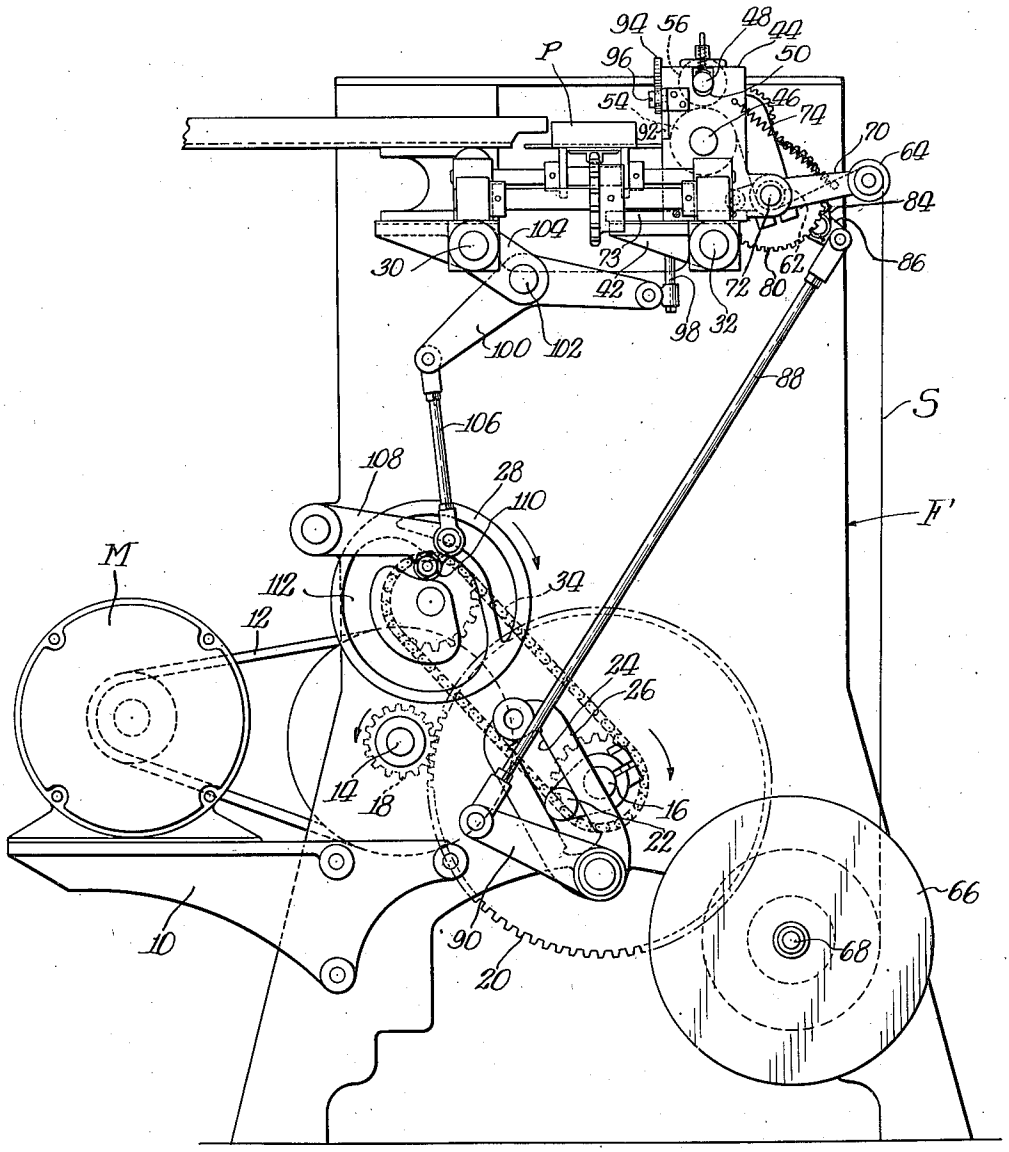
Aug. 3, 1948. O. SANDBERG 2,446,305

STRIP FEEDER FOR WRAPPING MACHINES

Filed June 27, 1944 3 Sheets-Sheet 1

Fig. 1.



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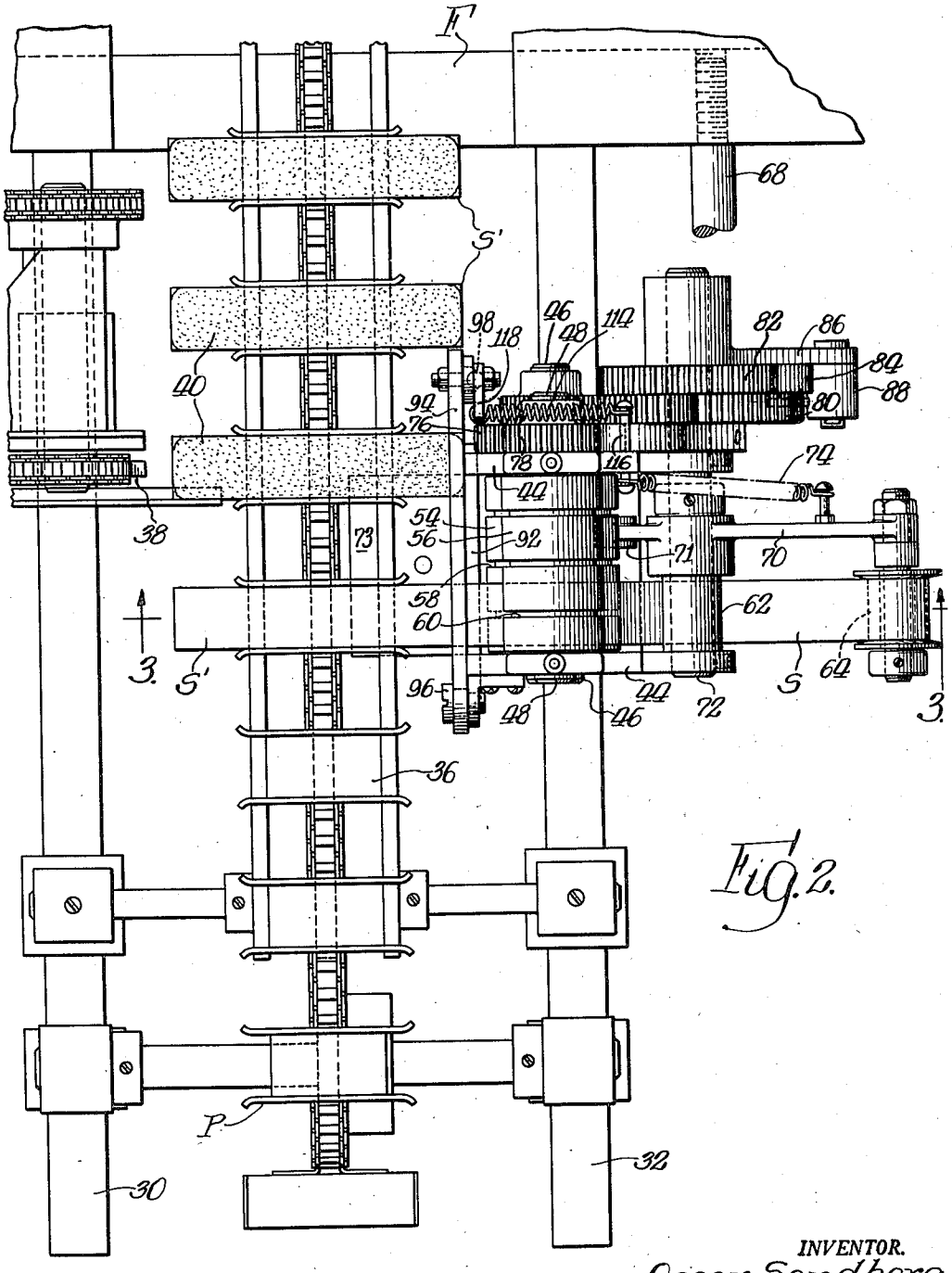


Fig. 2.

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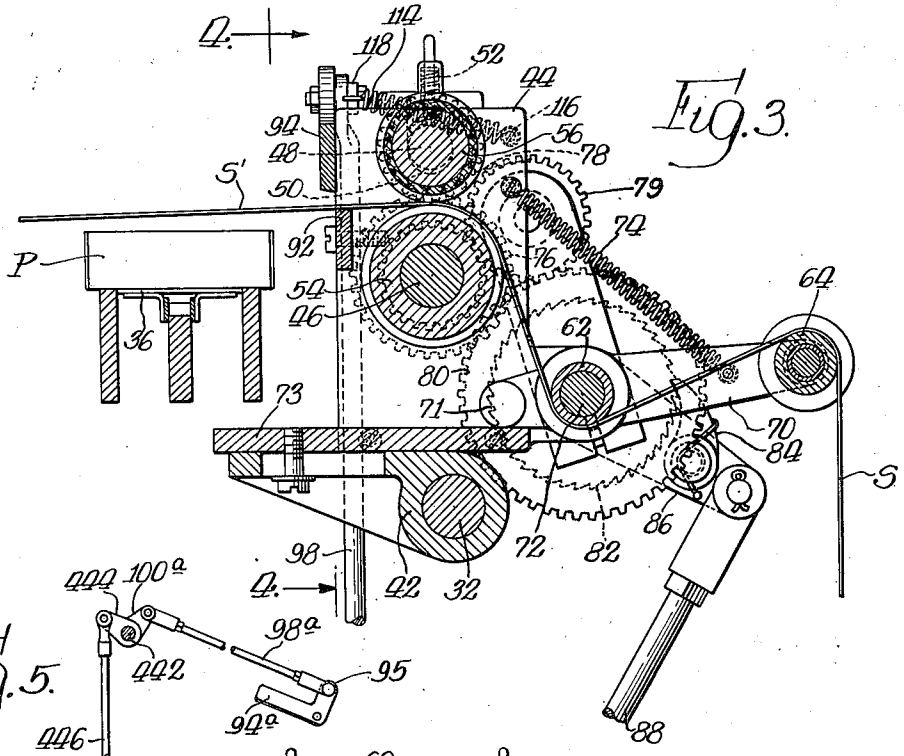


Fig. 3.

Fig. 5.

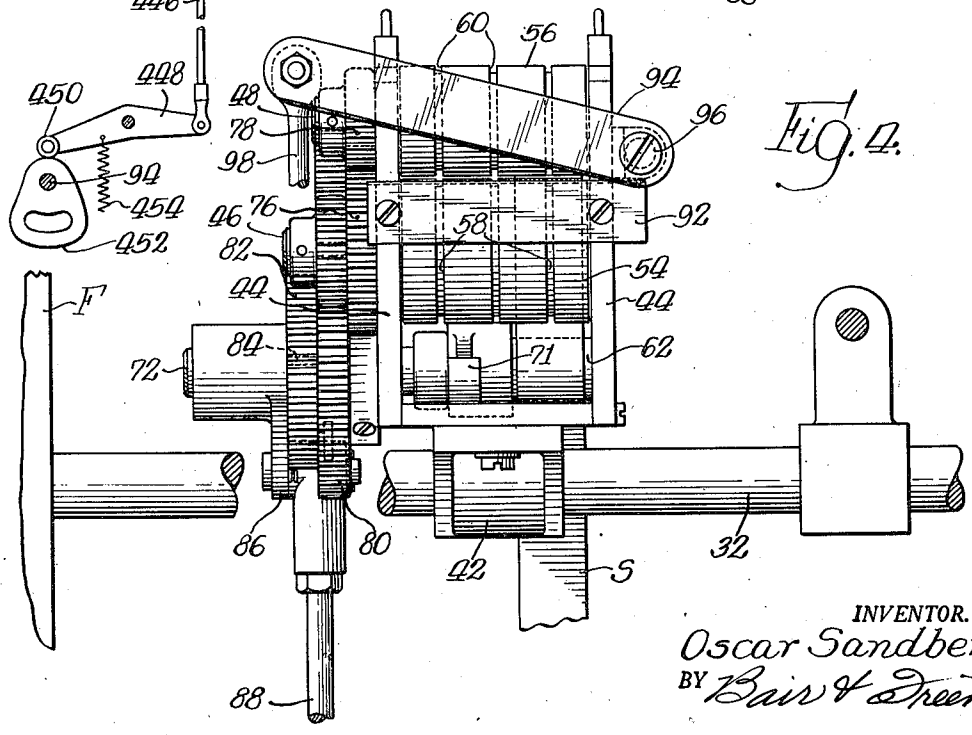


Fig. 4.

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Patented Aug. 3, 1948 2,446,305

UNITED STATES PATENT OFFICE

2,446,305

STRIP FEEDER FOR WRAPPING MACHINES

Oscar Sandberg, Defiance, Ohio, assignor to Lynch Package Machinery Corporation, Toledo, Ohio, a corporation of Ohio

Application June 27, 1944, Serial No. 542,336

4 Claims. (Cl. 164—42)

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My present invention relates to a strip feeder for wrapping machines which feeds a strip to the machine and cuts the strip into sections.

One object of the invention is to provide a strip feeder for wrapping machines which is comparatively simple to construct and assemble and which can readily be operated by connection thereof to the operating mechanism of a wrapping machine of the kind shown in my Patent No. 2,283,097, issued May 12, 1942.

Another object is to provide a strip feeding and cutting mechanism which feeds a strip of any desired material, such as cardboard or waxed paper into article-conveying pockets of the machine and which cuts sections of the strip from a storage roll thereof so that one section drops into each pocket.

Still another object is to provide a strip feeder of this general character particularly adapted for mounting on a machine of the kind shown in my prior patent and one which may be connected with the operating mechanism thereof, with a minimum of parts.

A further object is to provide a strip feeder which may be made in the form of a unit, supportable on a stationary rod of the wrapping machine of my prior patent and operative connections between the strip feeder and one part of the wrapping machine mechanism, a cutting means of the strip feeder having an operative connection with another part of the wrapping machine mechanism, and such operative connection including a bell crank supported by another stationary rod of the wrapping machine.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

Figure 1 is an end elevation of the wrapping machine of my prior patent, the end viewed being the feeding end with my strip feeder mounted thereon.

Figure 2 is a plan view of Figure 1.

Figure 3 is a detail, sectional view on the line 3—3 of Figure 2.

Figure 4 is a side elevation of the strip feeder and its cutting means as taken along the line 4—4 of Figure 3, and

Figure 5 is a side elevation of a modified form of cutting means for the strip feeder having a different driving arrangement for the cutting knife.

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On the accompanying drawings I have used the reference character F to indicate the main frame of a wrapping machine, and M a motor for driving the mechanism of the machine. The motor M is mounted on a bracket 10 carried by the frame F, and through a belt 12 drives a shaft 14. The shaft 14 is geared to a second shaft 16 by a pinion 18 and a gear 20 so that the shaft 16 rotates at a relatively slow speed, with one cycle of operation of the machine being represented by one revolution of the shaft 16.

The drive just described is shown in my prior patent and also therein is shown a crank pin 22 operating in a slot 24 of an arm 26 whereby the arm is quickly oscillated in a counter-clockwise direction and slowly oscillated in a clock-wise direction. Also in said patent a cam 28, a pair of stationary rods 30 and 32 and a pocket conveyor P, are shown. The cam 28 is driven from the shaft 16 by a chain 34 and a suitable mechanism is provided for driving the pocket conveyor P in steps so that the pockets, designated 36 in Figure 2, alternately stop in the position shown and then are advanced from one position to the next. When in a position opposite an article conveyor 38, they receive articles to be wrapped, such as candy bars 40.

Describing now the strip feeder of the present invention, a bracket 42 is mounted on the stationary rod 32 and supports a framework 44 in which is journalled a shaft 46 and a shaft 48. The shaft 48 is vertically movable or floating, and this is made possible by mounting it in slots 50 of the frame 44. Springs 52 bias the shaft 48 toward the shaft 46.

Feed rollers 54 and 56 are mounted on the respective shafts 46 and 48 and these rollers are preferably grooved as indicated at 58 and 60 (see Figure 4). They are adapted to feed a strip S toward the left in Figure 3, the strip passing under an idler roller 62, over a second idler roller 64, and being reeled on a storage reel 66. The reel 66 may be supported in any suitable manner, as on a shaft 68 extending from the frame F.

The idler 64 is mounted on an arm 70 pivoted on a shaft 72 on which the roller 62 is mounted. A spring 74 normally swings the arm 70 to the position shown in Figure 3 with a boss 71 of the arm acting as a stop against a stop plate 73 on the bracket 42.

When the feed rolls 54 and 56 are operated to feed the strip S, the tension exerted on the strip is absorbed to some extent by the spring 74, permitting the arm 70 to be lowered instead of giving the reel 66 an excessive jerk at that time.

For driving the feed rolls 54 and 56 I provide meshing gears 76 and 78 on the respective shafts 46 and 48 and meshing with the gear 76 is an idler gear 79. It meshes with a gear 80 rotatable on the shaft 72, or the shaft may rotate with it, the shaft in that case being journalled in the frame 44.

For rotating the gear 80 I provide a ratchet disc 82 and it in turn is rotated by a pawl 84 carried by an oscillatable arm 86. The arm 86 is connected by a link 88 with an arm mounted to move simultaneously with the slotted arm 26.

For cutting the strip S into sections S' which may drop, one in each pocket 36, I provide a stationary cutter bar 92 and a pivoted cutter bar 94 shearingly coacting therewith. The pivot for the bar 94 is shown at 96 and its opposite end is connected by a link 98 to a bell crank 100. The bell crank 100 is oscillatably supported on a shaft 102 which in turn is supported by a bracket 104 extending from the stationary shaft 30. The bell crank 100 is connected by a link 106 to an arm 108 of the wrapping machine, which arm carries a roller 110 relative to which a groove 112 of the cam 28 travels.

In Figure 5 I show a modified construction having a cutter bar 94*a* in the form of a bell crank provided with an upwardly extending arm 95. The arm 95 is connected by a link 98*a* with an arm 100*a* on a rock shaft 442. The shaft 442 is rocked by a lever 444 which in turn is connected by a link 446 with a lever 448. The lever 448 carries a roller 450 cooperating with a cam 452 on a shaft 94. A spring 454 is connected with the lever 448 to hold the roller 450 in engagement with the cam 452. The parts 442 to 454 inclusive and the shaft 94 are shown in my prior patent above mentioned and bear the same reference numerals, the shaft 94 being driven as disclosed in that patent from the shaft 16. The arrangement shown in Figure 5 permits of an overhead drive for the cutter bar 94*a* without interference with other parts of the wrapping machine as occurs in certain machines when the corresponding arrangement 98 to 112 is used.

The feed rollers and the pivoted knife are thereby operated once each cycle of operation of the wrapping machine and of course are properly timed in relation to the intermittent movement of the pockets 30 so that a strip section S' is cut from the strip stock S at the proper time for dropping into a channel-shaped pocket 36 while it is in a stationary position. Such position is in alignment with the strip and is illustrated in Figure 2.

Practical operation

In the operation of my strip feeder, assuming the parts are in the position of Figure 1, the feed rolls 54 and 56 have just been rotated by the link 88. The rotation is relatively slow, i. e., greater than half a cycle, because of the crank pin 22 rotating clockwise in Figure 1, and therefore the return movement of the pawl 84 relative to the ratchet wheel 82 is relatively quick, i. e., less than half a cycle. During the slow return of the pawl along the ratchet teeth, the link 106, due to the shape and position of the cam groove 112, causes the pivoted knife 94 to lower and thereby shear the section S' from the strip S. The pocket conveyor is stationary at this time so that the sheared strip drops from the position of Figure 3 by gravity into the pocket which is aligned with the strip section at that time. The knife 94 is then raised, following which the ratchet wheel 82 is again rotated in the next cycle, and during such rotation, the pocket conveyor advances one station; the strip S is thereby being fed by the rolls 54 and 56 at the same time that the pocket conveyor is advancing, but, as shown in Figure 3, the strip projects in a position well above the pockets so that they do not interfere with each other.

For the purpose of keeping the movable cutter bar 94 closely adjacent the stationary bar 92 so as to secure the desired shearing action, I provide a spring 114 connected to a stationary screw 116 and to a clip 118 on the pivot between the link 98 and the cutter bar 94. The pivot joints are sufficiently loose to permit the spring to act and to permit the necessary side swinging of the link 98 during its reciprocatory movement.

From the foregoing it will be obvious that I have provided a relatively simple feeder, and it may be readily mounted in position on a wrapping machine. It eliminates a much more complicated card feed structure in which individual cards are stacked and fed one at a time into the pockets of the pocket conveyor. The strip S may be made of ordinary cardboard and readily handled in roll form on the reel 66 as distinguished from loose cards placed in a magazine. Cardboard has sufficient flexibility to pass around the rolls 64, 62 and 54 and sufficient stiffness to return to a substantially straight position as shown in Figure 3, after being fed by the feed rolls. The device however is adaptable for feeding strips of waxed paper or other material to the pockets of the pocket conveyor instead of cardboard.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope without sacrificing any of the advantages thereof.

I claim as my invention:

1. In a strip feeder for a wrapping machine having a horizontal, open-end pocket, a pair of strip feed rolls, and means for cutting a section from a strip fed by said strip feed rolls when said section is substantially centered in said pocket for deposit in and travel with the pocket, a reel on which the strip is stored, said reel being freely rotatable.

2. In a strip feeder for a wrapping machine having a pocket, a pair of feed rolls adjacent the pocket, means for feeding a strip by rotation of said rolls, means for cutting a section from the strip for deposit in the pocket, a reel for the strip, ratchet mechanism for operating said feed rolls, means for operating said ratchet mechanism slowly during the feed of said strip and returning it quickly, and means for operating said knife during the return period.

3. A strip feeder for wrapping machines comprising a pair of feed rolls, ratchet mechanism for advancing said feed rolls for feeding a strip horizontally to the wrapping machine, and means for cutting a section off the strip at a position permitting said section to fall in proper laterally positioned place in the wrapping machine.

4. A strip feeder for a wrapping machine having a pair of stationary parallel supporting rods comprising a pair of feed rolls mounted for feeding the strip horizontally and a cutter mounted on one of said rods for vertical shearing movement, ratchet mechanism for rotating said feed rolls, a bell crank pivotally supported on the other of said rods and having one arm extending toward the other rod and operatively connected

with said cutter by a vertically arranged link, and an operative connection with the other arm of said bell crank for oscillating it.

OSCAR SANDBERG.

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