

Feb. 25, 1941.

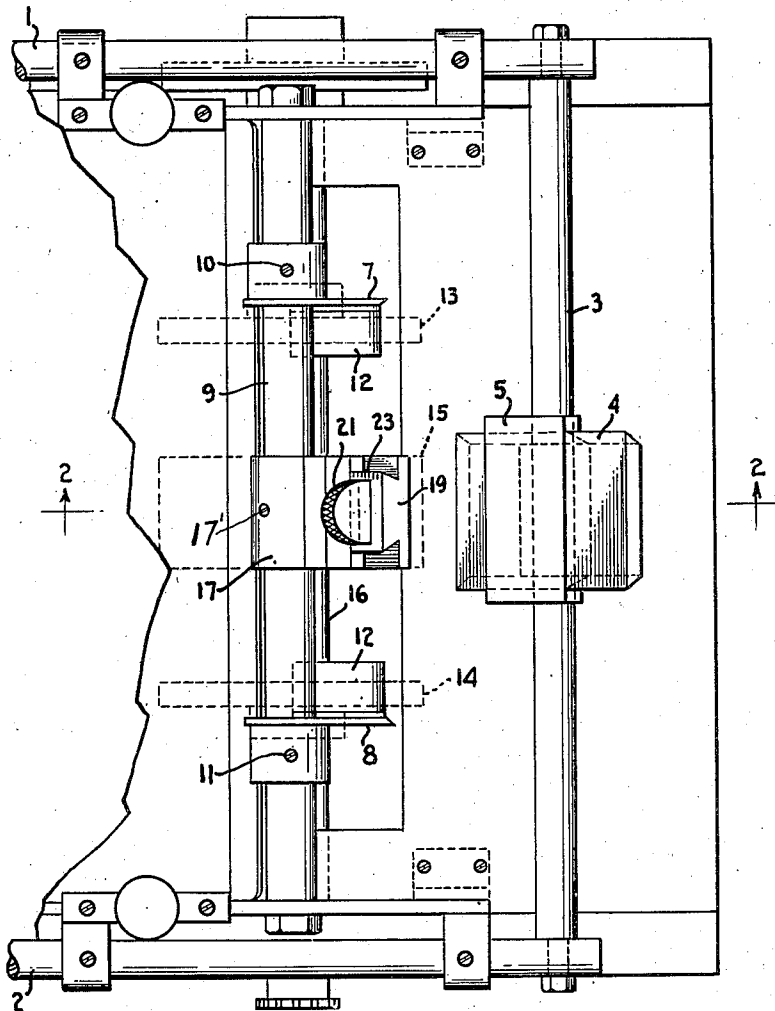
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2,233,153

CALIPER FOR CARD FEEDERS FOR COUNTING MACHINES

Original Filed July 26, 1939 3 Sheets-Sheet 1

FIG. 1



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FIG. 2

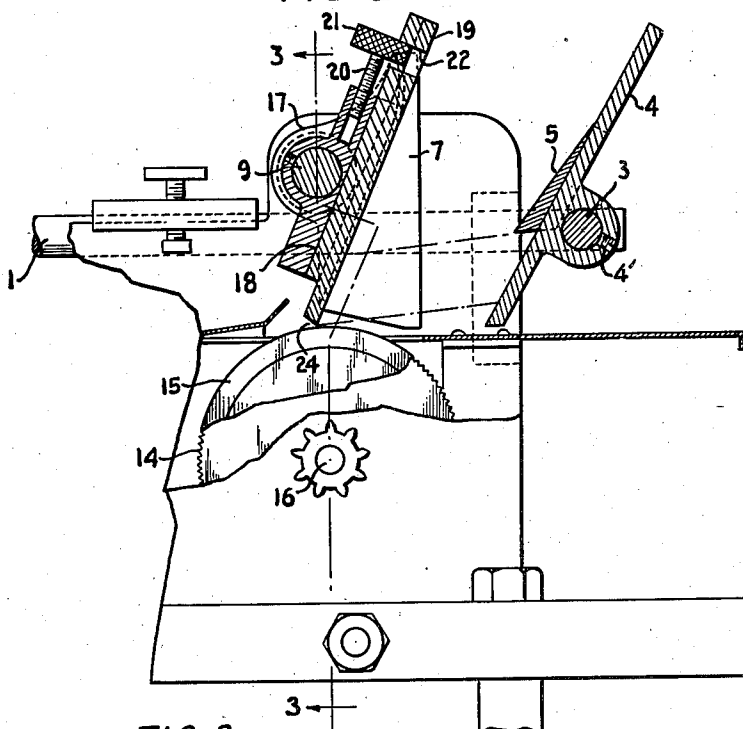
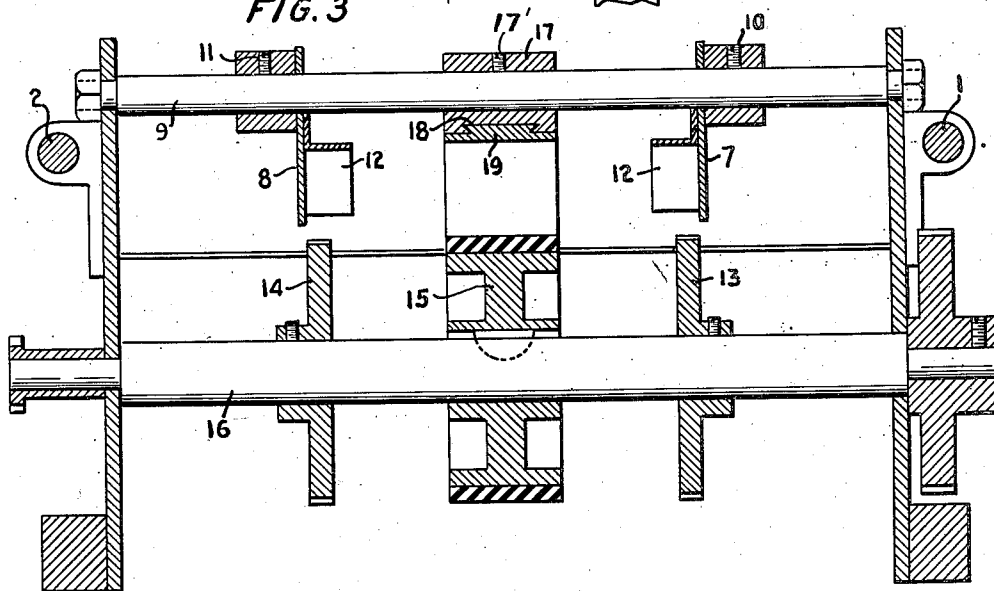


FIG. 3



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CALIPER FOR CARD FEEDERS FOR COUNTING MACHINES

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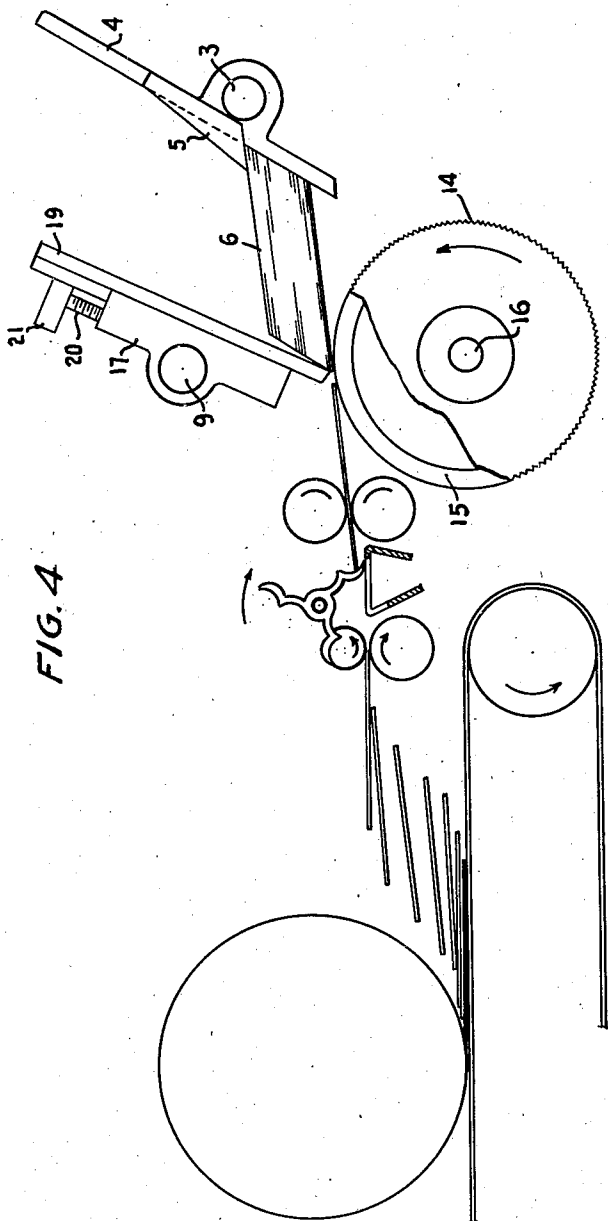


FIG. 4

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CALIPER FOR CARD FEEDERS FOR
COUNTING MACHINES

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Original application July 26, 1939, Serial No.
286,570. Divided and this application April 2,
1940, Serial No. 327,418

5 Claims. (Cl. 271-41)

This invention is described in my copending application Serial No. 286,570, filed July 26, 1939, of which this is a division, and also in my copending application Serial No. 327,415, filed April 2, 1940.

Numerous machines have been built for counting cards and papers. In commercial practice they have been found either too slow in operation or inaccurate in count or both.

This is due to the fact that cards, coupons, checks, envelopes, etc. which are to be counted, not only vary greatly in thickness, but to a considerable degree in quality and in the condition in which they are found when they are to be counted, for example, cards may be made from a very high grade rag content stock or very soft manila, also it may be desired to count them when new before they are distributed to their various destinations and then after much handling they are returned to be again counted.

The checks and coupons of various grades of paper may be new or worn, they may have perforated edges and carbon printed spots on the reverse surface. The thickness of the paper or cards will be found to vary from approximately .003 inch to .025 inch or more.

The result of this situation is that it is absolutely essential for provision to be made to prevent the passage of more than a single item from the stack to be counted. This necessitates the provision of some means to vary to an extreme degree of nicety the size of the passage through which the card, check, etc. shall be fed.

My invention has for its principal object to provide a caliper which preferably is to be used in association with the card feeder described in my copending application, Serial No. 327,415, although it will be apparent that it may be employed on other counting machines.

That application sets forth that it is desirable to provide a construction whereby the card support can be adjusted to various angles, and it is the object of that invention to provide a construction which permits the angle to be varied and then, when the correct angle is obtained, to move the support to fit various sizes of cards without altering the angle.

A further object of my present invention is to provide a caliper the angle of inclination of which can be adjusted and in this manner ensure a greater degree of accuracy in the feeding of the cards.

My means of accomplishing the foregoing objects may be more fully comprehended by having reference to the accompanying drawings which

are hereunto annexed and are a part of this specification in which:

Fig. 1 is a plan view of a fragmentary portion of a counting machine showing my improvement;

Fig. 2 is a cross section on line 2-2 in Fig. 1;

Fig. 3 is a sectional view taken on line 3-3 in Fig. 2; and

Fig. 4 is a diagrammatic view showing the operation of the device.

Similar reference numerals refer to similar parts throughout the entire specification.

As described in copending application, Serial No. 327,415, the card feeder comprises two rods 1 and 2 which are slidably mounted therein. The rods 1 and 2 are connected at the front end by a cross rod 3 which carries an inclined adjustable card support 4 which supports the cards as clearly seen in Figs. 2 and 4.

This card support is provided with a sliding weight 5 which adds to the force of gravity for feeding the cards. This sliding weight 5 is arranged to bear upon the rearward margin of the cards only. It has been found in practice that in this way I am able to attain more effective feeding, for the reason that sliding weight 5 never varies in weight since the force of gravity exerted upon it is always the same regardless of the size of the stack of cards.

The card support 4, as clearly seen in Figs. 1 and 2 is rotatably mounted upon the cross rod 3 so that its angle of inclination can be adjusted to any degree required. Provision is made to hold the card support in place once the adjustment has been made by a set screw 4' mounted in the hub of the support plate 4. Practice has shown that it is necessary to vary the angle of the plate 4 because if the angle of the plate is too sharp or not sharp enough it will prevent the proper feeding of the cards from the stack. By mounting the inclined card support 4 upon the cross rod 3 which is slidable with rods 1 and 2, once the proper angle of inclination is determined, it can always be maintained regardless of the size of the cards to be counted. Because of the rods 1 and 2 being parallel, it necessarily follows that when the cross rod 3 is moved at all, the ends of rod 3 will at all times travel uniformly so that there will be no danger of twisting the support plate 4 thus spoiling the angle of inclination.

The forward edge of the cards contacts locating plates 7 and 8 which are adjustably mounted on a rod 9. These plates are provided with hubs which may be cast or formed thereon or readily attached by welding or any other convenient method of securing them to the plate. Set screws 10 and

11 are provided to secure the locating plates on rod 9 in a position to suit the width of the cards which are to be counted.

Angle plates 12 are attached to the locating plates 7 and 8 by screws or in any other suitable or convenient manner. These plates are utilized to limit the forward movement of the cards.

The front edge of the cards rest upon the periphery of two rolls 13 and 14 which are designed to support the ends of the cards. In practice I have found it desirable to corrugate the periphery of these right and left rolls 13 and 14. The cards are preferably fed by a feed roll 15 which is approximately the same diameter as the right and left rolls 13 and 14. In practice I have found that this roll should be substantially $1\frac{3}{4}$ inches wide. It is located centrally between the support rolls 13 and 14. The feed roll 15 may be provided with a cover of medium soft tough rubber. If so constructed, this rubber should be approximately $\frac{1}{4}$ inch in thickness or it may be found desirable to make the roll entirely of rubber. This feed roll 15 is carried by a shaft 16 which passes through a bearing formed in the side plates or panels of the machine.

The rod 9 is preferably mounted in suitable bearings secured to the panels of the machine. Upon this rod 9 I mount a block 17. This block 17 is preferably provided with a vertical dovetail slot 18 arranged to receive my improved caliper plate 19. As shown in the drawings the caliper is rotatably mounted on the rod 9. This provides for adjusting the angle of inclination of this block 17 and in turn the caliper. A set screw 17' is provided to hold the block 17 in place. It will be clear that by loosening this set screw 17' the block 17 which carries the caliper plate 19 may be rotated upon the rod 9 until its angle of inclination is the same as the adjusted angle of the card support 4. By tightening the screw 17' the block 17 and caliper plate 19 can be securely held at any angle desired. Although I have shown a set screw for this purpose, other mechanical means may be employed if desired.

This caliper plate 19 is slidably mounted in the dovetail slot 18. Provision is made for raising and lowering the caliper plate 19 by means of an adjusting screw 20 which is threaded into the block 17, as clearly seen in Fig. 2. The screw 20 is provided with a head 21 which is fitted into a horizontal slot 22 formed in the caliper 19. This provides for a minute adjustment of the caliper 19.

Preferably a micrometer scale is scribed on the face of the block 17 adjacent the edge 23 of the caliper plate 19.

Operation

In operation, the operator first puts a micrometer on one of the cards, checks, etc., which are to be counted and having determined its accurate measurement he sets the position of the caliper plate 19 by means of the adjusting screw 20 and the micrometer scale on the block 17 until the opening between the lower edge 24 of the caliper plate and the periphery of the feed roll 15 coincide with that of the thickness of the article to be fed.

In practice I have found it is sometimes necessary to very slightly increase the space between the periphery of the feed roll 15 and the lower edge 24 of the caliper plate 19 to take care of irregularities in the edges of the cards, checks and the like which are to be counted, but once

this adjustment is made, no further difficulties will be caused by the passage of more than a single card, check or the like which is being counted.

The machine is now ready to begin the counting operation. The motor (not shown) is started and through the medium of belt, pulleys and trains of gears, the various rotating parts are revolved. The frictional contact against the rubber surface of the feed roll 15, on the bottom card of the stack of cards 6, will cause the bottom card to be fed rearwardly. This friction is materially increased by means of gravity due to the weight of the cards on the stack and is supplemented by the sliding weight 5. The auxiliary rolls 13 and 14 which are provided with corrugated surface, keep the cards balanced, the roughened surface of these rolls supplementing the feeding action of the main feed roll 15.

It will be clear from the foregoing that by the provision of the micrometer adjustment for the spacing between the lower edge of the caliper plate 19, and the face of the feed roller 15, that the device will prevent more than a single card being fed and that the adjustment enables the operator to insure proper delivery of a single card, etc. regardless of the variation in thickness.

Having described my invention, what I regard as new and desire to secure by Letters Patent is:

1. In a card counting machine, a main feed roll on which the forward edge of the card rests, a pair of adjustable auxiliary feed rolls located at each side of the main feed roll, a card support, means to adjust its angle of inclination, a caliper plate adjustably mounted above and spaced from said main feed roll, whereby said space may be altered for articles of varying thickness, and means permitting the adjustment of the angle of inclination of said caliper to substantially correspond to the card support.

2. In a card counting machine, a main feed roll on which the forward edge of the card rests, a cross bar above said main feed roll, a card support, means to adjust its angle of inclination, a block rotatably mounted on said bar above said feed roll, whereby the angle of inclination of said block can be correspondingly adjusted, dovetail guides in said block, a caliper plate fitted to and coinciding with said dovetail slot, an adjusting screw mounted in said block arranged to shift the position of the caliper plate with relation to the feed roll.

3. In a card counting machine, a main feed roll on which the forward edge of the card rests, a cross bar above said main feed roll, a card support, means to adjust its angle of inclination, a block rotatably mounted on said bar above said feed roll, whereby its angle of inclination can be adjusted to substantially correspond to the card support, dovetail guides in said block, a caliper plate fitted to and coinciding with said dovetail slot, an adjusting screw mounted in said block, a head on said screw, there being a slot in said caliper plate in which said head fits whereby the turning of said screw will vary the space between the lower edge of said plate and the feed roll.

4. In a card counting machine, a main feed roll on which the forward edge of the card rests, a cross bar above said main feed roll, a card support, means to adjust its angle of inclination, a block mounted on said bar above said feed roll, dovetail guides in said block, a caliper plate fitted to and coinciding with said dovetail slot, an adjusting screw mounted in said block, arranged to shift the position of the caliper plate with relation

to the feed roll, a micrometer scale on said block adjacent said adjusting screw, and means permitting the adjustment of the angle of inclination in relation to that of the card support.

5 5. In a card counting machine, a main feed roll on which the forward edge of the card rests, a pair of adjustable feed rolls located at each side of the main feed roll, a card support, means to adjust its angle of inclination, a caliper plate

above and spaced from the periphery of said main feed roll, a micrometer adjustment whereby said space may be altered for articles of varying thickness, means permitting the adjustment of the angle of inclination in relation to that of the card support, and means to lock said adjustment when made. 5

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