

Feb. 25, 1941.

N. S. WELK

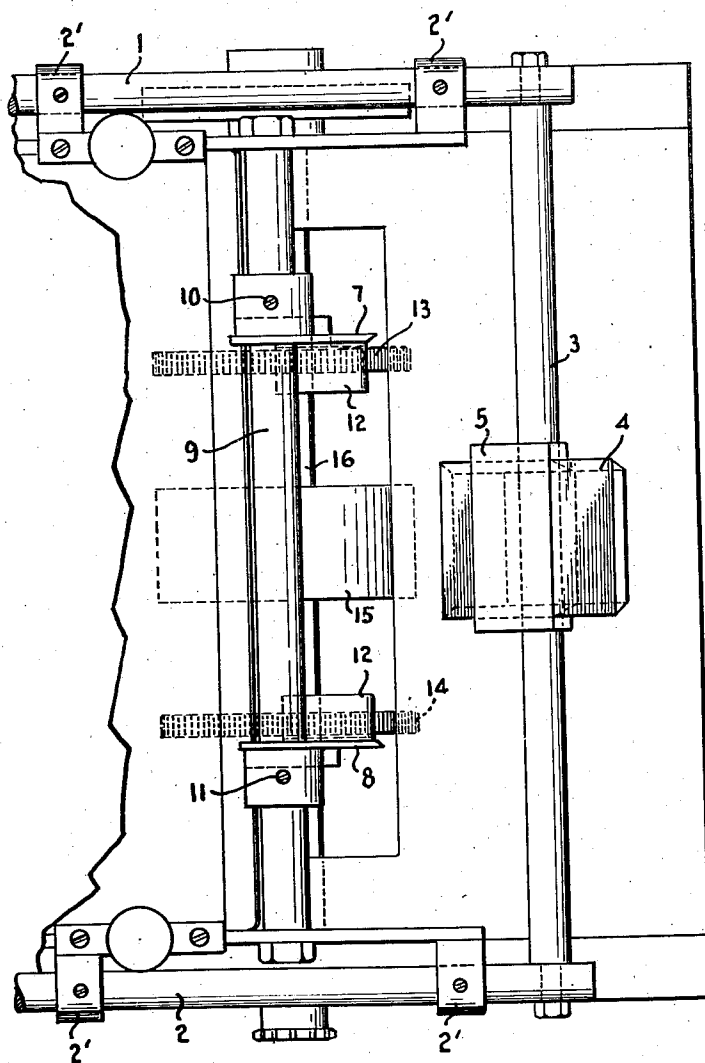
2,233,150

CARD FEEDER

Original Filed July 26, 1939

3 Sheets-Sheet 1

FIG. 1



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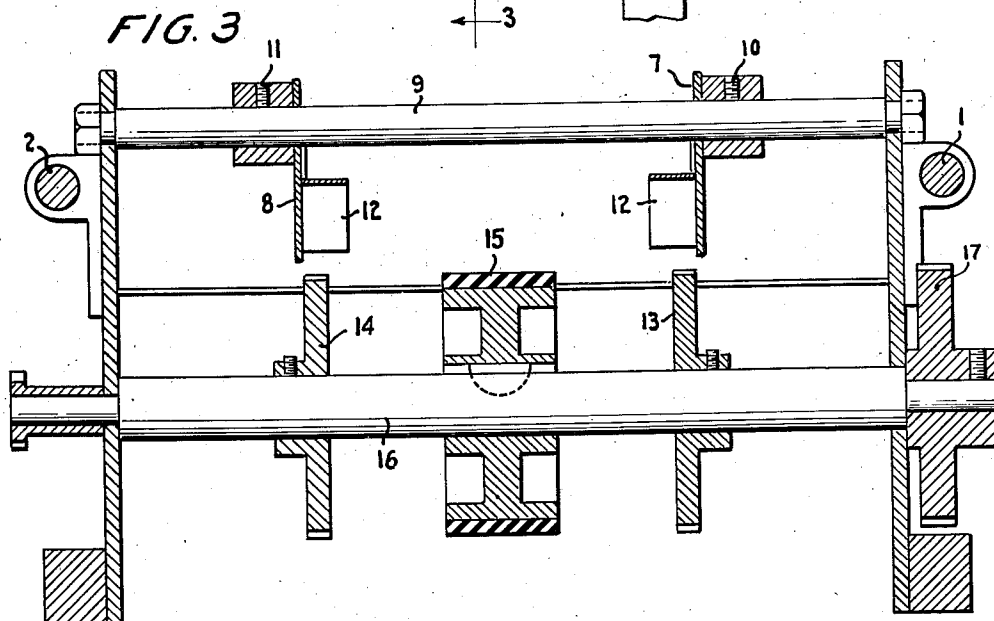
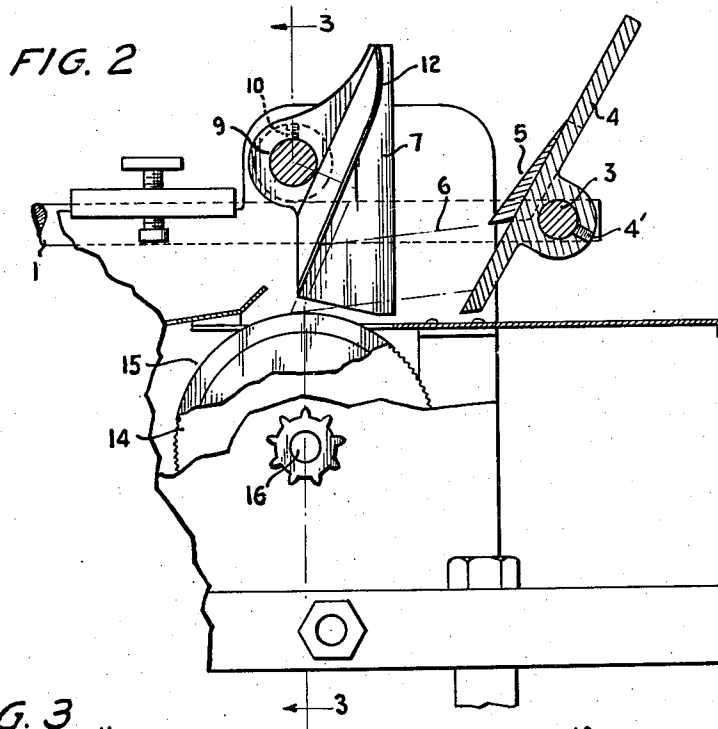
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3 Sheets-Sheet 2



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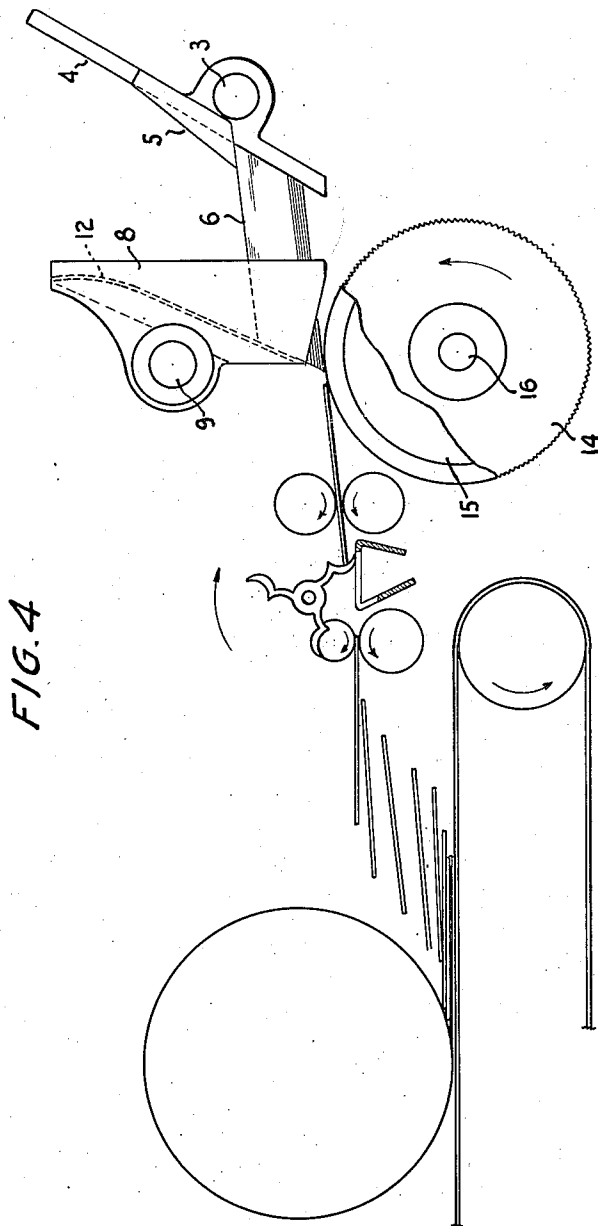
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CARD FEEDER

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,233,150

CARD FEEDER

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Original application July 26, 1939, Serial No.
286,570. Divided and this application April 2,
1940, Serial No. 327,415

10 Claims. (Cl. 271—61)

My invention relates to that class of machines which is designed to count record cars, checks, coupons and the like, such as described in my copending application, Serial No. 286,570, of which this is a division.

In feeding devices for machines of this character it has been found that where they rely upon the force of gravity, due to the weight of the cards, to produce the feed, the feeding in certain instances is irregular as the weight of the stack gradually diminishes, because the cards are fed from the bottom of the stack.

Moreover, in machines of the type described in my copending application above referred to, where the cards, checks, etc. are to be counted, it is absolutely essential that the cards, checks, etc. be fed singly at all times.

The principal object of my invention is to provide a construction which will overcome this objection and will insure uniform feeding of the cards in the stack.

My invention has for its further object to provide a feeder which can be readily adjusted to care for different sizes of cards, checks, and the like which are to be counted.

Practice has shown that in machines of this type, it is essential that the cards be held at an angle so as to produce a bevelled arrangement so that the front edge of the lowermost card will be somewhat in advance of the remaining cards, and this angle is critical. Considerable time has been lost in machines of this character in making this adjustment of the supporting plate.

My invention has for its further object to provide a construction so that once the critical angle is determined, the supporting plate can be shifted to accommodate various sizes of cards, checks and the like without at all changing or altering the angle of inclination.

I am aware that there have been patents such, for example, as United States Letters Patent to La Bombard No. 1,352,284, which provides for locking the angle of inclination of the card supports, which are two in number. But in the construction disclosed in that patent, there is no means provided by which the two pins illustrated, which form the card support, can be moved as a unit with the result that the advantages obtained by locking the pins in the desired angle of inclination is entirely lost. Whereas, by the use of my improved construction, as will appear from the hereinafter contained description, once the angle of inclination has been determined, no further adjustment is necessary with respect to the angle of the plate with relation to the stack,

regardless of the movement required to suit various sizes of 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 fragment of the machine shown in the parent application hereinbefore referred to;

Fig. 2 is a fragmentary view of the same machine showing my improved invention which is the subject matter of this application;

Fig. 3 is a vertical sectional view taken on the line 3—3 in Fig. 2; and

Fig. 4 is a diagrammatic view of the operation of the machine showing the preliminary stacking of the cards on the conveyor belt, a card ready to be counted and the feeder mechanism which forms the subject matter of this application.

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

As shown in the drawings I provide two rods 1 and 2 which are slidably mounted in brackets 2' cast or formed on the frame of the machine of which I have only shown a fragmentary portion as obviously the frame forms no part of the invention herein set forth. 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.

Practice has shown that by constructing the card support without a bottom plate, the cards rest to the fullest extent upon the main feed roll 15 and the auxiliary rolls 13 and 14. When the bottom card is carried rearwardly by the main feed roll 15 even to a slight degree it is removed from the support 4 and is free to approach an approximate horizontal position.

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. This sliding weight 5, as clearly shown in Fig. 2, is tapered downwardly and outwardly to facilitate the loading of the machine. When loading, the front edge of the cards rests temporarily upon this tapered surface. The weight 5 is then raised sufficiently for the cards to drop into position. This construction has been found in practice to lessen the time required for loading. It has been found in practice that in this way I am able to attain the most effective feeding, for the reason that since the sliding

weight 5 never varies, the amount of gravity exerted upon it never varies regardless of the size of the stack.

The card support 4, as clearly seen in Figs. 1, 2 and 4 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 card support 4.

Practice has shown that it is necessary to vary the angle of the plate 4 to suit various kinds of card stacks 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 the rods 1 and 2 are parallel, it necessarily follows that when the cross rod 3 is moved at all, both of the ends of rod 3 will at all times travel uniformly so that there will be no danger of twisting the card support 4 thus changing the angle of inclination.

The forward edges of the cards contact 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 plates. Set screws 10 and 11 are provided to secure the locating plates on rod 9 in the correct 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 rests upon the periphery of two auxiliary rolls 13 and 14 which are designed to support the ends of the cards. These rolls are slidable on the shaft 16 on which they are mounted to provide for various sizes of 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 auxiliary 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. Both the feed roll 15 and rolls 13 and 14 are carried by a shaft 16 which passes through a bearing formed in the side plates or panels of the machine. A gear 17 is fixedly secured to an end of the shaft 16 to drive the feed roll 15 and supporting rolls 13 and 14. This gear 17 may be driven in any suitable or convenient manner (not shown).

The operation

A stack of cards of approximately five hundred in number are placed on a flat surface and "jogged" until their edges are even. The cards are "jogged" preferably when held at an angle to their face, thus providing a fanned or bevelled arrangement for loading on the inclined surface of the weight 5 which slides on the front of the card support 4. The locating plates 7 and

8 are then adjusted on the cross rod 9 to suit the width of the cards which are to be counted. When this adjustment is made, the locating plates are retained in their position by means of the set screws 10 and 11. The auxiliary rolls 13 and 14 are then spaced the proper distance apart to suit the size of the cards to be counted. They are then fastened on the shaft 16 by means of screws provided for that purpose. Preferably these rolls 13 and 14 are provided with corrugated surfaces, and when in proper position serve to keep the cards balanced. The roughened surface of these rolls supplements the feeding action of the main feed roll 15. The weight 5 is elevated on the card support 4 until it rests on the margin of the top card of the stack 6.

The machine should then be turned manually, enough rotations to determine that the angle of inclination for the support plate 4 has been correctly determined. Once this angle of inclination is obtained, the set screw 4' is tightened up and the support plate as far as its angle is concerned becomes permanent. This angle of inclination will vary with the character, quality or type of cards, checks, etc. which are to be counted, and I have found in practice that considerable time is saved by determining the angle of inclination for the support plate 4 by manual operation of the machine before starting it to count, but as stated, once the correct angle is determined, the feeding of a single card is insured.

The locating plates 7 and 8 having been adjusted for the proper width of the card, the machine is ready to begin its counting operation. The motor (not shown) is started and through the medium of a belt, pulleys and train of gears, which mesh with the gear 17, the various rotating parts are revolved. The frictional contact of the rubber surface of the feed roll 15 against the bottom card of the stock of cards 6, will cause the bottom card to be fed rearwardly. This friction is materially increased by means of force of gravity acting upon the weight of the cards on the stack and is supplemented by the sliding weight 5.

Although I have described with some degree of particularity the specific construction for the adjustment of the card support, it will be apparent to persons skilled in the art that the illustration and description is furnished solely for the purpose of describing a concrete embodiment of my invention, and I do not wish to be understood as limiting myself to such specific construction except as such limitations may appear in the hereinafter contained claims.

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

1. In a card counting machine, an adjustable card support, means to adjust the angle of inclination of said support, means to lock said adjustment when made, and means permitting the shifting of the position of said support without changing said inclination, said means comprising laterally spaced guide means, cooperating guide means on which said support is mounted whereby the support can be adjusted longitudinally.

2. In a card counting machine, an inclined card support, means to adjust the angle of inclination of said support, means to lock said adjustment when made, laterally spaced longitudinally adjustable means permitting the shifting of the position of said support without changing said inclination, and supplemental means mounted and slidable on said support to press the cards

downwardly, adapted to contact the edge of said cards.

3. In a card counting machine, a pair of longitudinally adjustable parallel rods, a cross rod rigidly secured to said parallel rods, a card support adjustably mounted on said cross rod, means to lock said support on said cross rod at predetermined angles, whereby said support can be longitudinally adjusted.

4. In a card counting machine, a cross rod, a card support rotatably mounted thereon, means to lock said support at predetermined angles, means permitting the shifting of both ends of the cross rod in unison whereby the card support can be shifted without varying its angle.

5. In a card counting machine having a pair of rollers to support the cards, a feed roller intermediate said pair of rollers; a pair of locating plates, means to adjust said plates laterally, a cross rod, a card support adjustably mounted thereon, means to lock said support in predetermined angles, parallel rods to which said cross rod is rigidly connected, guides on which said parallel rods with the cross rod slide whereby the card support can be shifted without varying its angle.

6. In a card counting machine, a pair of locating plates, means permitting the adjustment of the said plates laterally, a card support, guide means for longitudinal adjustment of said support, means to lock said support in predetermined angles, cooperating means on which said card support is mounted whereby the card support can be shifted longitudinally without varying its angle.

7. In a card counting machine, a cross rod, a single card support adjustably mounted thereon, means to lock said support in predetermined angles, a pair of parallel rods, guides on which

said parallel rods slide whereby the card support and the cross rod can be shifted longitudinally without varying its angle of inclination.

8. In a card counting machine, a card support mounted on means rigidly carried by spaced longitudinally adjustable means, means permitting the adjustment of the angle of inclination of said support, means to lock said adjustment when made, means to shift the position of said support without changing said inclination, a pair of locating plates one on each side of said support, and means permitting the adjustment of the said plates to the various widths of cards.

9. In a card counting machine, a card support, means permitting the adjustment of the angle of inclination of said support, means to lock said adjustment when made, means to shift the position of said support without changing said inclination said means comprising laterally spaced guide means, cooperating guide means on which said support is mounted whereby the support can be adjusted longitudinally, and a weight the outer surface of which tapers downwardly and outwardly slidably mounted on said inclined support the lower portion of which is adapted to contact the edge of said cards when in position.

10. In a card counting machine having a pair of rollers to support the cards, means permitting the adjustment of the position of said rollers, a feed roller intermediate said pair of rollers; a pair of locating plates, means permitting the adjustment of the said plates laterally, a cross rod, a card support adjustably mounted thereon, means to lock said support in predetermined angles, parallel rods to which said cross rod is secured, guides on which parallel rods with the cross rod slide whereby the card support can be shifted without varying its angle.

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