Feb. 23, 1932. F. R. SCHMITT 1,846,909

ARTICLE FEED FOR WRAPPING MACHINES

Filed Jan. 24, 1929 2 Sheets-Sheet 1

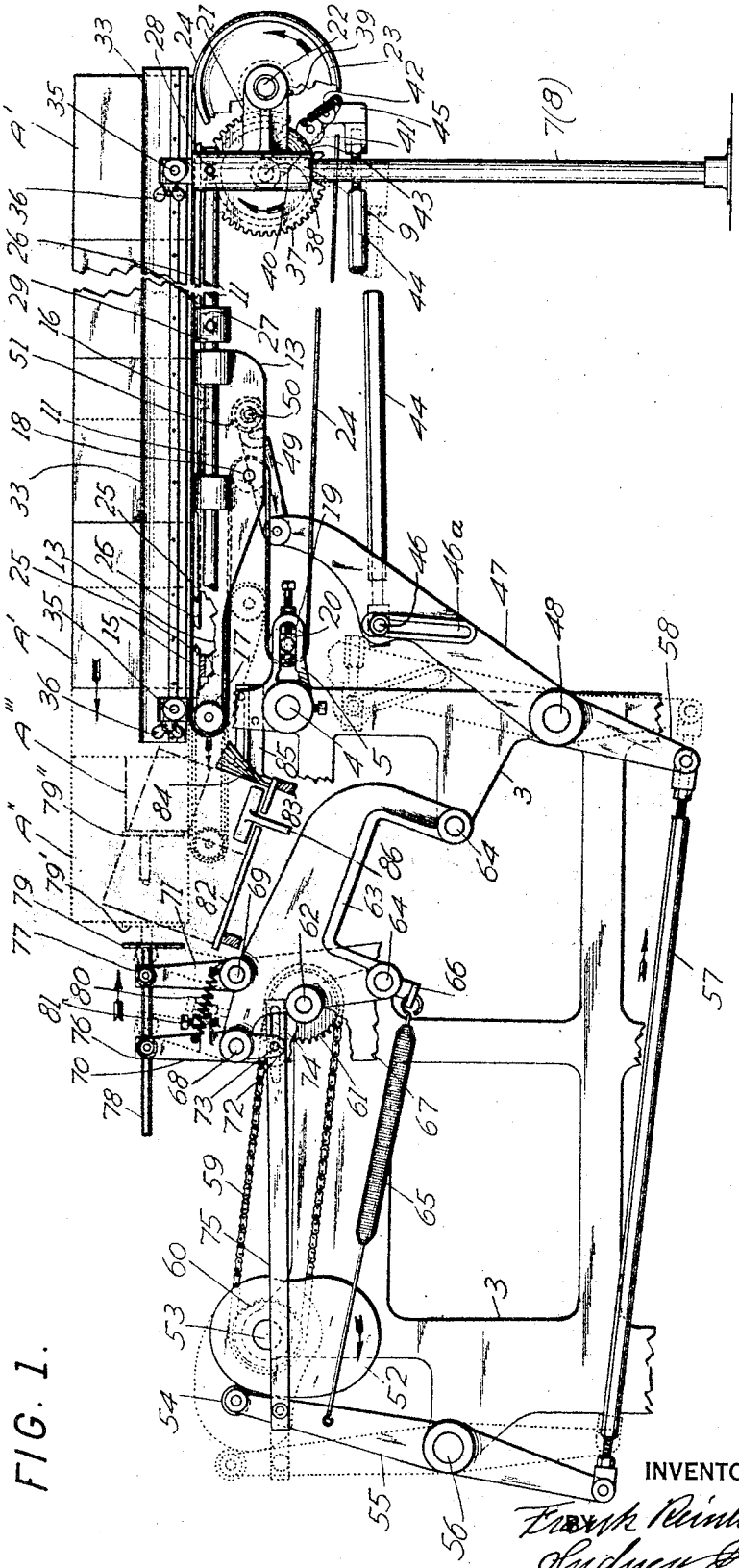


FIG. 1.

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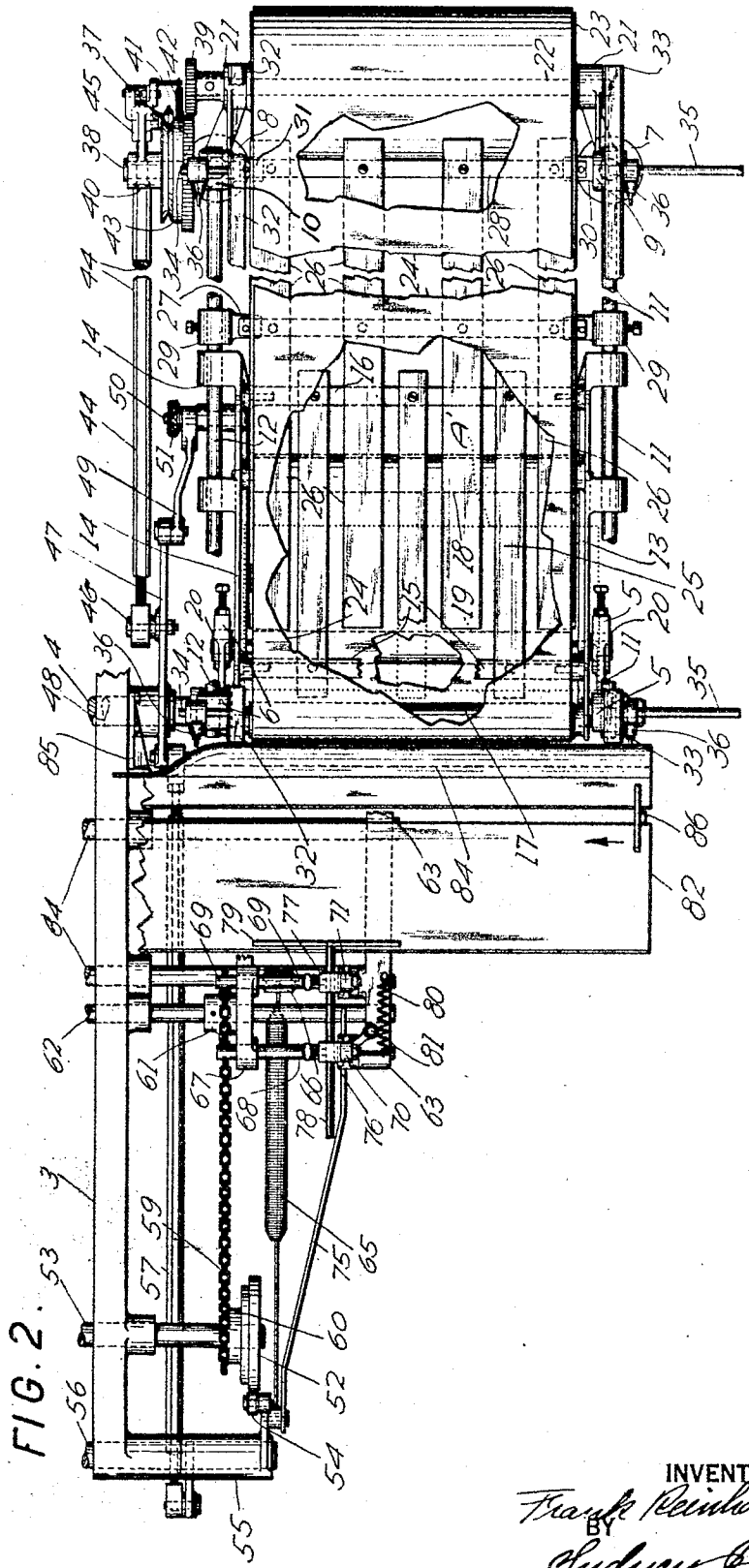


FIG. 2.

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# UNITED STATES PATENT OFFICE

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## ARTICLE-FEED FOR WRAPPING MACHINES

Application filed January 24, 1929. Serial No. 334,785.

This invention relates to article feeds for wrapping machines designed to supply articles one by one to the feeding device which introduces the articles into the machine. It is particularly designed for use where the articles are supported in the feeding device of the machine in tilted or lower position with respect to the supply of articles upon the article feed, and in other situations where it is necessary or desirable that the articles be dropped or deposited, rather than pushed or tipped, from the article supply feed to the feeding device of the machine.

In successively feeding articles one by one from a supply to the device which introduces the articles into the machine, it has been the common practice to periodically hold the supply of articles on the article feed stationary while a forwarding belt, on which they rest, moves continuously. Resulting excessive wear on the belt necessitated frequent shutdowns and replacements. Moreover, such wear could not be avoided by merely moving the belt intermittently in situations such as those above pointed out because a considerable over-travel of the belt would then be necessary to propel the articles clear of said belt and onto the feeding device, and moreover the articles would cause wear by sliding over the forward end of the belt.

Accordingly, it is one of the objects of the present invention to provide a simple and effective article feed which will drop or deposit articles more or less squarely onto the feeding device to introduce the articles into the machine, without tipping over the articles. Another object is to provide an article feed to successively supply articles one by one to the feeding device of the machine without rubbing between the belt and the articles, whereby excessive wear of the belt may be avoided. Still another object is to provide means for withdrawing the forwarding belt from under an article over said feeding device to permit it to drop thereon, and to do this by rolling the belt, rather than sliding it under the article. Still another object is to provide for suitable adjustment of the several parts and their operating connections, to feed articles of different sizes. With these and other objects in view, the invention consists in certain constructions and combinations which will be hereinafter described and then set forth in the hereunto appended claims.

In the accompanying drawings, in which like characters of reference indicate the same or like parts:

Fig. 1 is a side elevation of the improved article; and

Fig. 2 is a plan view of the same, partly broken away.

In carrying the invention into effect, there is provided in combination with a wrapping machine feed device, a stop in the path of the articles forwarded to said device, means for forwarding articles successively over said device into engagement with said stop, and mechanism for withdrawing said forwarding means from under the leading article engaging said stop to permit it to drop to said feeding device. In the best constructions, the said forwarding means includes a forwarding belt, and preferably there is provided a pulley forming a loop at the forward end of the operating run of said belt, together with mechanism operating to reciprocate said pulley lengthwise of the run in order to roll the belt from under said leading article. In the best constructions also, devices are provided connecting said forwarding means and said mechanism to intermittently drive the former from the latter. The best constructions also include means for moving said stop away from the leading article when the forwarding means has been withdrawn. The means above referred to may be widely varied in construction within the scope of the claims, for the particular machine selected to illustrate the invention is but one of many possible concrete embodiments of the same. The invention, therefore, is not to be restricted to the precise details of the structure shown and described.

Referring to the drawings, the frame 3 of the wrapping machine with which the present article supply feed is designed to cooperate, mounts a shaft 4, the ends of which project beyond said frame and carry a pair of brackets 5 and 6. Another pair of brackets

9 and 10 are carried by uprights 7 and 8. Brackets 5 and 9 support between them a horizontal rod 11 extending along one side of the path of the articles, and brackets 6 and 10 similarly support the horizontal rod 12 on the other side of said path. On these rods 11 and 12, a carriage consisting of the frames 13 and 14 connected by the cross bars 15 and 16, is slidably mounted for reciprocation lengthwise of the path of the articles. The brackets 5 and 6 also carry adjustable blocks 20 on which is mounted a stationary pulley 19. Adjustment of the blocks moves the pulley to regulate the tension of the forwarding belt 24. The brackets 9 and 10 have horizontal arms 21 on which there is mounted a shaft 22 carrying a pulley 23. The carriage carries pulleys 17 and 18, pulley 17 forming a loop at the forward end of the upper run of the belt.

The forwarding belt 24 runs over the pulleys 17, 18, 19 and 23, on the upper operating run of which the supply of articles A′ rests. The forward portion of this run is supported by bars 15 and 16 mounted on the reciprocating carriage, and the remainder of the operating run of this belt is supported by stationary bars 26 fastened to cross bars 27 and 28 carried by lugs 29 attached to the rods 11 and 12 and by lugs 30 and 31 on the brackets 9 and 10.

The two vertical guide walls 32 and 33 serve to guide the articles as they are forwarded by the belt 24 and these walls are mounted on rods 34 and 35, being adjustable thereon for different widths of articles. For this purpose, the rods 34 are slidable in bearings located in brackets 5, 6, 9 and 10 and are locked in position by the wing nuts 36.

The belt 24 is intermittently driven by the following means: A gear 37 loosely mounted on a stud 38 carried by a lug on the bracket 10, meshes with a gear 39 fixedly mounted on the shaft 22. On the stud 38 there is also loosely mounted a lever 40 which carries an eccentrically mounted roller 41 held by a spring 42 in a circumferential groove of a disk 43, integral with the spur gear 39. The lever 40, by means of a knuckle 45, is connected by the adjustable connecting rod 44 to a pin 46 adjustably mounted in slot 46*x* of an oscillating lever 47 mounted on the shaft 48.

By adjustment of the pin 46 in the slot 46*a*, the throw of the lever 40 can be varied to regulate the intermittent movement of the forwarding belt to the feeding of smaller or larger articles.

The lever 47 is oscillated by a cam 52 on shaft 53, which cam engages a roller 54 and a lever 55 pivoted at 56 and connected by a rod 57 to an arm 58 of the lever 47. The lever 47 thus oscillated, operates to withdraw the forwarding belt from under the leading article thereon through the agency of an adjustable link 49 which is secured to the stud 50 on the reciprocating carriage 13—14—15—16 by a knurled nut 51.

When the lever 40 is rocked in a clockwise direction through movement of the lever 47 ultimately driven by the cam 52, the roller 41, by virtue of its eccentricity, grips the disk 43 and drives the gear 39. When the lever rocks in a counter clockwise direction, however, the eccentric roller is released, and causes the gear and forwarding belt to remain stationary. The eccentric roller thus acts as a one way clutch, much in the same manner as a ratchet and pawl. The cam 52 is driven by means of a chain 59 connected to a sprocket 60 on the cam shaft 53 and a sprocket 61 on drive shaft 62 of the wrapping machine proper. The shaft 62 is journalled in frame 3 and in a bracket 63 secured at 64 to said frame. A spring 65 attached to the lever 55 and anchored at 66 keeps the roller 54 in contact with cam 52.

A stop 79 is supported in the path of articles forwarded over the feed-way leading into the wrapping machine, and this stop is mounted for movement toward and away from the leading article forwarded by the belt 24. This stop is mounted on a longitudinally adjustable rod 78 secured in blocks 76 and 77 pivoted at the upper ends of a pair of parallel levers 70 and 71 fixed respectively to shafts 68 and 69 journalled in a pedestal 67. The lever 70 is provided with an arm 72, to which is secured a pin 73, which projects into a slot 74 of a link 75 connected to cam lever 55.

The stop 79 is pressed toward the leading article on the belt 24 by a spring 80. An adjustable set screw 81 bearing against the frame brackets 63 limits the extent of the resulting movement.

The operation of the article feed illustrated is as follows: When an article A forwarded by the intermittently driven belt 24 has arrived at the forward position A′, shown in Fig. 1, the belt, together with the pulleys 17 and 18 and the carriage 13—14—15—16, is reciprocated to the position A″, shown in dotted lines in Fig. 1, thereby extending the operating run of said belt over the table 82 of the feeding device of the wrapping machine. At the same time, movement of the carriage operating mechanism through the connecting devices 44, 41, 43, 37 and 39 imparts a forwarding movement to the belt by reason of which the belt forwards the leading article resting on it onto the extended portion of the operating run simultaneously with the extension of said run.

As the article thus approaches its foremost position on the extended forwarding means, the stop 79 is caused by the movement of link 75 to exert pressure on the forward face of the article, thus pressing it against the following articles, and thereby securely hold-

ing same between the stop and said following articles.

The extended run of the forwarding belt is then withdrawn from under the article by rearward movement of the carriage 13—14—15—16 and with it pulley 17, thereby rolling the belt from under the article A'' without rubbing or friction between the article and the belt, leaving the article securely gripped between the stop plate at position 79' and the succeeding article on the forwarding belt.

As the carriage approaches the end of its rearward movement, the outer end of the slot 74 of link 75, driven from the same cam as the carriage, engages pin 73 on arm 72 of the lever 70, thereby moving the stop plate 79 away from the article during the last portion of the withdrawing movement of the forwarding means. This releases the suspended article A, which being wholly unsupported, drops squarely onto the inclined feed-way or table 82 of the feeding device of the wrapping machine. This table is suitably supported by bars 83 attached to the frame 3. The article deposited on the table 82 is guided by the side wall 84 which, when necessary, is cut away in the path of the extended forwarding mechanism and this wall is supported by a bracket 85 from frame 3. A number of pushers 86 projecting through a slot in the table 82, carried at intervals by a conveyor chain not shown, engage with and push the articles along the table and into the wrapping machine. The operation of the machine on smaller articles is similar in all respects, being shown by dot-dash lines at A''' in Fig. 1.

It should be noted that the mounting and staggered relationship of the pulleys 17 and 18, is such that they form contiguous oppositely disposed loops and are caused to reciprocate together with respect to the stationary pulley 19. In the remainder of the belt any increase in the length of the loop in the forward end of the operating run of the belt 24, formed by pulley 17, is compensated for by a corresponding decrease in the length of the loop formed by the pulley 18, and vice versa. Thus there will be no need of slack in the belt to avoid binding thereof.

It will also be observed that the driving means for the belt, the mechanism for extending and withdrawing the forwarding means, and the mechanism operating the stop 79, are interconnected, all being ultimately driven from the cam 52 and the coacting lever 55, and that means are provided for adjusting the connecting linkage between each of these parts to suit variations in operating conditions and the size of the articles.

What is claimed is:

1. The combination with a wrapping machine feeding device, of a stop in the path of articles forwarded to said device, means for forwarding a row of articles to press the leading article between said stop and the following article in a position overlying said feeding device, and mechanism for withdrawing said forwarding means from under the leading article to permit it to drop to said feeding device.

2. The combination with a wrapping machine feeding device, of a stop in the path of articles forwarded to said device, means for forwarding articles successively over said device into engagement with said stop, mechanism for withdrawing said forwarding means from under the leading article engaging said stop to permit it to drop to said feeding device, and means for moving said stop away from the leading article when the forwarding means has been withdrawn.

3. The combination with a wrapping machine feeding device, of a stop in the path of articles forwarded to said device, means for forwarding articles successively over said device into engagement with said stop, mechanism for withdrawing said forwarding means from under the leading article engaging said stop to permit it to drop to said feeding device, and means operating said stop to press the leading article against the following articles and then release the same when said forwarding means has been withdrawn.

4. The combination with a wrapping machine feeding device, of a stop in the path of articles forwarded to said device, means for forwarding a row of articles to press the leading article between said stop and the following article in a position overlying said feeding device, and mechanism for withdrawing said forwarding means from under the leading article to permit it to drop to said feeding device, said forwarding means including a forwarding belt.

5. The combination with a wrapping machine feeding device, of a stop in the path of articles forwarded to said device, means for forwarding articles successively over said device into engagement with said stop, mechanism for withdrawing said forwarding means from under the leading article engaging said stop to permit it to drop to said feeding device, and devices connecting said forwarding means and said mechanism to drive the former from the latter, including a drive shaft for said forwarding means, a member oscillated by said mechanism and means coacting with said member and said shaft to intermittently rotate said shaft.

6. The combination with a wrapping machine feeding device, of a stop in the path of articles forwarded to said device, means for forwarding articles successively over said device into engagement with said stop, mechanism for withdrawing said forwarding means from under the leading article engaging said stop to permit it to drop to said feeding device, and interconnected means for

operating said mechanism and for moving said stop away from said leading article when the forwarding means has been withdrawn.

7. The combination with a wrapping machine feeding device, of a stop in the path of articles forwarded to said device, means for forwarding articles successively over said device into engagement with said stop, and mechanism for withdrawing said forwarding means from under the leading article engaging said stop to permit it to drop to said feeding device, cam operated means for actuating said mechanism and instrumentalities connected to said cam operated means for alternately moving said stop against said leading article and retracting the same.

8. In an article feed, the combination with a forwarding belt, of mechanism for alternately extending and withdrawing the forward end of the operating run of said belt, and means for driving said belt to successively forward articles onto the extended portion of the run, said means including devices intermittently driven by said mechanism to impart forwarding movement to the belt during extending of the run and to cause said belt to remain stationary during withdrawal of said run.

In testimony whereof, I have signed my name to this specification.

FRANK REINHOLD SCHMITT.