Aug. 12, 1941. C. H. PETSKEYES ET AL 2,252,028

PAPER FEED

Filed Feb. 27, 1939 2 Sheets-Sheet 1

Fig. 1.

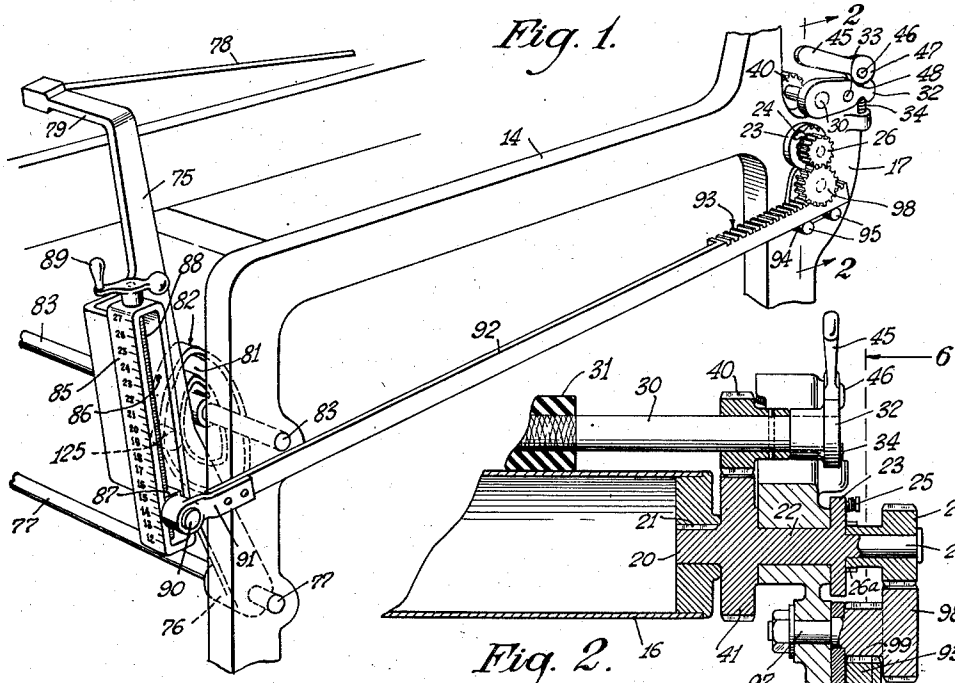
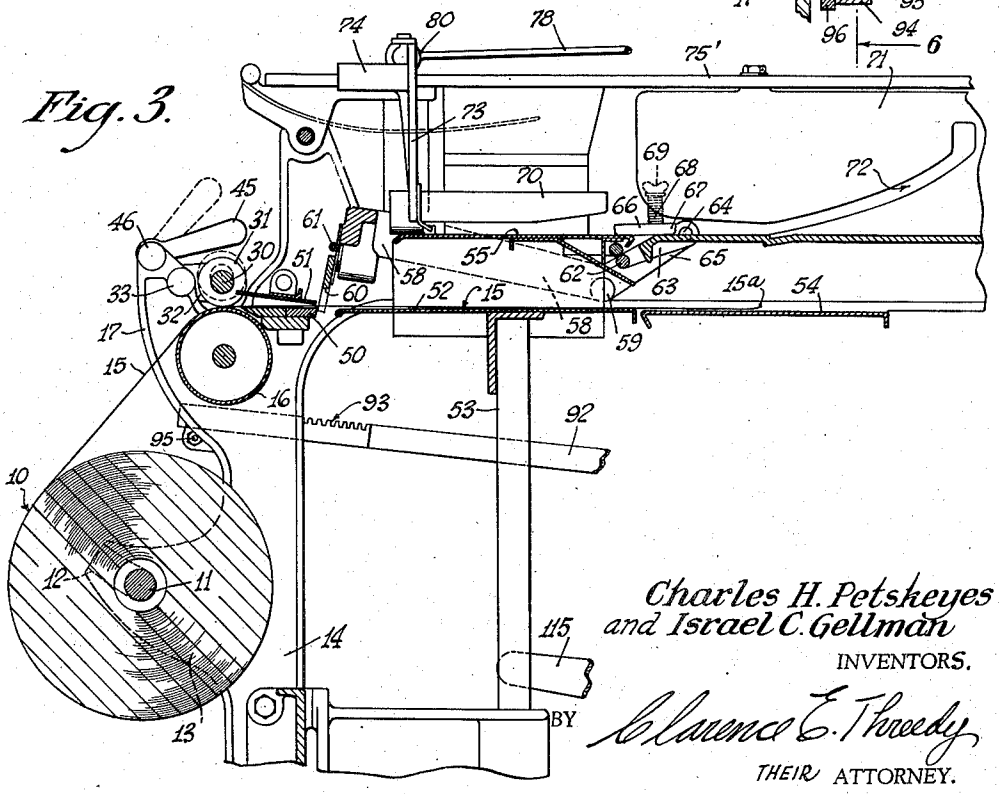


Fig. 2.

Fig. 3.



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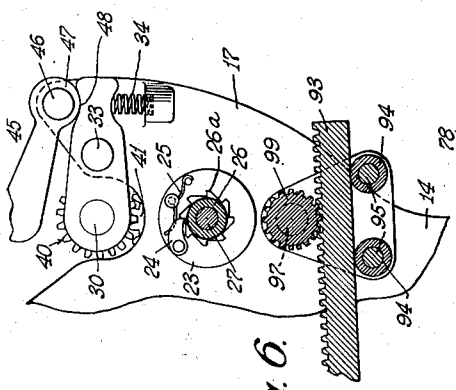


Fig. 6.

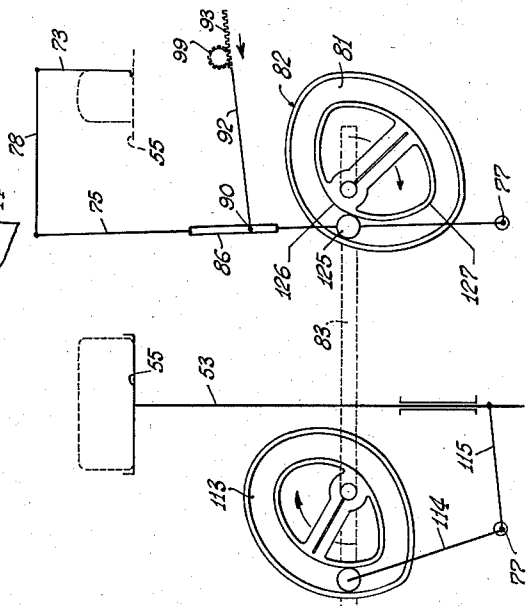


Fig. 5.

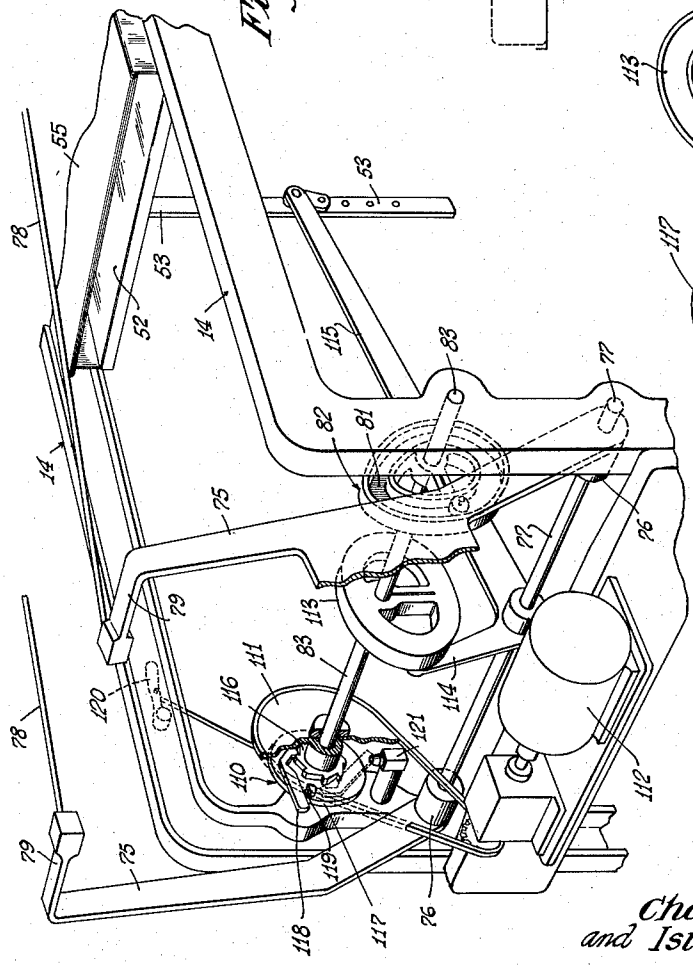


Fig. 4.

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PAPER FEED

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Application February 27, 1939, Serial No. 258,672

8 Claims. (Cl. 93—2)

The principal object of this invention is the provision of improved paper feeding and measuring means for use in wrapping machines.

Viewed from another aspect, the invention has among its important objects the provision of adjustable means, cooperably driven with certain wrapping mechanism in a wrapping machine, for feeding selectively measured lengths of webbing or wrapping paper into wrapping position.

Other objects, advantages and economies characterizing the invention will become apparent as the following description proceeds in view of the annexed drawings, in which:

Fig. 1 is a fragmentary perspective of the adjusting means and feed stroke arm;

Fig. 2 is a fragmentary section along line 2—2 of Fig. 1, showing the unidirectional ratchet drive to enlarged scale;

Fig. 3 is a fragmentary section of the wrapping machine;

Fig. 4 is a fragmentary perspective end view of the drive mechanism;

Fig. 5 is a diagram illustrating the timing and carry-over feature;

Fig. 6 is a fragmentary sectional elevational view as seen from line 6—6 in Fig. 2.

Referring to Fig. 3, a preferred arrangement includes a source of supply of paper webbing in the form of a roll of wrapping paper 10 rotatably supported on a spindle 11 removably seated in slots 12 in cradle arms 13 projecting from opposite frame members 14 of the main frame structure.

The web of paper 15 is fed up over a feeding roller 16 journaled in opposite projections 17 (Fig. 1 also) on frame members 14 above the supply roll, and as shown in Fig. 2, one end 20 of the feed roller is keyed as at 21 to the spindle 22 of a driven ratchet device having an end plate 23 rigid with the spindle and on which is mounted a pawl 24 urged by spring means 25 into driving engagement with ratchet teeth 26a on a driven gear 26 which floats on a stud 27 integral with the spindle 22. When the gear 26 is rotated in one direction, the pawl 24 catches and rotates the feed roller 16 (Fig. 6).

Mounted at intervals across a shaft 30 (Figs. 2 and 3) are a plurality of friction presser rollers 31 which are pressed against the paper webbing on roller 16 by virtue of the fact that the shaft 30 is journaled at its opposite ends in eccentric arms 32 pivoted as at 33 on the frame and each normally urged by eccentric springs 34 toward the feed roller.

The presser-roller shaft 30 is driven cooperably with the feed roller through the agency of a driven pinion 40 (Figs. 1 and 2) thereon which meshes with a driving pinion 41 rigid on the ratchet spindle 22.

Means for moving and holding the presser roller out of pressing engagement with the feed roller includes the provision of a hand lever 45 pivoted as at 46 on the frame and having a cam part 47 arranged to ride into and out of an eccentric notch 48 on one of the eccentric arms 32. Thus, when the lever 45 is turned clockwise in Fig. 1, the cam portion rides into the notch on the eccentric arm and pivots the latter about the point 33 and moves the rollers 31 away from the feed roller. Movement of the lever 45 in the opposite direction back to the position of Fig. 1 permits the spring 34 to urge the arm 32 back toward the feed roller. This presser operating and control means 32—34—45 is duplicated on opposite sides of the machine, for convenience.

By cooperation of the feed and presser rollers, as aforesaid, the webbing 15 is fed over a stationary horizontal knife member 50 (Fig. 3) beneath a guide means or apron 51, which prevents the paper from curling up or back when it is cut, the paper continuing across an opening which is (at times) bridged by the lower level 52 of an elevator 55 mounted atop a vertically reciprocable elevator post 53 until the end 15a of the paper webbing lies on a holding table 54 at the opposite side of the elevator opening.

When the elevator starts down from the fully raised position shown in Fig. 3, a knife bail 58, pivoted on the frame as at 59 is permitted to drop by its own weight (having been previously raised by the rising elevator into the position of Fig. 3) and a movable knife or shear 60 pivotally mounted by hinge means 61 thereon, shears the webbing 15 in cooperation with the stationary shear 50. The knife bail structure is described and claimed in our copending U. S. application, Serial No. 258,676.

Means for grasping and holding the sheared sheet of wrapping material includes a holding bail 62 extended crosswise of the sheet above the elevator and holding table 54, the bail being mounted in a pair of arms 63 pivoted as at 64 on a tail 65 of the knife bail. This mounting, together with the provision of quick-action operating arms 66, pivotally attached as at 67 to each of the bail arms 63 and each coacting with spring means 68 on the shanks of thumb screws 69 severally attached to the bail arms 63, effects a snapping of the holding bail 62 toward the table

54, to and from the position of Fig. 3 as a result of the up and down movement of the elevator.

When the elevator starts down, the quick-action arrangement causes the holding bail 62 to be quickly dropped down against the end 15a of the sheet of paper (the latter being severed from the main web at substantially the same time by downward movement of the knife bail as aforesaid) with the result that one end 15a of the severed sheet is clamped against the holding table 54.

As the elevator continues downward, the free end of the cut sheet lowers until the sheet is hanging nearly vertical from table 54. At this time, by means not shown herein, but described and claimed in our copending U. S. application, Serial No. 258,674, an article such as a loaf of bread will be moved horizontally against the hanging sheet and onto the upper level 55 of the elevator, so that the loaf is initially and partially wrapped. As a result of movement of the elevator into raised position (Fig. 3), certain intermediate wrapping operations are effected through engagement of the protruding parts of the sheet with members such as the arm 70, and through the agency of other wrapping means not all shown herein.

For purposes of understanding the present invention, it is sufficient to point out that when the loaf reaches fully elevated position, it is substantially wrapped save for certain end folds which are effected by moving the loaf sidewise between opposite terminal fold plates 71 so as to cause the incomplete end folds or tails to ride into arcuate tracks 72 for the final folding operation.

Movement of the elevated loaf into the terminal fold means is accomplished by a pair of reciprocal transfer arms 73 depending from sleeve brackets 74 sliding on horizontal rails 75' above the elevated loaf. The transfer arms are shifted from normal position (Fig. 3) against the side of the loaf to move the latter in between the terminal fold plates 71, at which time the elevator may start down.

Mechanism for actuating the transfer means 73—74 in timed relation to the movement of the elevator and other wrapping instrumentalities of the machine, includes offset drive or crank arms 75 (Fig. 1—only one being seen) mounted for oscillation at their ends 76 on a cross shaft 77 rigid therewith and journaled in the main frame. The drive arms oscillate in the direction of reciprocation of the transfer arms 73, but at an opposite end of the machine from the latter, connecting rods 78, each attached at one of their ends to the offset parts 79 of one of the drive arms, and at their respective opposite ends 80 to one of the sleeve brackets 74, providing a driving connection between crank arms 75 and the transfer fingers. Thus, when the crank arms are oscillated, the transfer arms are reciprocated.

One of the crank arms 75 has a cam follower which rides in the cam groove or track 81 of a rotating cam 82 on a shaft 83 which has driving connection (Fig. 4) with a central drive system or power plant, and which moves the crank 75 back and forth in timed relation to the movement of the elevator and associated wrapping mechanism.

The paper measuring device is arranged for timed coaction with the other wrapping mechanism through an adjustable driving connection with the transfer operating crank means. To this end, one of the drive cranks 75 has a formation 85 which is shaped to provide a guideway 86 for an adjustable traveler or pivot means in the form of a sliding block 87 threaded on an adjusting spindle or screw 88 journaled in the guideway and arranged to be rotated by a hand crank 89 for the purpose of causing the block or rider 87 to move back and forth in the guideway.

Projecting from the adjustable fulcrum block is a stud 90 to which is pivotally attached one end part 91 of a drive rod 92. The opposite end of the drive rod is provided with a rack of teeth 93 and is slidably mounted for rocking reciprocation on rollers 94 secured by pins 95 to a rocking plate 96 which is pivoted on a stud bolt 97 in the frame and which in turn mounts a gear 98 meshing with the ratchet gear 26. The drive rod is fitted in behind the gear 98 with its rack of teeth meshed with a reduced inner gear toothing 99 forming a part of gear 98.

By turning the adjusting crank 89, the stud or pivot member 90 is moved to any desired position along the guideway on the drive crank to position an index on the drive rod connection 91 opposite desired number indication along the guide member, these latter indications being calibrated to indicate the number of inches of paper to be fed. In this way the adjustable lever, pivot, or fulcrum connection between the crank 75 and the drive rod 92 is changed to vary the stroke thereof with a consequent variation in the rotative movement of gear 98.

When the drive rod 92 moves in one direction (right, Fig. 1), ratchet gear 26 slips past the pawl so that the paper feed roller is not turned, but when the drive rod moves in the opposite direction, the pawl 24 takes hold and the feed roller 16 is turned to advance a portion of the web—how much, depending upon the setting of the fulcrum block relative to the indicia on its guideway. The advance or feeding of the web occurs at a time when the transfer fingers are moving the nearly wrapped loaf in between the terminal wrapping plates.

The form of the cam 82 determines the relative rate and period of operation of the drive crank and drive rod with respect to the other wrapping mechanisms, and the elevator waits in raised position while the transfer arms remove the bread therefrom and while a new portion of webbing is fed across the lower level of the elevator.

An important feature of the timing is the arrangement of the cam 82 to give the drive rod 92 a slight but definite forward (left, Fig. 1) pull at the moment the elevator moves into fully raised position. The advantage of this resides in the fact that the machine is arranged and constructed to complete each wrapping cycle or operation when the elevator moves into raised position. This is accomplished through a special clutch connection with the power plant for the machine, the arrangement being such that there is always a slight carry-over of the cam 82 from the end of one operating cycle into the beginning of the next, and as a result, the paper feed roll 16 is given a slight paper advancing movement before the wrapping mechanism stops after making one complete wrapping cycle.

As a result of the foregoing carry-over, the waxed paper which is commonly used in such machines, is prevented from sticking along, and adjacent, the edge of the stationary shear or knife 50, such sticking otherwise occurring due to crowding of the wax at the point of cutting

and due to the congealing of wax, generally, when the machine is allowed to stand idle for any appreciable period. Thus, if the machine is shut off, the waxed paper will be given a slight advancing movement to loosen it, and there will be no danger of sticking, such sticking being highly objectionable because it results in bunching of the paper and jamming of the machine.

This terminal kick or momentary advance of the web at the end of each wrapping cycle is accomplished by the mechanism shown in Fig. 4 wherein the cam shaft **83** is shown to be connected through a special clutch **110** with a sprocket **111** floating on shaft **83** and driven by a motor **112** constituting a central power plant or drive means for the machine. At this juncture, it may be observed that the elevator **53** is cooperably driven with the actuating means for the proper feed through the agency of a second cam **113** on shaft **83** and crank means **114—115**. The cam **82** and associated crank **75**, adjustable pivot or fulcrum means **85—90—92**, constitute a cyclically operable actuating mechanism for the paper feed, and this actuating means coacts with the other wrapping instrumentalities and mechanism through the common connection of the cams **82** and **113** with the power drive through the clutch **110**.

Thus, each operation of the clutch **110** will effect one complete wrapping operation or cycle of the machine. To this end, the clutch includes a ratchet **116** driven with the sprocket **111** and floating on shaft **83**, there being a clutch disc **117** rigid with shaft **83** and having a pawl **118** (see Fig. 5) which is normally urged by a spring **119** into driving engagement with the ratchet. A manually controlled lever **120** is connected with a pivoted release and stop **121** arranged in the path of the pawl so as to lift the latter out of clutching engagement with the ratchet once per revolution of the clutch assembly. In this sense, the clutch is cyclically operable, and upon each cycle of operation thereof the wrapping mechanism is driven through one complete wrapping cycle or operation.

The cam **82** is so arranged in its evolution that for every complete revolution of the shaft **83**, corresponding to one complete wrapping cycle, the cam **82** will travel through one complete cycle and a small part of the next cycle. As a result, when a complete wrapping operation is finished, the elevator **52—55** rests in raised position, while the drive rod **92** is moved slightly to advance the free end of the paper enough to prevent its sticking or becoming fixed, so that the danger of jamming is obviated—especially where the machine lies idle for any length of time between wrapping operations.

The foregoing phase relationship between the cyclic operations of the wrapping mechanism and paper feed is diagrammatically illustrated in Fig. 5 wherein the parts are identified in their respective positions at the completion of one wrapping operation. It is observed that the elevator **55** is raised, the clutch pawl **118** disengaged, and the drive rod or rack **92** in initial movement to rotate gear **98** slightly, attention being directed to the fact that the cam rider **125** for the oscillatory crank or lever **75** has been moved slightly past (downward) the lowest nose **126** on cam **82**, movement between the nose **126** and the point **127** corresponding to paper feeding movement of the drive member or stroke arm **92**.

The objects and advantages of the invention may be realized in other forms of construction, arrangement and modes of operation of the parts specifically described herein for purposes of illustrating a preferred embodiment, and the appended claims therefore are intended to include all equivalent arrangements fairly coming within the spirit and scope of the invention.

Having thus described our invention, what we claim as new and desire to protect by Letters Patent is:

1. In a wrapping mechanism including power drive means, adjustable web feeding means, web severing means, and cyclically operable actuating mechanism therefor arranged to effect the feeding and severing of one strip of webbing of selectively determined length for each cycle of operation of said actuating mechanism, the combination of clutch means arranged for operation to drivingly connect said wrapping mechanism and feed actuating mechanism with said power drive means to effect one complete wrapping operation of said wrapping mechanism, said cyclically operable actuating mechanism being arranged and constructed to complete one cycle of operation and a part of another cycle during each operating cycle of said wrapping mechanism following operation of the clutch means as aforesaid, whereby said webbing may be partly advanced at the completion of each wrapping cycle to prevent the severed portion of said webbing from becoming fixed following each severing operation.

2. In a wrapping machine, a source of driving power, paper feeding means arranged to feed measured amounts of wrapping paper relative to wrapping mechanism in said machine, cyclically operable drive means for actuating said feeding means, and cyclically operable clutch mechanism arranged for operation to connect said cyclically operable drive means with said source of driving power, said cyclically operable drive means being arranged and constructed to provide a carry-over whereby said cyclically operable drive means will be driven a predetermined amount after completion of each cycle of operation thereof upon each operation of said clutch mechanism.

3. In a wrapping machine, wrapper feed means arranged for actuation to feed measured lengths of wrapper, cyclically operable drive means coacting with said feed means to actuate the latter so as to feed one of said lengths of wrapper for each cycle of operation thereof, and cyclically operable clutch means operatively connecting said drive means with a source of driving power, said clutch means being arranged and constructed to be operated to initiate a cycle of operation of said drive means, and the latter being arranged in such manner that upon each cycle of operation thereof, said cyclically operable drive means will be driven through one cycle and a predetermined fraction of the next cycle, whereby said wrapper material will be advanced in feeding movement following each actuation of said feed means upon operation of said clutch means.

4. In a wrapping machine, in combination, means for feeding a waxed wrapper from a web and severing the same, and mechanism including instrumentalities for wrapping an article in said wrapper and including coacting power drive and clutch means arranged for actuation to complete one cycle of operation to feed and sever a wrapper and wrap an article as aforesaid, said drive and clutch means being further arranged and con-

structed to advance said web in feeding movement a certain amount at the conclusion of each said cycle to assure that said web shall not stick as a result of the severing operation.

5. In a wrapping machine, in combination, wrapping mechanism arranged for periodic actuation to effect a series of complete wrapping operations and coacting with web feeding and severing means to advance and sever a waxed wrapper prior to each wrapping operation, power-driven means for energizing said mechanism and coacting means, and a clutch drivingly interconnecting said power-driven means and mechanism and arranged for operation to effect energization of said mechanism for one complete wrapping operation as aforesaid and a fraction of another wrapping operation sufficient to advance said web before disconnecting said mechanism from said drive means whereby to dislodge said web to avoid jamming the machine by sticking of the web as a result of severing the same.

6. In a wrapping machine, in combination, a rotatable drive shaft, power means for driving said shaft, a clutch arranged for operation to interconnect said shaft and power means for the duration of a complete revolution of the latter by the former and a fraction of another revolution and thereafter to automatically disconnect said shaft from said power means, wrapping mechanism, means energized by said shaft for actuating said wrapping mechanism and arranged to effect a complete wrapping operation for each revolution of the shaft, means for feeding webbing for wrapping purposes relative to said wrapping mechanism and severing a predetermined length of the webbing to provide a wrapper for each complete wrapping operation as aforesaid, said severing means being actuated prior to or not later than the completion of each revolution of said shaft so that said webbing will be advanced by the additional revolution of said shaft before disconnection of the latter by said clutch from said power means.

7. In a web feeding and severing mechanism, in combination, cyclically operable means for feeding predetermined lengths of webbing relative to severing means, a source of driving power, clutch means operable to interconnect said cyclically operable means and said source of power to drive the former through one complete operating cycle and a fraction of the next cycle and thereafter disconnect said cyclically operable means whereby to advance more than said predetermined length of webbing, and severing means driven cooperably with said cyclically operable means to sever said web prior to the disconnection of the cyclically operable means by the clutch means as aforesaid whereby a portion of said webbing less than said predetermined length will be advanced following each severing operation to dislodge said webbing in the event the same sticks or is otherwise arrested, whereby jamming of the machine may be prevented.

8. In a sheet feeding and severing machine, means for feeding waxed sheeting with respect to severing means, a power source, clutch means constructed to be set for operation to interconnect said first-mentioned feeding means with said power means for operation to feed a predetermined length of sheeting and thereafter automatically disconnect said feeding means, and severing mechanism driven cooperably with said feeding means through the agency of said clutch means for actuation once during each feeding operation to sever said sheeting in a length less than said predetermined length prior to the disconnection of said feeding means whereby an additional length of sheeting will be fed following each severing operation to loosen said sheeting in the event the same sticks as a result of the severing thereof, whereby to prevent jamming of the machine.

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