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DEVICE FOR DISPENSING STRIP ELEMENTS

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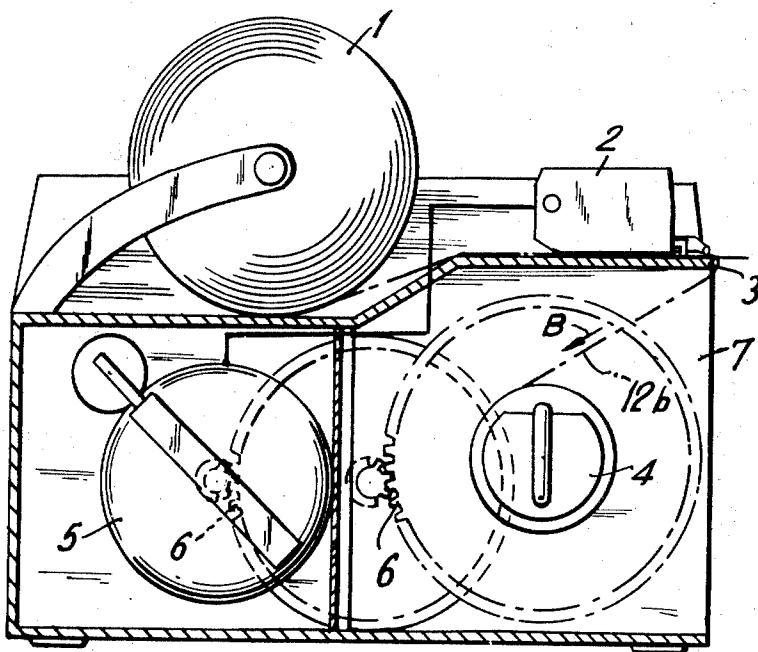


FIG. 1

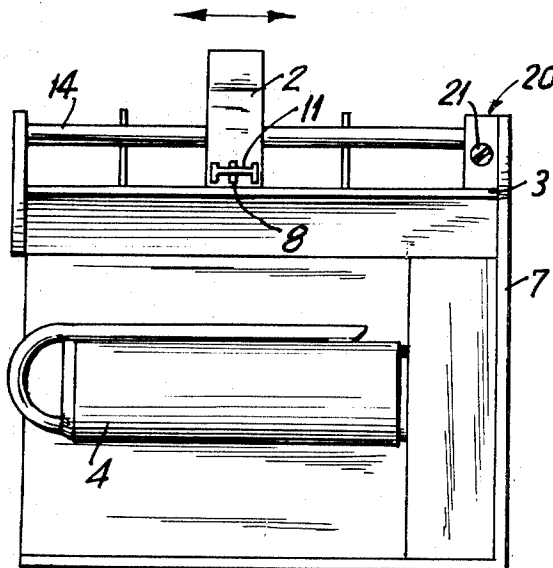


FIG. 2

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DEVICE FOR DISPENSING STRIP ELEMENTS
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U.S. Cl. 221—73

7 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus for dispensing self-adhesive tickets and similar elements from a protective paper backing is formed of a housing for mounting a ticket supply roll thereon and having a releasing edge over which the combined ticket and backing strip are drawn for separating the ticket from its backing strip. A sensing device is mounted on the housing having a feeler element for engagement with the surface of the ticket strip as it approaches the releasing edge. The feeler element is arranged to sense openings between individual tickets and to discontinue the passage of the ticket strip each time one of the openings is sensed. The sensing device includes a lever mechanism for positioning a permanent magnet within an electric coil, when the feeler element senses a space between the tickets, it deflects and the lever mechanism which is connected to it moves the permanent magnet in the coil either upwardly or downwardly and a voltage pulse is induced in the coil. The pulse serves to control the dispensing device and halts the movement of the ticket strip. The sensing device also includes a lever extending forwardly of the releasing edge, this lever is pivoted for movement upon the removal of a ticket and activates a contact in the sensing device for restarting the ticket passage. The underside of the sensing device also serves as a brake for the moving ticket strip and an adjusting device is provided on the dispensing apparatus for assuring that the sensing device is securely held in place against the moving ticket strip. When replacing the ticket supply roll, the adjusting means for holding the sensing device in place is released and the sensing device is pivoted upwardly out of the path of the ticket strip.

BACKGROUND OF THE INVENTION

The invention relates to a dispensing device for self-adhesive tickets. Such devices have the purpose of releasing from the protective paper the tickets which are stuck thereto by self-adhesive material, and to make such tickets ready for handling so that they can be easily removed and can be stuck upon the goods which are to be labelled. Ticket dispensing devices of the above described type are already known in various constructions.

All of these dispensing devices include an arrangement which allows the strip of tickets to be drawn tightly about a comparatively sharp edge. Thereby, on account of its stiffness, the ticket which is stuck to the protective strip releases from the protective strip which is drawn over the above mentioned edge and can then be easily removed and can be stuck upon the goods which are to be labelled. In order to achieve the above mentioned effect it is first of all necessary to pull upon the strip after it has passed over the above mentioned deflecting edge, and secondly the strip must be somewhat retarded in front of the deflecting edge in order to allow the protective strip to lie tightly against the deflecting edge so that the ticket stuck upon the protective strip detaches itself automatically.

The drawing of the protective strip over the deflecting edge is effected by hand in the simplest types of appa-

ratus, whilst this operation is performed by motor power in the case of the power driven semi-automatic or automatic systems.

The types of apparatus driven by motor power divide themselves fundamentally into two types, which may be designated as semi-automatic and fully automatic. The difference between the semi-automatic and fully automatic systems consists essentially in the fact that the semi-automatic systems receive the instruction for issuing a ticket by virtue of a manual operation, for example the operation of a switch, whilst in the case of the automatic systems, upon taking off the ticket which has been prepared for use, the system is set automatically in operation and again prepares a ticket for removal.

In order to realise this automatic preparation of a new ticket after the removal of the previous ticket, suitable control devices are necessary. For this purpose two different control types are known, these being designated firstly as mechanical and secondly as electronic operating by means of light-responsive devices.

The mechanical control arrangement consists essentially of a feeler which slides over the ticket track and senses the difference between the thickness of the protective strip including the ticket stuck thereon and the protective strip alone and then operates a microswitch. Such thickness differences are naturally very small (about 0.1 mm.), so that this type of control is very sensitive, must be accurately adjusted and therefore is liable to faults.

The electronic type of control by means of light-responsive devices is, by contrast, very reliable and makes no special demands with reference to its adaptation to various types of tickets and different paper thicknesses. On the other hand this type of control is very demanding in apparatus and therefore expensive. Moreover the type of control using light-responsive devices has the disadvantage that the latter must be permanently installed and cannot be displaced laterally with respect to the path of the tickets, which fact is a disadvantage, particularly when processing multiple-track tickets.

The present invention removes the disadvantages of the two abovenamed systems by the provision of an apparatus which can be easily manufactured and serviced, which requires no adjusting work, but which nevertheless responds in a reliable manner to comparatively small thicknesses of the ticket.

In accordance with the invention this apparatus is characterised by the provision of a feeler which falls into the intermediate space between two succeeding tickets, and which through a lever system causes a movement of a permanent magnet in an electrical coil, whilst the voltage pulse generated in the coil serves for the control of the device for feeding of the tickets.

The invention will be described in the following with reference to a practical embodiment illustrated in the accompanying drawing. The drawing shows as follows:

FIG. 1 is a longitudinal section through the ticket dispensing apparatus according to the invention,

FIG. 2 is a front elevation,

FIG. 3 shows a part of FIG. 1 representing the arrangement of the ticket sensing device,

FIG. 4 shows a longitudinal section through the ticket sensing device, and

FIG. 5 shows the arrangement for regulating the braking force.

Similar reference characters indicate the same parts.

In FIG. 1 the reference 1 indicates a ticket supply roll. 2 indicates a sensing device and 3 indicates a releasing edge, over which the strip of tickets is drawn, 4 indicates a pulling device, 5 is a motor with an electromagnetic brake, whilst 6 is a reduction gear for the tension drum and 7 is the casing.

FIG. 2 shows the front elevation of the apparatus. From this it may be seen that the sensing device may be displaced over the whole width of the apparatus.

From FIG. 3 it may be seen in what manner the sensing device 2 can be swung into position shown in the dashed lines in order to facilitate the introduction of the strip of tickets. The lower side 2a of the casing of the sensing device serves at the same time as a brake in order to provide that the strip of tickets is drawn tightly across the release edge 3. The arrangement necessary for producing the braking force, as well as the function thereof, is evident from the description with reference to FIG. 5. At the same time this arrangement is so designed that the sensing device can be fixed in the swung out position.

FIG. 4 shows a longitudinal section through the sensing device 2. The reference 2' indicates the casing of the device, 3 is the release edge, 8 the feeler which senses the ticket track, 9 is a movable permanent magnet, 10 is an electrical coil, 11 is a contact lever, 12a indicates the tickets moved in the direction of the arrow A, 12b is the empty protective strip, 13 is the intermediate space between the individual tickets, 14 is the shaft about which the entire device is pivotable, and along which it is laterally displaceable. In order to facilitate this latter movement, there is provided a keyway in the shaft 14 in which engages a spring key 14a installed in the casing 2'.

The above described device functions as follows. If the strip of tickets 12a is moved by pulling upon the protective strip 12b in a direction of the arrow B, then the feeler 8 slides over the ticket track and, when an intermediate space is reached, the feeler drops under the action of the spring 15 into the intermediate space between two tickets. This feeler acts through a lever mechanism 16, 16', 16'' to move the permanent magnet 9 in the coil 10 upwardly or downwardly, whereby a voltage pulse is induced in the coil, which serves to control the dispensing device in such a manner that the pulse which is generated by the vertical movement of the feeler 8 stops the free movement of the ticket track. In this connection it is immaterial whether the ticket track is brought to rest in such a manner that the feeler lies in the intermediate space between two tickets or whether the feeler is again raised upon a ticket. If now the ticket 12a is slightly raised upon being removed, the lever 11 pivotable about the pivot point 19 is also raised and touches a contact 17, whereby the dispensing device starts again and the track of tickets is again pulled forward whereupon the above described working cycle repeats itself.

It is now clear without going further that the above described arrangement requires no adjusting operation by the user after the apparatus has been adjusted in the factory. Likewise the thickness of the ticket material is not decisive because in general it is immaterial in what rest position the permanent magnet 9 finds itself in the coil 10. The object is solely to have an up and down motion inside the coil in order to generate a voltage pulse. This pulse, after suitable amplification, serves to switch a bistable relay or a contactless switch in order to disconnect the motor 5. The latter is again switched in by means of the contact 17 upon raising the lever 11 when removing the most forwardly situated ticket.

From the mode of operation of the described sensing device it is clear that the rest position of the permanent magnet in the coil can vary within comparatively large limits. In the same way the amount of wear on the feeler 8 is practically of no significance. Because the latter lies upon the paper track with a comparatively light pressure it is subjected only to a small amount of wear.

Because the underside of the casing of the sensing device serves at the same time as a brake for the travelling ticket track, it is necessary that this underside must bear accurately and with a certain adjustable force upon the ticket track. This pressure is brought to bear by an arrangement installed upon the casing 7 and indicated by

the general reference 20 (FIG. 2), but whose details may be seen from FIG. 5. In this figure 21 is an adjusting screw which presses against a pin 23 by means of a compression spring 22, the said pin itself bearing against an eccentric 24, which is rigidly connected to the shaft 14 carrying the sensing device. By the force applied eccentrically to the pin 23 the shaft 14 is stressed in the clockwise direction in the view represented in the drawing and therefore forces the sensing device downwardly at the side adjacent the sensing finger 8.

In the raised position of the sensing device shown in dashed lines in FIG. 3, which is adopted for the purpose of inserting a new web of tickets, the eccentric 24 together with the shaft 14 rotate in the counter-clockwise direction and after passing through about 90° arrives in an upwardly deflected position defined by a stop surface 24a. After swinging back the device into the operating position the same pressure is restored between the edge of the casing of the sensing device at the ticket discharge side and the web of tickets, whereby reliable sensing is ensured by the feeler 8. Because the application pressure of the feeler is comparatively small it is possible to use a thin feeler. Thereby the intermediate spaces between the individual tickets can be kept if necessary very narrow so as to make possible an economy in the comparatively expensive ticket material.

The representation in FIG. 4 makes it clear that it is not absolutely necessary to install the lever 11 and the cooperating contact 17 within the casing 2'. In practical embodiments of ticket dispensing devices, wherein because of constructional or other reasons the extraction point of the tickets must essentially be remote from the casing, it is possible to have the lever which is rotatable about the pivot 19 arranged at a suitable point externally of the casing 2' in a bearing which is not shown in the drawing, and to arrange for the appertaining contact to be controlled at that point.

What is claimed is:

1. A device for dispensing a series of strip elements such as tickets which have spaces defined therebetween, comprising means for feeding a series of strip elements through a feedpath, a feed control sensing device adapted to be connected to said feeding means including a feeler, said sensing device includes a housing, means mounting said housing so that it bears against the strip elements which are fed and provides a braking action therebetween, means mounting said feeler adjacent said feedpath to engage strip elements as they are fed and to move over the surfaces of said strip elements and into the spaces therebetween, an electric coil adapted to be connected to said feeding means for starting and stopping said feeding means upon change of voltage of said coil, and a permanent magnet arranged in the field of said coil and connected to said feeler for movement therewith to vary the voltage of said coil.

2. A device for dispensing a series of strip elements such as tickets which have spaces defined therebetween, comprising means for feeding a series of strip elements through a feedpath, a feed control sensing device adapted to be connected to said feeding means including a feeler, said sensing device includes a housing, means mounting said housing over the feedpath of said strip elements to permit it to be pivoted upwardly from a position in which it overlies said strip elements to one which is raised above said strip elements, means mounting said feeler adjacent said feedpath to engage strip elements as they are fed and to move over the surfaces of said strip elements and into the spaces therebetween, an electric coil adapted to be connected to said feeding means for starting and stopping said feeding means upon change of voltage of said coil, and a permanent magnet arranged in the field of said coil and connected to said feeler for movement therewith to vary the voltage of said coil.

3. A device for dispensing a series of strip elements such as tickets which have spaces defined therebetween,

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comprising means for feeding a series of strip elements through a feedpath, a feed control sensing device adapted to be connected to said feeding means including a feeler, said sensing device includes a housing, and means mounting said housing above the feedpath of said strip elements permitting lateral movement of said housing, means mounting said feeler adjacent said feedpath to engage strip elements as they are fed and to move over the surfaces of said strip elements and into the spaces therebetween, an electric coil adapted to be connected to said feeding means for starting and stopping said feeding means upon change of voltage of said coil, and a permanent magnet arranged in the field of said coil and connected to said feeler for movement therewith to vary the voltage of said coil.

4. A device for dispensing a series of strip elements such as tickets which have spaces defined therebetween, comprising means for feeding a series of strip elements through a feedpath, a feed control sensing device adapted to be connected to said feeding means including a feeler, means mounting said feeler adjacent said feedpath to engage strip elements as they are fed and to move over the surfaces of said strip elements and into the spaces therebetween, an electric coil adapted to be connected to said feeding means for starting and stopping said feeding means upon change of voltage of said coil, a permanent magnet arranged in the field of said coil and connected to said feeler for movement therewith to vary the voltage of said coil, and a contact lever connected to said feeler and extending outwardly therefrom to overlie a strip element which has passed the feeler and being movable upon removal of the strip element from the feedpath to shift said feeler to change the position of said permanent magnet and restart said feeding means.

5. A device for dispensing a series of strip elements such as tickets which have spaces defined therebetween, comprising means for feeding a series of strip elements through a feedpath, a feed control sensing device adapted to be connected to said feeding means including a feeler, said feed control sensing device includes a housing, means mounting said housing above said feedpath in a position wherein said housing bears against the strip elements which are being fed, means for biasing said housing downwardly over said strip elements, means mounting said feeler adjacent said feedpath to engage strip elements as they are fed and to move over the surfaces of said strip elements and into the spaces therebetween, an electric coil adapted to be connected to said feeding means for starting and stopping said feeding means upon change of voltage of said coil, and a permanent magnet arranged in the field of said coil and connected to said feeler for movement therewith to vary the voltage of said coil.

6. A device for dispensing a series of strip elements such as tickets which have spaces defined therebetween, comprising means for feeding a series of strip elements through a feedpath, a feed control sensing device adapted to be connected to said feeding means including a feeler, means mounting said feeler adjacent said feedpath to engage strip elements as they are fed and to move over the surfaces of said strip elements and into the spaces

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therebetween, an electric coil adapted to be connected to said feeding means for starting and stopping said feeding means upon change of voltage of said coil, a permanent magnet arranged in the field of said coil and connected to said feeler for movement therewith to vary the voltage of said coil, a roll of strip elements and an underlying base material, said strip elements being secured to said underlying base material by pressure-sensitive adhesive, a member defining said strip material feedpath having an edge forming a release for the strip material from said backing material, a pulling device connected to said backing material for pulling said backing material from the roll thereof along with said strip material and around said release edge at which said strip material separates from said backing material, said feeding means comprising said pulling device and a motor connected to said pulling device for rotating said pulling device to roll up and withdraw said backing material, said feed control sensing device includes a housing having a flat bottom resting on said strip elements, means pivotally mounting said housing, adjustable means for biasing said housing downwardly to engage said strip elements, said feeler being pivotally mounted within said housing along with said permanent magnet and said coil, and a control lever pivotally connected to said feeler and extending downwardly from said housing to overlie a strip element which has been fed past said feeler and being movable upwardly upon removal of the strip element to engage a contact for reactivating said coil.

7. A feed control sensing device for use in dispensing strip elements such as tickets which have spaces defined therebetween comprising a housing, a feeler member pivotally mounted in said housing and projecting downwardly therefrom to engage over the surface of the strip elements as they are fed, an electric coil carried in said housing and adapted to be connected to feed means for said strip material, a permanent magnet arranged in the field of said coil being movable to vary the field and the voltage of said coil, link means pivotally connected to said permanent magnet and to said feeler for movement of said permanent magnet upon movement of said feeler into the spaces between strip elements, means for pivotally mounting said housing in a position in which it is adapted to bear downwardly over the strip elements, and means for adjustably biasing said housing downwardly over the strip elements.

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