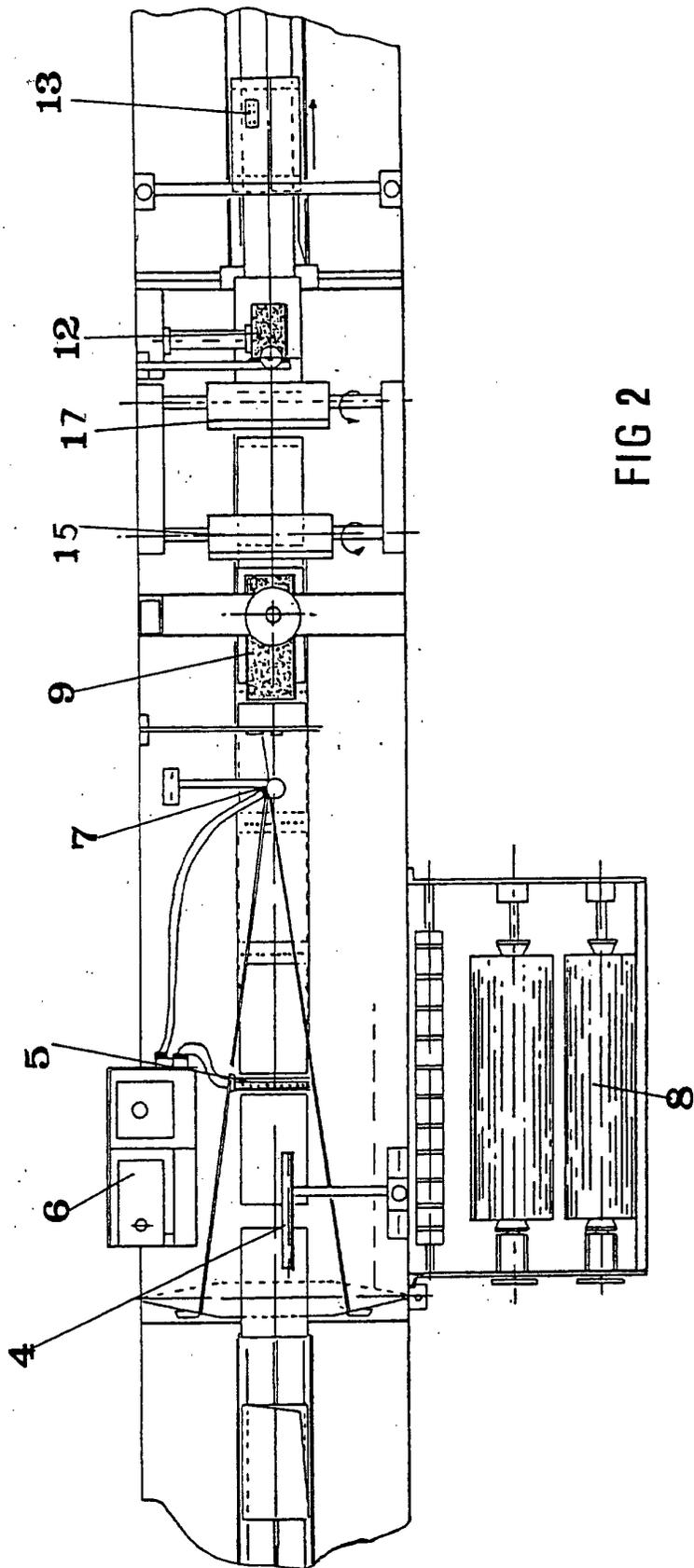


FIG 2

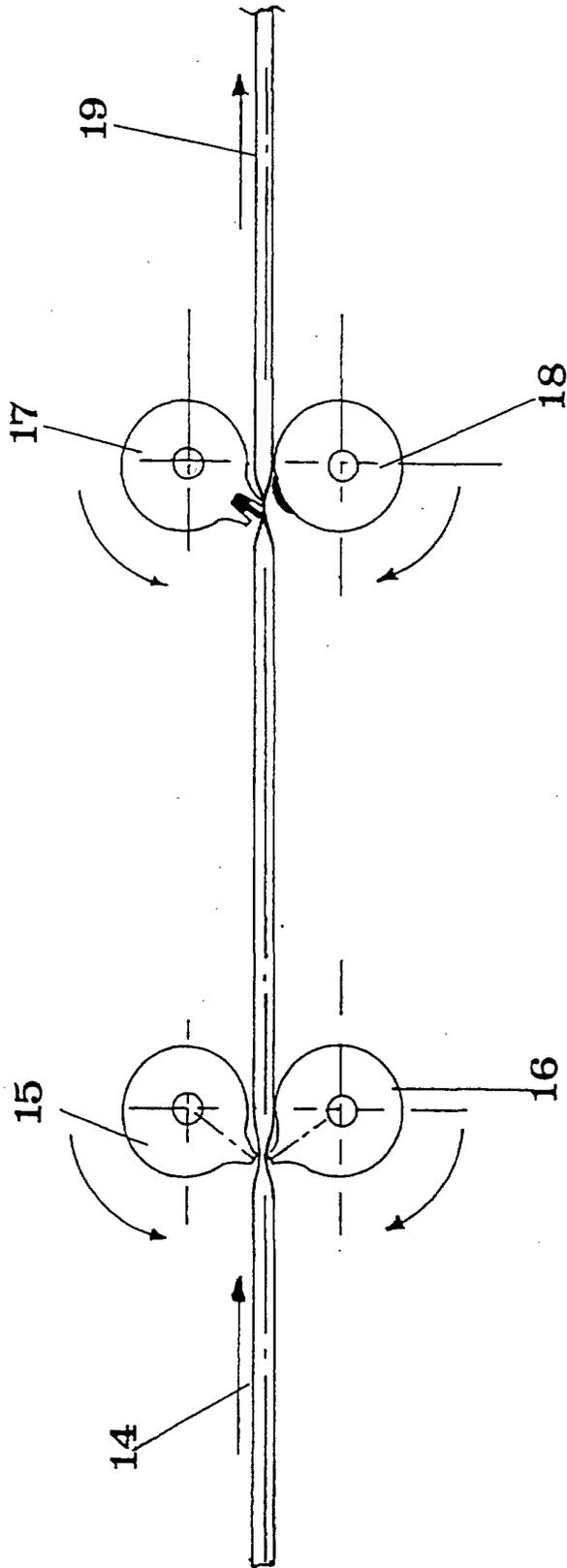


FIG 3

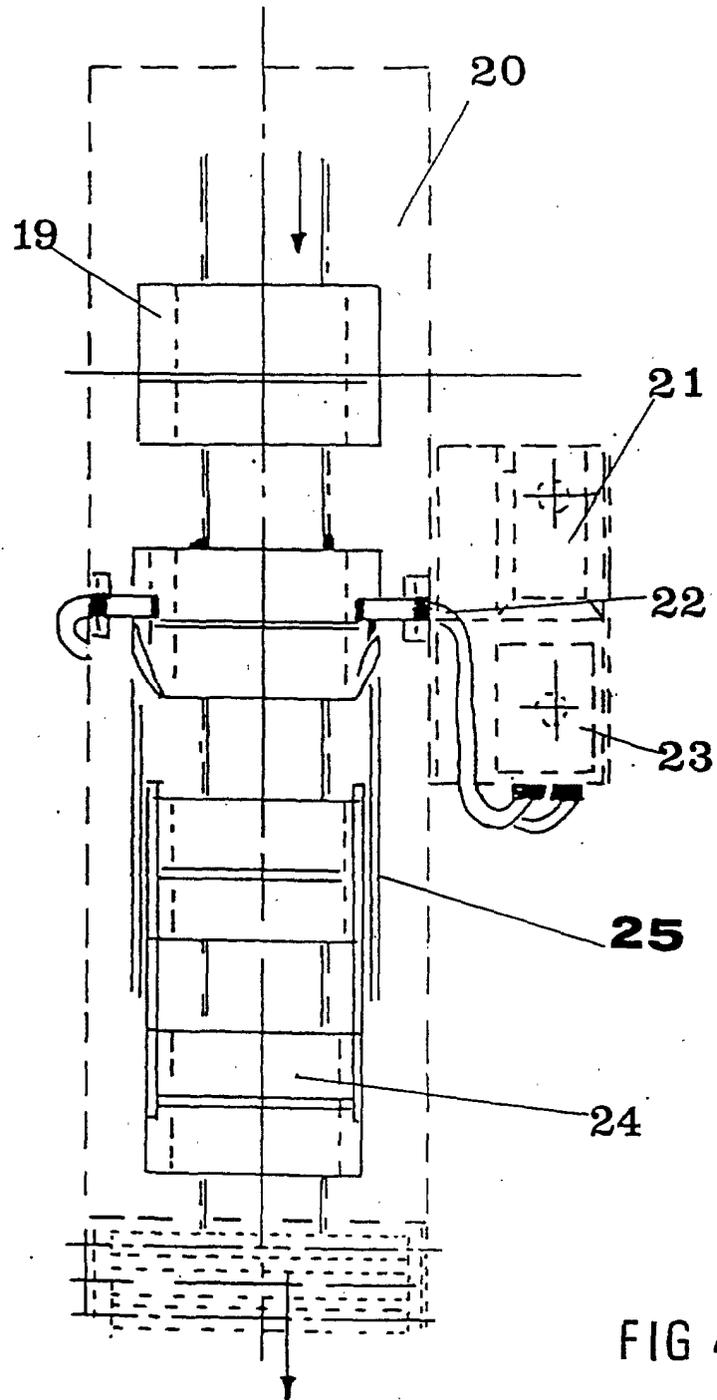


FIG 4

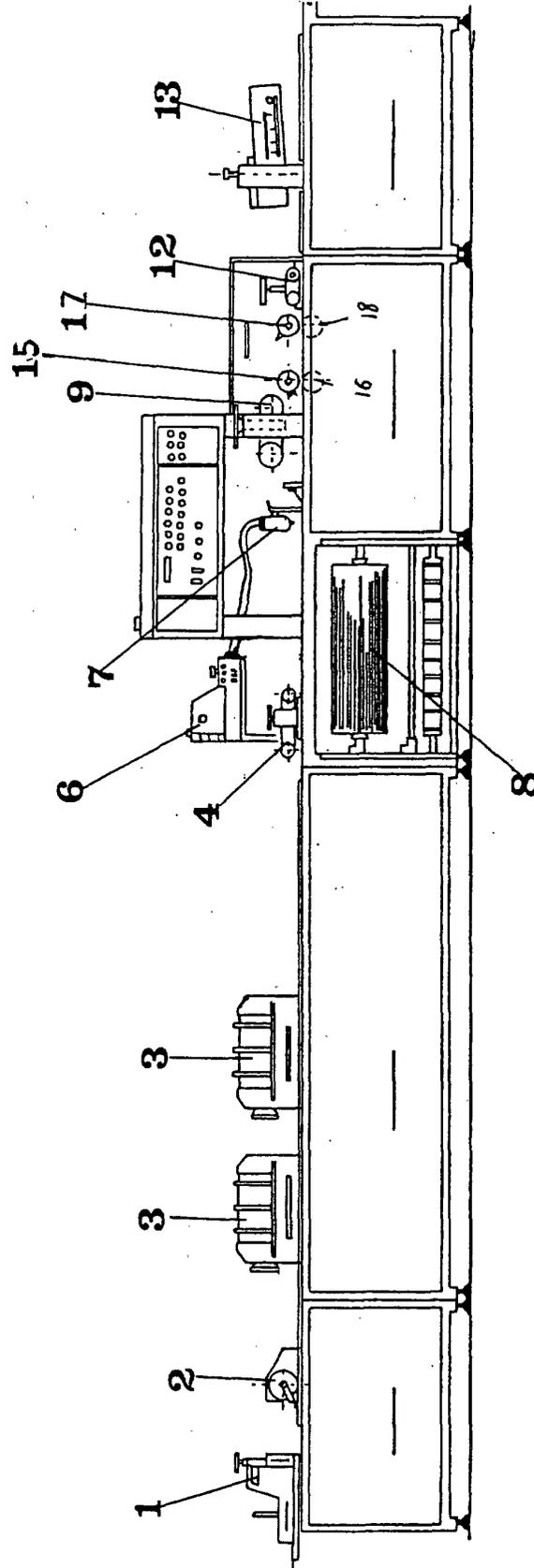
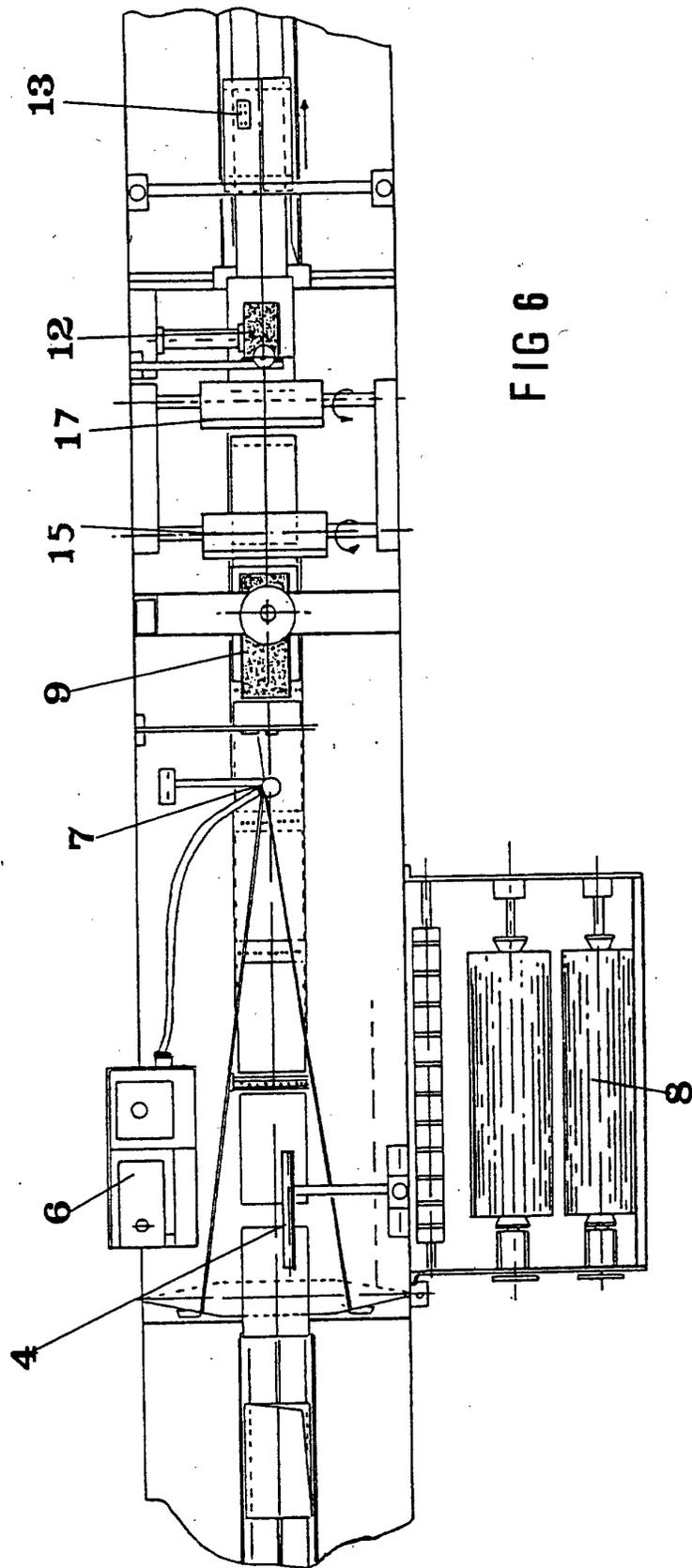


FIG 5



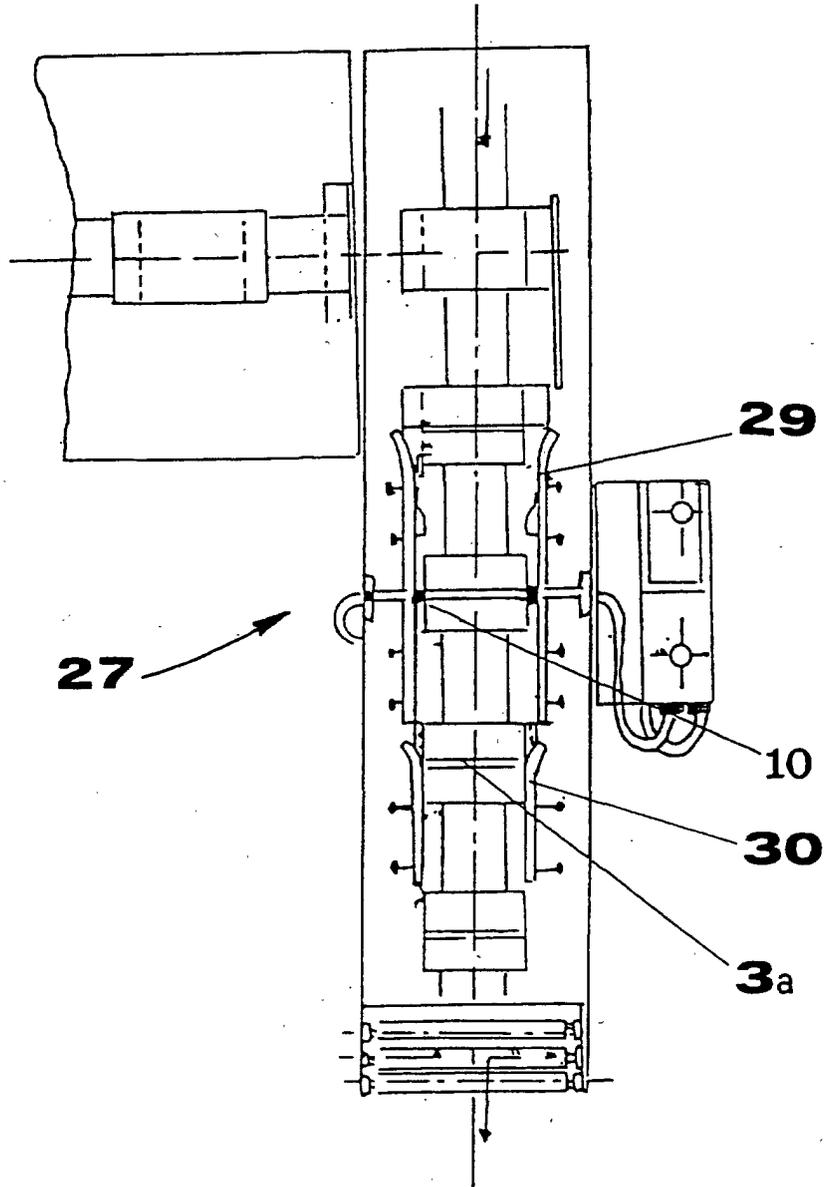


FIG 7

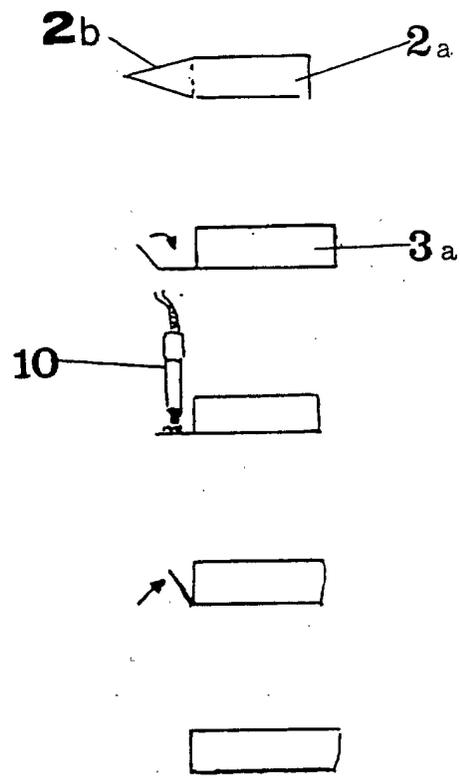


FIG 8