

⑫ **EUROPEAN PATENT SPECIFICATION**

- ④⑤ Date of publication of patent specification: **26.10.88**      ⑤① Int. Cl.<sup>4</sup>: **G 07 B 17/00, B 41 F 17/00**  
②① Application number: **84308222.3**  
②② Date of filing: **27.11.84**

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⑤④ **Improved suspension system for franking machine printing head.**

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③⑩ Priority: **02.12.83 GB 8332243**

④③ Date of publication of application:  
**19.06.85 Bulletin 85/25**

④⑤ Publication of the grant of the patent:  
**26.10.88 Bulletin 88/43**

⑧④ Designated Contracting States:  
**CH DE FR IT LI**

⑤⑧ References cited:  
**DE-A-2 904 965**  
**US-A-4 410 287**

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**EP 0 145 404 B1**

## Description

This invention concerns franking machines and, in particular an improved suspension system for printing heads fitted therein.

Relative movement must be provided for between a printing head containing inked characters for forming an impression on an envelope or packet and a platen in which the envelope or packet is rested during franking.

Additionally, differing thicknesses of envelope and packet have to be accommodated whilst maintaining substantially constant printing head pressure on the surface to be impressed.

In DE—A—2904965 (Pitney-Bowes) there is disclosed a franking machine containing a printing head which itself includes at least one print face on the underside thereof, which when inked, will form an impression on the surface of an envelope or packet placed on a platen underneath the printing head, wherein the printing head is attached to an elongated support means which is connected to the remainder of the franking machine through a joint which permits at least limited movement of the support means in the relation to the remainder of the machine in a plane cutting transversely through the joint and the printing head, which movement urges the end of the support means carrying the printing head in a generally downward direction towards the platen during the printing operation. Such a machine is referred to below as a franking machine of the type defined.

US—A—4410287 (Speicher) discloses a billet marker in which a marking wheel is pivotally supported on a pair of parallel arms to enable the marking wheel to move through an arcuate path towards a billet to be marked.

The present invention seeks to provide an improved suspension system for such printing heads of franking machines.

According to the present invention, there is provided a franking machine of the type defined, characterised in that the support means is in the form of two elongated arms connected at one of their ends by a yoke; in that the printing head is pivotally attached to said arms between their free ends with the axis of pivoting lying in, or being parallel and closely spaced from, the plane containing the print face so as to reduce sliding movement of the print face relative to an envelope or packet during downward movement of the printing head, the printing head being resiliently held in its position relative to the arms by spring means; and in that the joint is arranged such that, on exerting a thrust on the yoke to operate the printing head, at least a limited tilting movement of the arms out of their normal plane is permitted, thereby allowing a limited tilting movement of the printing head from side to side.

Preferably, the arms including the yoke are normally held in an elevated position relative to the platen under the action of a spring or other resilient device and are urged thereby against retaining member determining the said elevated position.

Other features of the invention are recited in the appended claims.

The invention will now be illustrated by way of example with reference to the accompanying drawings in which

Figure 1 is a perspective view of a printing head and platen mechanism embodying features of the invention;

Figure 2 is a second perspective view of the mechanism of Figure 1 from a different angle;

Figure 3 is a side view of the mechanism of Figure 1 viewed in the direction of arrow 3 and with the sideplate removed;

Figure 4 is a similar side view of the mechanism shown in Figure 1 viewed from the opposite direction to that of arrow 3 and with the sideplate removed;

Figure 5 is a diagrammatic side view showing part of the printing and indexing mechanism contained within the printing head of the mechanism shown in Figures 1 and 2;

Figure 6 is a top plan view of the mechanism shown in Figure 1;

Figure 7 is an underside view of the same mechanism;

Figure 8 is a top plan view, partly diagrammatic in format, of a complete printing head assembly for a franking machine incorporating printing head mechanisms such as shown in Figures 1 to 7;

Figure 9 is a front elevation of the apparatus shown in plan in Figure 8 with protective covers removed to illustrate the interior of the printing heads;

Figure 10 is a view in the direction of arrow 10 in Figure 9 with some of the elements removed for clarity to illustrate the indexing and printing mechanism within one of the printing head mechanisms of Figure 9;

Figure 11 is a side view of the apparatus shown in Figure 9 viewed in the direction of arrow 11 in Figure 9 illustrating relative layout of component parts;

Figure 12 illustrates the interior of a drive wheel ratchet having a uni-directional characteristic; and

Figure 13 is a cross-section of the drive wheel ratchet arrangement of Figure 12;

Figure 14 is an underside view of the printing head of Figures 1—7 shown partly in cross-section on a plane through the axis of rotation of the shaft 80, 82; and

Figure 15 is an underside of the platen and head assembly of Figures 1—7 with the coverplate 52 of Figure 7 removed.

In Figures 1 and 2 there is shown a basic printing head mechanism of the type which can be incorporated into a franking machine or the like. The mechanism shown in Figures 1 and 2 and the subsequent five Figures is intended to illustrate the principle of operation and construction more clearly than is the case when the components are miniaturised and compacted more densely than in the mechanism shown. A final form of the apparatus illustrating the use of the same type of printing head in a parallel multi-head arrangement in a franking machine is shown in later Figures.

In the drawings a baseplate 10 serves as a support for two sideplates 12 and 14. A drive motor and gearbox assembly (not shown in detail) 16 is attached to and extends beyond the side wall 14 and serves to rotate a drive shaft 18 carrying a main print head operating cam 20 and a supplementary switch-actuating cam 22.

Also between the two sidecheeks 12 and 14 extends a rod 24 which is parallel to but spaced from and to the rear of the drive shaft 18.

The printing head comprises a generally rectangular housing 26 which is pivotally attached at a stub shaft 28 on the one side and at a similar point (not visible in the drawings) on the other side of the housing 26 by means of stub-axles, to opposite arms 30 and 32 connected by a yoke 34.

The yoke 34 is relatively freely floating in that it is secured to the baseplate 10 through a lost motion connection best seen in Figures 3 and 4. This comprises an upstanding pin 36 having an enlarged head 38 which holds captive the generally flat plate section of the yoke 34. The latter includes an aperture (not shown) which is oversize relative to the diameter of the pin 36 so that the plate of the yoke 34 can, in fact, tilt to one side or the other as well as in a generally up and down manner relative to the baseplate 10.

The yoke 34 is held in place by means of a spring 40 located between a point of attachment at 42 in the middle of the plate of the yoke assembly 34 and attached to a fish plate 44 which itself is threaded on the rod 24 extending between the two sidecheeks 12 and 14. The spring is selected so as to still be in tension when the arms 30 and 32 engage the underside of the drive shaft 18 which is the normal centralised position for the assembly under the action of the spring 40.

The yoke assembly and therefore the printing head 26 can be moved in a downward direction for printing by rotation of the cam 20 to deflect the yoke 34 in the direction of the arrow 46 (see Figure 3).

The printing head includes a print face 48 containing characters which, if inked, will leave a suitable impression on an envelope or letter situated thereunder and aligned with and below the print face 48 is a platen 50 which is located in position by means of an underplate assembly 55 secured in position by means of four screws as can best be seen in Figure 7.

Removal of the plate 50 gives uninterrupted access through an aperture (not shown) in the baseplate 10, to the print face 48 to facilitate checking, cleaning and replacing members of the print head assembly.

The orientation of the print head relative to the arms 30 and 32 is maintained by means of at least one spring best seen in Figure 1. The spring includes two radial arms 52 and 54 and is looped at its centre around the protruding end of the stub-shaft 28 the outboard end of which is enlarged to prevent the spring loop from leaving the stub-shaft.

The outboard ends of the radial arms 52 and 54 are secured on the one hand in an aperture 56 in

the arm 30 and around a fixed stand-off 58 attached to the side of the print head housing 26.

A similar spring (not shown) is provided on the other side of the housing 26 between it and the other arm 32.

The springs are selected so as to hold the print head housing 26 in the orientation shown in Figures 1, 2 and 3. Any attempt to tilt the print head housing 26 in either direction denoted by the double-headed arrow 60 in Figure 1 will be resisted by the spring and the restoring force stored in the spring will tend to return the housing 26 to the orientation shown in Figures 1 to 3 as soon as any force tending to tilt the housing 26 relative to the yoke assembly is removed. Such a tilting force is, of course, exerted on the printing head housing 26 in the event that an envelope or package is located below the print face 48 which is not of uniform thickness so that part of the print face is prevented from travelling in a downward direction by the same amount as another part of the print face.

The interaction of the two arms 30 and 32 with the drive shaft 18 serves to centralise the yoke assembly and therefore the housing 26. However, once the cam 20 has rotated so as to depress the yoke assembly in the direction of the arrow 46, (Fig. 3), this interaction ceases and the yoke assembly becomes free floating by virtue of the fact that the point of contact between the cam 20 and the yoke plate, the point of attachment 42 of the spring 40 with the yoke plate and the rear mounting pin 36 are all on a straight line which is substantially perpendicular to the axis of pivoting of the head 26 relative to the yoke assembly and established by the stub-shafts of which one is denoted by reference numeral 28.

As a consequence the print head housing 26 can, relative to the baseplate 10 and therefore the platen 50, tilt not only in the direction of the double-headed arrow 60 (Fig. 1) but also from side to side as indicated by the curved arrows 62 and 64 in Figure 1. The printing head can therefore accommodate gross unevenness in a packet or envelope located therebelow.

The printing head itself includes four endless belts of which one is shown at 66 in Figure 5, arranged in parallel-spaced arrangement within the head. Each follows a generally oval path and at its lower end passes around an inking reservoir and transfer pad not shown in detail but designated by reference numeral 68. To this end the material from which the endless loop 66 is formed is preferably porous at least to certain printing inks and forms a so-called retentive pad porous rubber printing medium. The belt or loop 66 is formed around its external surface with a series of upstanding segments such as 70 and 72 each of which can if desired carry a character in relief which when the material forming the belt or loop 66 is saturated with ink will form an impression of the character on a sheet of paper or the like located below the printing head in the position designated in dotted outline at 74. To this end, an opening is provided in the underside of the

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housing through which the lowermost of the segments 70, 72 etc. can just protrude and in the illustration this is denoted by reference numeral 76.

At its upper end the belt passes around a driving pulley 78 which is either mounted directly onto one of the two head driveshafts 80 or 82 or is connected thereto through the intermediary of a uni-directional clutch (to be described). In Figure 5 the driving wheel 78 can be thought of as comprising the shaft 80 or mounted thereon.

Drive for the shaft 82 is provided by a first electric motor 84 (see Fig. 2) the output shaft of which includes a toothed pinion 86 which meshes with a gear wheel 88 which in turn drives a second toothed pinion 90 for driving a larger diameter gearwheel 92 splined or otherwise secured to the shaft 82.

For clarity, the second motor and gear train for driving the other aligned but separate shaft 80 are not shown in Figures 1 and 2. However, it is to be understood that the second motor is mounted back-to-back and may be in axial alignment with a first motor and a second gear train similar to that transmitting drive between the first motor and the shaft 82 is provided between the second motor (not shown) output shaft and the shaft 80.

Each of the two shafts 80 and 82 extends into the housing 26 by a sufficient amount to almost touch the opposite end of the other shaft. However, the two shafts are entirely separate from a rotational point of view.

Within the housing 26, two of the four endless belts such as 70 are driven by one of the shafts 80 and another two are driven by the shaft 82.

As will hereinafter be described, one of the endless belts in each pair is driven through a uni-directional clutch so that rotation of the shaft, for example, 80, in one direction will rotate both of the endless belts associated therewith but in the other direction will only drive the endless belt which is directly connected to the shaft or to a driving wheel itself non-rotatably secured on the shaft. Consequently, the two endless belts can be independently set so as to present selected characters such as 76 for printing by first of all rotating both of the endless belts in one direction until the first character associated with the clutched belt is in position and thereafter rotating the shaft in the opposite sense until the other character associated with the fixed wheel or belt has been moved into position.

The other pair of endless belts can be set in a similar manner by rotation of the other motor, first in one direction and then the other.

Although not shown, it is to be understood that a separate uni-directional clutch may be provided for each drive to each of the belts so that both belts are completely independent and rotation of the shaft such as 80 in one direction will only cause one of the belts to be rotated whilst rotation in the other direction will cause the other belt to be rotated.

It is, of course, not easy to see which particular character has been displayed in the window on the underside of the printing head for any particular belt and to this end a toothed indexing wheel is associated with each individual belt. One such wheel is shown at 94 in Figure 5. The spacing between the teeth around the indexing wheel 94 is commensurate with the spacing between the upstanding segments such as 70, 72 around the endless belt 66 so that as the belt rotates so the indexing wheel must rotate by a corresponding number of segments. The indexing wheel 94 includes one or more electrical contacts (not shown) which, as the wheel 94 is indexed, make different combinations of connection between a plurality of conductors designated by reference numerals 96 and 98 by way of example only, carried by a conductor card 100 sandwiched between the index wheel 94 and the next index wheel along. These cards are more clearly shown in Figure 1 and it will be noted that flying leads such as 102 are connected to the conductors such as 96, 98 etc for conveying the pattern of electrical connections to a micro-processor or the like to establish the precise positions of the four index wheels 94. By appropriately coding the electrical connections, so an electrical signal can be derived indicative of the angular position of each of the four wheels 94 which therefore correspond to the rotational position of the associated four endless belts 66 and therefore the four characters or groups of characters contained by the belts in the window in the underside of the printing head 26.

The window and surrounding framework constitutes a print face 48 of Figure 3.

In Figures 2, 3 and 6 the bundle of conductors to the conductor cards 100 are only shown leading to one of the cards. In practice, a single bundle would in fact be led to and make connection with each of the cards as is shown in Figure 1.

Reverting to Figure 1, a microswitch 104 is shown mounted close to the second cam 22 mounted on the shaft 18 with the microswitch actuating lever 106 acting as a cam follower. The cam is shaped and fitted to the shaft 18 so that the microswitch is operated once every revolution of the shaft 18 and is opened (or closed) as required at a position in which the lobe of the cam 20 is furthest from the plate of the yoke assembly 34.

The design of print head assembly shown in Figures 1 to 7 is eminently suitable for incorporation into a franking machine in which a plurality of such head assemblies are located side by side. Each different head assembly can then be dedicated to one particular task associated with the franking of mail and appropriate characters and printing devices are located in each such dedicated printing head assembly.

Arrangements such as this is shown in figure 8 where four such printing heads are mounted at the end of four freely floating yoke or arm assemblies. The four printing heads are desig-

nated 108, 110, 112 and 114 and their respective support assemblies by the reference numerals 116, 118, 120 and 122.

Actuating cams, each corresponding to the cam 20 of Figure 1, are denoted by reference numerals 124, 126, 128 and 130 respectively.

The lost motion free pivot points corresponding to the rear pin 36, 38 of Figure 3 are denoted by reference numerals 132, 134, 136 and 138 respectively.

Springs corresponding to the spring 40 of Figure 3 are shown at 140, 142, 144 and 146.

The cams 124 to 130 are all mounted on a common shaft 148 and drive therefor is derived therefrom a motor and gearbox assembly (not shown) similar to the item 16 of Figure 1.

Figure 9 illustrates the assembly of Figure 8 from the front as an elevation thereof in the direction of arrow 8.

Print head 114 and 112 are each an ink-loaded porous rubber stamp having a printface 115 and 113 respectively containing characters or indicia which when urged into contact with a sheet of paper such as the outside of an envelope or packet will produce a pattern of information thereon.

The print heads 110 and 108 respectively are constructed basically in the same way as the head shown in Figures 1 to 7 in that they comprise a series of endless belts (see Figure 11) of which one is designated 148 which have outwardly protruding segments containing characters for printing. Each of the belts can be indexed by appropriate rotation of one or the other of two drive shafts 150 and 152 which are themselves driven by toothed wheels 154 and 156 respectively themselves driven by worm gears 158 and 160 respectively on the outward shafts of two motors 162 and 164.

The print head 110, however, is not motor-driven but is manually rotatable to adjust the print head characters and to this end two thumbwheels 166 and 168 are provided which have external serrations such as at 170 which engage appropriately toothed wheels 172 and 174 respectively. The toothed wheels just referred to serve to drive one or other of two short axles (not shown) to rotate one or other of the endless belts such as 176 and the endless belts are engaged by externally segmented indicator wheels of which one is designated at 178 each having external protrusions for engaging in the segments around the endless belt 176 so as to rotate therewith.

By providing one indicator wheel for each of the endless belts 176 etc, so the characters lined up in the printing station by adjustment of the four endless belts 176 etc can be displayed on the appropriate indicator wheels behind a window 180 provided in a front inclined wall of a housing 182 which covers the whole assembly.

The franking machine thus incorporates three different types of printing head within the overall assembly, two in which the printing plates are self-inked for life and two in which the endless belts are of a porous material and are replenished

by ink from a reservoir such as at 184 (see Figure 10).

Figure 11 shows the layout of the various parts making up the overall assembly at least insofar as the print head 108 is concerned. To this end there is a yoke 116 and spring 140, operating cam 124 on shaft 148 and a stop shaft 186 (not shown in Figure 8) extends across and prevents upward movement of the yoke assembly 116 beyond a certain amount under the action of the spring 140.

The encoder assembly 188 corresponds to the encoder cards 100 of Figures 1 to 7 embodiment and shown diagrammatically at 190 is one of the toothed wheels containing the electrical conductors which set up the contacts and circuits on the encoder boards and which rotates with rotation of the endless belt 148.

Below the printing stage is shown a soft resiliently deformable pad 192 to absorb unevenness and thick contents of envelopes and packets. A stop 194 running along the length of the base 195 behind the platen area 192 serves as a guide as to where the envelope, packet or the like should be pushed before the printing head is lowered.

Figures 12 and 13 illustrate a uni-directional clutch arrangement in which a shaft 196 has secured therein a diametrically extending dog 198 for engaging the inside of an annulus 200 which is formed as a circular internal ratchet. The dog 198 is slidable axially within the shaft 196. As the shaft 196 rotates in the direction of the arrow 202, drive is transmitted between the end 204 of the dog 198 and one of the teeth of the ratchet. Rotation of the shaft 196 in the opposite direction to arrow 202 causes the dog to ride up the inclined surface 206 and to enter the cutaway region 208 on the opposite side of the ratchet wheel so that there is no tendency for any rotational drive to occur between the shaft 196 and the internal ratchet wheel 200.

Figure 14 shows more clearly than the views of Figures 1—7 the internal detail of the printing head 26. The shafts 80, 82 are formed with reduced axially parallel grooves at their inboard ends one of which is shown in the cross-sectioned half view of Figure 14, at 210. Rolling elements such as 212 are located in the grooves and support an annular member such as at 214 forming part of one of the driving wheels 78. The design of the grooves and rolling elements and shape of the interior of the annular member 214 is such that rotation of the shaft in one direction transmits drive to the driving wheel 78' whilst in the other direction, to the driving wheel 78''. Endless bands containing printing characters are fitted around the driving wheels 78 as previously described.

An electrical position-indicating signal is obtained from the rotation of the indexing wheel 94 co-operating with the driving wheel 78', 78'' etc. In the view shown in Figure 14 indexing wheel 94' co-operates with driving wheel 78'. On the lefthand side in figure 14 the indexing wheels etc are shown in cross-section and the sliding electrical contact between the wheel and the

conductive tracks on its associated card 100'. However, in the non-section half of Figure 14 there can clearly be seen at 216 and 218. The indexing wheels 94', 94'' etc are freely rotatable above their central supporting axle 220 whilst the cards are non-rotatable relative thereto.

Figure 15 demonstrates how, after removing the underplate assembly 55 (shown in Figure 7) the underside of the printing head housing 26 can be clearly seen to permit the semi-permanent printing matter to be changed if required. This is shown as the rectangular cross-hatched region 222 defining the aperture 224 through which the variable printing characters protrude. The region 222 is held in place by six screws 226 and is replaceable by other surrounds as required by removing the screws 226.

### Claims

1. A franking machine containing a printing head which itself includes at least one print face (48) on the underside thereof which, when inked, will form an impression on the surface of an envelope or packet placed on a platen (50) under the printing head, wherein the printing head is attached to an elongated support means which is connected to the remainder of the franking machine through a joint which permits at least limited movement of the support means in relation to the remainder of the machine in a plane cutting transversely through the joint and the printing head, which movement urges the end of the support means carrying the printing head in a generally downward direction towards the platen during the printing operation, characterised in that the support means is in the form of two elongated arms (30, 32) connected at one of their ends by a yoke (34); in that the printing head is pivotally attached to said arms between their free ends with the axis of pivoting lying in, or being parallel and closely spaced from, the plane containing the print face (48) so as to reduce sliding movement of the print face relative to an envelope or packet during downward movement of the printing head, the printing head being resiliently held in its position relative to the arms (30, 32) by spring means (52, 54); and in that the joint is arranged such that, on exerting a thrust on the yoke (34) to operate the printing head, at least a limited tilting movement of the arms (30, 32) out of their normal plane is permitted, thereby allowing a limited tilting movement of the printing head from side to side.

2. A franking machine as claimed in claim 1 characterised in that the arms (30, 32) including the yoke (34) are normally held in an elevated position relative to the platen (50) under the action of a spring (40) or other resilient device and are urged thereby against a retaining member (38) determining the said elevation position.

3. A franking machine as claimed in claim 1 or 2, characterised in that the downward force on the arms (30, 32) is provided by means of cam (20) which rotates through an over centre position to depress the arms towards the platen (50).

4. A franking machine as claimed in any of claims 1 to 3, characterised in that the two arms (30, 32) of the yoke (34) are connected to stub-axes (28) carried by the printing head to permit the printing head to be pivotally attached to the yoke.

5. A franking machine as claimed in any of claims 2 to 4 characterised in that the joint comprises a lost motion connection of the yoke (34) to the base plate (10) of the franking machine, in a vertical sense the rear of the yoke (34) being capable of being pushed in a downward direction through a small distance from its normal position where it engages the head of the retaining member (38) under the action of said spring means (40) so that the force exerted between the print face (48) and the surface of an envelope or packet to be impressed can be maintained constant, equal to the spring rate of the spring means (40) acting on the yoke.

6. A franking machine as claimed in any of claims 3 to 5 characterised in that the cam (20) acting on the yoke (34) is carried by a drive shaft (18) which extends parallel to the axis of pivoting between the printing head and the arms (30, 32) of the yoke and the latter include upturned sidecheeks which are adapted to engage the underside of the drive shaft carrying the cam when the yoke is in its elevated position relative to the platen (50).

7. A franking machine as claimed in claim 6 characterised in that a rod (24) extends parallel to the drive shaft (18) to the rear thereof the spring (40) normally holding the arms (30, 32) and the yoke (34) is in an elevated position being attached at one end of the rod and at its lower end to the yoke (34).

8. A franking machine as claimed in claim 7 characterised in that the point of attachment (42), to the yoke the point of contact between the cam (20) and the yoke (34), and the rear lost motion connection between the yoke (24) and the base-plate (10) all lie on the same straight line which itself is generally perpendicular to the axis of pivoting of the printing head relative to the yoke (34).

9. A franking machine as claimed in either of claims 7 or 8 characterised by a second cam (22) located on the drive-shaft (18), and by a microswitch (104) operated by rotation of the second cam (22) so as to indicate when the drive shaft (18) occupies a given angular position corresponding to the home position of the yoke (34).

10. A franking machine as claimed in any of the preceding claims characterised in that the printing head includes means for adjusting at least some of the characters and information contained in the print face (48) to permit variation of postal value and date.

11. A franking machine as claimed in any of the preceding claims characterised by means within the printing head for generating electrical signals indicative of the selected postal value and/or date to permit remote indication of the selected value and date.

12. A franking machine as claimed in any of the

preceding claims characterised by drive means for altering the characters and date in the print face also carried by the printing head.

13. A franking machine as claimed in any of the preceding claims characterised by inking means contained within or on the printing head to cause the print face to be inked sufficiently often to ensure that a good impression is always obtained however many times the printing head is operated.

14. A franking machine as claimed in any of the preceding claims 7 to 13 characterised in that the printing head and associated yoke form a sub-assembly which is duplicated along the print path so that a plurality of independent printing heads (108 to 114) can be provided within the same franking machine, one dedicated to printing the postal value information, another dedicated to printing the date and town and a third optional sub-assembly dedicated to printing advertising material or other promotional material as part of the franking of the envelope.

15. A franking machine as claimed in claim 14 characterised by a common drive shaft (148) having separate cams (124 to 130) operating on each of the yokes for the different sub-assemblies, so that a single drive can be used to actuate all printing heads simultaneously.

16. A franking machine as claimed in any of claims 7 to 15 characterised in that the spring means holding the printing head resiliently in its position relative to the arms (30, 32) of the yoke assembly each comprises a first radial arm (52) attached to one of the arms (30, 32) of the yoke, and a second radial arm (54) attached to the printing head, so that pivoting of the printing head about its axis of pivoting between the arms of the yoke (34) in either direction of rotation will be resisted by the said spring means so that the latter will always return the printing head to a constant position relative to the arms of the yoke after a printing operation which has caused the head to leave that position.

#### Patentansprüche

1. Eine Frankiermaschine mit einem Druckkopf, der selbst auf seiner Unterseite mindestens eine Druckfläche (48) aufweist, die bei Einfärbung auf der Oberfläche eines auf eine Platte (50) unter den Druckkopf gestellten Umschlages oder Paketes einen Aufdruck erzeugt, wobei der Druckkopf an einem länglichen Stützmittel befestigt ist, das mit dem übrigen Teil der Frankiermaschine über ein Gelenk verbunden ist, das mindestens eine begrenzte Bewegung des Stützmittels in bezug auf den übrigen Teil der Maschine in einer Ebene zuläßt, die quer durch das Gelenk und den Druckkopf durchtritt, wobei diese Bewegung während des Druckvorganges das Ende des den Druckkopf tragenden Stützmittels in einer Richtung allgemein nach unten in Richtung auf die Platte drückt, dadurch gekennzeichnet, daß das Stützmittel in der Form von zwei langgesteckten Armen (30, 32) vorliegt, die an einem ihrer Enden über ein Joch

(34) verbunden sind, daß der Druckkopf an den Armen zwischen deren freien Enden schwenkbar befestigt ist, wobei die Schwenkachse in der oder parallel zu der und in einem kurzen Abstand von der die Druckfläche (48) enthaltenden Ebene liegt, um damit die Gleitbewegung der Druckfläche gegenüber einem Umschlag oder einem Paket während der Abwärtsbewegung des Druckkopfes herabzusetzen, der Druckkopf in seiner Lage gegenüber den Armen (30, 32) durch Federmittel (52, 54) federnd gehalten wird; und daß das Gelenk so ausgebildet ist, daß bei Ausüben eines Axialdruckes auf das Joch (34) zum Betätigen des Druckkopfes mindestens eine begrenzte Kippbewegung der Arme (30, 32) aus deren Normalebene gestattet wird, um damit eine begrenzte Kippbewegung des Druckkopfes von Seite zu Seite zuzulassen.

2. Eine Frankiermaschine wie in Anspruch 1 beansprucht, dadurch gekennzeichnet, daß die Arme (30, 32) einschließlich des Joches (34) normalerweise unter der Einwirkung einer Feder (40) oder einer anderen elastischen Vorrichtung gegenüber der Platte (50) in einer erhöhten Stellung gehalten und dadurch gegen ein die erhöhte Stellung bestimmendes Halteglied (38) gedrückt werden.

3. Eine Frankiermaschine wie in Anspruch 1 oder 2 beansprucht, dadurch gekennzeichnet, daß die auf die Arme (30, 32) einwirkende Abwärtskraft mit einem Nocken (20) bewirkt wird, der sich zum Herabdrücken der Arme in Richtung auf die Platte (50) durch eine labile Gleichgewichts-Stellung dreht.

4. Eine Frankiermaschine wie in irgendeinem der Ansprüche 1 bis 3 beansprucht, dadurch gekennzeichnet, daß die beiden Arme (30, 32) des Joches (34) zum Ermöglichen einer schwenkbaren Befestigung des Druckkopfes am Joch mit vom Druckkopf getragenen Achsschenkeln (28) verbunden sind.

5. Eine Frankiermaschine wie in irgendeinem der Ansprüche 2 bis 4 beansprucht, dadurch gekennzeichnet, daß das Gelenk eine Verbindung mit einem toten Gang des Joches (34) zur Grundplatte (10) der Frankiermaschine in einer vertikalen Richtung einschließt, die Rückseite des Joches (34) in einer Richtung nach unten über eine kurze Entfernung aus ihrer Normallage gestoßen werden kann, wo sie unter der Einwirkung des Federmittels (40) den Kopf des Haltegliedes (38) erfaßt, so daß die zwischen der Druckfläche (48) und der zu bedruckenden Oberfläche eines Umschlages oder Paketes auszuübende Kraft gleich der Federgröße des auf das Joch einwirkenden Federmittels (40) konstant gehalten werden kann.

6. Eine Frankiermaschine wie in irgendeinem der Ansprüche 3 bis 5 beansprucht, dadurch gekennzeichnet, daß der auf das Joch (34) einwirkende Nocken (20) von einer Antriebswelle (18), die parallel zu der Schwenkachse zwischen dem Druckkopf und den Armen (30, 32) des Joches verläuft, getragen wird und das letztere nach aufwärts gewendete Seitenwangen enthält, die

an der Unterseite der den Nocken tragenden Antriebswelle anliegen, wenn sich das Joch in seiner gegenüber der Platte (50) angehobenen Stellung befindet.

7. Eine Frankiermaschine wie in Anspruch 6 beansprucht, dadurch gekennzeichnet, daß eine Stange (24) parallel zu der Antriebswelle (18) zu deren rückwärtigem Ende verläuft und die Feder (40), die die Arme (30, 32) und das Joch (34) normalerweise in einer angehobenen Stellung hält, an einem Ende an der Stange und an ihrem unteren Ende am Joch (34) befestigt ist.

8. Eine Frankiermaschine wie in Anspruch 7 beansprucht, dadurch gekennzeichnet, daß der Befestigungspunkt (42) am Joch, der Berührungsprodukt zwischen dem Nocken (20) und dem Joch (34) und die hintere Totgangverbindung zwischen dem Joch (24) und der Grundplatte (10) sämtlich auf der gleichen geraden Linie liegen, die selbst im allgemeinen senkrecht zu der Schwenkachse des Druckkopfes gegenüber dem Joch (34) ist.

9. Eine Frankiermaschine wie in einem der Ansprüche 7 oder 8 beansprucht, gekennzeichnet durch einen auf der Antriebs-Welle (18) angeordneten zweiten Nocken (22) und durch einen durch die Drehung des zweiten Nockens (22) betätigten Mikroschalter (104), so daß angezeigt wird, wenn die Antriebswelle (18) eine der Ruhelage des Joches (34) entsprechende vorgegebene Winkellage einnimmt.

10. Eine Frankiermaschine wie in irgendeinem der vorhergehenden Ansprüche beansprucht, dadurch gekennzeichnet, daß der Druckkopf zum Ermöglichen einer Veränderung des postalischen Wertes und des Datums Mittel zum Verstellen von mindestens einigen der in der Druckfläche (48) enthaltenen Zweichen und Informationen enthält.

11. Eine Frankiermaschine wie in irgendeinem der vorhergehenden Ansprüche beansprucht, gekennzeichnet durch Mittel in dem Druckkopf zum Erzeugen von elektrischen Signalen zum Anzeigen des gewählten postalischen Wertes und/oder des Datums zum Ermöglichen einer Fernanzeige des gewählten Wertes und des Datums.

12. Eine Frankiermaschine wie in irgendeinem der vorhergehenden Ansprüche beansprucht, gekennzeichnet durch Antriebsmittel zum Ändern der Zeichen und Daten in der auch vom Druckkopf getragenen Druckfläche.

13. Eine Frankiermaschine wie in irgendeinem der vorhergehenden Ansprüche beansprucht, gekennzeichnet durch in oder auf dem Druckkopf enthaltene Einfärbemittel zum Bewirken eines ausreichend häufigen Einfärbens der Druckfläche, um sicherzustellen, daß ein guter Druck auch bei einem häufigen Betätigen des Druckkopfes immer erreicht wird.

14. Eine Frankiermaschine wie in irgendeinem der vorhergehenden Ansprüche 7 bis 13 beansprucht, dadurch gekennzeichnet, daß der Druckkopf und das zugehörige Joch eine Unteranordnung bilden, die entlang des Druckweges dupliziert wird, so daß eine Vielzahl von unabhängigen Druckköpfen (108 bis 114) in der gleichen Fran-

kiermaschine vorgesehen werden können, von denen einer dem Druck der postalischen Wertinformation, ein anderer dem Druck des Datums und der Stadt und eine dritte wahlweise vorzusehende Unteranordnung dem Druck von Werbeoder anderem Promotionsmaterial als Teil der Frankatur des Umschlages zugeordnet ist.

15. Eine Frankiermaschine wie in Anspruch 14 beansprucht, gekennzeichnet durch eine gemeinsame Antriebswelle (148) mit getrennten Nocken (124 bis 130), die für die verschiedenen Unteranordnungen auf jedes der Joche einwirken, so daß ein einziger Antrieb zum gleichzeitigen Betätigen sämtlicher Druckköpfe verwandt werden kann.

16. Eine Frankiermaschine wie in irgendeinem der Ansprüche 7 bis 15 beansprucht, dadurch gekennzeichnet, daß die Federmittel, die den Druckkopf federnd in seiner Lage gegenüber den Armen (30, 32) der Jochanordnung halten, jeweils einen ersten radialen Arm (52) aufweisen, der an einem der Arme (30, 32) des Joches befestigt ist, und einen zweiten radialen Arm (54), der an dem Druckkopf befestigt ist, so daß sich die Federmittel dem Schwenken des Druckkopfes um dessen Schwenkachse zwischen den Armen des Joches (34) in beiden Drehrichtungen widersetzen, so daß die Federmittel den Druckkopf nach einem Druckvorgang, der den Kopf zu einem Verlassen dieser Lage bewegt hat, immer in einer konstante Lage gegenüber den Armen des Joches zurückführen.

#### Revendications

1. Machine à affranchir comportant une tête d'impression qui elle-même comporte au moins une face d'impression (48) sur le dessous, qui, lorsqu'elle est encrée, créera une impression sur la surface d'une enveloppe ou d'un paquet placé sur un plateau (50) situé sous la tête d'impression, dans laquelle la tête d'impression est fixée sur un moyen de support allongé qui est relié au reste de la machine à affranchir par une organe de liaison qui autorise au minimum un déplacement limité du moyen de support par rapport au reste de la machine dans un plan qui coupe transversalement l'organe de liaison et la tête d'impression, lequel déplacement pousse l'extrémité du moyen de support portant la tête d'impression généralement vers le bas en direction du plateau pendant l'opération d'impression, caractérisé en ce que le moyen de support à la forme de deux bras oblongs (30, 32) reliés à l'une de leurs extrémités par un étrier (34); en ce que la tête d'impression est fixée de façon pivotante aux dits bras entre leurs extrémités libres, cet axe de pivotement étant dans le plan contenant la face d'impression (48) ou étant parallèle à celui-ci et placé à proximité immédiate, de façon à réduire le déplacement par glissement de la face d'impression par rapport à une enveloppe ou à un paquet pendant le mouvement vers le base de la tête d'impression, la tête d'impression étant maintenu de façon élastique dans sa position par rapport aux bras (30, 32) par des moyens de ressort (52, 54); et en

ce que l'organe de liaison est disposé de telle façon que, en exerçant une forte poussée sur l'étrier (34) pour faire fonctionner la tête d'impression, au moins un mouvement de basculement limité des bras (30, 32) en dehors de leur plan normal est permis, ce qui autorise un mouvement de basculement limité de la tête d'accrochage d'un côté à l'autre.

2. Machine à affranchir selon la revendication 1, caractérisée en ce que le bras (30, 32) y compris l'étrier 34 sont maintenus normalement en position relevée par rapport au plateau (50) sous l'action d'un ressort (40) ou d'un autre dispositif élastique et sont de ce fait poussés contre un organe de retenue (38) déterminant ladite position relevée.

3. Machine à affranchir selon la revendication 1 ou 2, caractérisée en ce que la force s'exerçant vers le bas sur les bras (30, 32) est fournie au moyen d'une came (20) qui tourne sur une position excentrée pour pousser les bras en direction du plateau (50).

4. Machine à affranchir selon les revendications 1 à 3, caractérisée en ce que les deux bras (30, 32) de l'étrier 34 sont reliés à des axes en porte à faux (28) portés par la tête d'impression, pour permettre à la tête d'impression d'être fixée à l'étrier de façon pivotante.

5. Machine à affranchir selon une quelconque des revendications 2 à 4, caractérisée en ce que l'organe de liaison comprend une liaison à amortissement reliant dans un sens vertical l'étrier (34) à la plaque de base (10) de la machine à affranchir, l'arrière de l'étrier (34) étant susceptible d'être poussé vers le bas sur une courte distance à partir de sa position normale pour entrer en contact avec la tête d'un organe de retenue (38) sous l'action dudit moyen de ressort (40) de telle sorte que la force qui s'exerce entre la face d'impression (48) et la surface d'un enveloppe ou d'un paquet à imprimer soit maintenue constante, égale à la force du moyen de ressort (40) qui agit sur l'étrier.

6. Machine à affranchir selon l'une quelconque des revendications 3 à 5, caractérisée en ce que la came (20) qui agit sur l'étrier (34) est portée par l'arbre d'entraînement (18) qui s'étend parallèlement à l'axe de pivotement entre la tête d'impression et les bras (30, 32) de l'étrier, et que ce dernier comprend des joues latérales tournées vers le haut qui sont aptes à venir en contact avec le côté inférieur de l'arbre d'entraînement portant la came lorsque l'étrier est dans sa position relevée par rapport au plateau (50).

7. Machine à affranchir selon la revendication 6 caractérisée en ce qu'une tige (24) s'étend parallèlement à l'arbre d'entraînement (18) vers l'arrière de celui-ci, le ressort (40) maintenant normalement les bras (30, 32) et l'étrier (34) en position relevée étant fixé à une de ses extrémités à la tige et à son extrémité à l'étrier (34).

8. Machine à affranchir selon la revendication 7, caractérisée en ce que le point de fixation (42) de l'étrier, le point de contact entre la came (20) et l'étrier (34), et la liaison à amortissement située à

l'arrière entre l'étrier (24) et la plaque de base (10) se trouvent sur la même ligne droite qui elle-même est sensiblement perpendiculaire à l'axe de pivotement de la tête d'impression par rapport à l'étrier (34).

9. Machine à affranchir selon l'une quelconque des revendications 7 ou 8, caractérisée par une seconde came (22) située sur l'arbre d'entraînement (18), et par un micro-contact (104) actionné grâce à la rotation de la seconde came (22) de façon à indiquer à quel moment l'arbre d'entraînement (18) occupe une position angulaire correspondant à la position normale de l'étrier (34).

10. Machine à affranchir selon l'une quelconque des revendications précédentes caractérisée en ce que la tête d'affranchissement comprend des moyens pour régler au moins certains des caractères et des éléments d'information contenus dans la face d'impression (48) de façon à permettre de faire varier la valeur d'affranchissement et la date.

11. Machine à affranchir selon l'une quelconque des revendications précédentes, caractérisée par des moyens situés à l'intérieur de la tête d'impression, destinés à créer des signaux électriques indicatifs de la valeur d'affranchissement qui a été sélectionnée et/ou la date pour permettre l'indication à distance de la valeur sélectionnée et de la date.

12. Machine à affranchir selon l'une quelconque des revendications précédentes caractérisée par des moyens d'entraînement destinés à changer les caractères et les données de la face d'impression également portée par la tête d'impression.

13. Machine à affranchir selon l'une quelconque des revendications précédentes, caractérisée par des moyens d'encrage contenus à l'intérieur de la tête d'impression ou sur celle-ci, pour provoquer l'encrage de la face d'impression assez fréquemment pour assurer qu'une bonne impression soit toujours obtenue quel que soit le nombre de fois où la tête d'impression fonctionne.

14. Machine à affranchir selon l'une quelconque des revendications précédentes 7 à 13, caractérisée en ce que la tête d'impression et l'étrier qui lui est associée forment un sous-ensemble qui se répète sur le trajet d'impression, de telle façon qu'une pluralité de têtes d'impression indépendantes (108 à 144) peut être montée sur la même machine à affranchir, l'une affectée à l'impression de la donnée de valeur d'affranchissement, une autre affectée à l'impression de la date et de la ville et un troisième sous-ensemble optionnel destiné à l'impression d'une mention publicitaire ou d'une autre mention promotionnelle, constituant une partie de l'affranchissement de l'enveloppe.

15. Machine à affranchir selon la revendication 14, caractérisée par un arbre d'entraînement commun (148) comportant des cames séparées (124 à 130) agissant sur chacun des étriers de différents sous-ensembles, de telle façon qu'un seul entraînement puisse faire fonctionner simultanément toutes les têtes d'impression.

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16. Machine à affranchir selon l'une quelconque des revendications 7 à 15, caractérisée en ce que les moyens de ressort maintenant de façon élastique la tête d'impression dans sa position relative par rapport aux bras (30, 32) du montage d'étrier, comprennent chacun un premier bras radial (52) fixé à l'un des bras (30, 32) de l'étrier, et un second bras radial (54) fixé à la tête d'impression, de telle sorte que le pivotement de la tête d'im-

pression sur son axe de pivotement entre les bras de l'étrier (34) dans l'un ou l'autre sens de rotation, sera centré par ledit moyen de ressort de telle sorte que ce dernier ramènera toujours la tête d'impression à une position constante par rapport aux bras de l'étrier après une opération d'impression qui a eu pour conséquence de faire quitter cette position à la tête d'impression.

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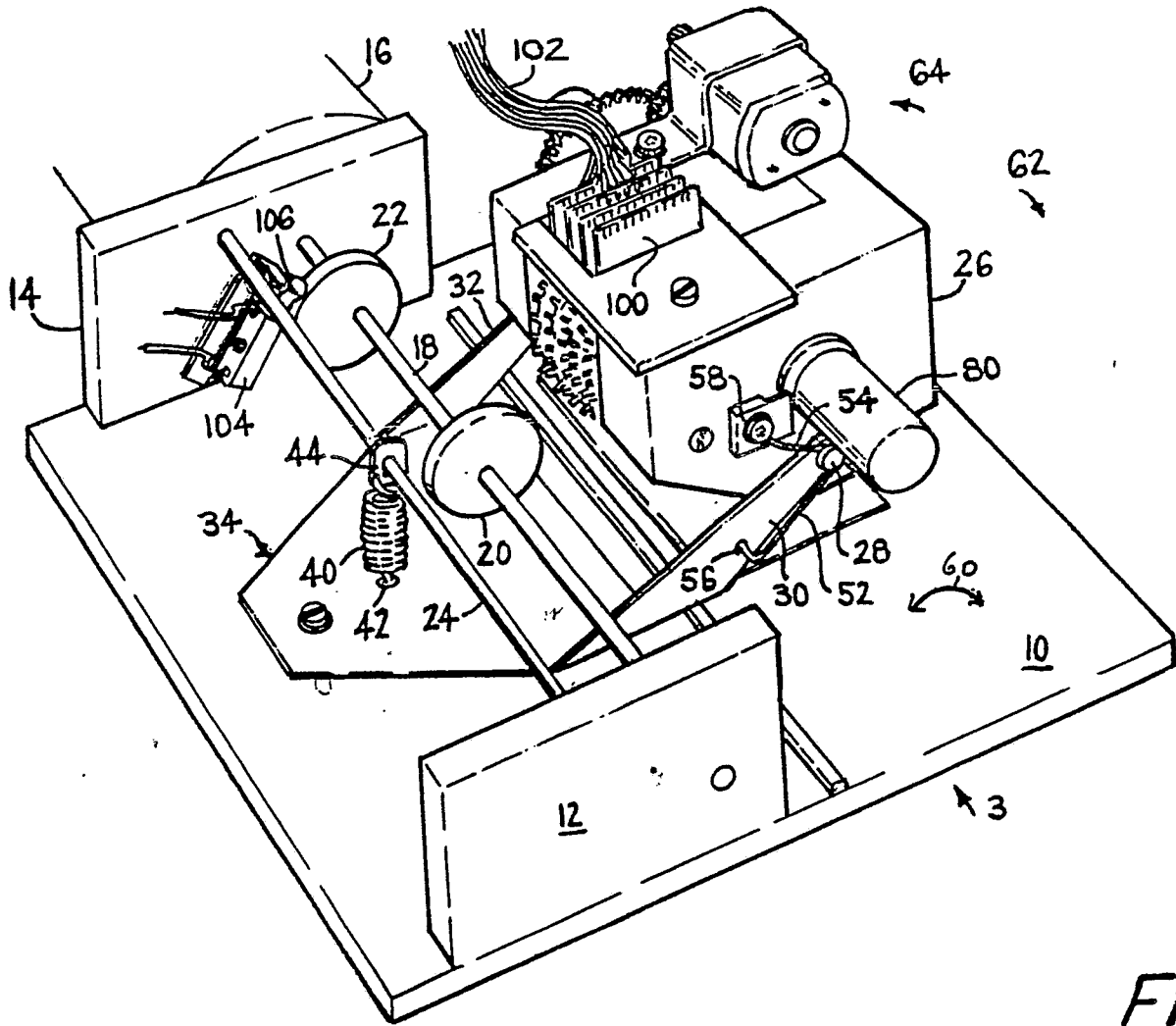
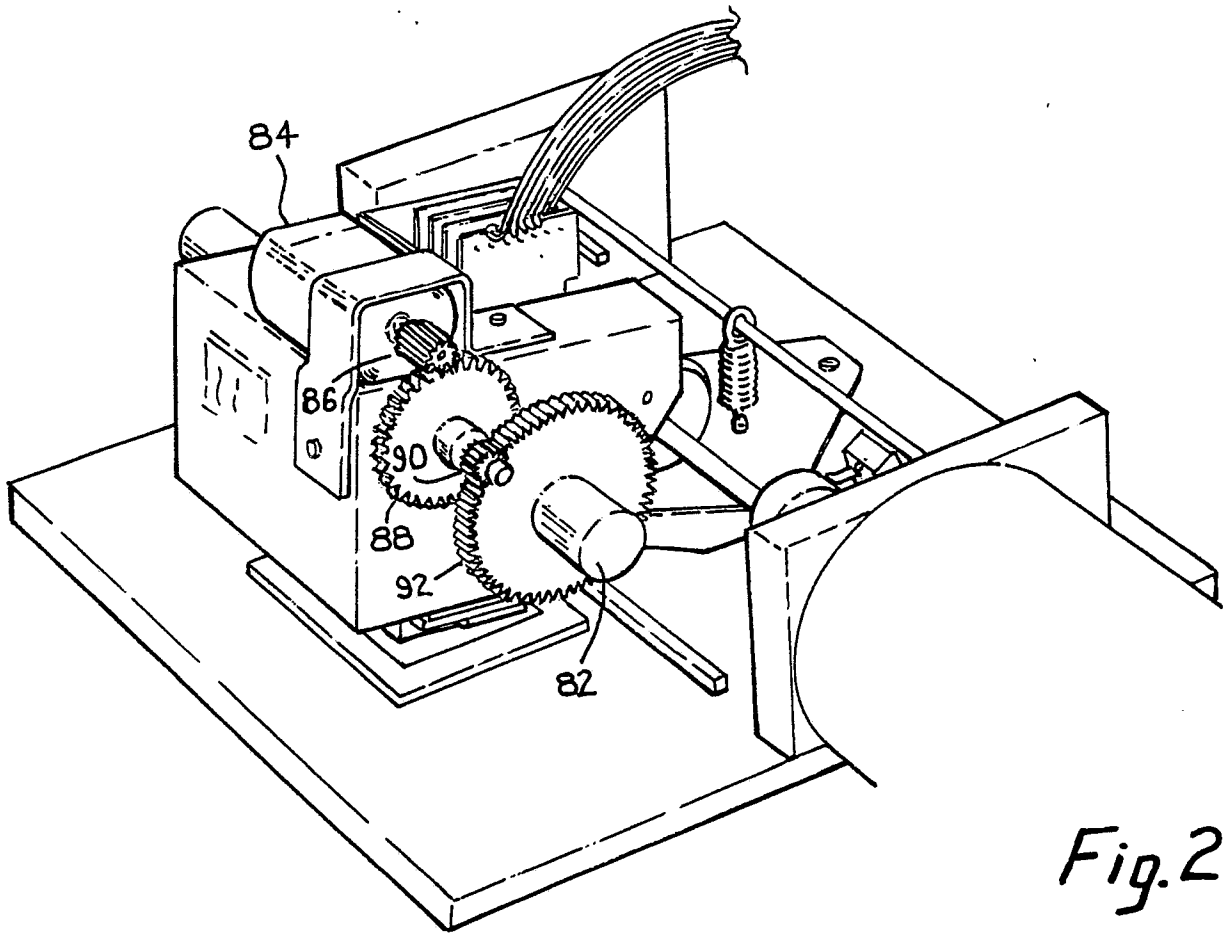
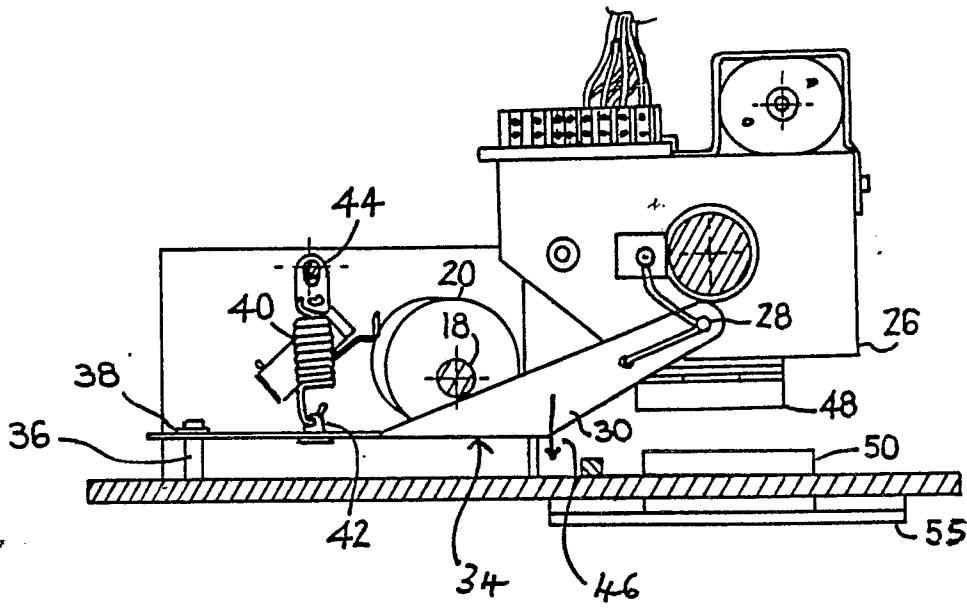


Fig. 1



*Fig. 2*



*Fig. 3*

0 145 404

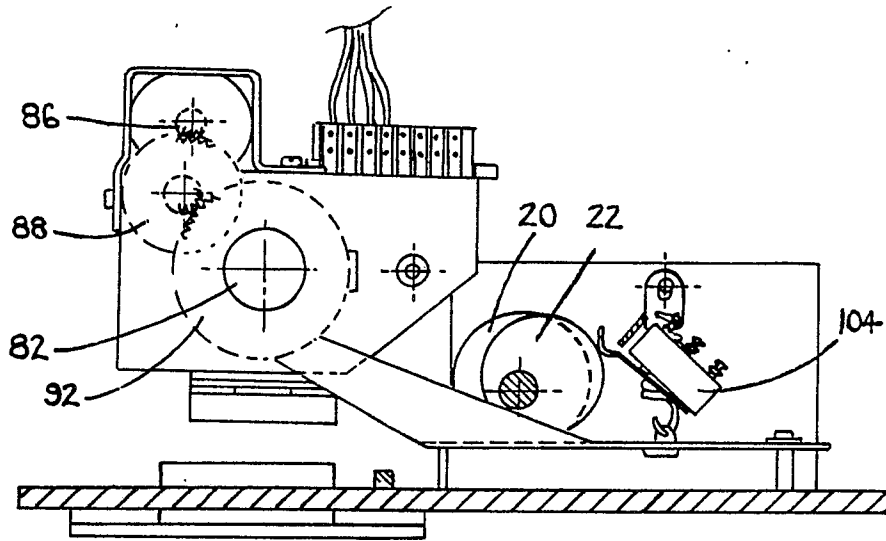


Fig. 4

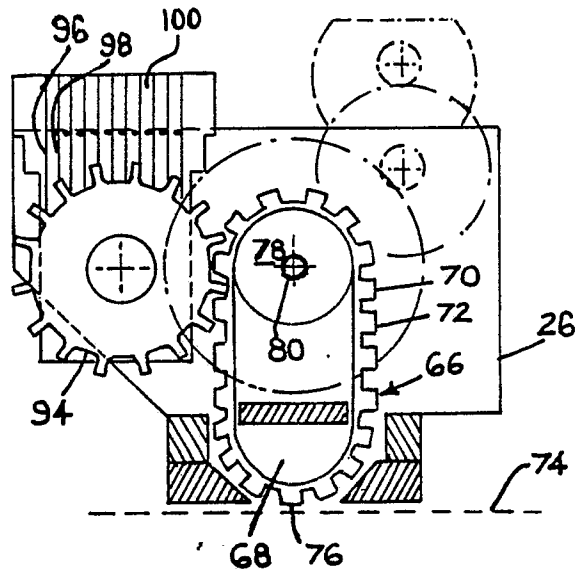


Fig. 5

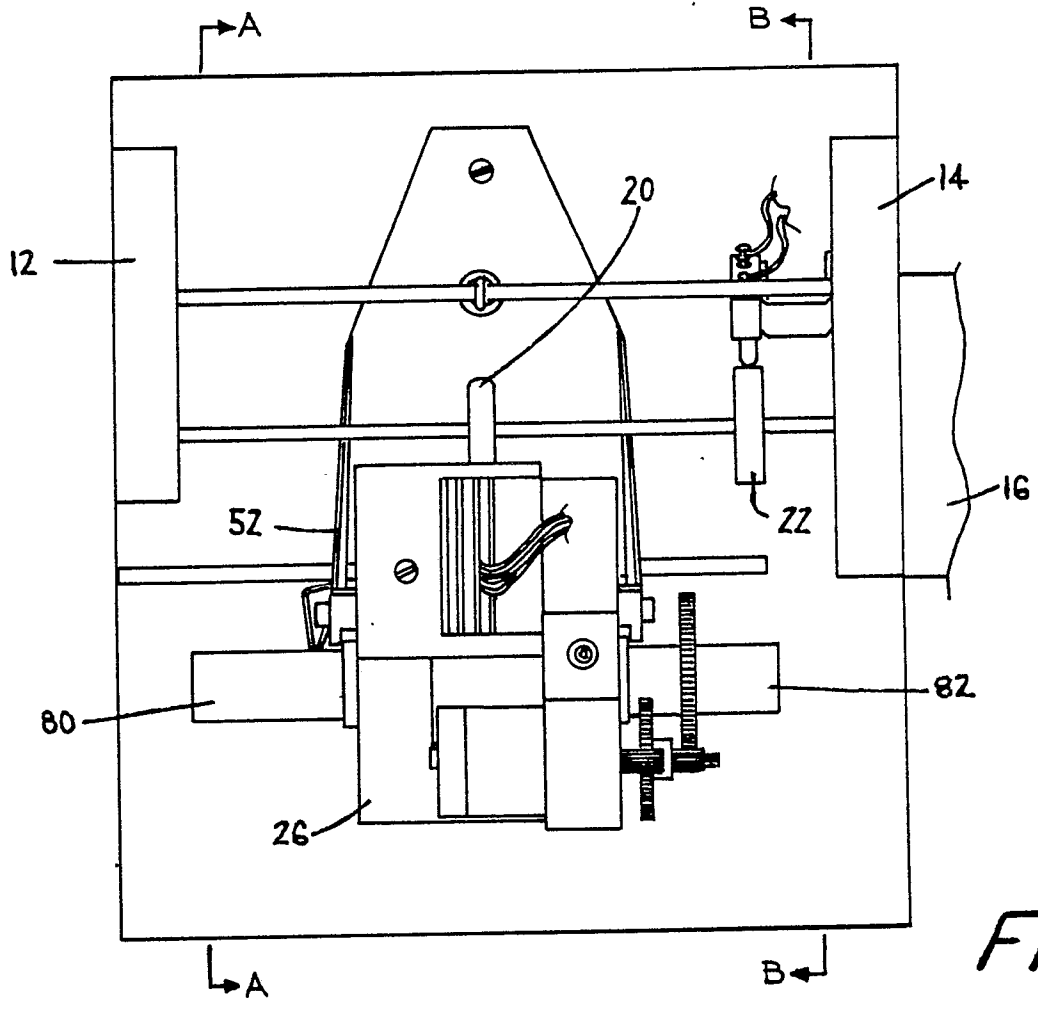
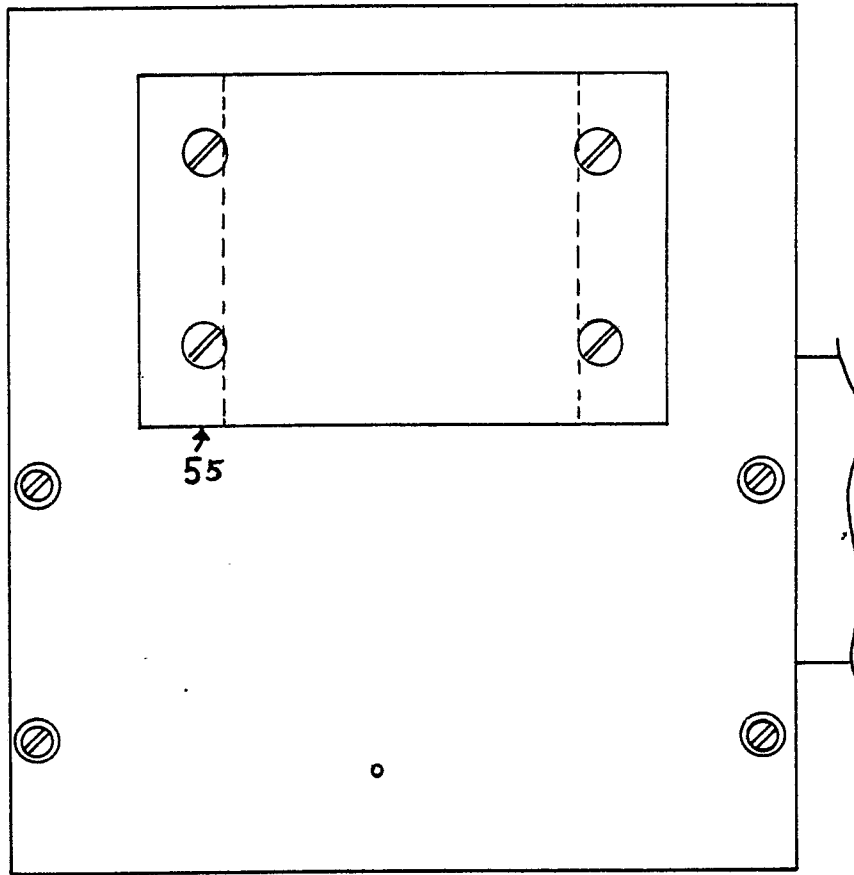


Fig. 6



*Fig.7*

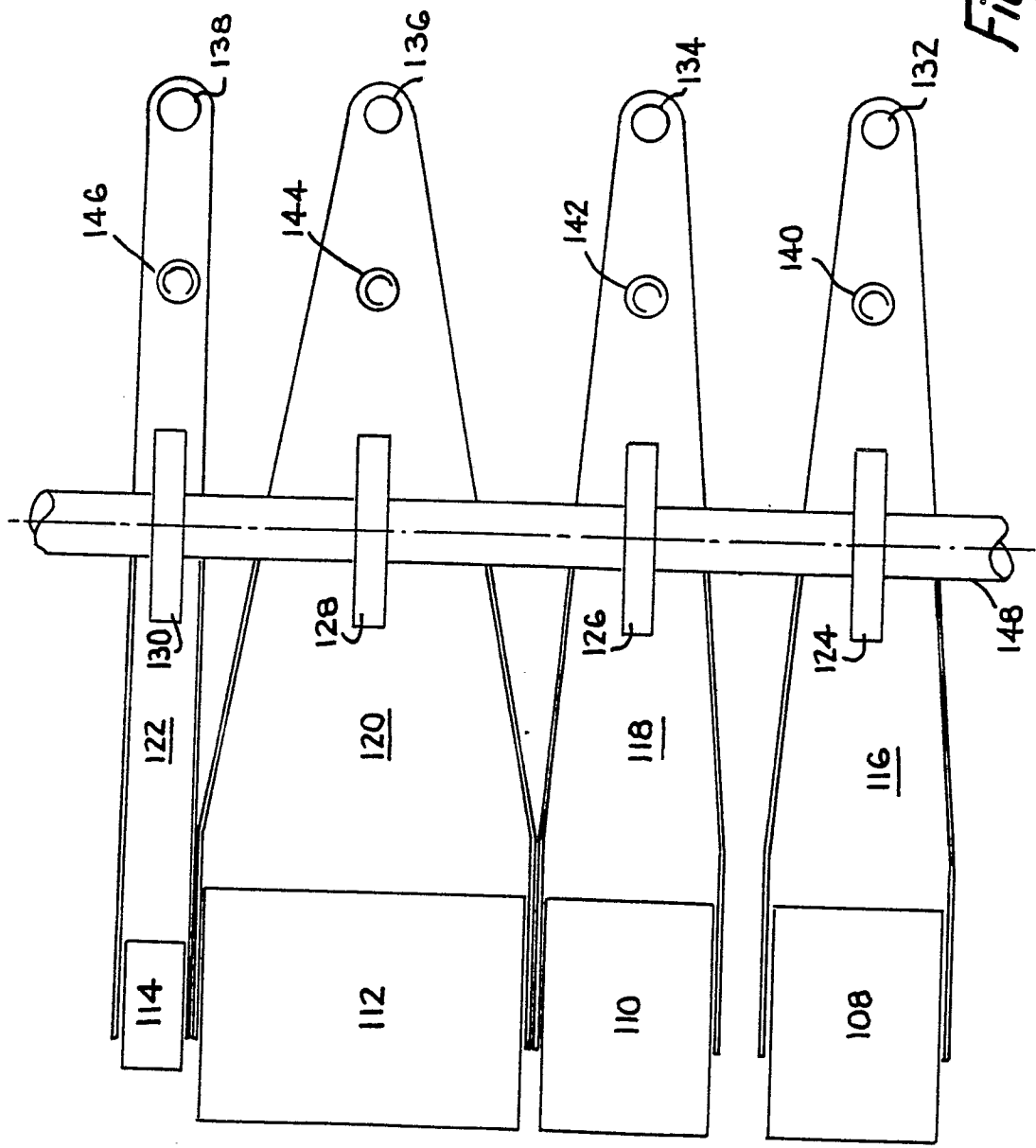


Fig. 8

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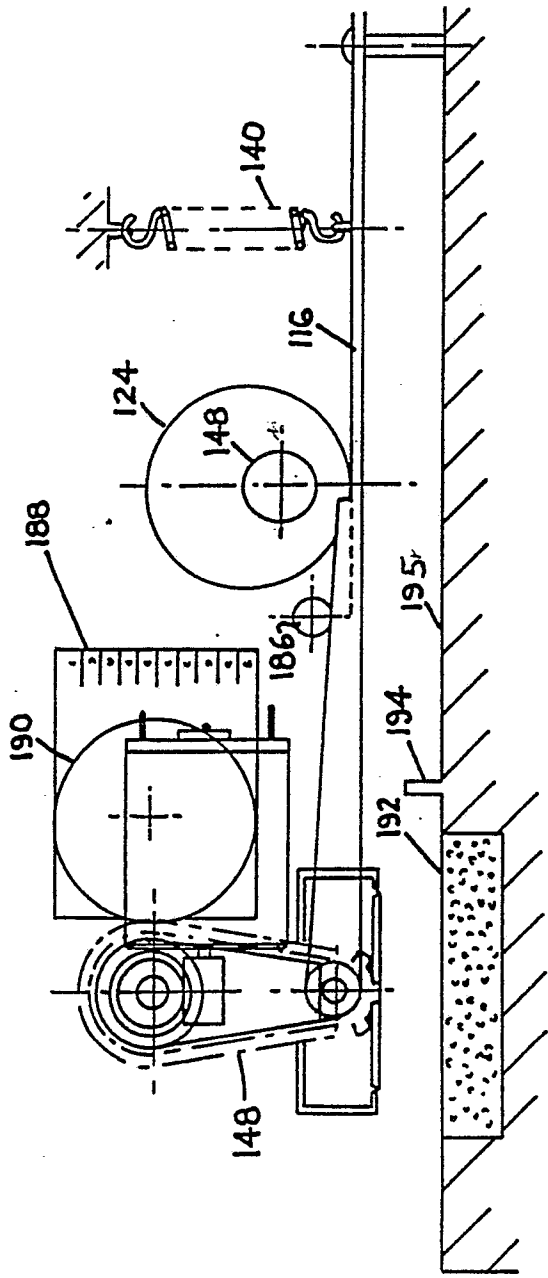


Fig. 11

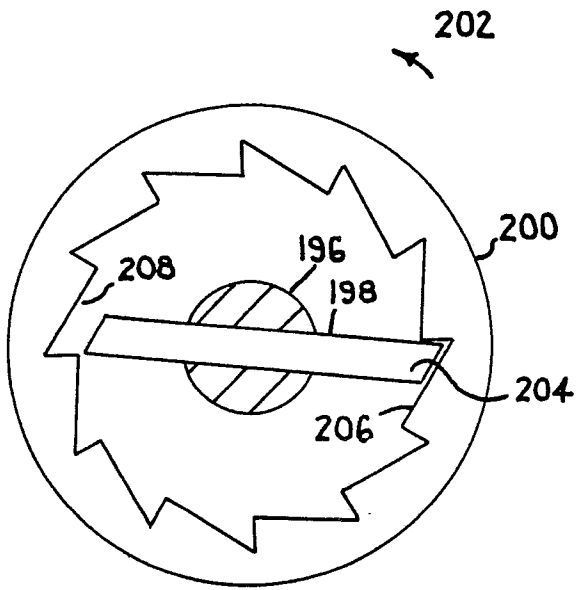


Fig. 12

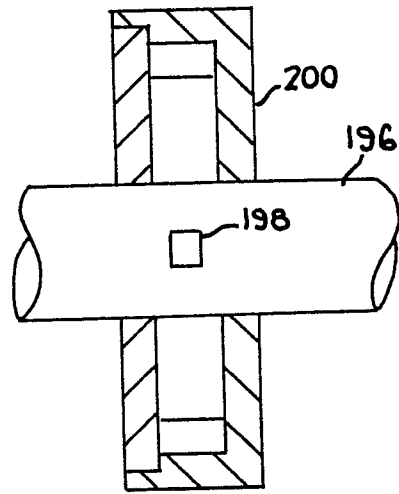
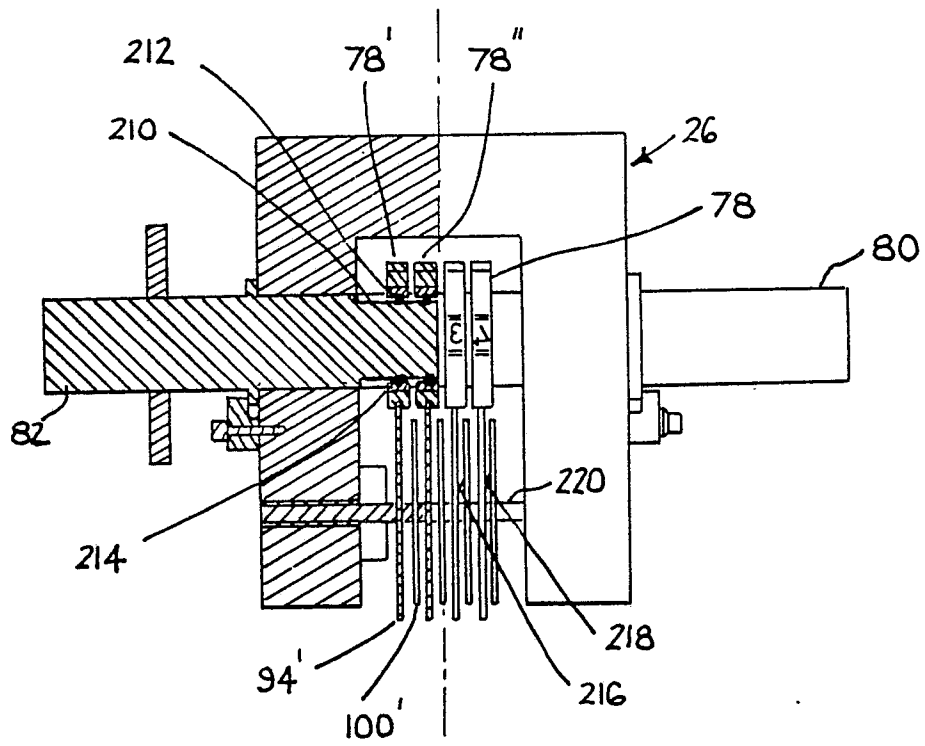
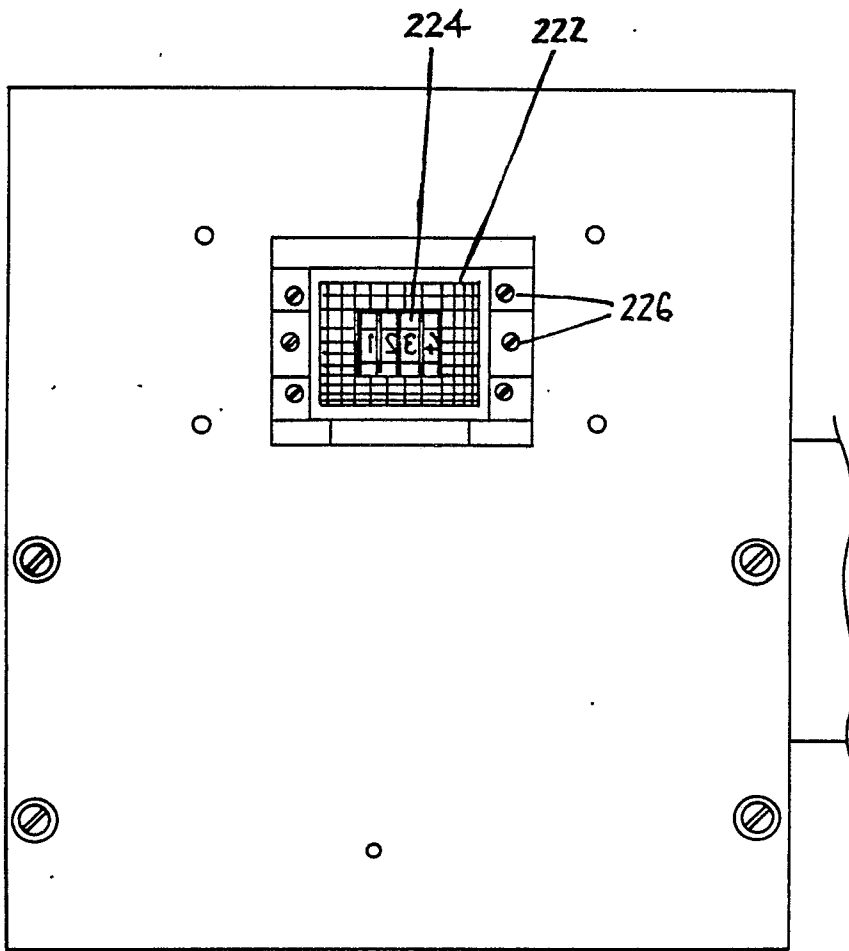


Fig. 13



*Fig. 14*



*Fig. 15*