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PERFORATED RECORD SENSING DEVICE

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FIG. 1.

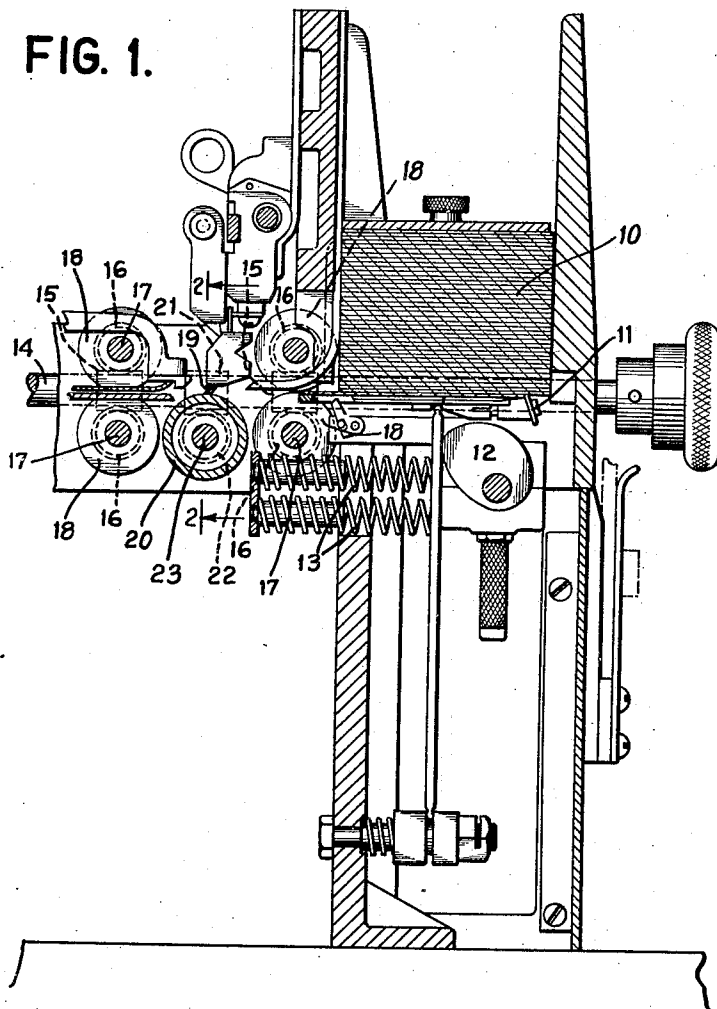
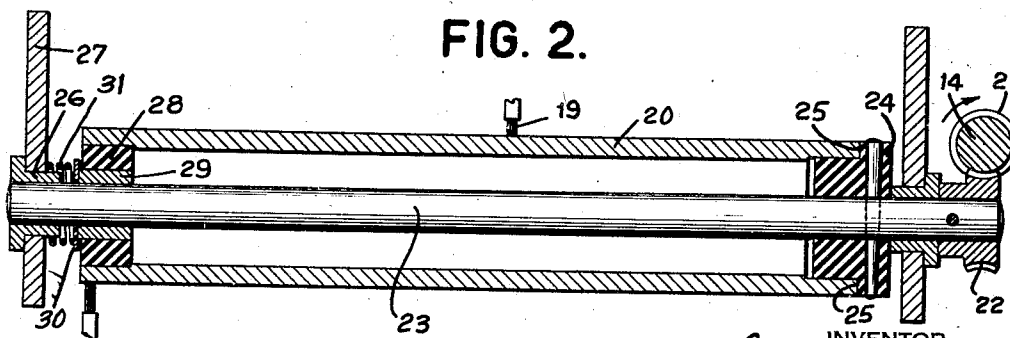


FIG. 2.



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PERFORATED RECORD SENSING DEVICE

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3 Claims. (Cl. 235—61.11)

The present invention relates to record controlled accounting machines and more particularly to the sensing devices of such machines which sense perforations in record cards to control the operation of the machine.

The invention relates to electrical contact sensing devices in which a stranded contact brush makes electrical contact with a roller through a perforation in a record card. Feeding means is usually provided to feed cards, one by one, to pass between the brush and roller. As the brush wipes over the imperforate portion of the card it gathers small particles of lint or card dust, which, when the perforation is sensed, may cause burning of the contact roll at the point of contact. Generally the roller is geared to move with the card so that different sections make contact with the variously located perforations and the positions at which spotting occurs are thus distributed around the circumference of the roller.

The principal object of the present invention is to provide an improved brush and contact roller construction in which the action of spotting or burning is greatly minimized.

In carrying out the object of the invention a polished, hardened steel roller, harder than the contacting brush, is employed which is mounted to be driven through a light frictional arrangement. Pressure of the card against the roller will cause a slight retardation of the roller which retardation is progressive and varying so that as successive cards are sensed a constantly varying point of contact is presented to the brush.

Various other objects and advantages of the invention will be obvious from the following particular description of one form of mechanism embodying the invention or from an inspection of the accompanying drawing; and the invention also constitutes certain new and useful features of construction and combination of parts herein-after set forth and claimed.

In the drawing:

Fig. 1 is a section of the card feeding and sensing section of a sorting machine to which the present invention has been applied.

Fig. 2 is a section on line 2—2 of Fig. 1 showing the arrangement and construction of my improved contact roller.

The sorting machine to which the present improvements are applied may be that shown in my Patent No. 1,969,362, granted August 7, 1934.

In such machines, record cards are advanced singly from the bottom of a stack 10 (Fig. 1) by a picker 11 which is reciprocated under control of cam 12 and springs 13. Cam 12 is driven from

main drive shaft 14 which is in constant rotation. On the shaft are worms 15 which mesh with worm wheels 16 on cross shafts 17 to which are secured feeding rollers 18.

Picker 11 advances a card to the first pair of rollers 18 which advance it to the next pair and so on to its ultimate destination. Intermediate the first two pairs of rollers is the sensing station comprising brush 19 and contact roller 20, which, upon sensing a perforation, complete an electrical circuit as explained in my patent mentioned above, to select a sorting pocket to receive the card. The perforations in the card are located in so-called index point positions distributed along the width of the card which is its direction of feeding.

Roller 20 is mounted and driven as follows: On shaft 14 is a worm 21 which drives a worm wheel 22 secured to a shaft 23. Pinned to shaft 23 is a shouldered member 24 which abuts against the end of roller 20 at the surface 25. The portion of reduced diameter which extends within the roller 20 has what is termed a free running fit so that driving contact is only along the surface 25. The opposite end of shaft 23 is supported in a bearing 26 fixed in frame 27. The opposite end of roller 20 has an insulating bushing 28 secured thereto by a tight fit. Fitting tightly within bushing 28 is a metallic bushing 29 which is reamed to provide a free running fit on shaft 23. Adjacent to bushing 29 is a freely mounted washer 30 between which and frame 27 is a coil spring 31.

With this arrangement, roller 20 is driven only through contact of its right hand end with surface 25 of member 24, the force of contact being provided by spring 31 pressing against the left hand end of the roller.

Roller 20 is slightly greater in diameter than feed rollers 17 so that its surface speed is slightly greater and it rotates together with the feed rollers. As a record card is advanced by the first pair of feed rollers 17 it will enter between brush 19 and roller 20. The brush 19 bearing against the card will cause a slight retardation of roller 20 against its frictional drive and while the card is at the sensing brush, roller 20 will rotate at substantially the speed of the feed rollers. When the card has passed by the brush 19, roller 20 will pick up again. The next card will again cause a slight retardation and so on, each succeeding card in turn causing a slight differential-rotation with respect to the constantly driven feed rollers 17.

Thus for each card traversing roller 20, the points of possible contact through the card with

the roller will constantly vary and if, due to some cause, a spot is formed upon sensing some perforation, the slipping action of the roller against the card will clean the spot before the same point is again in position to complete a circuit.

In a test of a polished steel roller geared to rotate so that for a given index point position of the card eleven different points of contact were presented, the roller showed burned spots at all eleven points after 24,000 cards, each with a perforation at the same index point position, had been run through the sensing station. In contrast, the same polished roller arranged as described above showed no burned spots whatever after 300,000 cards had been fed and sensed.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is as follows:

1. A record card feeding and sensing device comprising a pair of feed rollers for advancing a record card in a straight line with a constant rate of motion, a contact roller having its surface tangent to the line of travel of the card, frictional means for constantly driving said contact roller at a peripheral speed greater than the speed of the advancing card, a contacting element engaging said roller, said feed rollers being arranged to feed the card between said element and said contact roller, at said constant rate of

motion, whereby said card, upon entering between the element and contact roller, causes retardation of the roller against its frictional driving means.

2. A record card feeding and sensing device comprising a pair of feed rollers, means for driving said rollers to cause the surface thereof to travel at a predetermined linear speed, a contact roller positioned adjacent to said feed rollers, means for frictionally driving said contact roller so that its surface speed is greater than the surface speed of the feed rollers, said feed rollers being arranged to feed a record card into engagement with the surface of said contact roller, and at the surface speed of the feed rollers, whereby the record card will lessen the speed of the contact roller against the action of its driving means while the card is in engagement therewith.

3. In combination, sensing means for sensing successive cards, one card at a time, while the card is in motion, including a pair of cooperating elements between which the card moves at a fixed rate of speed, one of said elements being a roller, means for impositively rotating the roller to provide a normal peripheral speed, different than the speed of the card, prior to engagement of the card with the roller, said roller being constrained by the card during engagement therewith to move at substantially the same peripheral speed as the card and means for feeding successive cards at predetermined spaced distances and at said fixed rate of speed between the pair of cooperating elements to enable the roller during the interval of disengagement with successive cards to move at its own rate of speed, whereby a different peripheral portion of the roller meets each immediately succeeding card.

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