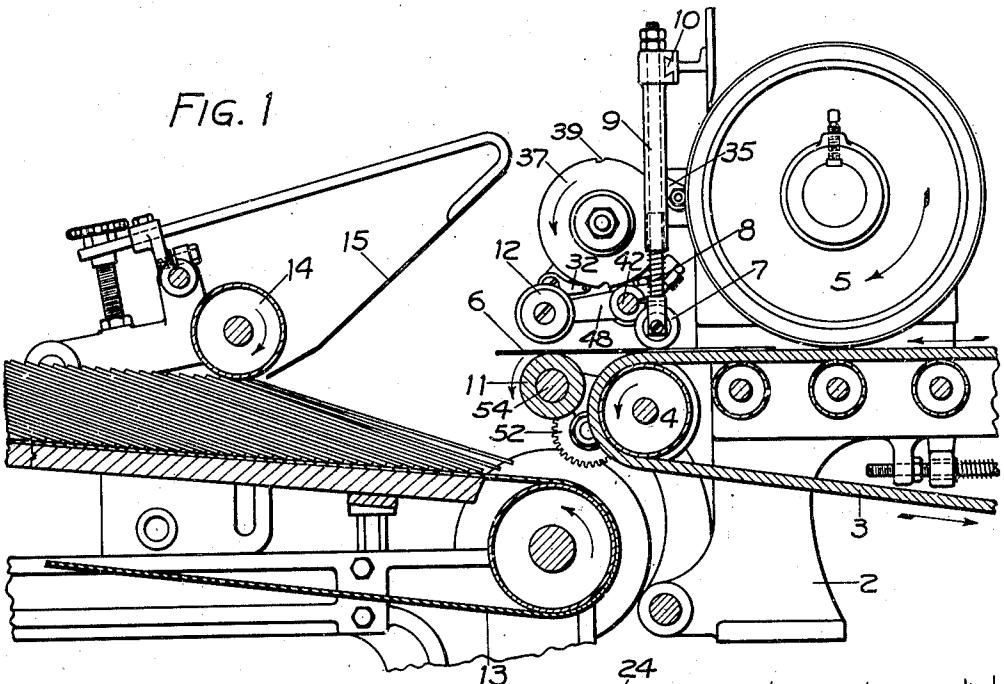
Sept. 20, 1938. E. G. STAUDE 2,130,604

COUNTING MECHANISM

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FIG. 1



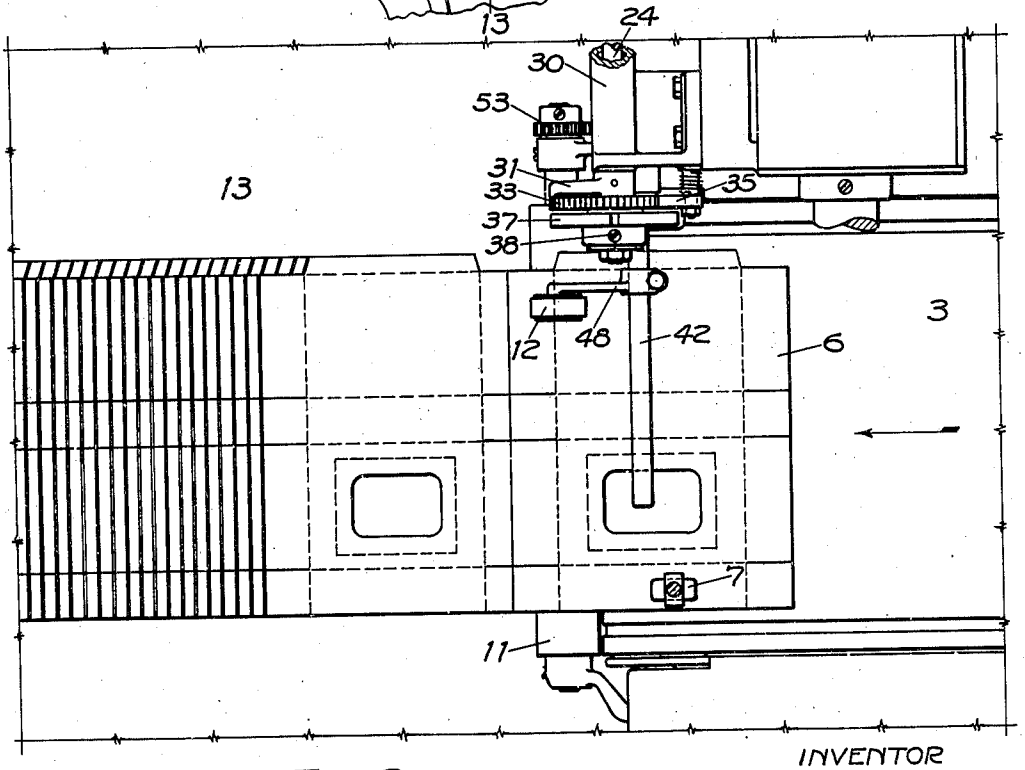


FIG. 2

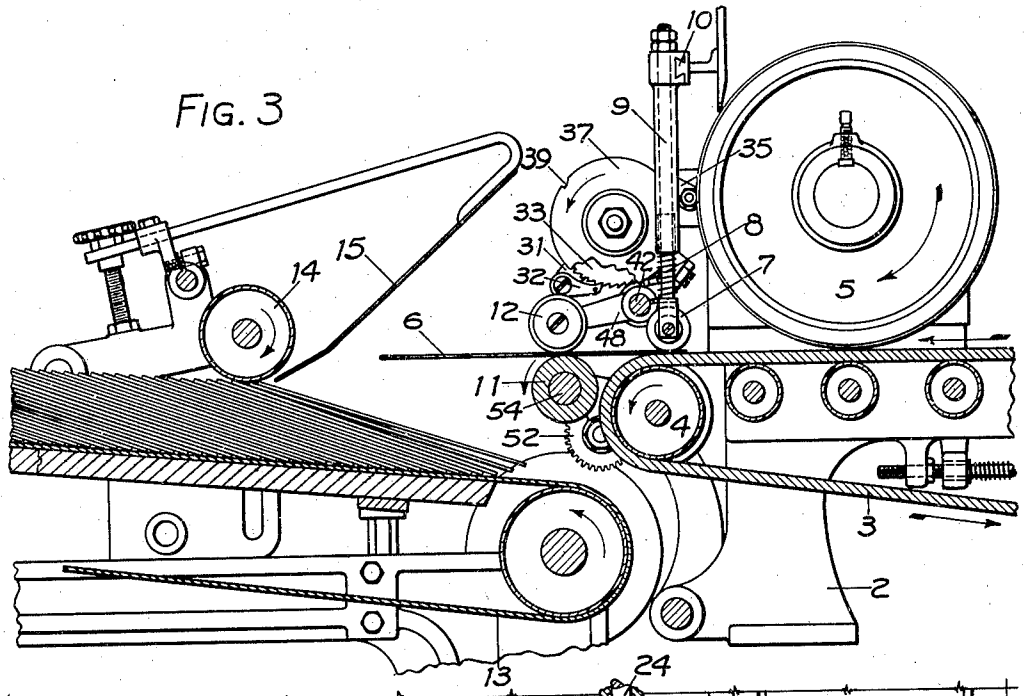
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COUNTING MECHANISM

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FIG. 3



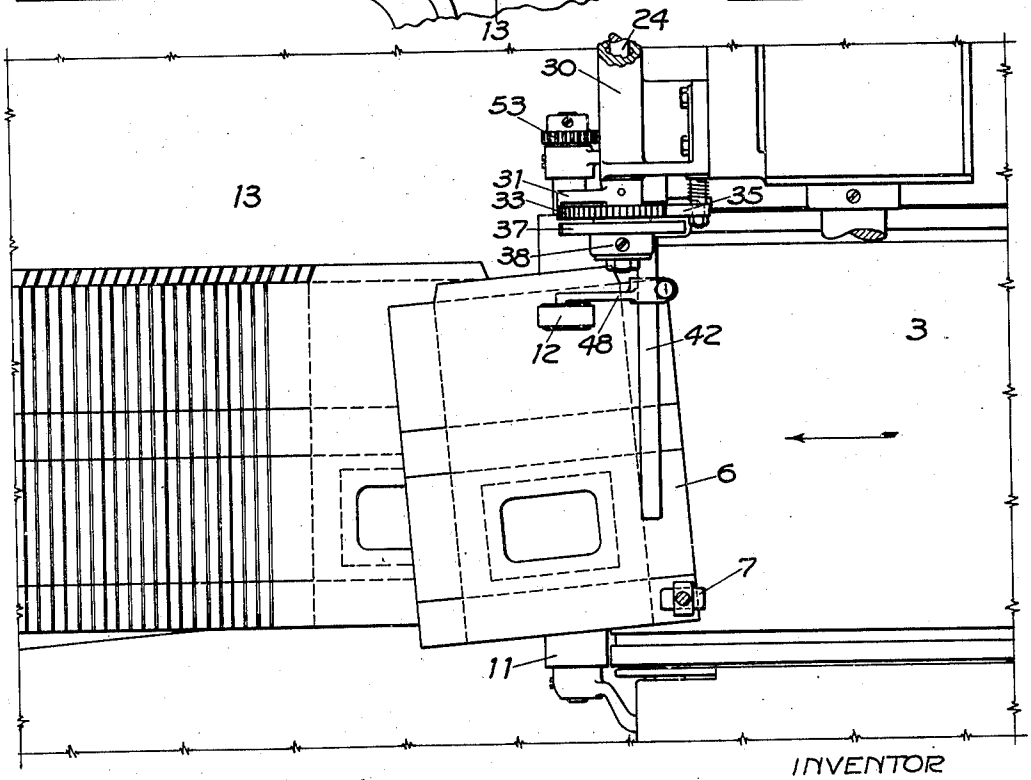


FIG. 4

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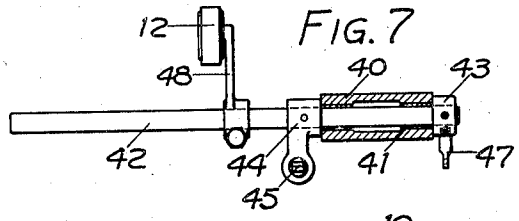


FIG. 7

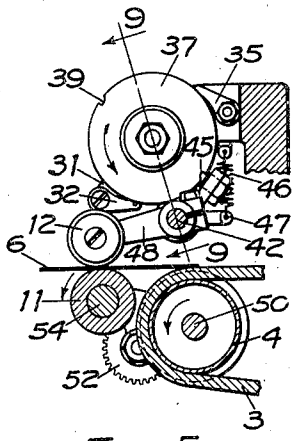


FIG. 5

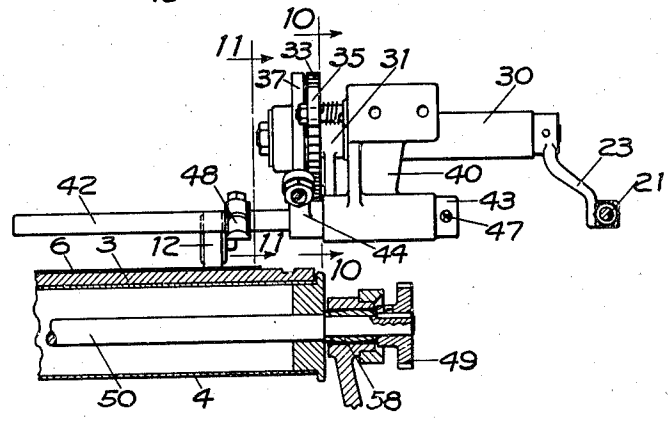


FIG. 6

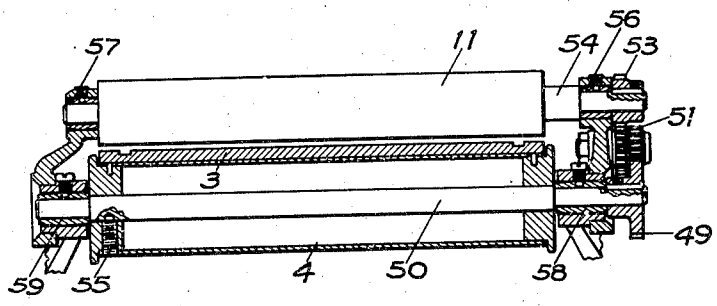


FIG. 12

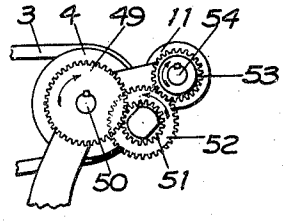


FIG. 13

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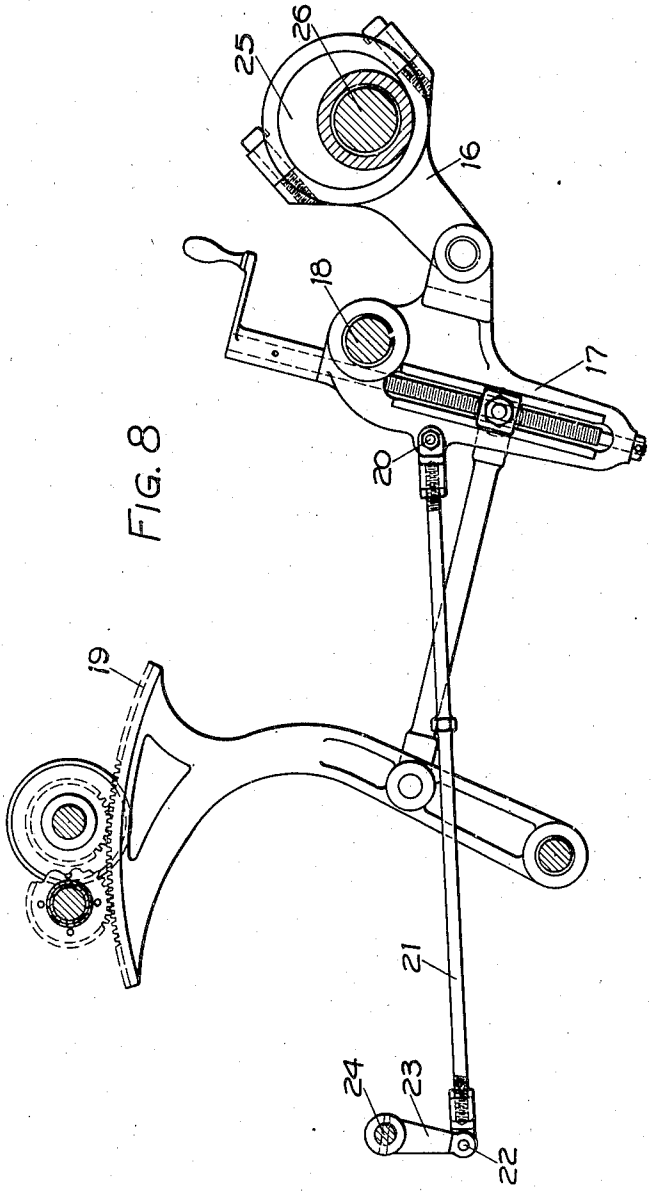


FIG. 8

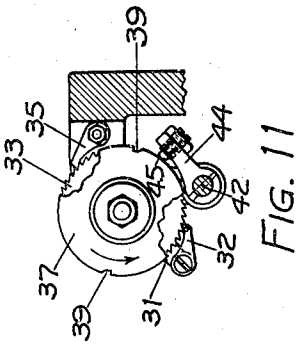


FIG. 11

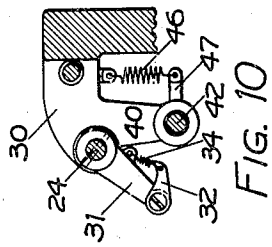


FIG. 10

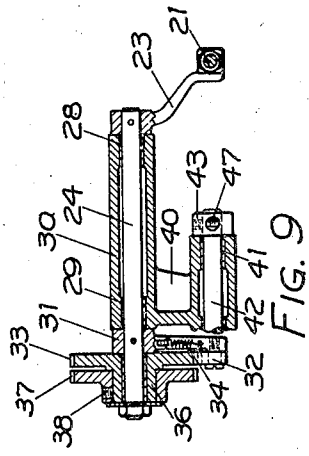


FIG. 9

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2,130,604

UNITED STATES PATENT OFFICE

2,130,604

COUNTING MECHANISM

Edwin G. Staude, Minneapolis, Minn.

Application May 23, 1936, Serial No. 81,511

6 Claims. (Cl. 93—93)

This invention is conveniently applied to a machine like that of my Patent No. 1,969,106, but it is understood that the device can be applied to any machine for counting articles by slightly changing the feeding or delivery path of one blank of a group, to cause that blank to assume a visually prominent position relatively to the others.

An object is to provide a mechanism for slightly deflecting a selected blank from its normal feeding path, and have this deflection occur at the delivery end of a machine, and be controlled by machine power. This deflection is made to occur once for every twenty-five, or fifty or one hundred blanks, and thus a deflected blank functions as an indicator, assisting an attendant in counting the blanks as they are removed, for example in lots of twenty-five, fifty or one hundred.

A further object is to provide a simple counting mechanism which shall act on the surface of the selected blank at two different points to cause the aforesaid deflection.

Features include all details of construction along with the broader ideas of means inherent in the disclosure.

In the accompanying drawings, forming a part of this application—

Figure 1 is a vertical longitudinal section, partly in elevation, of a feeding mechanism embodying my invention, and showing the blank deflector wheel out of contact with the blank;

Figure 2 is a plan view of Figure 1;

Figure 3 is a view similar to Figure 1, with the blank deflector wheel in contact with a blank or article, and urging the same into feeding relation with a feed-accelerating surface, whereby to cause the blank to be moved laterally out of the feeding path;

Figure 4 is a plan view of Figure 3, showing the blank deflected;

Figure 5 is a detail of part of the control mechanism for the blank deflector wheel, positioned as during deflecting action;

Figure 6 is a rear end view of Figure 5;

Figure 7 is a detail plan showing the mounting for the blank deflector wheel, including the shaft upon which its is adjustable;

Figure 8 is a detail section of part of the mechanism for operating the blank deflector;

Figure 9 is a detail section on line 9—9 of Figure 5, looking in the direction of the arrow;

Figure 10 is a detail section on line 10—10 of Figure 6, looking in the direction of the arrow;

Figure 11 is a detail section on line 11—11 of Figure 6, looking in the direction of the arrow;

Figure 12 is a plan section showing the feed-accelerating roll in elevation, and illustrating a part of the drive mechanism therefor; and

Figure 13 is an elevation of the right end of Figure 12.

Referring to the drawings, numeral 2 is the frame of the machine to which my invention is applied, and 3 is a carrier belt operatively related to a pulley 4 journaled in the frame. At 5 is shown a pressure drum, under which the blank 6, resting on the belt 3, passes. At 7 is an idler pulley urged against the belt 3 by a spring 8. Support for the idler pulley 7 and the spring 8 is a holder 9 mounted to be adjustable crosswise of the machine as by a suitable guide 10.

In practice, the idler pulley 7 is adjusted to bear on the left-hand side of the upper surface of the blank, as shown in Figures 2 and 4, thus acting while the blank passes from the pressure drum 5 to the stack, and additionally acting as a kind of pivot about which a selected blank is swung to be projected laterally of the line of feed.

The main feature of my invention will now be described. At 11 is a driven roller set ahead of the roller 4 and having a surface speed greater than the surface speed of the belt 3. Numeral 12 designates a wheel which cooperates with roller 11 to deflect a blank, and said wheel is shown out of contact with the blank 6 in Figures 1 and 2. With the wheel 12 raised, the blanks are delivered in a straight line onto a suitable slow moving conveyor belt 13, having the usual stop roller 14 and a guide or deflector plate 15. The blanks are thus stacked or overlapped and in this case, the deflector mechanism acts just before the blank is delivered to the stack. This feature is also claimed, along with the broader idea of means of moving a selected blank laterally to facilitate counting.

In order to deflect a selected blank from its normal path, as in Figure 4, the blank deflector wheel is forced against the sheet by a spring, thus forcing the sheet against roller 11. Since the roller 11 travels at a greater speed than the speed of the belt 3, and since the element is pressing the blank, the blank is moved sideways. The blank pivots about the contact point of roller 7.

The mechanism for controlling the selective action of the deflector wheel 12 is as follows: Referring to Figure 8, 16 is the usual eccentric strap for causing oscillatory motion of a link member

17 pivoted on shaft 18. Link 17, acting through a suitable link, produces reciprocating motion of a rack 19, which in turn controls the feed mechanism of that part of the machine shown in my Patent No. 1,969,106.

Oscillating member 17 is provided with a fork connection at 20 having a rod 21 pivoted as at 22 to an arm 23 adapted to rock a shaft 24, for every revolution of an eccentric 25, mounted on a shaft 26, and connected by strap 16 with link 17. Referring to Figure 9, the arm 23 is seen to be offset and is pinned or otherwise secured to the shaft 24. This shaft has bearings at 28 and 29 in a casting 30. Referring to Figures 9, 10 and 11, an arm 31 is pinned or otherwise secured to the shaft 24 and has a pawl 32 held in contact with a ratchet 33 by a spring 34 (see Figure 10), the ratchet being rotatable on shaft 24. As the arm 31 moves the pawl 32, the latter advances the ratchet step by step. To prevent reverse motion of the ratchet, a suitable idler stop pawl 35 is provided (see Figure 11). Mounted on a hub 36 of the ratchet 33 is a disc 37 secured to the hub 36 by a set screw 38, for purposes of adjustment. This disc 37 has notches 39, preferably two, in its periphery, and preferably diametrically related.

The casting 30 has a depending arm 40 (see Figure 9) and carries a bearing 41 for supporting a shaft 42 (see Figures 2, 6 and 7). This shaft has a collar 43 at one end of the bearing and an arm 44 at the opposite end. The arm 44 is provided with an adjustable threaded pin 45 adapted to bear against the periphery of the disc 37. As the disc 37 revolves step by step, the pin 45 eventually drops into one of the notches 39 (see Figure 5) permitting shaft 42 to turn under the action of a spring 46 secured to a pin 47 which is screwed to the collar 43. The spring 46 serves to keep the pin 45 in contact with the periphery of the disc 37. This turning of the shaft causes the deflector wheel 12 on arm 48 to engage the blank 6 and so increase its friction against the faster moving roller 11, as to cause that side of the blank to move at a greater rate of speed than the opposite side, thus deflecting the blank, as shown in Figure 4. The pressing action of wheel 12 is only momentary, continuing until the pawl 32 again moves the ratchet wheel 33. Contact of the deflector wheel 12 with a blank is so timed that deflection of a blank occurs only after twenty-five, fifty or one hundred blanks have passed the wheel 12. The roller 11 may be driven in any desired manner. The particular means here shown (see Figures 12 and 13) is through a spur-gear 49 on a shaft 50, meshing with an idler 51 which in turn is secured to a spur gear 52 which meshes with a gear 53 mounted on shaft 54, to which the roller 11 is secured. Pulley 4 is secured to the shaft 50 by a set screw 55. The shaft 54 is mounted in suitable bearings 56, 57, and the shaft 50 is mounted in suitable bearings 58 and 59.

There is no intention to be limited entirely to the details of construction although these are also claimed. Features of the invention include broadly the idea of providing means which acts intermittently and when acting acts momentarily to feed one side of the blank at greater speed than the other side and thus obtain deflection; and the use of means acting as a pivotal point about which the blank swings when the first mentioned means momentarily acts.

I also claim the method by which two feeding means are caused to act simultaneously on an article while being fed one laterally of the other.

I claim as my invention:

1. An article counter including, two article feeding means respectively operating at different speeds and acting on the same face of an article, and means intermittently acting on the opposite face of the article and controlled by one of the feeding means for causing that feeding means which operates at the greater speed to act momentarily to deflect a blank from the normal line of feed, both feeding means having widths not less than that of the articles being fed and constantly acting on the entire transverse width of the blank.

2. An endless feeding conveyor, and a feeding roll arranged forwardly of the forward end of said conveyor, a second conveyor to which the articles are delivered after passing over said roll, means by which the roll is operated at greater speed than the feeding conveyor, a second roll above the feeding plane and over said feed roll, and means for periodically and momentarily causing the second roll to engage a selected article and press it into firmer contact with said feed roll, and means acting simultaneously to apply pressure to the article at a point laterally of the contact point of said second roll with said article.

3. An article counter comprising two feeding surfaces operating on one face of an article at different surface speeds, the one operating at the greater speed being in advance of the other, and adapted to receive and advance the article independently of the other, a roller acting on the opposite side of the article to press the article against that feeding surface which travels at the lesser speed, and a second roller having substantially only a point contact at the same side of the article to press the same against the feeding surface which has the greater speed.

4. An article counter including two surfaces moving at different speeds, and both of which simultaneously act on one face of an article to feed it, means momentarily acting on the opposite face of a selected article to press it against that feeding surface which operates at the greater speed, said pressure means acting at a point intermediately of the opposite lateral confines of said feeding surfaces.

5. An article counter, including two surfaces moving at different speeds, and both of which simultaneously act on one face of an article to feed it, and means momentarily acting on the opposite face of a selected article to press it against that feeding surface which operates at the greater speed, means for supporting said pressure means whereby it may be adjusted transversely of said feeding surface to apply pressure at any point transversely of said feeding surface.

6. An article counter including two surfaces moving at different speeds, and both of which simultaneously act on one face of an article to feed it, said surfaces operating on parallel axes which are at right angles to the line of feed, and pressure means selectively acting momentarily on the opposite face of said selected article to press it against the feeding surface which operates at the greater speed.

EDWIN G. STAUDE.