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(71) Applicant: **OMRON TATEISI ELECTRONICS CO.**
10, Tsuchido-cho Hanazono Ukyo-ku
Kyoto 616(JP)

(72) Inventor: **Nakanishi, Tomoyuki**
Bldg.4-630, Fuke-cho
Moriyama-shi Siga-ken(JP)

(74) Representative: **WILHELMS & KILIAN Patentanwälte**
Eduard-Schmid-Strasse 2
D-8000 München 90(DE)

(54) **Envelope labeling device.**

(57) A label having an adhesive coating and peelably attached to a web of paper is printed by a printer and then peeled off the web of paper by a catching finger mounted on a labeler, which is then angularly moved toward a labeling table. A hammer is raised toward the labeler to apply the label to an envelope supplied to the labeling table.

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Croydon Printing Company Ltd

WILHELMS KILIAN & PARTNER

PATENTANWÄLTE

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EUROPEAN PATENT ATTORNEYS EUROPÄISCHE PATENTVERTRETER MANDATAIRES EN BREVETS EUROPÉENS

DR RER NAT ROLF E WILHELMS
DR RER NAT HELMUT KILIAN
DR ING JÜRGEN SCHMIDT BOGATZKY*

EDUARD SCHMID STRASSE 2
8000 MÜNCHEN 90

TELEFON (089) 652091
TELEX 523467 (wilp d)
TELEGRAMME PATRANS MÜNCHEN
TELEFAX G3/G2 (089) 6516206

OMRON TATEISI ELECTRONICS CO.

Kyoto - Japan

Envelope Labeling Device

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BACKGROUND OF THE INVENTION

1. Field of the invention:

The present invention relates to an envelope labeling device for labeling envelopes containing banknotes or bills to be deposited through automatic cash depositing machines in banks, and more particularly to an envelope labeling machine for applying labels with predetermined items of information printed thereon to envelopes containing deposited banknotes or bills and placed in the automatic cash depositing machine.

2. Description of the Prior Art:

Automatic cash depositing machines normally accept bare banknotes or bills deposited through a bill insertion slot. If the deposited bills were directly stocked in a bill container in the machine, the deposits could not be differentiated from each other, and the amount of money in each deposit would not be determined from the deposited bills. To avoid these drawbacks, the automatic cash depositing machine is equipped with an automatic mechanism for counting bills at the same time that they are deposited to calculate the amount of deposited money. However, various problems arise out of such a calculation effected for each deposit.

There has been proposed a device for accepting bills deposited in envelopes, printing predetermined items of

information such as the name of a depositor and his or her account number on each deposited envelope, stocking the envelopes, and checking the amounts of deposited money upon elapse of business hours of the day. The proposed device is advantageous in that it can be used directly as an automatic cash depositing machine known as a so-called "night deposit safe".

If envelopes used in depositing bills were of the same size and thickness, then the envelopes could directly be printed by a printer in the automatic cash depositing machine. However, depositors actually use envelopes of various sizes and thicknesses dependent on the number of bills to be deposited, and no information could be printed directly on the envelopes. In particular, if a coin or coins happened to be placed in a despoisted envelope in error, and characters were printed on the envelope over the coin, then the printed characters would be illegible. Where a dot-matrix printer is employed, head pins thereof would be damaged by the coin in the envelope.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an envelope labeling device for clearly and properly indicating predetermined items of information on envelopes used for depositing bills regardless of varying shapes and thicknesses of the envelopes and the presence of a coin or coins in the envelopes.

According to the present invention, there is provided

a device for applying a printed label to an envelope, comprising a means for supplying a web of paper with a label peelably attached thereto to a labeling table along a path, a means for printing predetermined items of information on the label while the web of paper is supplied along the path to the labeling table, a means for peeling the printed label off the web of paper, and a means disposed between the peeling means and the labeling table for delivering the peeled label to the labeling table, the labeling table having a means for pressing an adhesive-coated surface of the printed label against an envelope supplied to the labeling table.

With the arrangement of the invention, the envelope is not directly printed, but the label with the predeterminerd items of information printed thereon is adhered to the envelope. Therefore, the label is reliably applied to the envelope to clearly indicate the printed items of information regardless of the size and thickness of the envelope. The indicated items of information could not be impaired if a coin or coins were present in the envelope.

The above and other objects, features and advantages of the present invention will become more apparent from the following description when taken in conjunction with the accompanying drawings in which a preferred embodiment of the present invention is shown by way of illustrative example.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic front elevational view of an envelope labeling device according to the present invention;

FIG. 2 is an enlarged side elevational view of a portion of the envelope labeling device;

FIG. 3 is an enlarged perspective view of a label;

FIG. 4 is a timing chart of operation of various comopnents in the envelope labeling device; and

FIG. 5 is a flowchart of successive steps of operation of the envelope labeling device.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIG. 1, a roll 1 of web-shaped paper is rotatably supported on a shaft 2, and is wound by a takeup roller 3. The roll 1 of paper is composed of a web-shaped paper base 1a and labels 4 separably applied thereto at prescribed intervals, the web-shaped paper base 1a being rolled around a paper tube, for example. As illustrated in FIG. 3, each label 4 has a surface coated with an adhesive 5 except for a leading edge portion 4a and is peelably attached to the paper base 1a with the adhesive-coated surface 4b.

In FIG. 1, the takeup roller 3 is operatively coupled with a motor 6 through a power transmitting mechanism 7. The takeup roller 3 is rotated to wind the roll paper 1 in response to energization of the motor 6.

The roll paper 1 travels via upper and lower guide

rollers 8a, 8b. A first label detector 9 such as a photoelectric transducer is disposed immediately below the upper guide roller 8a. A printer 10 is associated with the first label detector 9 for printing a label in response to an output signal from the first label detector 9. The first label detector 9 has a platen 11 and a printer head 12 which are positioned one on each side of the roll paper 1.

A labeler 14 angularly movable about a support shaft 13 is positioned laterally of the lower guide roller 8b across the roll paper 1. The roll paper 1 as it passes between the lower guide roller 8b and the labeler 14 is directed laterally away from the labeler 14. A second label detector 15 is located in a position where the roll paper 1 changes it direction around the lower guide roller 8b.

The second label detector 15 serves to fix the leading edge portion 4a of a label 4 to the labeler 14. More specifically, a solenoid 16 on the labeler 14 is energized in response to an output signal from the second label detector 15 for actuating a catching finger 17 to grip the leading edge portion 4a between itself and the labeler 14. The catching finger 17 thus serves as a means for peeling the label 4 off the paper base 1a.

A labeling table 18 is disposed directly below the labeler 14 for holding an envelope 19 fed from a feed means (not shown) and supported by rollers 20.

The labeler 14 serves as part of a pressing means 21 (described later) and also serves to deliver the label 4 as gripped by the catching finger 17 onto the labeling table 18. As shown in FIGS. 1 and 2, a sector-shaped cam plate 23 is angularly movable by a motor 22, and a lever 14a projecting from the labeler 14 is normally kept in contact with the sector-shaped cam plate 23 under the force of a tension spring 24. The labeler 14 is thus angularly movable between a solid-line position and a dashed-line position in FIG. 1 in response to rotation of the sector-shaped cam plate 24.

Upper and lower cam detectors 25, 26 (FIG. 2) de-energizes the motor 22 when the labeler 14 is brought to the solid-line and dashed-line positions.

The pressing mens 21 is disposed immediately below the labeling table 18 and comprises a hammer 28 vertically movable in and along a guide sleeve 27. The hammer 28 is normally lowered by gravity. When a solenoid 29 is energized, a pusher lever 31 is turned counterclockwise (FIG. 1) about a pivot pin 30 to raise the hammer 28. The hammer 28 is positioned in vertical alignment with the labeler 14 as it is located in the dashed-line position.

Operation of the envelope labeling device will be described with reference to FIGS. 4 and 5. Upon detection of an envelope 19 placed in an automatic cash deposting machine, the motor 6 is started in a step 41 to rotate the roll 3 for thereby drawing the roll paper 1.

While the roll paper 1 is fed along, the first label detector 9 determines whether there is a label 4 on the roll paper 1 in a step 42. Such label determination can be effected by detecting a timing hole 4c (FIG. 3) defined in a marginal edge of the label 4 with the first label detector 9.

When the label 4 is detected, the motor 6 is de-energized or the roll paper 1 is stopped in a step 43, and the printer 10 is actuated in a step 44 to print predtermined items of information on the label 4.

After the printing operation has been completed, the motor 6 is energized again in a step 46 to feed the printed label 4 downwardly as shown in FIG. 1. When the second label detector 15 detects the printed label 46, the motor 6 is de-energized again in a step 47.

Therefore, the solenoid 16 is energized in a step 48 with a slight time lag tl as shown in FIG. 4 to enable the catching finger 17 to grip the leading edge portino 4a of the printed label 4. Upon elapse of a time interval t2 (about 100 msec.) in FIG. 4, the motor 22 is energized in a step 49 to cause the labeler 14 to peel the printed label 4 off the paper base 1a and to be turned toward a position directly above the labeling table 18. The completion of the turning movement of the labeler 14 is detected by the upper cam detector 25 in a step 50 to de-energize the motor 22. A step 52 may be provided for ascertaining for safety whether the lower cam detector 26 has been turned off or .

not.

The solenoid 29 is energized in a step 53 to cause the pusher lever 31 to push the hammer 28 upwardly for thereby pressing the envelope 19 against the labeler 14. The printed label 4 is now adhered to the envelope 19. Thereafter, the solenoid 29 is de-energized in a step 54 to permit the hammer 28 to return downardly. The solenoid 16 is de-energized in a step 55 to move the catching finger 17 out of engagement with the label 4. An envelope feed motor (not shown) is energized in a step 56 to discharge the envelope 19 with the label 4 applied thereto from the labeling table 18.

As described above, the envelope labeling device of the present invention can reliably and properly apply printed lavels to envelopes.

While the present invention has been described as being associated with an automatic cash depositing machine, the invention may be incorporated in various other applications.

Although a certain preferred embodiment has been shown and described, it should be understood that many changes and modifications may be made therein without departing from the scope of the appended claims.

What is claimed is:

1. A device for applying a printed label to an envelope, comprising:

(a) first means for supplying a web of paper with a label peelably attached thereto to a labeling table along a path;

(b) second means for printing predetermined items of information on the label while the web of paper is supplied along the path to the labeling table;

(b) third means for peeling the printed label off the web of paper;

(c) fourth means disposed between the peeling means and the labeling table for delivering the peeled label to the labeling table, the labeling table having fifth means for pressing an adhesive-coated surface of the printed label against an envelope supplied to the labeling table.

2. A device according to claim 1, wherein said first means includes a pair of guide rollers spaced from each other along said path with said printing means interposed therebetween.

3. A device according to claim 2, wherein said fourth means comprises a labeler angularly movable between a first position adjacent to one of said guide rollers which is located downstream of said printing means along said path and a second position adjacent to said labeling table.

4. A device according to claim 3, wherein said third means comprises a catching finger for gripping the printed

label between itself and said labeler.

5. A device according to claim 3, wherein said fifth means comprises a hammer movable toward said labeller as located in said second position with the envelope interposed between said labeler and said hammer.

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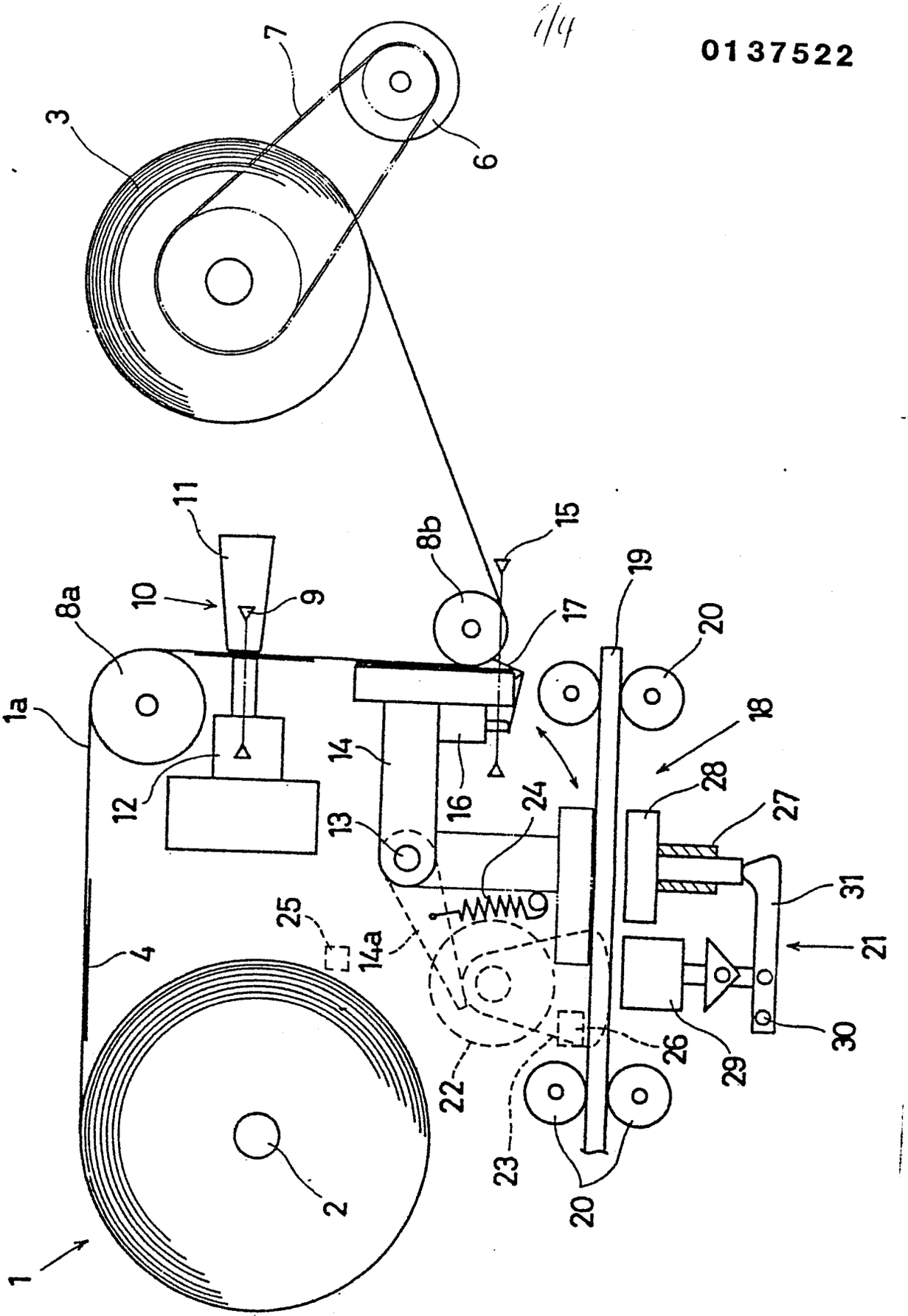
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FIG. 2

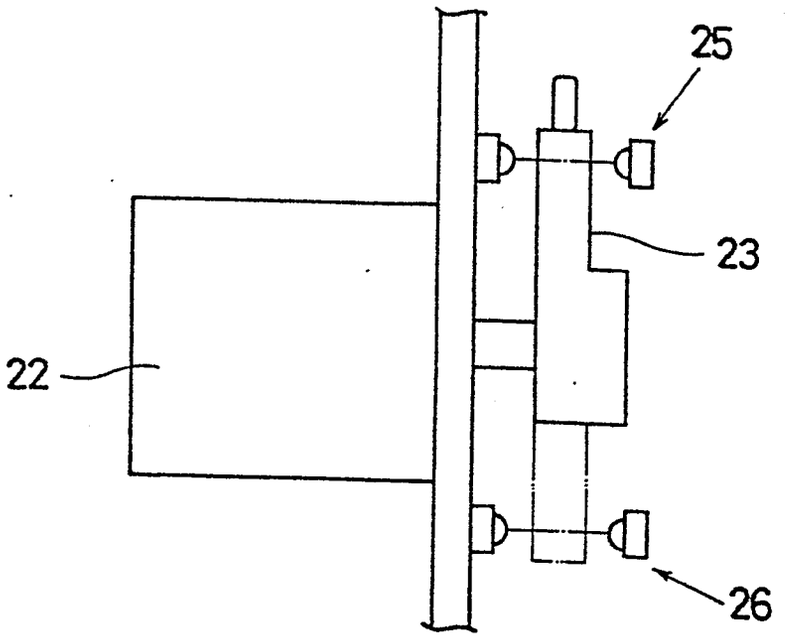

FIG. 3

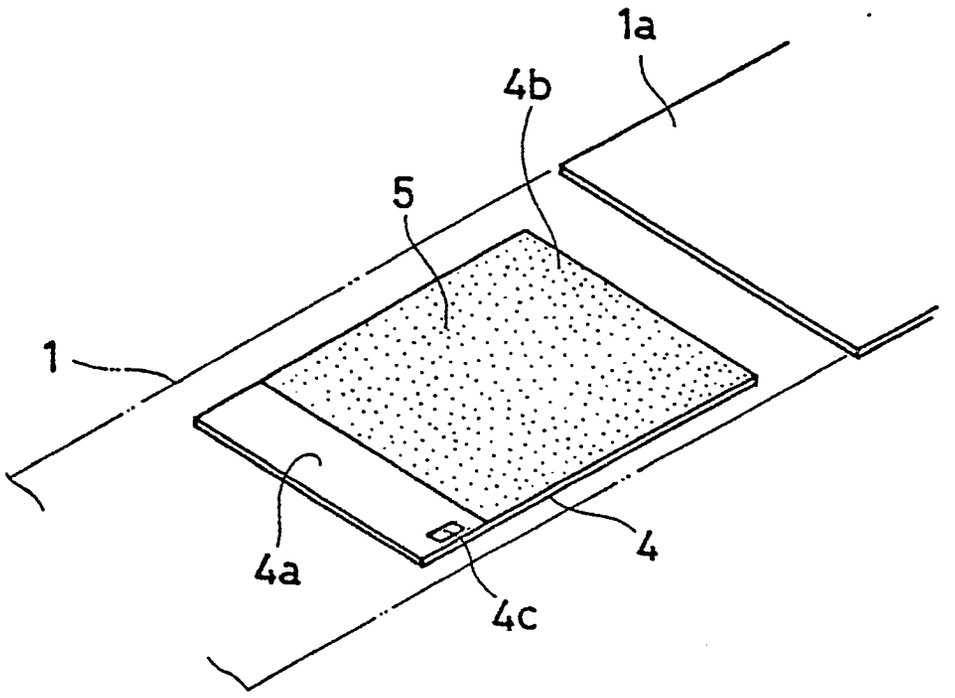

FIG.4

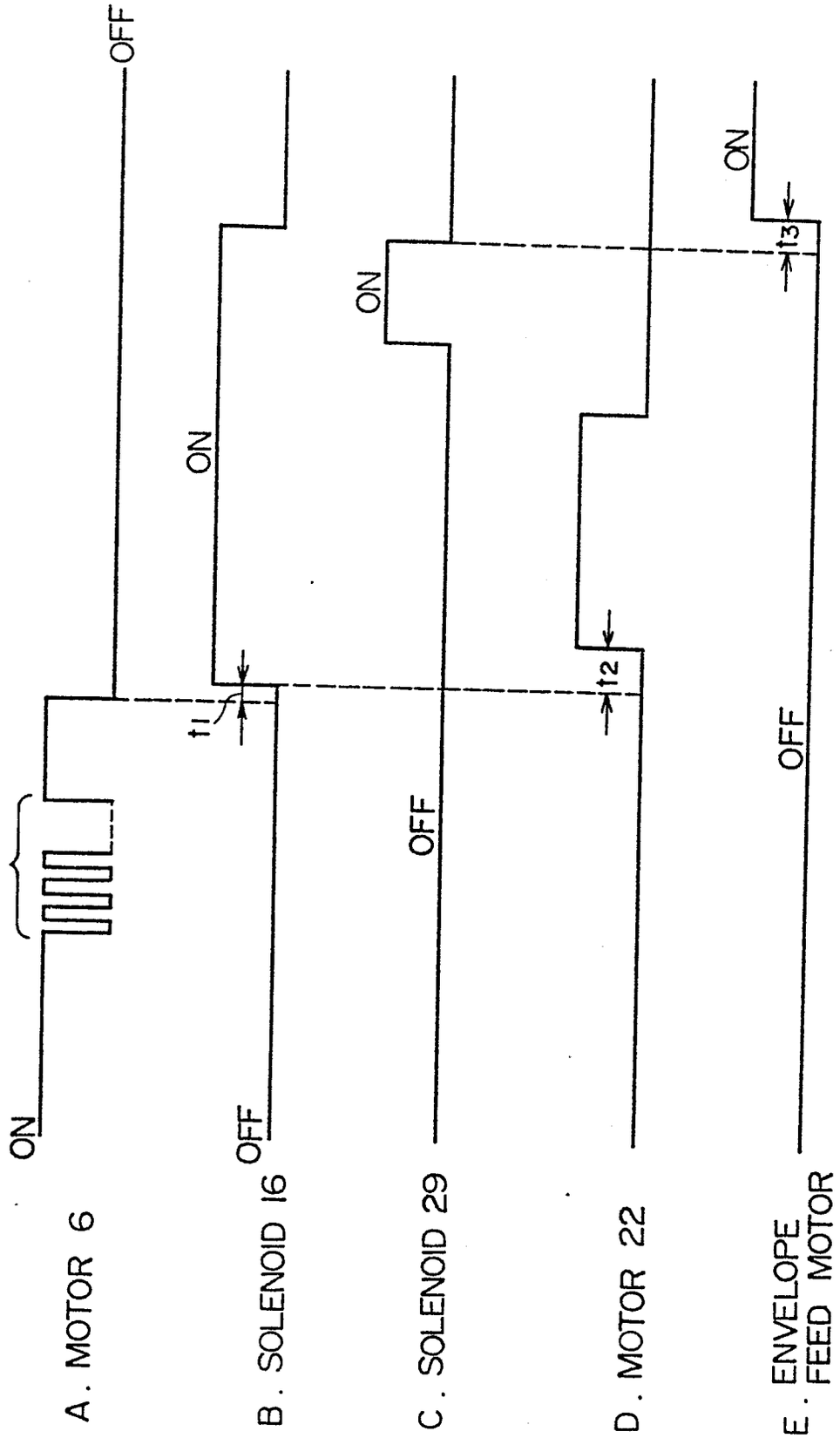
A. MOTOR 6
ON
OFF
B. SOLENOID 16
OFF
ON
C. SOLENOID 29
ON
OFF
D. MOTOR 22
ON
E. ENVELOPE FEED MOTOR
ON
OFF
t1
t2
t3

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FIG. 5