(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 015 985**
B1

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **12.05.82**

(51) Int. Cl.³: **B 65 C 11/02**

(21) Application number: **79900498.1**

(22) Date of filing: **23.05.79**

(86) International application number:
PCT/GB79/00074

(87) International publication number:
WO 79/01108 13.12.79 Gazette 79/25

(54) **LABEL APPLICATORS.**

(30) Priority: **23.05.78 GB 2142978**

(43) Date of publication of application:
01.10.80 Bulletin 80/20

(45) Publication of the grant of the patent:
12.05.82 Bulletin 82/19

(84) Designated Contracting States:
DE FR

(56) References cited:
GB - A - 1 477 743
US - A - 2 122 412
US - A - 3 024 724

(73) Proprietor: **NORPRINT LIMITED**
Horncastle Road
Boston, Lincolnshire (GB)

(72) Inventor: **FIGG, Anthony Vincent John**
7 Abbot's Way
Spalding Lincolnshire (GB)

(74) Representative: **Corin, Christopher John**
Mathisen Macara & Co. Lyon House Lyon Road
Harrow Middx. HA1 2ET (GB)

EP 0 015 985 B1

Courier Press, Leamington Spa, England.

Label applicators

This invention relates to hand-held printing apparatus for printing and dispensing labels comprising a manually-operable trigger, a print head and a toggle linkage operable by the trigger to actuate the print-head to print a label.

Labels of the kind suitable for use in such apparatus coated with a pressure-sensitive adhesive, but may also be coated with a heat-sensitive or other adhesive and in the limit may even be in the form of a ticket having no adhesive coating.

Such apparatus has already been proposed and brought into use and includes printing means which may operate on the stamp principle or may make use of rotary or pivotal print-heads. The stamp impression print-heads have the disadvantage that the intensity of the impression formed on the labels depends to some extent upon the force applied by the operator when actuating the apparatus unless the apparatus incorporates adequate mechanical safeguards. For this reason rotary print-heads have been proposed but they tend to complexity of construction and the safeguards proposed or used for stamp impression print-heads sometimes require that a high actuating force should be applied by the operator as well as necessitating additional complexity. In the latter apparatus, despite the safeguards, improper inking may result from fatigue in the operator who fails to apply sufficient pressure to the actuating member to ensure the desired intensity of the print impression.

It is well known to be desirable to construct label printing and dispensing apparatus which produces the same degree of print intensity substantially irrespective of the force applied to the trigger or other actuating member and one such apparatus is described in British patent specification 1 477 743. The mechanism of this apparatus incorporates two springs so arranged that when a certain point is reached in the operating cycle, the force of one spring overcomes the force of the other and printing then takes place by the spring force differential, which, when the springs are new will be a constant force. However, it is well known that over a period of time the spring forces will vary and hence the differential force will also vary with a consequent change in the intensity of print impression.

United States patent specification 2,122,412 discloses a tag remarker which is intended only to mark price tags and the like with fresh information and there is no question of the tags being dispensed from the remarker. Although a toggle linkage is incorporated in the print-head actuating mechanism, this mechanism also includes a stop which limits the toggle action with the result that the print impression will be governed by the stop rather than the toggle linkage. It follows that any variation in the thickness of the tag will cause a variation in the intensity of print impression.

United States patent specification 3,024,724 also illustrates a tag remarker by which tags are remarked with fresh price and/or other information. No dispensing is provided. Again a toggle linkage is incorporated but the linkage details are such that at the instant of printing the linkage components have not even substantially completed their relative movements so that the print impression will be dependant upon the force applied to the actuating trigger.

The problem to be solved by the present invention is the provision of a label dispensing and printing apparatus in which the print impression is substantially constant irrespective of the force applied to the actuating mechanism but the construction of the apparatus is nevertheless simple.

According to the present invention this problem is solved in that the toggle linkage comprises an actuating trigger of the apparatus pivoted at one end to the body of the apparatus, a link pivoted at one of its ends to the end of the trigger remote from the pivot point on the body, and a bell-crank lever pivoted by one of its arms to the body and pivoted to the end of the link remote from its pivot point on the trigger, the other arm of the bell-crank lever serving pivotally to support the print-head, the components of the linkage being so arranged that at the configuration corresponding to the forming of the print impression by the print-head they exert a constant maximum force possible with a given toggle linkage substantially irrespective of the force applied to the actuating trigger.

Apparatus embodying the invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings, in which:

Figure 1 is a side elevation of the apparatus in a rest configuration; and

Figure 2 is a side elevation of the apparatus of Figure 1 in an operative position.

Referring now to the drawings, the hand-held apparatus comprises a body 10 arranged to carry a reel 12 of pressure-sensitive adhesive labels mounted on a backing strip and during use the web is indexed through the apparatus by a feed mechanism, not shown in detail. Such webs are well-known in the art. The body 10 includes a handle 14 rigid therewith which carries at the end remote from the reel 12 a trigger or other actuating member 16 pivoted at 18 to the handle and this trigger member 16 has an upwards extension 20 to which a return spring 22 is attached at point 24.

The trigger member 16 includes a surface which can be conveniently engaged by the fingers of one hand of an operator and includes a finger guard 26, a part of which in the position shown in Figure 1, is approximately aligned

with the lower wall (as shown) of the body 10.

At the end remote from the projection 20, the trigger member 16 pivotally carries at pivots 27 two short links 28 (only one shown) which are also pivotally connected at 29 to a respective one of two bell-crank levers 30 which are pivotally connected at one end of one arm of each lever 32 to the body 10 and at the other end are spanned by a print-head 34 of generally conventional form in hand-held labelling apparatus. The print-head 34 may be of the fixed type (as shown) or may be capable of swinging in order to effect the printing operation on a label about to be dispensed at a printing platen 36. The print head is mounted between the two levers 30.

The applicator, as is conventional, includes a feed mechanism 39 (shown only in outline) which may be, for example, as illustrated and claimed in our co-pending European application No. 79900138.3 and this includes a take-up reel 38 for spent backing strip. The spent backing strip reel is mounted wholly within the body and below (as illustrated) the reel of fresh web 12. At the end of the body 10 remote from the handle an applicator roller 40 is provided and the operative facets of the print head 34 are arranged to contact during the operational cycle immediately before printing an inking roller 42 disposed immediately above the applicator roller 40.

In operation, the trigger member 16 is squeezed and the link 28 provides a toggle action so that at the overcentre position with the pivots 18, 27, 29 substantially aligned the bell-crank levers 30 swing and cause the print head 34 to move, contact the inking roller 42 and subsequently apply a print impression to a label on the platen 36 which also forms a guide for the label web both before and after a label has been dispensed from the backing. As will be apparent the amount of force applied to the label will be independent of the squeezing pressure applied to the trigger member 16 and by appropriate design of the bell crank lever 30 and of the link 28, the amount of pressure applied can be multiplied substantially beyond the pressure applied to the trigger member itself. This will avoid fatigue of the operator as well as ensuring that the print impression is maintained substantially constant irrespective of the pressure applied to the trigger member.

It will be understood that although the toggle action linkage is applied as hereinbefore described to apparatus operated by a squeeze action trigger, it is applicable to other apparatus such as disclosed in our co-pending European application No. 79900138.3.

Although the apparatus hereinbefore described is intended for manual operation it is also possible to operate the apparatus electrically. Clearly fatigue of the operator will be of less importance, but lower power consumption will be of advantage if the apparatus is battery-powered.

Although primarily intended for use with a web comprising a backing strip and pressure-sensitive adhesive coated labels, the apparatus could, with appropriate modification be used with heat-sensitive adhesive labels. The apparatus could also be used for a web of non-adhesive labels or tickets, and the term "label" as used herein is intended to cover tickets without any adhesive coating.

Claims

1. Hand-held printing apparatus for printing and dispensing labels comprising a manually-operable trigger (16), a print head (34) and a toggle linkage (16, 28, 30) operable by the trigger (16), to actuate the print-head to print a label, characterised in that the toggle linkage comprises the actuating trigger (16) of the apparatus pivoted at one end (18) to the body (10) of the apparatus, a link (28) pivoted at one of its ends to the end of the trigger (16) remote from the pivot point (18) on the body (10), and a bell-crank lever (30) pivoted (at 32) by one of its arms to the body (10) and pivoted (at 29) to the end of the link (28) remote from its pivot point on the trigger (16), the other arm of the bell-crank lever serving pivotally to support the print-head (34), the components of the linkage being so arranged that at the configuration corresponding to the forming of the print impression by the print-head they exert a constant maximum force possible with a given toggle linkage substantially irrespective of the force applied to the actuating trigger (16).

2. Apparatus according to claim 1, characterized in that the apparatus incorporates a label web mounting for carrying a reel of web (12) including both pressure-sensitive adhesive labels and a backing strip, and a spent backing strip reel mounting (38), said apparatus further comprising as a part of the toggle linkage, a pair of said bell-crank levers (30) pivotally supporting the print-head (34), a pair of said links (28) pivotally connecting (at 27, 29) the trigger member (16), forming an essential part of the toggle linkage, to the pair of bell-crank levers (30) at the junction of the arms of the levers, and a return spring (22) connected to the levers at the pivot axis (29) of the bell-crank levers with the links and to a projection (20) of the trigger member (16).

Revendications

1. Appareil manuel destiné à imprimer et distribuer des étiquettes, comprenant une gâchette manuelle (16), une tête d'impression (34) et une tringlerie à genouillère (16, 28, 30) commandée par la gâchette (16), afin que la tête d'impression soit manoeuvrée et imprime une étiquette, caractérisé en ce que la tringlerie à genouillère comprend la gâchette de manoeuvre (16) de l'appareil articulée à une première extrémité (18) zur le corps (10) de l'appareil, une

bielle (28) articulée à une première de ses extrémités sur l'extrémité de la gâchette (16) qui est distante de l'articulation (18) sur le corps (10), et un levier coudé (30) articulé (en 32) par l'un de ses bras sur le corps (10) et articulé (en 29) sur l'extrémité de la bielle (28) qui est éloignée de son articulation sur la gâchette (16), l'autre bras du levier coudé supportant la tête d'impression (34) sous forme articulée, les éléments de la tringlerie étant disposés de manière que, dans la configuration correspondant à la formation de l'impression par la tête d'impression, ils exercent une force constante aussi grande que possible avec une tringlerie déterminée à genouillère de façon pratiquement indépendante de la force appliquée à la gâchette de manoeuvre (16).

2. Appareil selon la revendication 1, caractérisé en ce qu'il comprend un dispositif de montage d'une bande d'étiquettes destiné à porter un rouleau d'une telle bande (12) comprenant à la fois un ruban de support et des étiquettes adhérant par pression, et un dispositif de montage (38) d'un rouleau de ruban usé de support, l'appareil comprenant en outre, comme parties de la tringlerie à genouillère, deux leviers coudés (30) supportant la tête d'impression (34) par une articulation, deux bielles (28) reliant sous forme articulée (en 27, 29) la gâchette (16) qui forme une partie essentielle de la tringlerie à genouillère, à la paire de leviers coudés (30) à la jonction des bras des leviers, et un ressort de rappel (22) raccordée aux leviers à l'articulation (29) des leviers coudés et des bielles et à une saillie (20) de la gâchette (16).

Patentansprüche

1. Handgerät zum Bedrucken und Ausgeben von Etiketten mit einem von Hand betätigbaren Betätigungsorgan (16), einem Druckkopf (34) und eine vom Betätigungsorgan (16) zwecks Betätigung des Druckkopfes zum Bedrucken eines Etikettes beaufschlagbaren Winkelhebel-Gelenkeinrichtung, dadurch gekennzeichnet, daß die Winkelhebel-Gelenkeinrichtung unfaßt das Betätigungsorgan (16) des Gerätes, wobei dieses Organ an einem Ende (18) des Gerätegehäuses (10) angelenkt ist, ein Verbindungsglied (28), welches mit einem seiner Enden an demjenigen Ende des Betätigungsorgans (16) angelenkt ist, welcher von der Anlenkstelle (18) am Gerätegehäuse (10) entfernt ist, und einen Winkelhebel (30), welcher (bei 32) mit einem seiner Arme am Gerätegehäuse (10) angelenkt und (bei 29) angelenkt ist an demjenigen Ende des Verbindungsgliedes (28), welches von dessen Anlenkstelle am Betätigungsorgan (16) entfernt ist, wobei der andere Arm des Winkelhebels zur verschwenkbaren Halterung des Druckkopfes (34) dient, und daß die Kompenenten der Gelenkeinrichtung so angeordnet sind, daß sie in der dem Ausbilden eines Abdruckes mit Hilfe des Druckkopfes entsprechenden Konfiguration eine konstante bei gegenbener Winkelhebel-Gelenkeinrichtung maximale Kraft ausüben, im wesentlichen unabhängig von der auf das Betätigungsorgan (16) ausgeübten Kraft.

2. Gerät nach Anspruch 1, dadurch gekennzeichnet, daß eine Halterungseinrichtung für eine Spule des sowohl druckempfindliche Haftetiketten als auch einen Trägerstreifen aufweisende Etikettenband (12) sowie eine Halterungseinrichtung (38) für eine Aufwickelspule für verbrauchtes Trägerstreifenmaterial vorgesehen sind, daß ferner als Bestandteil der Winkelhebel-Gelenkeinrichtung vorgesehen sind ein paar jener Winkelhebel (30), welche den Druckkopf (34) verschwenkbar haltern, ein paar jener Verbindungsglieder (28), welche (bei 27 und 29) das einen wesentlichen Bestandteil der Winkelhebel-Gelenkeinrichtung bildende Betätigungsorgan (16) verschwenkbar mit den beiden Winkelhebeln (30) im Verbindungsbereich der Arme der Hebel verbinden, und durch eine Rückholfeder (22), welche mit den Hebeln an der Schwenkachse (29) der Winkelhebel mit den Verbindungsgliedern sowie mit einem Vorsprung (20) des Betätigungsorgans (16) verbunden ist.

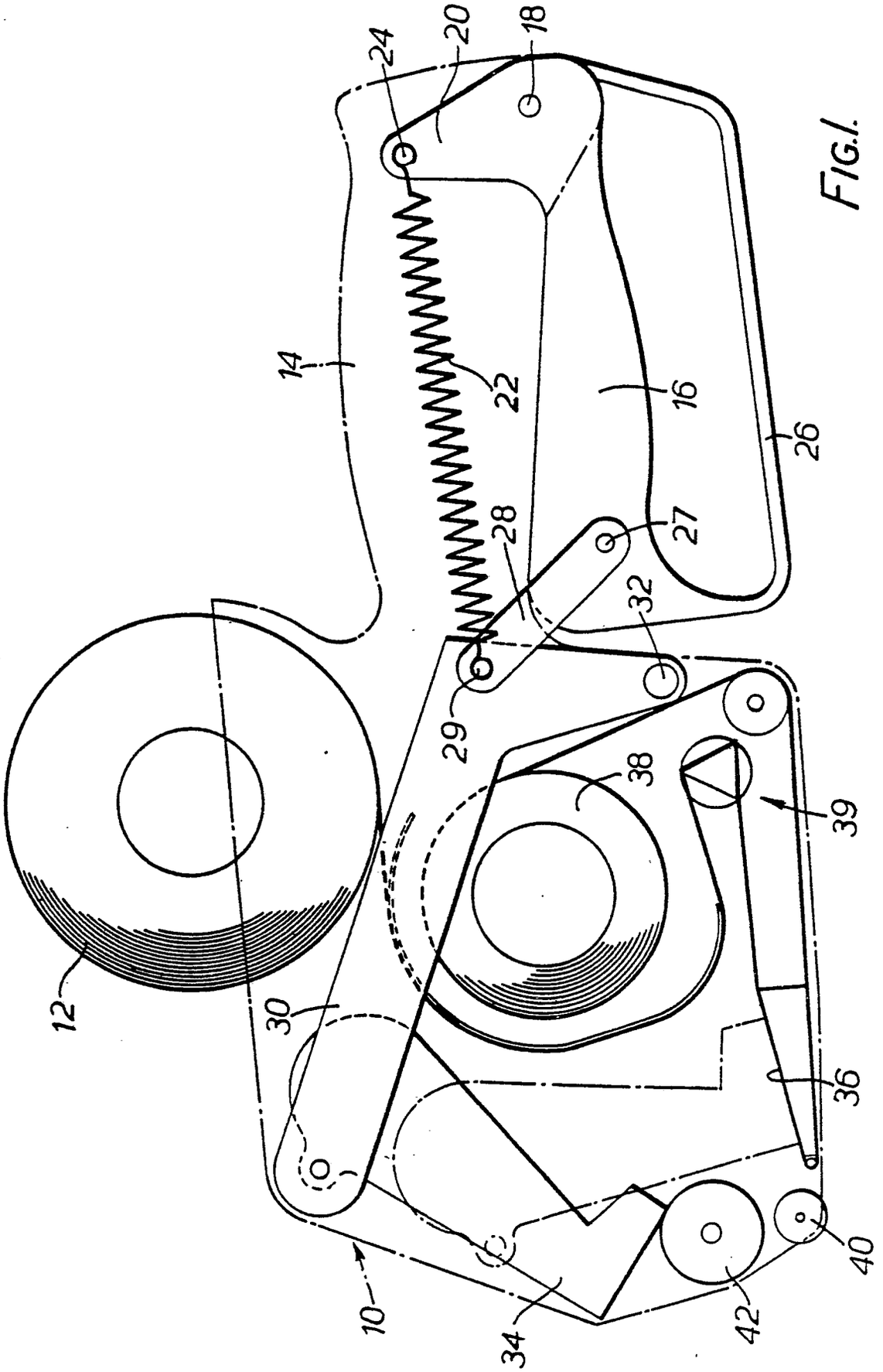

FIG.1.

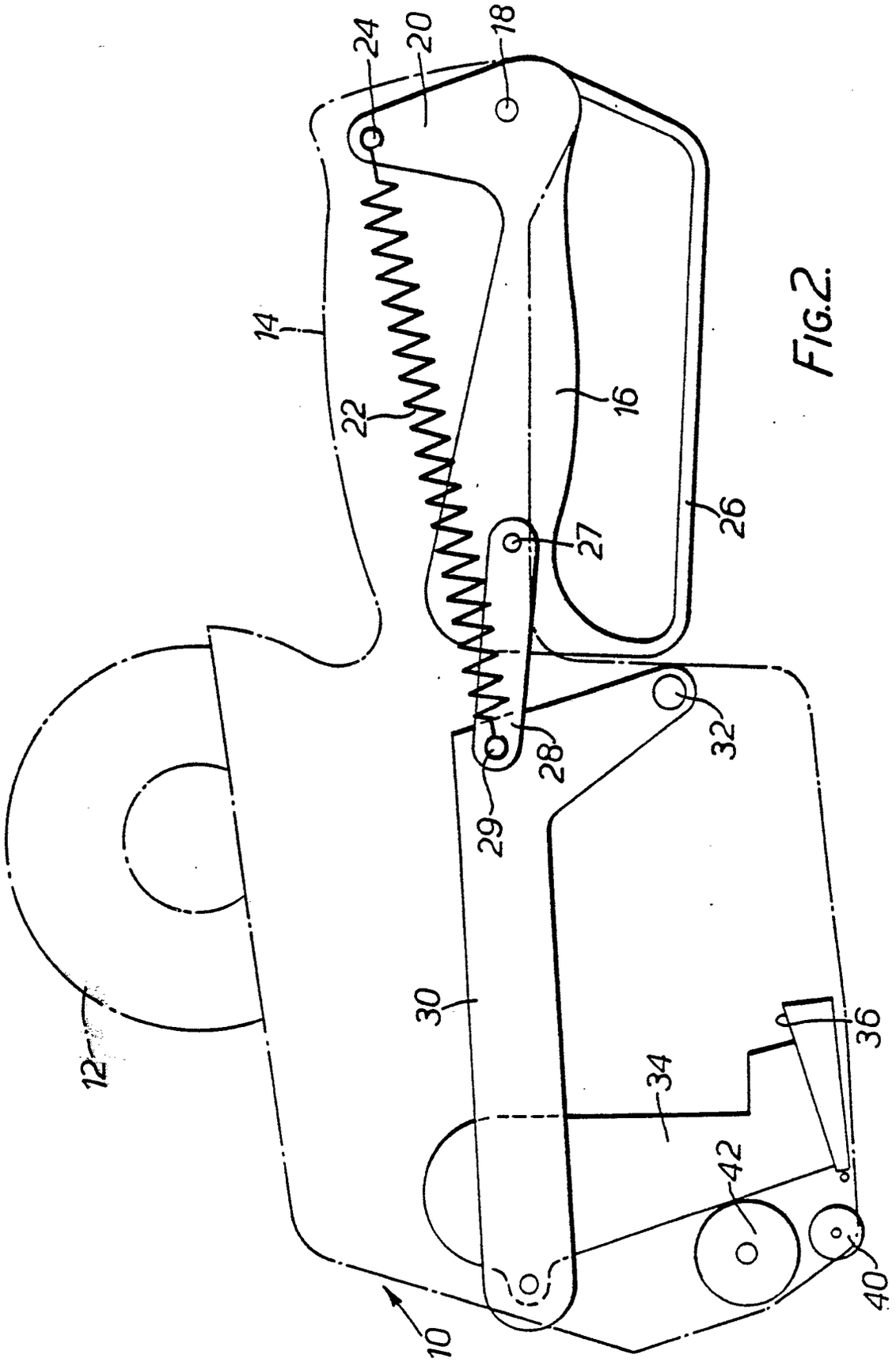

FIG.2.