

April 5, 1938.

C. H. PETSKEYES

2,113,239

WRAPPING MACHINE

Filed June 5, 1935

8 Sheets-Sheet 1

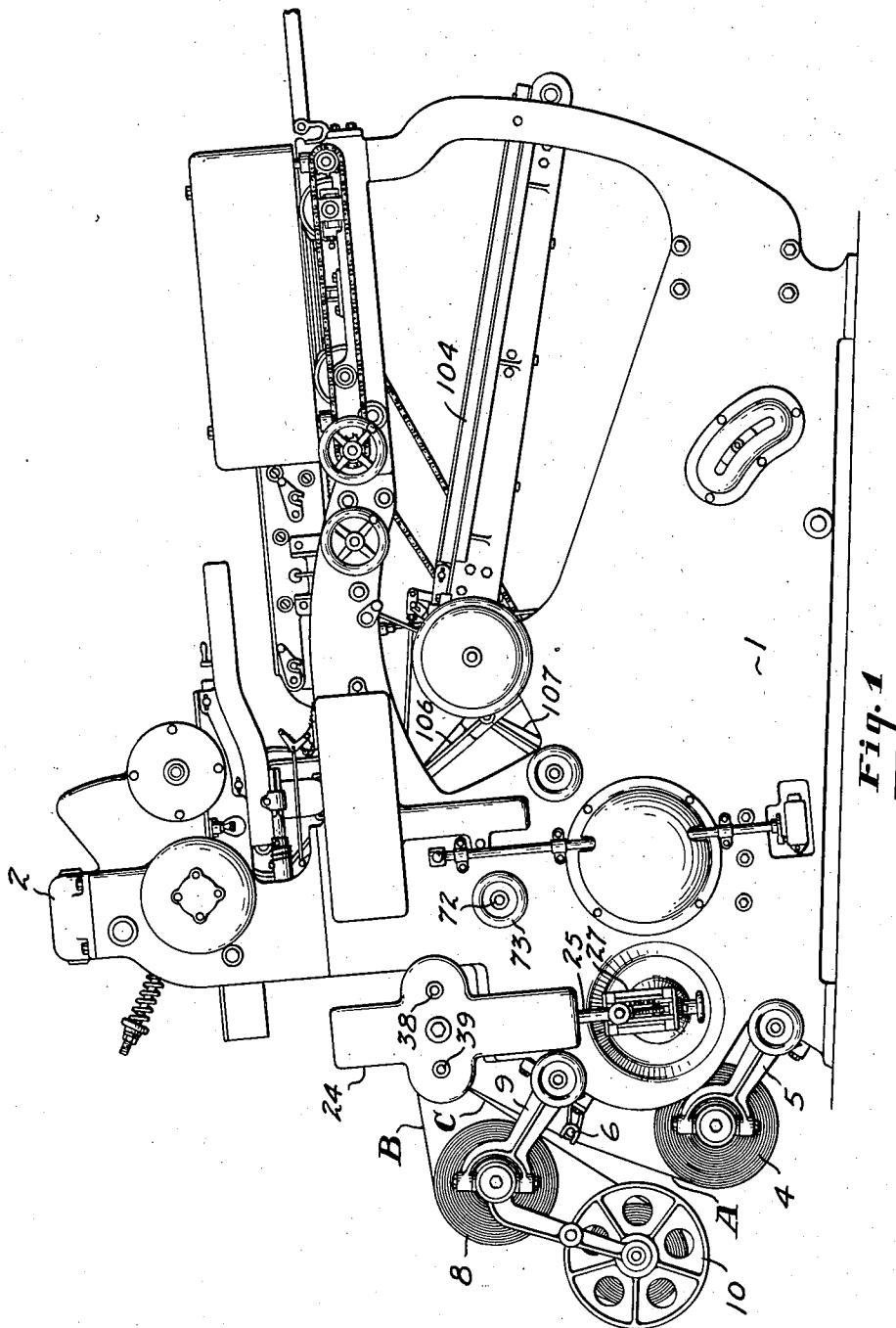


Fig. 1

INVENTOR
Charles H. Petskeyes
BY
Evans & McLaughlin
ATTORNEYS

April 5, 1938.

C. H. PETSKEYES

2,113,239

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8 Sheets-Sheet 2

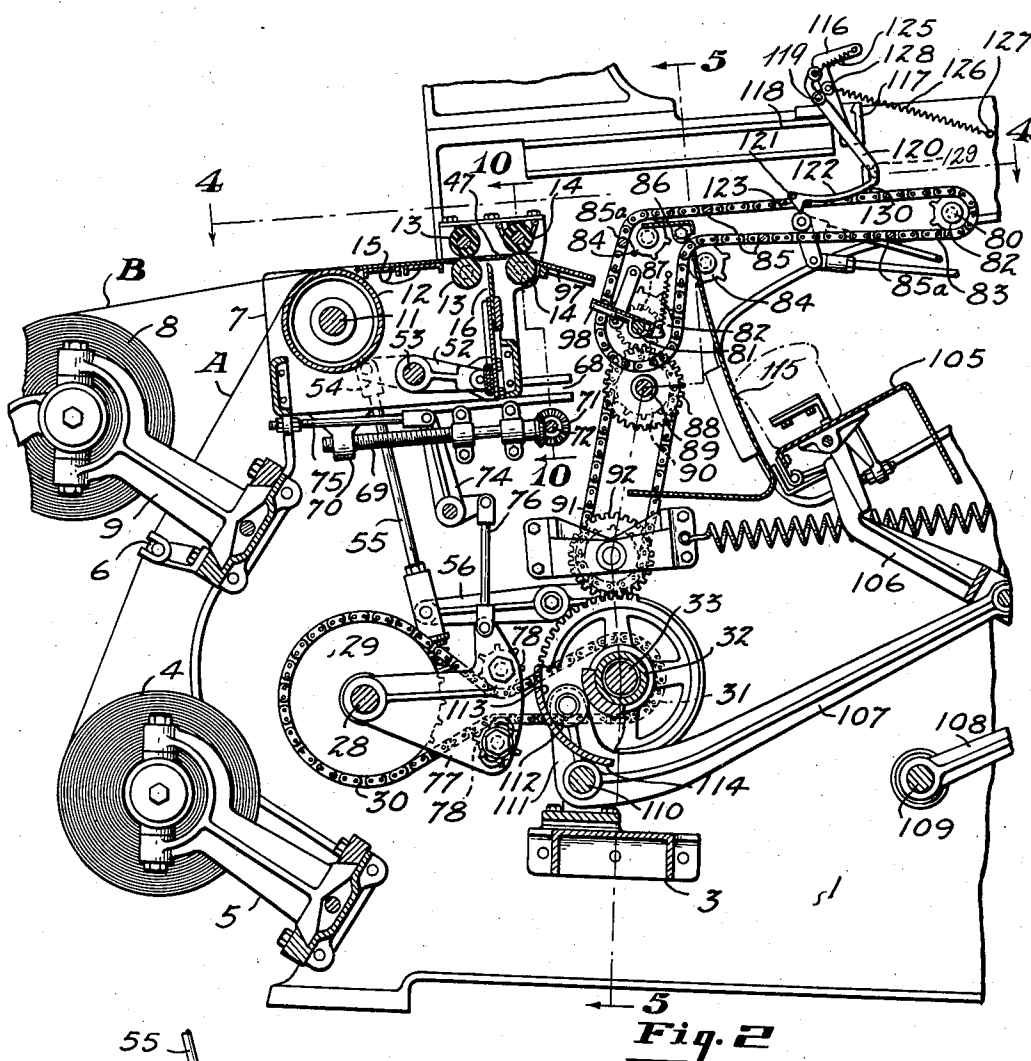
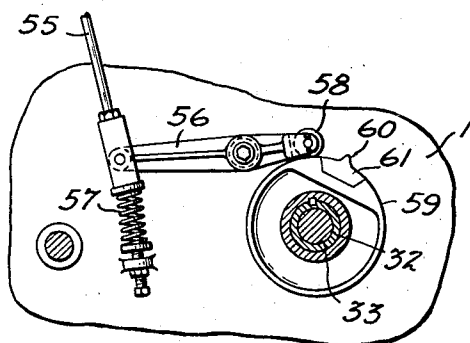


Fig. 3

INVENTOR
Charles H. Petskeyes
BY
Evans & Mcloy
ATTORNEYS

April 5, 1938.

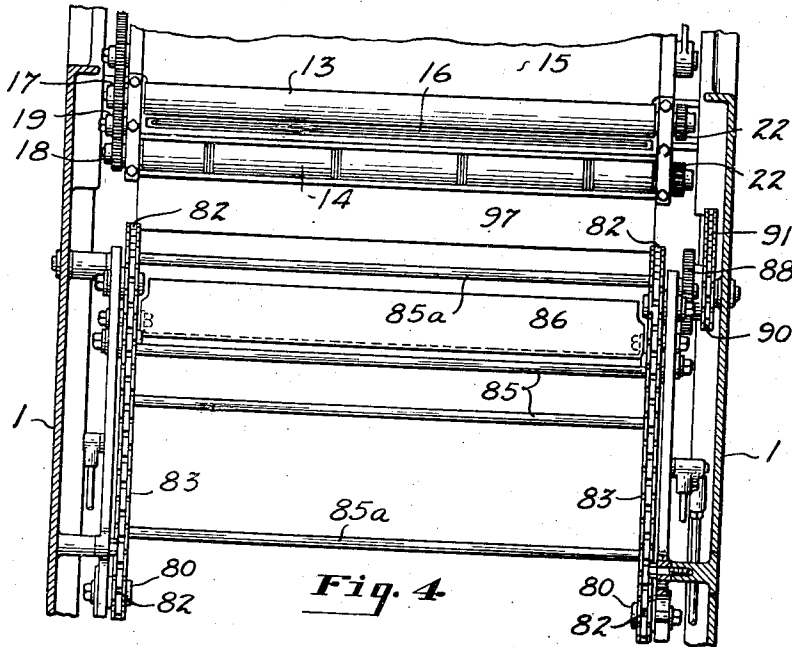
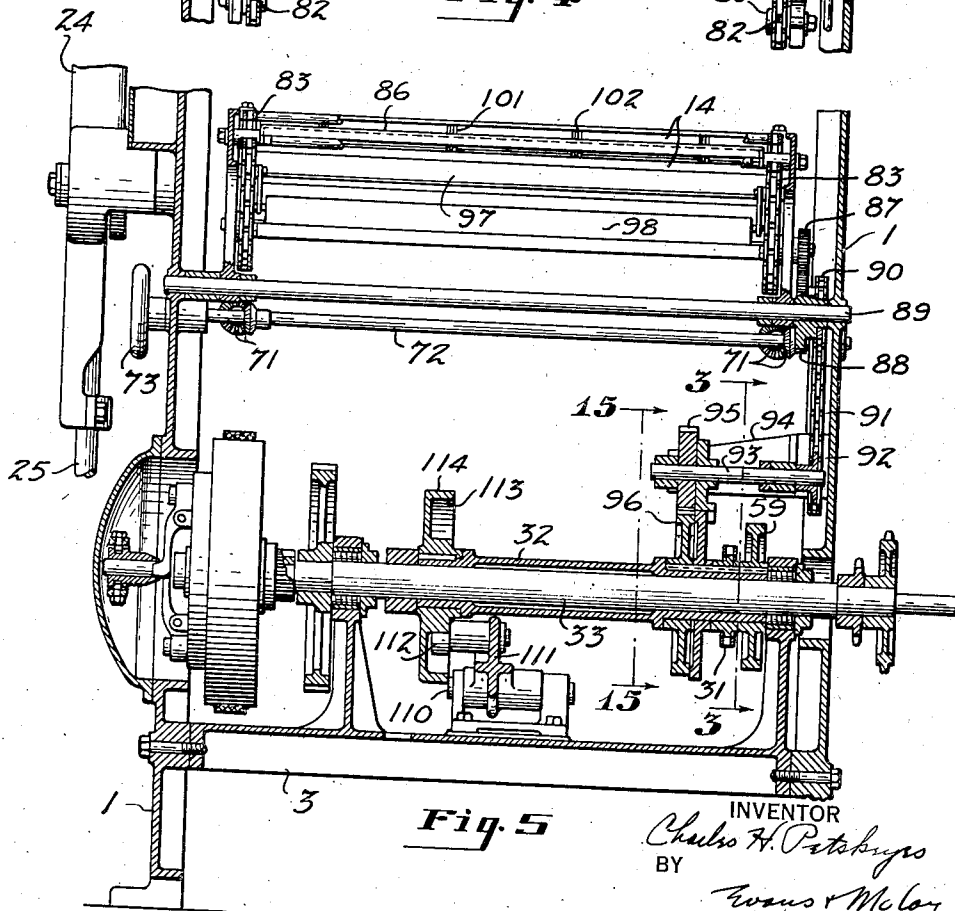
C. H. PETSKEYES

2,113,239

WRAPPING MACHINE

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8 Sheets-Sheet 3



INVENTOR
Charles H. Petskeyes
BY
Evans & McLaughlin
ATTORNEYS

April 5, 1938.

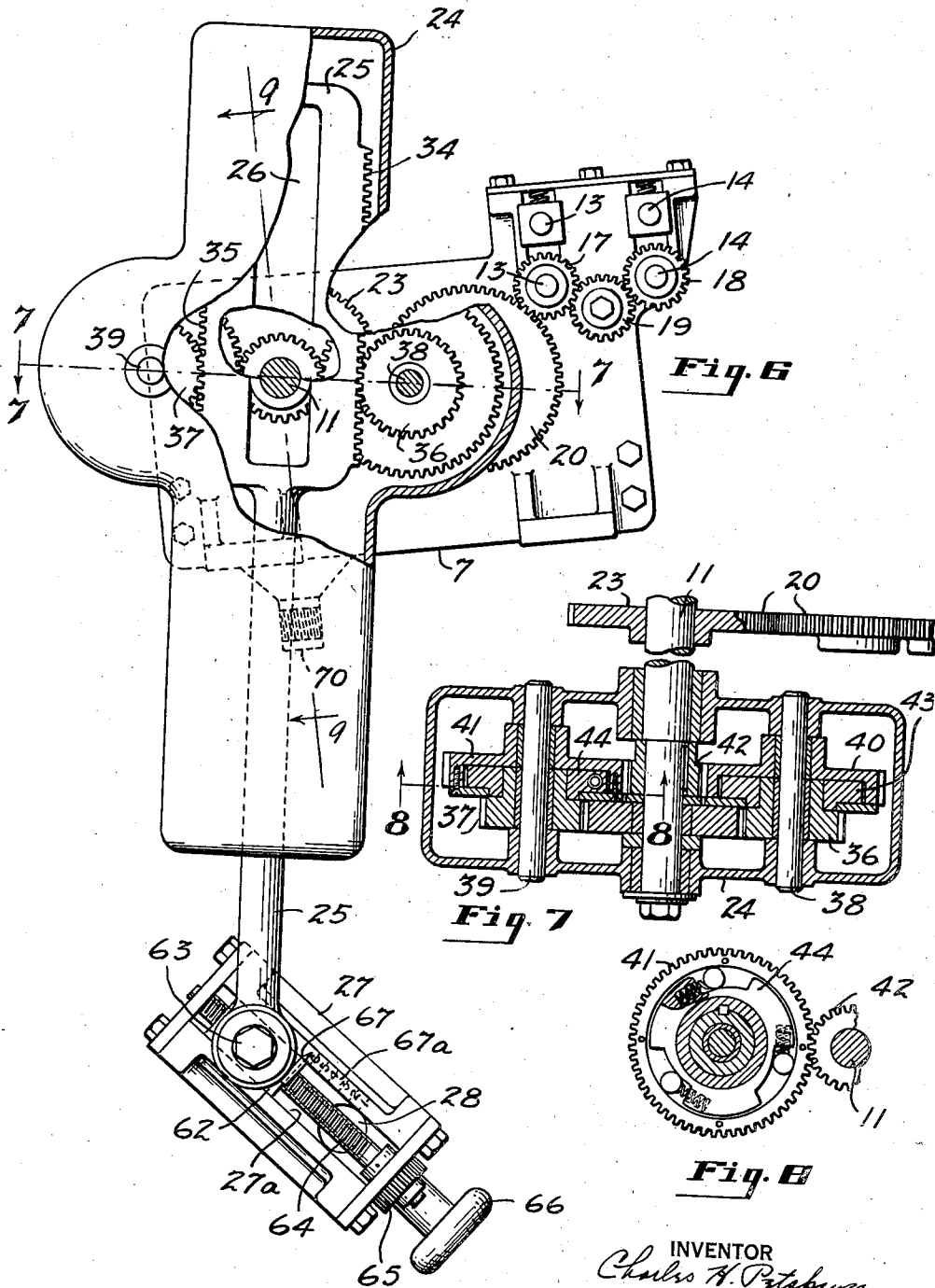
C. H. PETSKEYES

2,113,239

WRAPPING MACHINE

Filed June 5, 1935

8 Sheets-Sheet 4



INVENTOR
Charles H. Petskeyes
BY
Evans & Meloy
ATTORNEYS

April 5, 1938.

C. H. PETSKEYES

2,113,239

WRAPPING MACHINE

Filed June 5, 1935

8 Sheets-Sheet 5

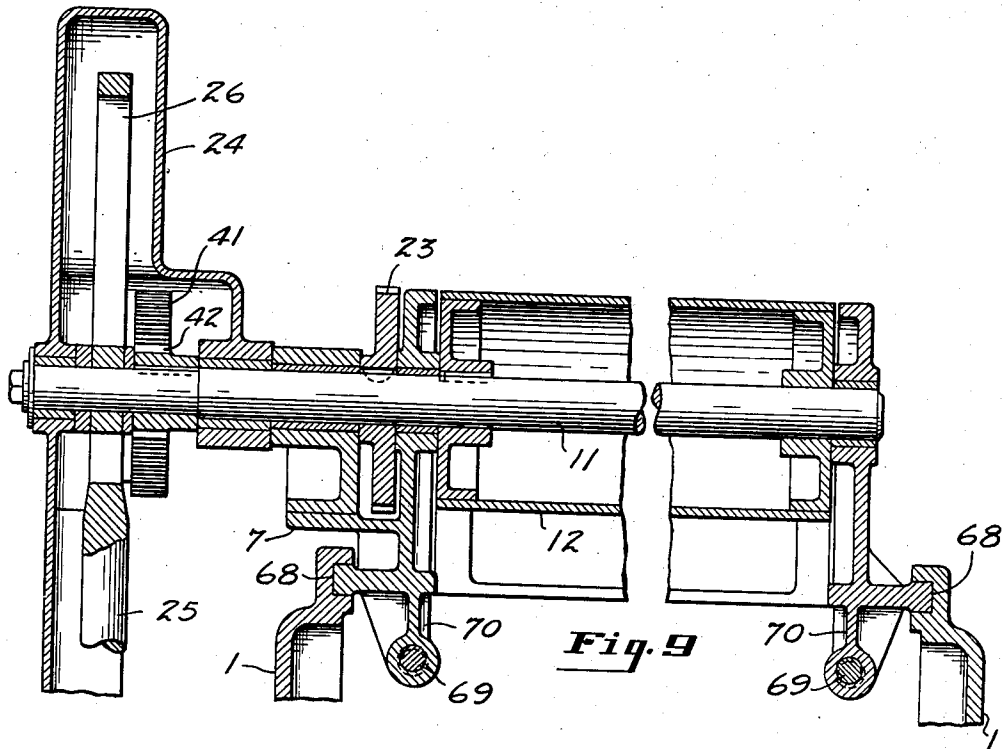


Fig. 9

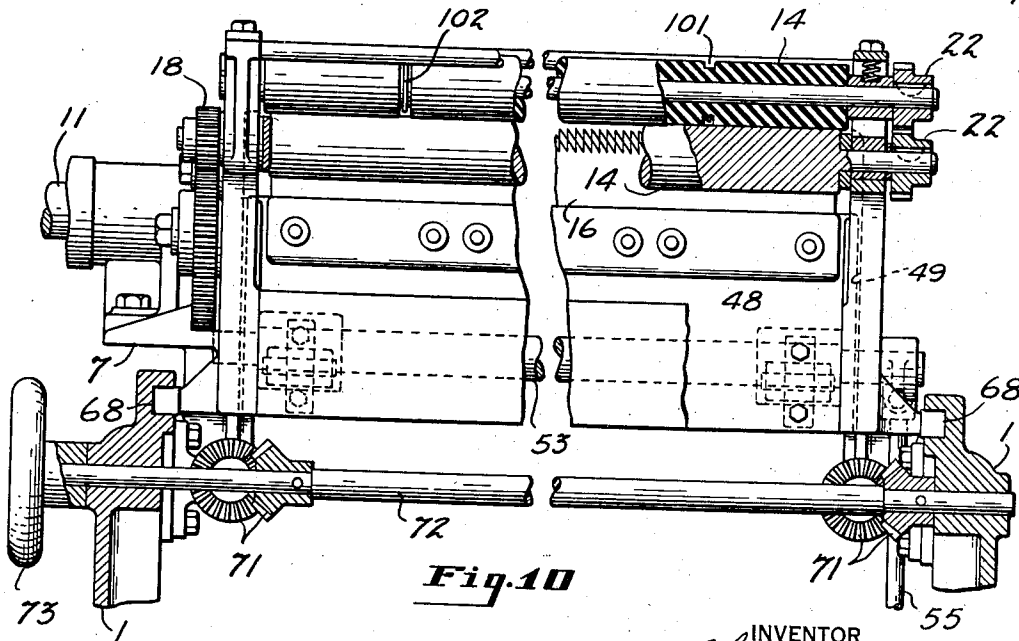


Fig. 10

INVENTOR
Charles H. Petskeyes
BY
Evans & McLaughlin
ATTORNEYS

April 5, 1938.

C. H. PETSKEYES

2,113,239

WRAPPING MACHINE

Filed June 5, 1935

8 Sheets-Sheet 6

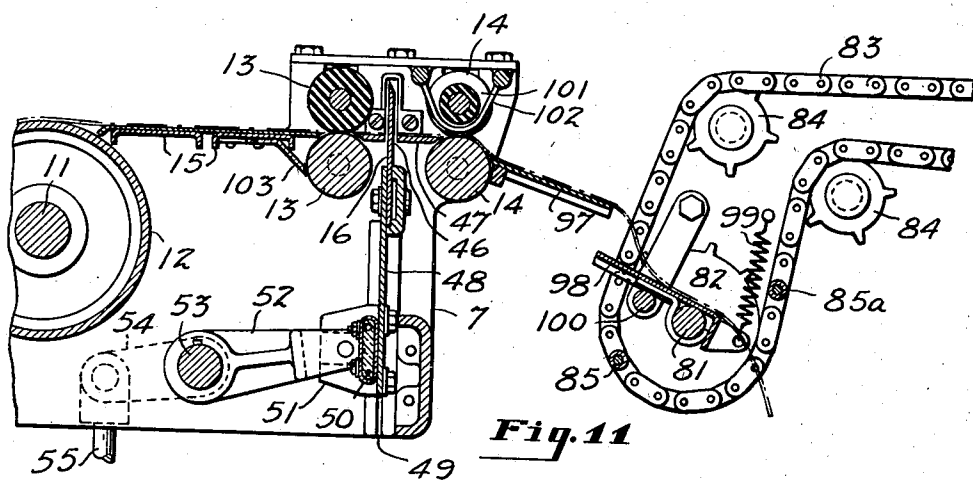


Fig. 11

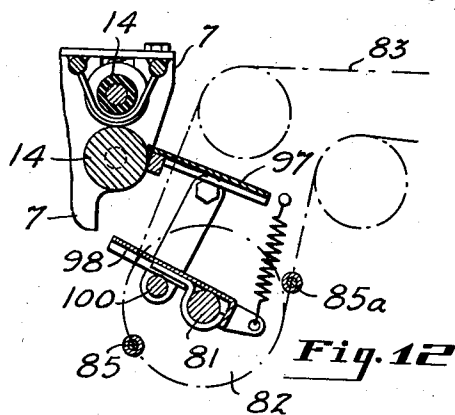


Fig. 12

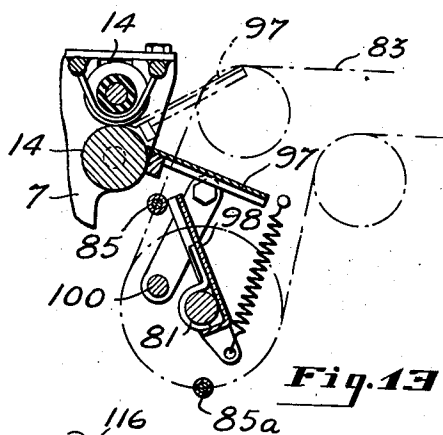


Fig. 13

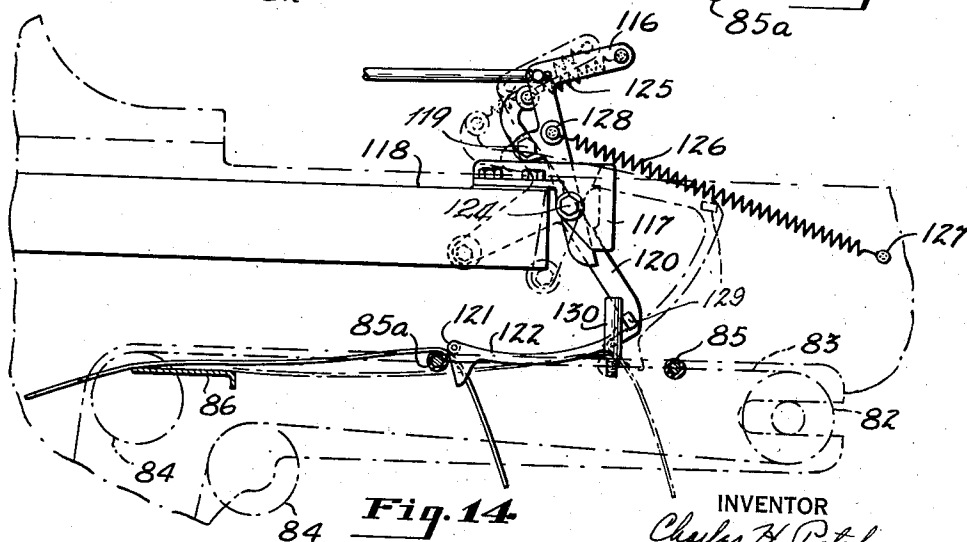


Fig. 14

INVENTOR
Charles H. Petskeyes
BY
Ernest McLaughlin
ATTORNEYS

April 5, 1938.

C. H. PETSKEYES

2,113,239

WRAPPING MACHINE

Filed June 5, 1935

8 Sheets-Sheet 7

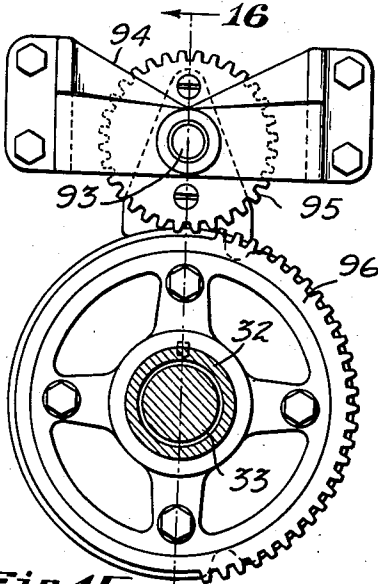


Fig. 15

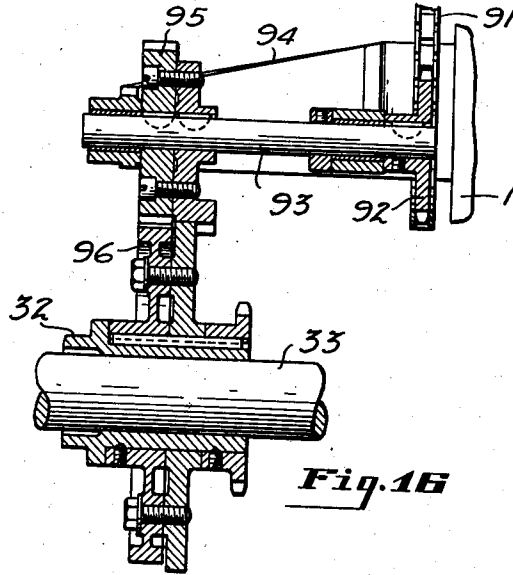


Fig. 16

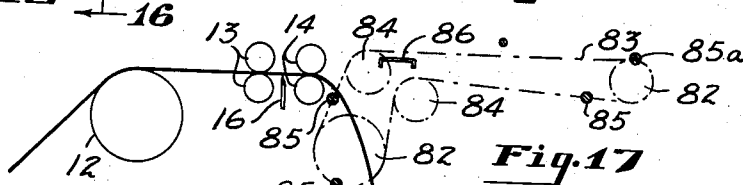


Fig. 17

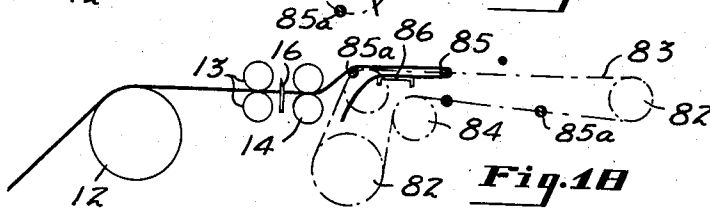


Fig. 18

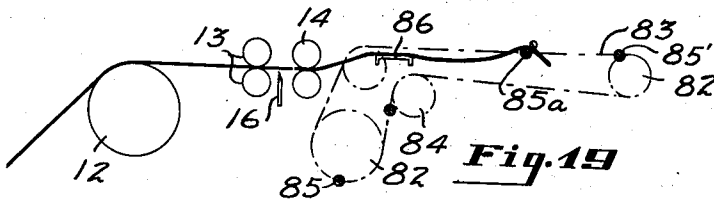


Fig. 19

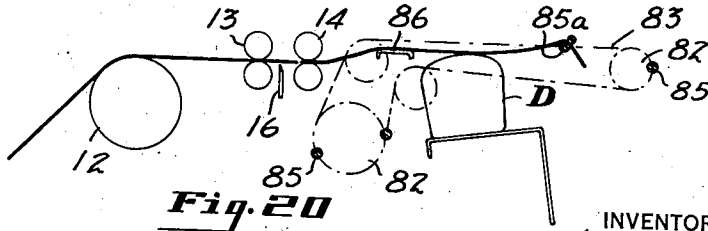


Fig. 20

INVENTOR
Charles H. Petskeyes
BY
Evans & McLoey
ATTORNEYS

UNITED STATES PATENT OFFICE

2,113,239

WRAPPING MACHINE

Charles H. Petskeyes, Davenport, Iowa, assignor
to Micro-Westco, Inc., Bettendorf, Iowa, a cor-
poration of Delaware

Application June 5, 1935, Serial No. 25,097

22 Claims. (Cl. 164-49)

This invention, which is a continuation in part of my co-pending application Serial No. 726,346, filed May 18, 1934, relates to wrapping machines and more particularly to means for feeding wrap-
5 ping material from a source to a wrapping station.

One of the objects of the present invention is to provide a wrapping machine with means whereby the location of the overlapping ends of the wrapping material can be predetermined.

10 Another object is to provide a wrapping machine with a web or wrapper feeding means which is bodily movable for predetermining the discharge position of the wrapper, and in which such means will not cause feeding of the wrapper
15 during such movement.

A further object is to provide a wrapping machine with improved mechanism for carrying a wrapper to a wrapping station, and in which the wrapper is held under tension during the carry-
20 ing movement.

Other objects will be apparent from the following detailed description, which is made with reference to the accompanying drawings, which illustrate a suitable embodiment of the invention.

25 In the drawings:

Figure 1 is a side elevation of the complete wrapping machine;

Fig. 2 is an enlarged fragmentary side view, with the side frame removed, of that portion of
30 the wrapping machine which includes the web feeding and transferring mechanism, other portions of the machine being omitted;

Fig. 3 is a fragmentary view of the cam and mechanism for operating the cutter blade and
35 taken substantially on line 3-3 of Fig. 5;

Fig. 4 is a section taken on line 4-4 of Fig. 2;

Fig. 5 is a section taken on line 5-5 of Fig. 2;

Fig. 6 is an enlarged side elevation of mechanism for operating the feed rolls, portions of the
40 same being broken away and sectioned;

Fig. 7 is a section taken on line 7-7 of Fig. 6;

Fig. 8 is a section taken on line 8-8 of Fig. 7 showing the overrunning clutch;

Fig. 9 is a section taken on line 9-9 of Fig. 6;

45 Fig. 10 is a section taken approximately on line 10-10 of Fig. 2;

Figs. 11, 12 and 13 are fragmentary views similar to Fig. 2, showing different relative positions of the feed mechanism;

50 Fig. 14 is a fragmentary view, partially diagrammatic, showing the means which engages with the web carrier to place the web under tension during the transfer to the wrapping station;
55

Fig. 15 is a section taken on line 15-15 of Fig. 5;

Fig. 16 is a section taken on line 16-16 of Fig. 15;

Figs. 17 to 20 are diagrammatic views showing 5 the travel of the wrapper from the feed rolls to the wrapping station.

Fig. 21 is a sectional view of a feed roll supporting carriage of modified construction;

Fig. 22 is a view somewhat similar to Fig. 11 10 but showing a modified arrangement of parts;

Fig. 23 is a section taken approximately on line 23-23 of Fig. 21;

Fig. 24 is a view showing the additional smoothing roll of Fig. 21 in its inoperative position; 15 and

Fig. 25 is a section taken on line 25-25 of Fig. 21.

The present invention concerns the means for feeding wrapping material, such as plain or waxed 20 paper, or regenerated cellulose, to a wrapping station.

The wrapping material "A" is carried in the form of a roll 4 which is supported on suitable arms 5 carried by the side frames 1, and is 25 passed over an idling roller 6 to a material advancing mechanism mounted upon an adjustable carriage 7.

When it is desired to use a double thickness of wrapping material, additional wrapping material "B", in the form of a roll 8, is rotatably supported on arms 9 carried by the rear ends of the side frames 1. A reel 10 is also provided for supporting a narrow strip of paper "C" having advertising material thereon which may be fed 35 with the material A and B.

If desired, any suitable means may be provided for circulating a refrigerant or cold air through the centers of the wrapping material rolls so as to cause hardening of the waxed surfaces of 40 the wrapping material and thereby minimize the accumulation of wax on the working parts of the machine.

The carriage 7 rotatably supports a shaft 11 to which a smoothing roll 12 of substantial diameter is secured. The roll 12 preferably is hollow, and if desired, may be cooled by circulating cold air, cooling fluid, or a refrigerant there- 45 through to cause the wax on the surface of the wrapping material to harden and thereby prevent the accumulation of wax on the working parts of the machine.

The carriage 7 also supports a pair of wrapping material advancing or feed rolls 13 which are 50 journaled therein, the advancing rolls 13 hav- 55

ing their axes in a common vertical plane, and an additional pair of wrapping material advancing rolls 14 adjacent the rolls 13 and also having their axes disposed in a common vertical plane. The wrapping material is conducted over the smoothing roll 12 and gripped by the feed rolls 13, suitable guide plates 15 being disposed between the smoothing roll 12 and feed rolls 13 to prevent sagging of the wrapping material between these rolls. The upper feed rolls 13 and 14 are preferably of rubber having a metal core and the lower feed rolls 13 and 14 are preferably of metal whereby the wrapping material will be positively fed and will not slip during the feeding thereof.

The carriage 7 also carries the cutting means or knife blade 16, to be later described, the knife blade being disposed to operate intermittently and to move between the pairs of rollers 13 and 14 to sever the wrapping material. The lower feed rolls 13 and 14 are provided with small toothed gears 17 and 18, respectively, which are meshed with a common idler gear 19 so that when the gear 17 is driven by means of a drive gear 20 the gears 17 and 18 will be driven simultaneously and in the same direction. The upper rolls 13 and 14 are so positioned with respect to the lower rolls 13 and 14 that during the feeding of the wrapping material the wrapping material will be gripped between the rolls of each pair and advanced toward the wrapping mechanism.

The rolls 13, at their ends opposite the gear 17, are provided with intermeshed pinions, and similarly the rolls 14 are provided with intermeshed pinions 22 so that the upper rolls 13 and 14 will be positively driven by the lower rolls 13 and 14. The forward rolls 14 are so geared to the rear rolls 13, or are of such diameter that they may rotate at a slightly greater speed than the rear rolls 13, whereby the wrapping material extending between the pairs of rolls may be placed under tension in order to facilitate the operation of severing the wrapping material.

The shaft 11, which carries the smoothing roll 12, is journaled in the carriage 7, and this shaft carries a drive gear 23 which is meshed with the gear 20, which is meshed with roll gear 17. The shaft 11 is rotated by means of a reciprocating mechanism, which is so arranged to provide a continuous feed of the wrapping material to the wrapping mechanism except for those momentary periods when the cutter blade 16 severs the wrapping material to provide a sheet of wrapping material of predetermined length, and which mechanism is also so arranged that the speed of advancement of the wrapping material is accelerated and decelerated, respectively, just after and just prior to the operation of the cutter blade 16, so as to avoid any sudden stopping of the wrapping material being advanced to the wrapping mechanism.

The mechanism for rotating the shaft 11 is carried within a suitable housing 24 which is pivoted upon the shaft 11. Slidably mounted within the housing 24 is a reciprocable element 25 having a longitudinal opening 26 therein which receives the end of the shaft 11. The reciprocable element 25 is connected at its lower end with a crank arm 27 mounted on a drive shaft 28. The shaft 28 is provided with a sprocket 29 that is driven by means of a chain belt 30 from a sprocket 31 mounted on a sleeve 32, the sleeve 32 being rotatably supported on a main wrapper drive shaft 33.

The reciprocable element 25 is provided at each side of the opening 26 with rack teeth 34 and 35 which mesh with pinions 36 and 37, respectively, the pinions 36 and 37 being mounted upon short shafts 38 and 39, respectively, which are carried by the housing 24. The shafts 38 and 39 also carry freely rotatable pinions 40 and 41, respectively, which mesh with a common pinion 42 secured to the shaft 11. A driving connection in the form of an overrunning clutch 43 is provided between the pinions 36 and 40, and a similar driving connection in the form of an overrunning clutch 44 is provided between the pinions 37 and 41. These overrunning clutch devices are preferably of the friction type, as indicated in Fig. 8, and so arranged that a driving connection is effected between the two pinions 37 and 41 or 36 and 40 only during the rotation of one of the pinions 36 or 37, as the case may be, in one direction. In other words, the clutch devices act as free wheeling units which effect the drive during only one direction of rotation. Also, the clutch devices 43 and 44 are opposed to each other so that the clutch device 43 provides a driving connection between the pinions 36 and 40 upon one direction of travel of the reciprocable element, and the clutch device 44 provides a driving connection between the pinions 37 and 41 during the travel of the reciprocable element 25 in the opposite direction, so that, regardless of direction of travel of the reciprocable element 25, the shaft 11, and consequently the feed rolls 13 and 14, by means of the chain of gears described, will always be driven in the same direction.

The cutter blade 16 is arranged to move vertically and upwardly between the pairs of feed rolls 13 and 14 through a slot 46 provided in a suitable wrapping material support 47 disposed between the pairs of feed rolls 13 and 14. The cutter blade 16 severs the wrapping material at the time the crank 27 is at dead center at the end of each stroke, i. e., when the reciprocable element changes from one direction of travel to the other. At this time the feed rolls 13 and 14 are momentarily at rest.

The cutter blade 16 is detachably mounted upon a vertically reciprocable plate 48 which is guided at its ends in slots 49 formed in the sides of the carriage 7. The plate 48 is preferably provided with an electric heating element 50 which transmits heat to the cutter blade 16 to melt and thereby prevent the accumulation of wax on the cutter blade.

The plate 48 is secured to a bracket 51 which is pivotally connected with a rocker arm 52 by means of a sliding member carried between the bifurcated ends of the rocker arm and riding in a slot in the bracket (see Fig. 10). The bifurcated ends of the rocker arm straddle the bracket 51 and the rocker arm is securely mounted on a pivoted shaft 53, the shaft 53 being pivotally supported by the carriage 7. The shaft 53 is provided with a lever 54 which is connected by means of a downwardly extending connecting rod 55 with one end of a pivoted double ended lever 56 (Fig. 2), a suitable coil spring 57 being employed to urge the connecting rod 55 upwardly and maintain the plate 48, which supports the cutter blade 16, in its downward position. The opposite end of the lever 56 is provided with a suitable cam surface or cam roller 58 which engages with a suitable cam 59 keyed to the rotatable hollow sleeve or shaft 32. The cam 59 is cylindrical except for a small cam projection 60 which en-

gages with the cam roller 58 and through the linkages described, causes the cutter blade 16 to travel upwardly between the pairs of rollers 13 and 14 and sever the wrapping material. The cam projection 60 is carried by a removable block 61 suitably secured to the cam 59 and is so arranged with respect to the crank arm 27 that it only engages with the cam roller 58 at the end of each stroke of the reciprocable element 25, i. e., when the crank arm 27 is at one of its dead center positions.

Because of the use of the reciprocable element 25, which is actuated by the crank arm 27, the advancement of the wrapping material is substantially continuous except for the momentary period that the reciprocable element 25 changes from one direction of travel to the other, and at which time the cutter blade 16 severs the wrapping material. Also by using the reciprocable element 25 and the crank arm 27, the rate of travel of the wrapping material is gradually increased just prior to the next severing operation so as to prevent any sudden stoppage or sudden advancement of the wrapping material, and thus avoid danger of tearing the wrapping material.

In order to provide for a change in length of the sheet of wrapping material which is severed from the material advanced by the feeding rolls 13 and 14, the stroke of the reciprocable element 25 is made adjustable, and this is accomplished by adjusting the throw of the crank arm 27. The crank arm 27 is provided with grooved guideways 27^a which slidably receive a block 62. The block 62 carries the crank pin 63 to which the end of the reciprocable element 25 is pivoted, and is threaded to receive an axially immovable adjusting screw 64 carried by the crank arm 27. The screw 64 is rotated within the crank arm by means of meshed gears 65, one of which is rotated by a suitable hand wheel 66. By rotating the hand wheel 66 the block 62, which carries the crank pin 63, may be moved toward or away from the axis of the shaft 28 to decrease or increase the throw of the crank, as the case may be, and thus predetermine the degree of rotation of the feed rolls, and thereby predetermine the length of wrapping material to be advanced by these rolls.

If desired, the crank pin block 62 may be provided with an indexing finger 67 which may be set according to index marks 67^a appearing on the crank arm, which correspond with different lengths of the wrapping material.

In order to properly locate a sheet of wrapping material, advanced and severed from the source of supply over the station where wrapping of the article is started, the carriage 7 is slidably and adjustably supported on suitable guides 68 carried by the side frames. Adjustment of the carriage 7 is obtained by means of screws 69 which are threaded into depending brackets 70 carried by the carriage and which are operated by means of suitable gearing 71 from a shaft 72 extending between the side frames 1, the shaft having a suitable hand wheel 73 arranged externally of one of the side frames which can be turned to cause the carriage 7 to travel forwardly or rearwardly with respect to the wrapping mechanism, and thereby to serve as a means for properly locating the sheet or sheets of wrapping material with respect to the article to be wrapped. This movement also provides a means for locating the discharge position of the wrapping material whereby the overlapping position of the ends of the material with respect to the bottom of the article being wrapped can be predetermined.

In order to compensate for the forward or rearward movement of the carriage 7 and prevent advancement or retardation of the wrapping material by the feed rolls 13 and 14 during this movement of the carriage, the carriage is connected by linkages, including a bell crank lever 74 and links 75 and 76, with an arm 77 pivoted on the crank shaft 28 adjacent the sprocket 29. This arm 77 carries spaced idler rolls or sprockets 78 which engage with the opposite driving and return portions of the chain belt 30 with respect to the axis of the crank shaft 28, the arm 77, through the engagement of the chain belt 30 with the idlers 78, will cause the crank shaft 28 to rotate an amount proportional to the distance traveled by the shaft 11, and thereby prevent rotation of the shaft 11 and the consequent rotation of the feed rolls 13 and 14, thus preventing advancement of the wrapping material during adjustment of the carriage 7.

The drive mechanism for the wrapping material feed mechanism permits the wrapping material to feed continuously except for the momentary period of the severing operation without jerking as the rate of feed decelerates just prior to the cutting operation and gradually accelerates just after the cutting operation. This prevents tearing of the wrapping material and provides for a more efficient feeding of the same.

Referring to Figs. 2, 11, and 17 to 20, the wrapping material, as it leaves the forward feed rolls 14, is fed to a mechanism which carries and supports the same up until the time the article, such as a loaf of bread "D", indicated in Fig. 20, is moved to its wrapping position. This mechanism includes forward and rearward spaced carrier shafts 80 and 81 respectively, the axis of forward shaft 80 being slightly above the plane of travel of the wrapping material between the feed rolls 13 and 14, and the rearward shaft being disposed some distance below the forward shaft 80 and near the feed rolls 14. The shafts 80 and 81 are provided with sprockets 82, over which spaced carrier chains 83 are trained. Suitable idlers 84 are provided slightly in advance of the vertical plane of the rearward shaft 81 to engage with the advancing and return portions of the chains 83 which carry web supporting bars 85 and 85^a, the bars being arranged in pairs, one bar 85 and one bar 85^a comprising each pair. The bars 85 and 85^a are preferably covered with rubber and are preferably arranged in pairs so that, during advancement of the wrapping material, one pair acts to support and carry the sheet of material being advanced, and the succeeding pair acting to carry and support the next sheet of material.

Extending transversely of the side frames and between the advancing and return portions of the carrier, is a suitable guide element 86, which also supports the sheet of material during its travel, the element 86 being slightly in advance of the vertical plane of the rearward shaft 81.

The rearward shaft 81 is provided with a pinion 87 which is meshed with a gear 88 (Fig. 2) rotatably mounted upon a shaft 89, the gear 88 carrying a sprocket 90 which is driven by means of a chain belt 91 from a sprocket 92 which is carried by a short shaft 93, as shown in Figs. 15 and 16. The shaft 93 is carried by a bracket 94 secured to one of the side frames 1 and is provided with a pinion 95 which is arranged to mesh with a Geneva gear 96, the Geneva gear being mounted on the sleeve 32, which is rotatably supported on the main drive shaft 33.

The Geneva gear 96 is of the type in which approximately one-half of the circumference is provided with gear teeth so that upon its rotation through the rotation of the sleeve 32, as previously described, the carrier comprising the chains 83 and cross bars 85 and 85a will move only a distance equal to one-half of the length of the carrier chains upon each full revolution of the gear 96.

The wrapping material A, as it is fed by the forward advancing of the rolls 14, hangs downwardly from the lower roll in a suspended position, as indicated in Fig. 17, to between the side chains 83 of the carrier where, during the operation of the carrier, the under surface of the wrapping material is engaged by the first flight or bar 85 of one pair of flights which are moving in an upward direction. This first flight 85 then raises the wrapping material and carries it over the horizontal support 86 with the front edge of the wrapping material trailing the portion engaged by the first flight, as indicated in Fig. 18. During the continued operation of the carrier the pair of flights or bars carry the wrapping material to the position indicated in Fig. 19, the second flight or bar 85a supporting the forward or leading end of the wrapping material and the first flight 85 of this pair of flights having moved beyond the leading edge of the wrapping material.

In order to assist the advancement of the wrapping material from the forward feed rolls 14 and to direct the same into a position to be engaged by the cross bars 85 and 85a of the carrier, it is preferred to provide a hinged plate 97 having an edge which serves as a wiper for the lower feed roll 14 to prevent the accumulation of wax thereon, and also to prevent the wrapping material from curling about the lower roll 14 as the free end thereof moves between the feed rolls 14.

It is also desirable to provide an additional plate 98 hingedly carried by the rearward carrier shaft 81 to extend into the path of the cross bars 85 and 85a, as indicated in Fig. 11, and slightly below the plate 97, so that the wrapping material is positively directed into a position to be engaged by the cross bars 85 and 85a of the carrier. As the cross bars 85 and 85a of the carrier move during operation of the carrier, they engage with the under side of the plate 98 and pivot the same until they clear the plate, as indicated in Fig. 13, thus carrying the wrapping material into its substantially horizontal position. Similarly, when the carriage 7 is moved into its forward adjusted position, the cross bars 85 and 85a may also engage with the pivoted plate 97 and raise the plate during operation to clear the same. In order to return the plate 98 to the position indicated in Fig. 11, it is preferred to employ a suitable tension spring 99, a suitable stop means 100 being provided to limit the return movement of the plate 98.

It is also desirable, in the case of the upper forward feed roll 14, to provide a means for preventing the wrapping material from adhering to or curling about this roll. This is accomplished by forming the upper roll 14 with circumferential grooves 101 and providing substantially U-shaped guards 102 which are located in these grooves, and have their ends secured to the carriage 7 above the axis of the roll, which will then prevent the wrapping material from adhering to the roll.

It is also preferred to provide means in the form of a scraper plate 103 adjacent the lower feed roll 13 for scraping any wax that may have

accumulated thereon during the operation of advancing the wrapping material.

The articles to be wrapped are fed into the machine by means of an endless conveyor 104 which transfers them to an elevating table 105, which table is pivoted to a swingable arm 106. The arm 106 is carried by two levers 107 and 108 pivoted thereto. The lever 108 is pivoted at one end to the arm 106, and at its opposite end to a shaft 109 carried by the side frames. The lever 107 is considerably longer than the lever 108 and is pivoted, by means of a pivot pin 110, to the lower cross member 3 and is provided with an angular extension 111 which carries a cam roller 112 which engages with an internal cam surface 113 provided in a cam 114, so that during rotation of the cam 114 the elevating table 105 will be caused to swing through a curved path adjacent a curved guide plate or backstop 115 to the position indicated in Fig. 20.

A suitable wrapping material tensioning mechanism is provided for smoothing out the wrapping material as it is being moved to the position indicated in Figs. 18 and 19. This mechanism, as shown in Fig. 14, cooperates with the wrapping material carrier, previously described, and includes a pair of levers 116 which are pivoted to brackets 117 mounted upon members 118. Pivoted at 119 to these levers 116, above their pivotal axes, are a pair of L-shaped levers 120 having an interconnecting rod 121 at the ends of the shorter legs 122 thereof, the end portions of the shorter legs 122 being provided with cam surfaces 123, which cam surfaces are disposable, during a movement of the pivotal levers 120, about their pivotal axes in the path of cross bar 85a of the wrapping material carrier conveyor, as indicated in Fig. 14.

The upper ends of the levers 116 are connected with the upper ends of the levers 120 by means of coil springs 125 which tend to draw the upper ends of these levers toward each other. Also, the levers 116 are urged to pivot in a clockwise direction by means of coil springs 126 which are connected at one end to the side frames at 127 and at their opposite ends at 128 above the pivotal axes of the levers 116. The tendency of the levers to be moved in a clockwise direction is limited by means of lugs 129 carried by the levers 120, which are disposed to engage with stop pins 130, carried by the supporting structure for the wrapping material carrier. The maximum rearward position of the shorter legs 122 of the levers 120 is indicated in Fig. 14, in which position the lugs 129 are in engagement with the stop pins 130.

During the operation of the tensioning mechanism, the wrapping material, as it is being carried forwardly by the moving cross bar 85a of the wrapping material carrier, is engaged by the rod 121 which extends between the levers 120, so that during the continued movement of the cross bar 85a the wrapping material is firmly held under yieldable tension to keep the same smooth, and also during the continued forward movement of the cross bar 85a the levers 120 are pivoted about their pivotal axes 124 to the position substantially as shown in broken outline in Fig. 14, thereby increasing the distance between the upper ends of the levers 120 and 116, and thus increasing the tension in the springs 125.

The complete operation of moving a sheet of the wrapping material up to the wrapping station is as follows:

As an article to be wrapped is moved onto the elevating table 105 from the infeed conveyor 104, the shaft 32 is automatically placed into driving

relation with shaft 33, which causes the carrier chains 83 and feed rolls 13 and 14 to operate to move and advance the leading end of the wrapping material in a depending position. The first flight 85 of the carrier then carries the wrapping material forwardly and at a predetermined time the gripper bar 121 is disposed into the path of the second flight 85a so that, as the first flight advances beyond the leading end of the wrapping material, the leading end is yieldably gripped between the bar 121 and second flight 85a, as indicated in Fig. 14, the bar 121 moving forwardly with the second flight 85a to place the wrapping material being advanced by the feed rolls under a slight tension. During this movement of the carrier the wrapping material has been severed by the cutter blade 16 and the elevator table 105 has started to move the article which has been disposed thereon, upwardly.

Just prior to the time the article, during its upward travel, engages the wrapping material which has been carried to the wrapping station by the carrier, the bar 121 has released the wrapping material through engagement of the cam surfaces 123 thereof with the second flight 85a. Immediately after this release of the leading end of the wrapping material, the trailing end, which has been severed by the cutter blade 16, is discharged from the forward feed rolls 14. The wrapping operation is then begun, during the wrapping the elevator table 105 assumes its lowermost position and receives another article to be wrapped, the feed mechanism and second pair of flights or bars 85 and 85a acting upon and carrying the wrapping material to the wrapping station.

Inasmuch as the wrapping mechanism is clearly shown and described in my copending application, Serial No. 726,346, and does not form a part of the invention herein claimed, such mechanism has been omitted from the drawings in order to clearly show the parts described herein.

Figs. 21 to 25 inclusive relate to a modified feed carriage construction having certain parts of improved construction which are not shown in my said co-pending application of which the construction shown in Figs. 1 to 20 hereof are a division. The parts shown in Figs. 21 to 25, however, carry the same numbers as corresponding parts shown in Figs. 1 to 20.

In the modified construction it will be noted that both of the upper feed rollers 13 and 14 are provided with a number of circumferential grooves 140 and a rod 141 bent to appropriate shape is disposed to lie within corresponding grooves of the upper feed rollers, the rods 141 being secured to transversely extending bars 142 secured in any suitable manner to the carriage 7.

The lower feed rollers 13 and 14 are also provided with circumferential grooves 143. Two spaced members 144 and 145 are provided between the pairs of rollers 13 and 14 as shown in Fig. 21, the member 144 being disposed in a plane below member 145 to support a series of fingers 146 which extend toward the lower roller 13 and lie within the grooves 143 thereof. The carriage 7 also is provided with a transverse strip-like member 147 at its end to lie adjacent the lower roller 14 and support a series of fingers 148 which extend toward and lie within the grooves 143 of the lower roller 14.

The rods 141 and fingers 146 and 148 function to prevent the ends of the wrapping material from curling about the feed rollers and act as guides for the free ends of wrapping material.

The strip-like member 147 is provided with a depending portion 149 which is attached to brackets 150 which are secured to a member 151 secured to the forward frame portion 152 of the carriage 7, as viewed in Fig. 21. Securely clamped between the members 151 and 152 is a flat spring metal plate 153 which is flexed to have its edge in scraping engagement with the lower feed roller 14. Also, clamped to the lower side of the wrapping material support 15 is a flat spring metal plate 154 which is flexed to have its edge in scraping engagement with the lower feed roller 13. The spring metal plates 153 and 154 yieldably engage the lower rollers 13 and 14 and remove any foreign substance or wax that may have accumulated thereon from the wrapping material.

A similar spring metal scraper plate 155 is secured to the rear end of the carriage 7 and is flexed to have its edge in scraping engagement with the smoothing roll 12 to remove wax and foreign material therefrom.

In order to assist the web feeding action of the feed and advancing rollers 13 and 14 and to provide a more positive feed of the wrapping material, I have associated an additional roll 156 with the smoothing roll 12. The roll 156 preferably has a resilient surface and is provided with extending shaft portions 157 which are journaled in bushings 158. The bushings 158 are slidably mounted in slots 159 provided in arms 160 pivoted to the sides of the carriage 7, the arms being connected by a cross bar 161. Suitable coil springs 162 are interposed between the bushings 158 and cross bar 161 and screws 163 are carried by the cross bar 161 for adjusting the springs 162 for the desired pressure.

Brackets 164 are secured to the sides of the carriage 7 and roll actuating arms 165 are pivoted thereto by means of pivot pins 166. Each arm 165 has an elongated slot 167 of angular arrangement which receives a pin 168 projecting from the adjacent pivoted roll carrying arm 160.

Normally the arms or levers 165 are in the position shown in Fig. 21, in which position they hold the roll 156 against the smoothing roll 12, the springs 162 holding the roll 156 in engagement with roll 12 with the desired amount of pressure. The pin receiving slots 167 of the levers 165 are so arranged that the pressure created by springs 162 will not cause the levers to pivot of themselves. However, the upper ends of the levers 165 may be grasped and moved rearwardly to swing the roll 156 out of engagement with the roll 12 as indicated in Fig. 24.

Also, associated with the side frames 1 are a pair of brackets 169 which support an idler roll 170 having its axis approximately in a plane passing through the axes of the rolls 12 and 156.

The wrapping material to be fed and advanced passes over the idler 170, then below roll 156 and upwardly between rolls 12 and 156 and over roll 12 to the advancing rollers 13 and 14. Since the roll 12 is driven and the roll 156 bears against the same with pressure, the wrapping material is gripped between these rolls which assists the feed rolls 13 and 14 in advancing wrapping material from the source of supply. It will be noted that the wrapping material indicated in broken outline in Fig. 21 is engaged at one side with smoothing roll 12 and is engaged at the opposite side with the auxiliary roll 156, the extent of engagement with each roll being at least 90 degrees of the circumference thereof. This provides for braking effect on the wrapping material tending to iron out and eliminate any curved set in

the material which may have been occasioned by the rolling of the material into its roll, particularly at smaller diameters. In other words, the leading end of the wrapping material may have a tendency to curl or roll in one direction by reason of its tight rolling, and the rolls 12 and 156 tend to straighten the material. This is a material advantage in the present construction as the leading end of the wrapping material is advanced by the feed rolls 14 to a suspended position for engagement by the carrier. By straightening the wrapping material of the set which may have been occasioned, insurance is had that the leading end will move to its suspended position without curling, so that the leading end will properly drape over one of the cross bars 85a of the paper carrier for engagement by the bar 121.

In the construction shown in Figs. 21 to 25, I have eliminated the plate 97 shown in Fig. 11 and lengthened the pivoted plate 98 so that it will in any of the adjusted positions of the carriage 7, engage with resilient blocks 171 which are mounted on plates or supports 172 secured to the depending portion 149 of the transverse plate 147, spring means 173 being provided to yieldably hold the plate 98 in its downward position, as indicated in Fig. 22. Resilient blocks 174 may also be provided on the under side of the plate 98. During operation of the machine, the leading end of the wrapping material, while in its depending position, is guided along the plate 98 as shown in Fig. 22, and as the carrier operates the first cross bar 85 thereof swings the plate 98 upwardly, and upon clearing the plate 98 engages the under side of the wrapping material and carries it upwardly.

Although a single embodiment of the invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined in the following claims.

What I claim is:

1. In a wrapping machine, a source of wrapping material, feed rolls for advancing wrapping material from said source to a downwardly suspended position, and a carrier means which includes a horizontal bar and means for moving said bar through a predetermined path to engage the under surface of the suspended wrapping material and move the same to an article-receiving position intermediate the ends of said carrier means, and means to arrest the movement of said horizontal bar during a wrapping operation while the material is in article-receiving position.

2. In a wrapping machine, a source of wrapping material, a pair of feed rolls for advancing wrapping material from said source to a downwardly suspended position, a supporting member, and a carrier including a pair of spaced horizontal bars movable through a path above said supporting member, the first of said bars during its movement being engageable with the under side of the suspended wrapping material the forward end thereof dropping over said first bar to carry the same over and above said supporting member thereby folding said wrapping material about said first bar so that the forward edge of the wrapping material trails the portion thereof engaged by said first bar, the second of said bars upon continued movement of said first bar being disposable to support the leading end of the wrapping material.

3. In a wrapping machine, a source of wrapping material, a pair of feed rolls for advancing wrapping material from said source to a downwardly suspended position, and a carrier means for moving the material from its suspended to a wrapping position, comprising a pair of endless conveyor elements and a pair of spaced bars extending between and carried by said elements, said elements being guided to move said bars in an upward direction and then in a forward direction away from said feed rolls, and a stationary supporting member disposed between the forward and return sides of said elements relatively close to said forward sides to support one end of the wrapping material during a wrapping operation, one of said bars during its movement by said elements being engageable with the under side of the suspended wrapping material to carry the same upwardly and over said supporting member, both said bars acting for a portion of their travel to carry said suspended material to a substantially horizontal position.

4. In a wrapping machine, a source of wrapping material, a pair of feed rolls for advancing wrapping material from said source to a downwardly suspended position, a supporting member, and a carrier including a pair of spaced horizontal bars movable through a path above said supporting member, the first of said bars during its movement being engageable with the under side of the suspended wrapping material to carry the same over and above said supporting member thereby folding the said wrapping material about said first bar so that the forward edge of the wrapping material trails the portion thereof engaged by said first bar and then to a horizontal position, the second of said bars upon continued movement of said first bar being disposable to support the leading end of the wrapping material.

5. In a wrapping machine, a source of wrapping material, a pair of feed rolls for advancing wrapping material from said source to a downwardly suspended position, and a carrier means for moving the material from its suspended to a substantially horizontal position, comprising a pair of endless conveyor elements and a pair of spaced bars extending between and carried by said elements, said elements being guided to move said bars in an upward direction and then in a forward direction away from said feed rolls, and a stationary supporting member disposed between the forward and return sides of said elements relatively close to said forward sides, one of said bars during its movement by said elements being engageable with the under side of the suspended wrapping material to carry the same upwardly and over said supporting member, both said bars acting for a portion of their travel to carry said suspended material to a substantially horizontal position, said supporting member and the second of said bars supporting said wrapping material upon disengagement of the first of said bars therefrom.

6. In a wrapping machine, a source of wrapping material, a pair of feed rolls for advancing wrapping material from said source to a downwardly suspended position, a supporting member, and a carrier including a pair of spaced horizontal bars movable through a path above said supporting member, the first of said bars during its movement being engageable with the under side of the suspended wrapping material to carry the same over and above said supporting member with the forward edge of said wrapping material trailing the portion thereof engaged by said first bar, the

second of said bars upon continued movement of said first bar being disposable to support the leading end of the wrapping material, and means for intermittently moving said bars as a unit.

7. In a wrapping machine, a source of wrapping material, a pair of feed rolls for advancing wrapping material from said source to a downwardly suspended position, and a carrier means for moving the material from its suspended to a substantially horizontal position, comprising a pair of endless conveyor elements and a pair of spaced bars extending between and carried by said elements, said elements being guided to move said bars in an upward direction and then in a forward direction away from said feed rolls, and a stationary supporting member disposed between the forward and return sides of said elements relatively close to said forward sides, one of said bars during its movement by said elements being engageable with the under side of the suspended wrapping material to carry the same upwardly and over said supporting member, both said bars acting for a portion of their travel to carry said suspended material to a substantially horizontal position, said carrier means including an intermittent drive means arranged to stop the travel of said bars at a predetermined position.

8. In a wrapping machine, a source of wrapping material, a pair of feed rolls for advancing wrapping material from said source to a downwardly suspended position, and a carrier means for moving the material from its suspended to a substantially horizontal position, comprising a pair of endless conveyor elements and a pair of spaced bars extending between and carried by said elements, said elements being guided to move said bars in an upward direction and then in a forward direction away from said feed rolls, and a stationary supporting member disposed between the forward and return sides of said elements relatively close to said forward sides, one of said bars during its movement by said elements being engageable with the under side of the suspended wrapping material to carry the same upwardly and over said supporting member, both said bars acting for a portion of their travel to carry said suspended material to a substantially horizontal position, said carrier means including an intermittent drive means arranged to stop the travel of said bars at a predetermined position, with the first of said bars disengaged from the wrapping material and with the second of said bars supporting the leading end of the wrapping material.

9. In a wrapping machine, a source of wrapping material, a pair of feed rolls for advancing wrapping material from said source to a downwardly suspended position, and a carrier for moving the material from its suspended to a wrapping position, comprising conveyor elements, pairs of spaced bars carried by said elements, and drive means for intermittently actuating said carrier, a pair of said bars upon each actuation of said carrier being arranged to engage the under side of the wrapping material and while carrying it forward in a direction away from said rolls to move it to a wrapping position.

10. In a wrapping machine, a source of wrapping material, a pair of feed rolls for advancing wrapping material from said source to a downwardly suspended position, and a carrier for moving the material from its suspended to a wrapping position, comprising conveyor elements, pairs of spaced bars carried by said elements, and drive means for intermittently actuating said carrier,

a pair of said bars upon each actuation of said carrier being arranged to engage the under side of the wrapping material and while carrying it forward in a direction away from said rolls to move it to a wrapping position, said drive means being arranged to stop said carrier at a predetermined position with the second bar of the particular pair of bars operative to engage the wrapping material prior to the stopping of said carrier, engaging and supporting the leading end of the wrapping material.

11. In a wrapping machine, a pair of feed rolls for advancing wrapping material, a member movable through a predetermined path for engaging the under side of the material near its leading end and carrying the same while it is being advanced by said rolls, and a second member in the path of said first member and yieldably engageable with the upper surface of the material at a predetermined position of said first member to yieldably hold the material between said members, said second member being movable with said first member for a portion of its travel, whereby to place the material being advanced under a tension.

12. In a wrapping machine, a pair of feed rolls for advancing wrapping material, a member movable through a predetermined path for engaging the under surface of said material near the leading end thereof while said material is being advanced by said rolls, a swingable bar in the path of movement of said member and engageable with the upper surface of said material at a predetermined position of said member, and spring means yieldably urging said bar toward said member to yieldably hold said wrapping material between said member and bar, said bar being movable with said member for a portion of the travel of said member, whereby to place the wrapping material being advanced by said rolls under a slight tension.

13. In a wrapping machine, a pair of feed rolls for advancing wrapping material, a member movable through a predetermined path for engaging the under side of the material near its leading end and carrying the same while it is being advanced by said rolls, and a second member in the path of said first member and yieldably engageable with the upper surface of the material at a predetermined position of said first member to yieldably hold the material between said members, said second member being movable with said first member for a portion of its travel, whereby to place the material being advanced under a tension, said second member being arranged to release said material just prior to the discharge of said material from said feed rolls.

14. In a wrapping machine, a source of wrapping material, a movable carriage, feed rolls on said carriage for withdrawing wrapping material from said source, means for driving said rolls, means for moving said carriage to adjust the position of the material to be discharged by said rolls, and means for preventing advancement of wrapping material by said rolls during adjusting movement of said carriage.

15. In a wrapping machine, a source of wrapping material, a movable carriage, feed rolls on said carriage for advancing wrapping material from said source, a crankshaft, connections between said crankshaft and feed rolls for driving said rolls, means for moving said carriage to adjust the discharge position of the material to be advanced and discharged by said rolls, and means connected with said carriage for rotating said

crankshaft in proportion to the adjusting movement of said carriage, whereby to prevent rotation of said feed rolls during adjusting movement of said carriage.

- 5 16. In a wrapping machine, a source of wrapping material, a movable carriage, feed rolls on said carriage for advancing wrapping material from said source, a crankshaft, connections between said crankshaft and feed rolls for driving
10 said rolls, means for moving said carriage to adjust the discharge position of the material to be advanced and discharged by said rolls, a drive belt for said crankshaft, an arm swingable about the axis of said crankshaft, idlers on said arm
15 engageable with the return and driving sides of said belt, and a linkage between said carriage and arm, whereby said arm upon adjusting movement of said carriage moves to cause said idlers to shorten one side and lengthen the other side
20 of said drive belt and thereby prevent advancement of wrapping material by said feed rolls during adjusting movement of said carriage.

17. In a wrapping machine a carrier for positioning a sheet of wrapping material for a wrapping operation comprising a horizontal member,
25 means for moving said member through a predetermined path to engage the under surface of a sheet of suspended wrapping material and move the same to an article receiving position intermediate the end positions of said carrier, and
30 means to arrest said movement of the wrapping material while suspended by said member in a position to be draped over an article in a wrapping operation.

- 35 18. In a wrapping machine a carrier for positioning a sheet of wrapping material for a wrapping operation comprising a horizontal member, means for moving said member through a predetermined path to engage the under surface of
40 a sheet of suspended wrapping material and move the same to an article receiving position intermediate the end positions of said carrier, means to arrest said movement of the wrapping material while suspended by said member in a position to
45 be draped over an article in a wrapping operation, and feed means operative to feed a sheet of wrapping material to a position for engagement by said carrier during the positioning by the carrier of a previously fed sheet.

- 50 19. In a wrapping machine, feed means for

advancing wrapping material, a carrier for intermittently positioning wrapping material for the wrapping operation, comprising a horizontal member, means for moving said member through a predetermined path to engage the under surface of a sheet of wrapping material partially advanced and move the same to an article receiving position intermediate the end positions of said carrier, said feed means actuated to continue to advance wrapping material after engagement by the carrier whereby said material is advanced during a portion of its movement to the article receiving position simultaneously by the carrier and the feed means, and means to arrest said movement of the wrapping material while suspended by said member in a position to be draped over an article in a wrapping operation.

20. In a wrapping machine having a source of wrapping material and feed rollers for advancing material from said source, a smoothing roll for engaging the material intermediate the source and feed rollers, an auxiliary roll journaled adjacent the smoothing roll in pivoted arms, and a lever arranged to pivot said arms whereby to engage or disengage the rolls.

21. In a wrapping machine having a source of wrapping material and feed rollers for advancing material from said source, a smoothing roll for engaging the material intermediate the source and feed rollers, an auxiliary roll journaled adjacent the smoothing roll in pivoted arms, a lever arranged to pivot said arms whereby to engage or disengage the rolls, and spring means for resiliently urging the engaged rolls together, said means arranged to be released upon disengagement of the rolls.

22. In a wrapping machine having a source of wrapping material and feed rollers for advancing material from said source, a smoothing roll for engaging the material intermediate the source and feed rollers, an auxiliary roll journaled adjacent the smoothing roll in pivoted arms, the plane of the axes of the smoothing and auxiliary rolls being at a substantial angle to the plane of the axes of the feed rollers whereby to guide the material through a sinuous path, and a lever arranged to pivot said arms whereby to engage or disengage the rolls.

CHARLES H. PETSKEYES.