Feb. 25, 1941. N. S. WELK 2,233,151

STACKER FOR CARD COUNTING MACHINES

Original Filed July 26, 1939 4 Sheets-Sheet 1

FIG. 1

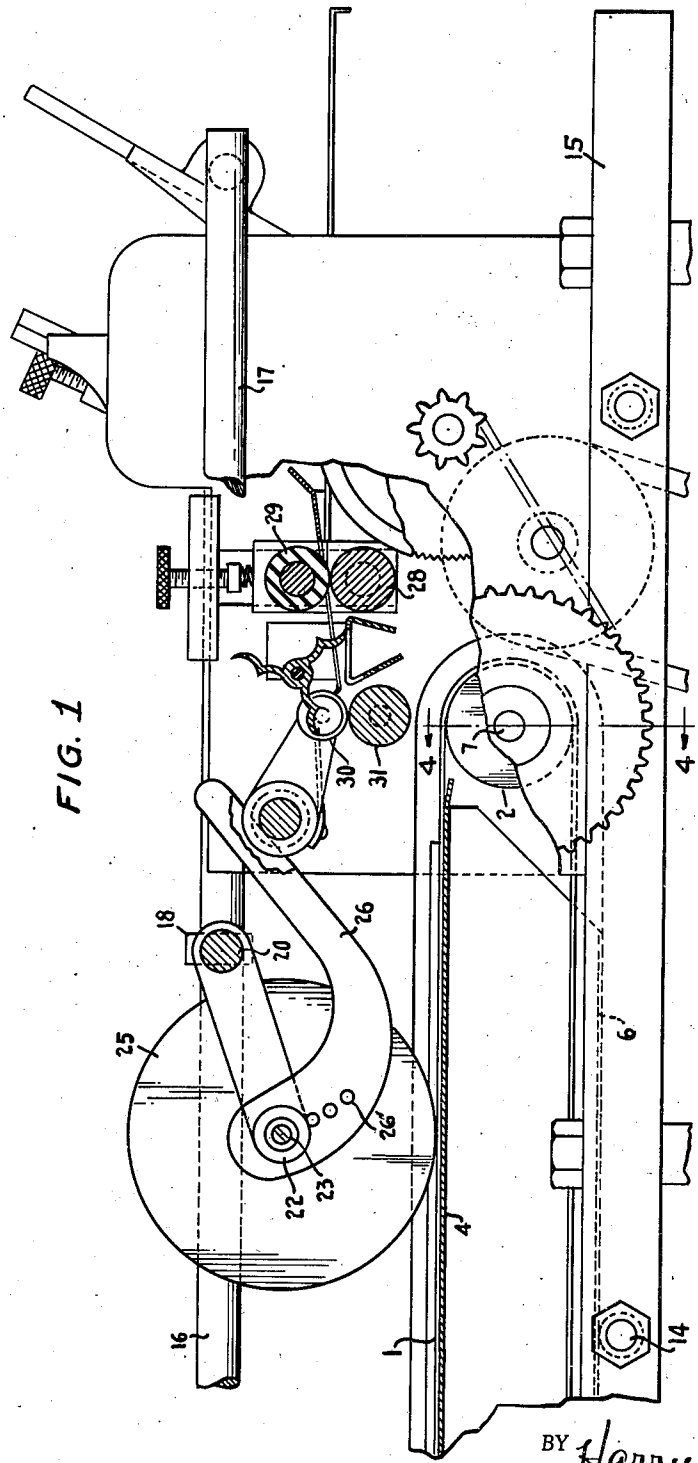
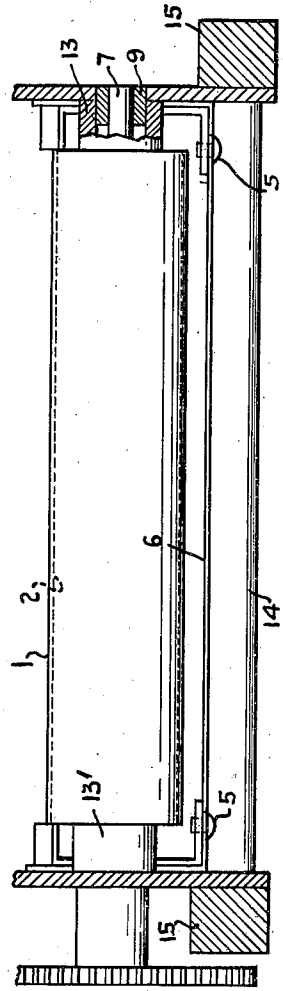


FIG. 4



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STACKER FOR CARD COUNTING MACHINES

Original Filed July 26, 1939 4 Sheets-Sheet 2

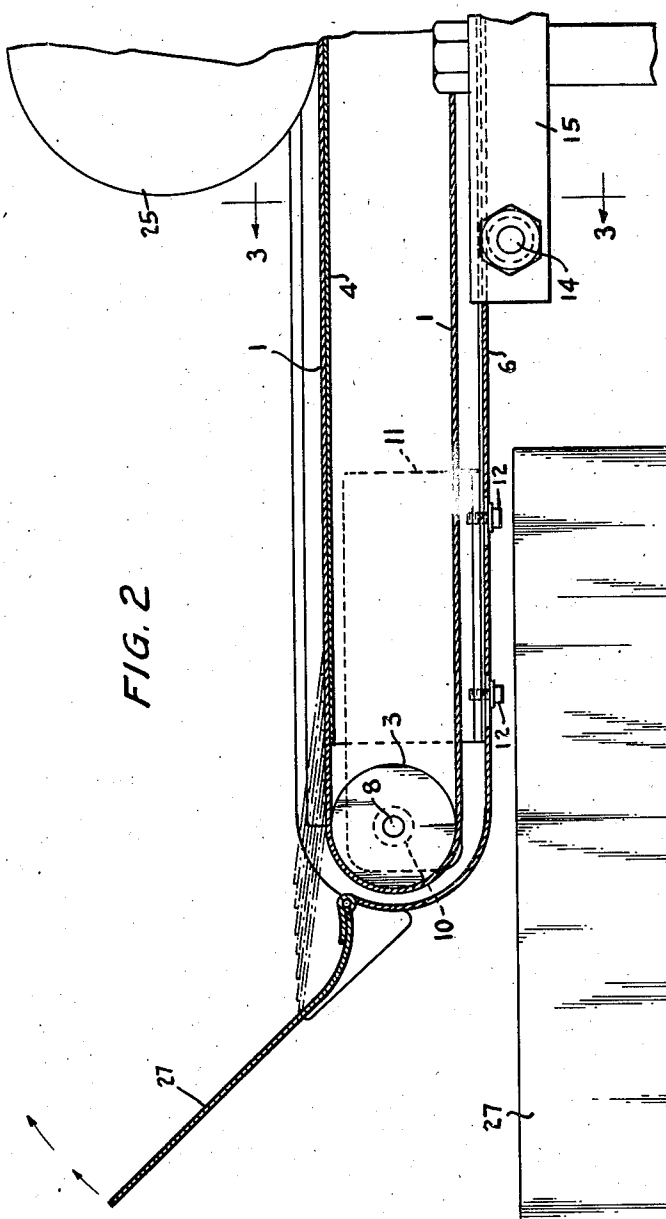


FIG. 2

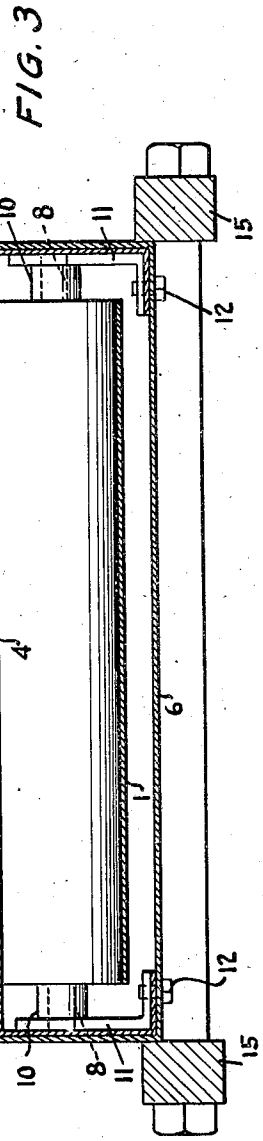


FIG. 3

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STACKER FOR CARD COUNTING MACHINES

Original Filed July 26, 1939 4 Sheets-Sheet 3

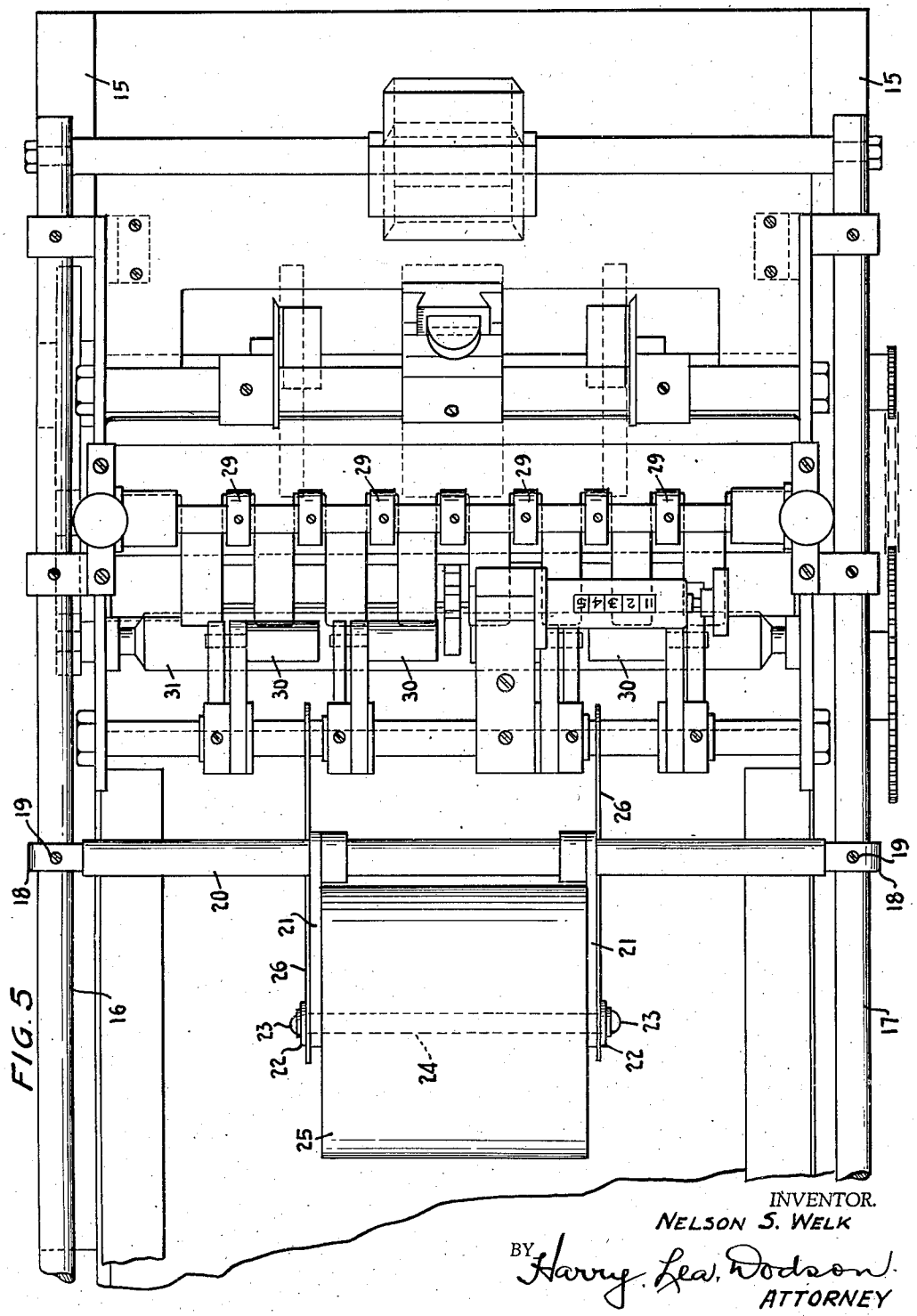


FIG. 5

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STACKER FOR CARD COUNTING MACHINES

Original Filed July 26, 1939 4 Sheets-Sheet 4

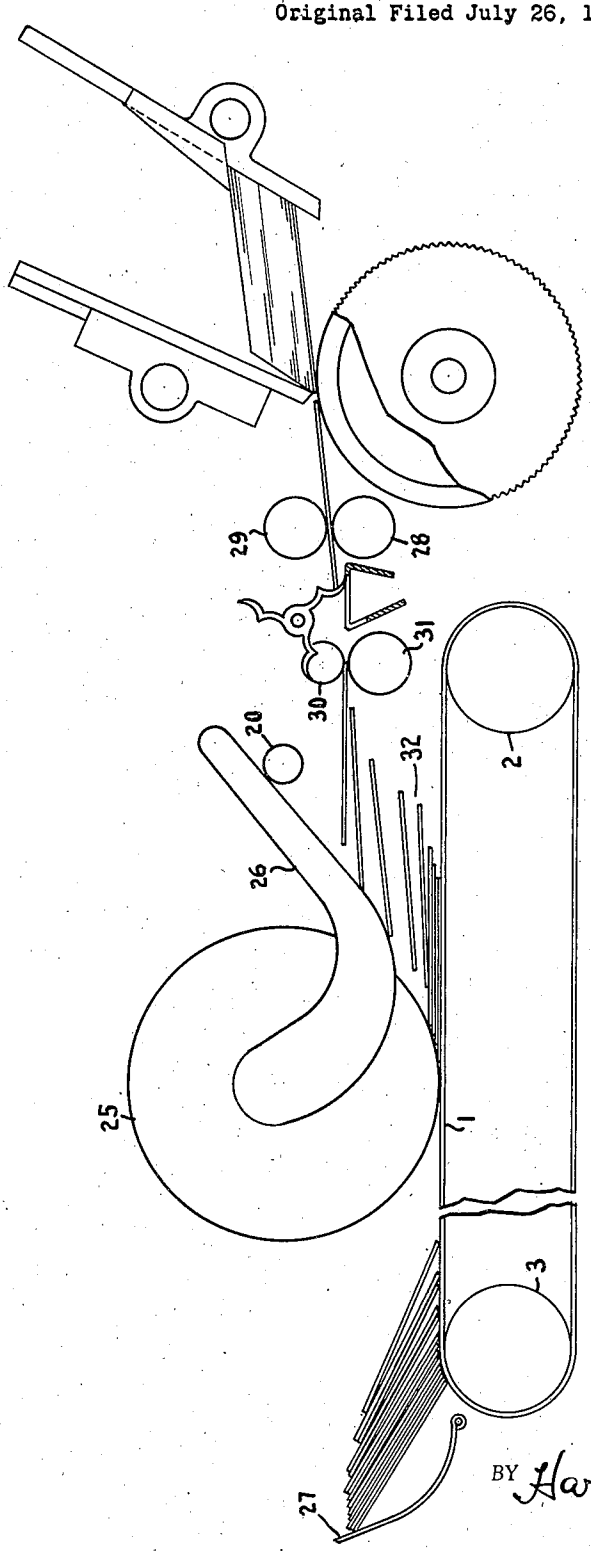


FIG. 6

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UNITED STATES PATENT OFFICE

2,233,151

STACKER FOR CARD COUNTING MACHINES

Nelson S. Welk, Athens, Ohio, assignor to The McBee Company, Athens, Ohio, a corporation of Ohio

Original application July 26, 1939, Serial No. 286,570. Divided and this application April 2, 1940, Serial No. 327,416

10 Claims. (Cl. 271—87)

My invention relates to that class of machines which are designed to count cards, loose leaf records, checks, tallies, and the like. A machine of this character is described in my copending application, Serial No. 286,570, filed July 26, 1939, of which this application is a division.

As described in that application a machine is provided with means for feeding the cards to the machine, means for conveying the cards from the feeder to the counting mechanism, then away from the same, where they are delivered to the means for stacking them. This application relates more specifically to the stacker.

In devices of this kind it is essential that cards should be delivered in a stack having the sides even so as to save the time of jogging them to get them in shape. It is also desirable that they should be stacked as they come from the machine without disturbing their sequential arrangement.

My invention has for its principal object to provide means to mechanically stack the cards after they have been counted.

A further object is to so stack them as to facilitate their removal for filing.

A further object is to provide means to stack the counted cards in numerical sequence.

A further object of my invention is to provide a preliminary stacking roll mounted above and in contact with the conveyor combined with deflector horns so that when the cards are ejected from the carrying rolls of the machine at the high rate of speed—in practice, my machine can sort as high as 50,000 cards per hour—they are caused to dam up in front of this preliminary stacking roll which is constructed of material sufficiently light in weight to permit the cards to pass under it in stacked formation. In this manner I am able to transform the high speed travel of the cards to a slow speed.

A further object is to provide for adjustment of this stacker roll when desirable or necessary.

A further object is to provide for the adjustment of the deflector horns.

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 side elevation view of the front half of the conveyor drive and stacking means, some of the parts being shown broken away and in section for clarity;

Fig. 2 is a side elevation view of the rear half of the conveyor drive and stacking means, some of the parts being shown broken away and in section for clarity;

Fig. 3 is a cross sectional view taken on line 3—3 of Fig. 2 and looking in the direction of the arrows;

Fig. 4 is a partial cross sectional view taken on line 4—4 of Fig. 1 showing the mounting means for the front roller of the conveyor;

Fig. 5 is a plan view of Fig. 1;

Fig. 6 is a diagrammatic view showing the operation of stacking the cards, etc.

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

After the cards have passed through the second set of wringer rolls in the manner set forth in said application, Serial No. 286,570, hereinbefore referred to, they fall upon a conveyor belt 1 which may be made of canvas or other flexible material with a rough surface. This belt 1 is preferably driven by a pair of wooden rolls 2 and 3. The conveyor belt is supported by a rigid metal table 4. Each side of the table is bent downwardly at a right angle and is attached by means of screws 5 to a metal pan or casing 6 which houses the conveyor. The rollers 2 and 3 are provided with steel shafts 7 and 8, the ends of which are carried by bearings 9 and 10.

The bearings 10 are fixedly secured to a belt tightening device 11 which is clamped to the bottom of the pan 6 being secured in place by means of screws 12 which extend through longitudinal slots formed in the bottom of the pan, so as to permit adjustment of the belt 1. The end of the pan 6 rests upon a cross rod 14 which is secured to the side bars 15.

The bearings 9 for the roller 2 are preferably pressed in to the side panels of the machine, only a fragmentary portion of these panels are shown. These bearings project inwardly preferably ¼ of an inch and extend inside of hubs 13 and 13' which project from the right and left ends of the roller 2, and which are permanently attached thereto.

Upon the rods 16 and 17 I mount collars 18 which are slidably mounted thereon. Set screws 19 are provided to hold these collars 18 securely against sliding movement. These collars 18 are preferably fastened to the ends of a cross rod 20. Upon this rod 20 I mount a pair of swinging arms 21, which may be spaced apart approximately two inches by any suitable or desired means; as shown they are spaced by a preliminary stacker roller preferably made of wood or some other light weight material 25. The arms

21 are preferably retained in position by means of collars 22 and screws 23. An axle 24 is mounted in the arms 21. Upon this axle I mount the wooden roll 25. This roller rests upon the conveyor belt 1 which rotates it upon the axle 24 by the friction of the conveyor belt 1.

Deflector horns 26, which are approximately 1/8 of an inch in thickness, are attached to the arms 21, by screws 23 and are adjustable so that when the cards strike these horns 26 they are guided downwardly and underneath the wooden roll 25, and intermediate it and the conveyor belt 1. I provide for the adjustment of these horns 26 by means of holes 26' so as to allow the machine to handle various sizes of cards.

At the outer end of the pan or casing 6, I locate an inclined plate 27 which is attached by means of the hinge 28 to the pan 6, thus providing means for covering this portion of the conveyor when the machine is not in use.

When the cards are conveyed to the rear, they contact the inclined plate 27 which is swung open as seen in Fig. 6 and since the surface of the plate 27 is smooth, it permits them to slide upward until they have assumed approximately an upright position as shown in Figs. 2 and 6. When the resistance of the cards stacked against the plate 27 is sufficiently great, the rough surface of the conveyor belt 1 will slip beneath the lower edges of the cards, and this will cause additional cards to assume an upright position before the space between the plate 27 and the roller 25 is filled.

After the card passes the wringer rolls 28 and 29, 30 and 31, the counted card drops approximately 1½ inches upon the conveyor belt 1, which carries it towards the rear of the machine. The surface speed of the conveyor belt 1 should be approximately seven percent (7%) of that of the surface speed of the cards being counted.

The preliminary stacking roll 25 acts as a buffer for ejected cards, causing them to pile up as shown at 32, Fig. 6, until the stack is sufficient to raise the light weight preliminary stacker roll 25 which will allow the stacked cards to pass under it and be conveyed to the rear. In this manner I am able to convert the high speed travel of the cards to a slow speed.

The cards are ejected from the wringer rolls 30 and 31 with a varying degree of velocity, some striking the deflector horns 26 which are provided to guide them downward under the roll 25, while others will drop down on cards previously deposited upon the conveyor 1. The roll 25 may be readily adjusted for its most effective position, according to the size of the cards which are being counted, by means of sliding the collars 18 upon the rods 16 and 17. The conveyor belt, as previously described, carries the cards to the rear where they contact the inclined plate 27 which operates to stack them in approximately an upright position, from which they may be removed by the operator from time to time, as before described.

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

1. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a conveyor belt to receive said cards after they are counted, rotatable means located back of the second set of wringer rolls which acts as a buffer to cards delivered by said wringer rolls, stationary means located each side of said buffer to deflect the cards downwardly onto said belt, an inclined plate adjacent the end of said conveyor which stacks the cards while the machine is running.

2. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a preliminary stacking roll which receives the cards as they are ejected from the second set of wringer rolls, a conveyor belt below and in contact with said stacking roll to receive said cards after they are counted, a casing for said conveyor belt, a hinged cover therefor which when opened forms an inclined plate adjacent the end of said conveyor which stacks the cards while the machine is running.

3. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a preliminary stacking roll which receives the cards as they are ejected from the second set of wringer rolls, deflector horns at each side of said preliminary stacking roll, a conveyor belt to receive said cards after they are counted, an inclined plate adjacent the end of said conveyor which stacks the cards while the machine is running.

4. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a conveyor belt to receive said cards after they are counted, rotatable means located back of the second set of wringer rolls which acts as a buffer to cards delivered by said wringer rolls, stationary means located each side of said buffer to deflect the cards downwardly onto said belt, means permitting the adjustment of the said deflecting means, adjustable means adjacent the end of said conveyor which stacks the cards while the machine is running.

5. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a preliminary stacking roll which receives the cards as they are ejected from the second set of wringer rolls, a conveyor belt to receive the said cards after they are counted, an inclined plate adjacent the end of said conveyor which stacks the cards while the machine is running, adjustable means mounted adjacent the stacking roll to deflect cards moving at an excessive speed.

6. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a conveyor belt to receive said cards after they are counted, a casing for said belt, an inclined plate adjacent the end of said conveyor which stacks the cards while the machine is running, said stacking means comprising a cover hinged to said casing, means permitting the adjustment of said conveyor belt.

7. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a conveyor belt to receive said cards after they are counted, an inclined plate adjacent the end of said conveyor which stacks the cards while the machine is running, said plate being hingedly mounted whereby it serves as a cover when closed.

8. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a preliminary stacking roller, rotatable means located back of the second set of wringer rolls which acts as a buffer to cards delivered by said wringer rolls, stationary means located each side of said buffer to deflect the cards downwardly onto said belt,

means permitting the adjustment of said buffer and deflecting means, a conveyor belt below and in contact with the periphery of said stacking roller to receive said cards after they are counted, an inclined plate adjacent the end of said conveyor which stacks the cards while the machine is running, means to adjust said conveyor belt.

9. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a preliminary stacking roll which receives the cards as they are ejected from the second set of wringer rolls, deflector horns at each side of said preliminary stacking roll, means to adjust the position of said horns, a conveyor belt to receive said cards after they are counted, an inclined plate adjacent the end of said conveyor which stacks the cards while the machine is running.

10. In a card counting machine having a feeder, two sets of wringer rolls and a counting mechanism intermediate said rolls; a preliminary stacking roll, deflector horns mounted each side of said stacking roll, a conveyor belt to receive said cards after they are counted, adjustable means adjacent the end of said conveyor which stacks the cards while the machine is running.

NELSON S. WELK.