Sept. 27, 1938. P. D. PARSONS 2,131,668

PACKAGE WRAPPING MACHINE

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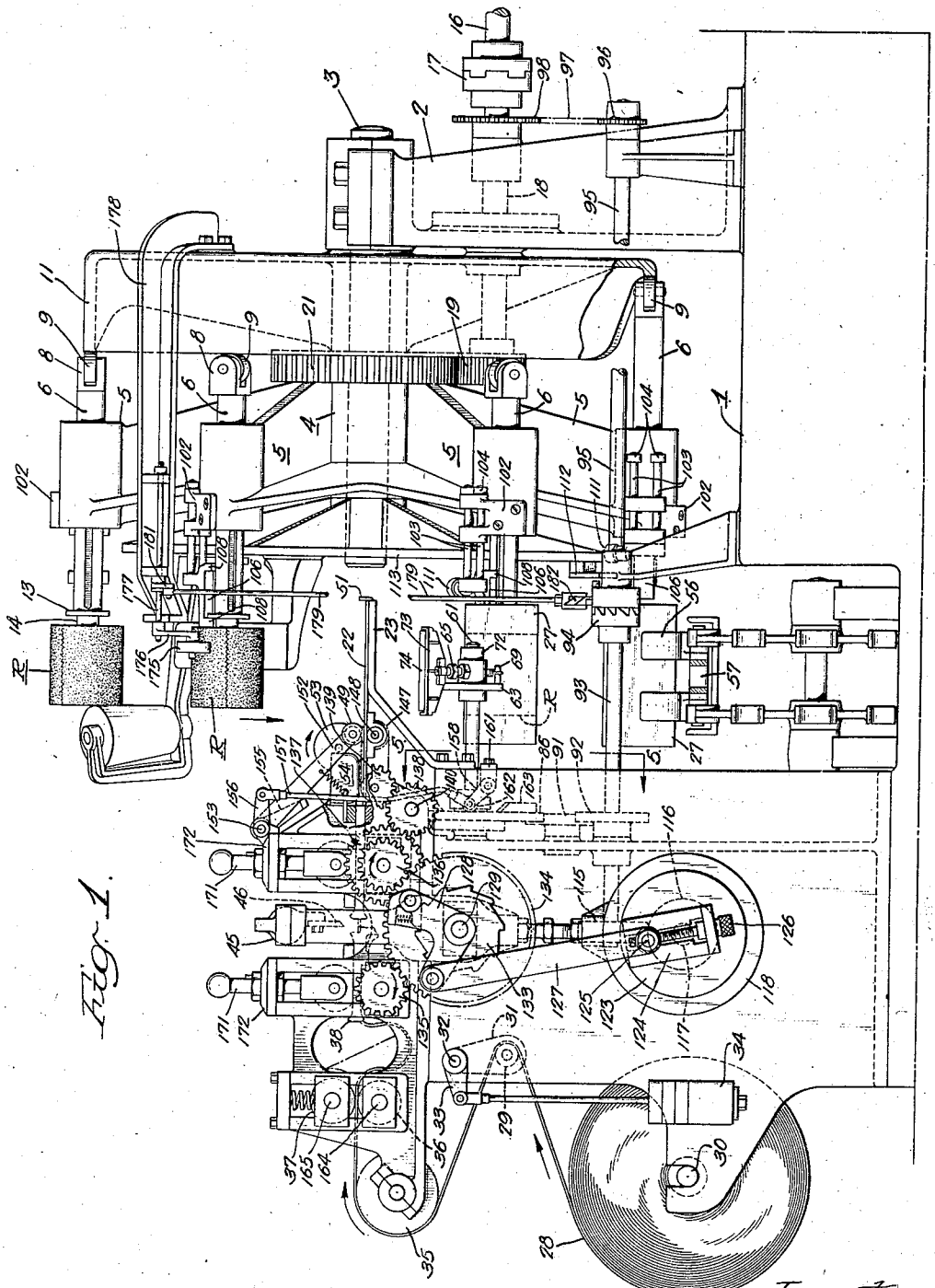


Fig. 1.

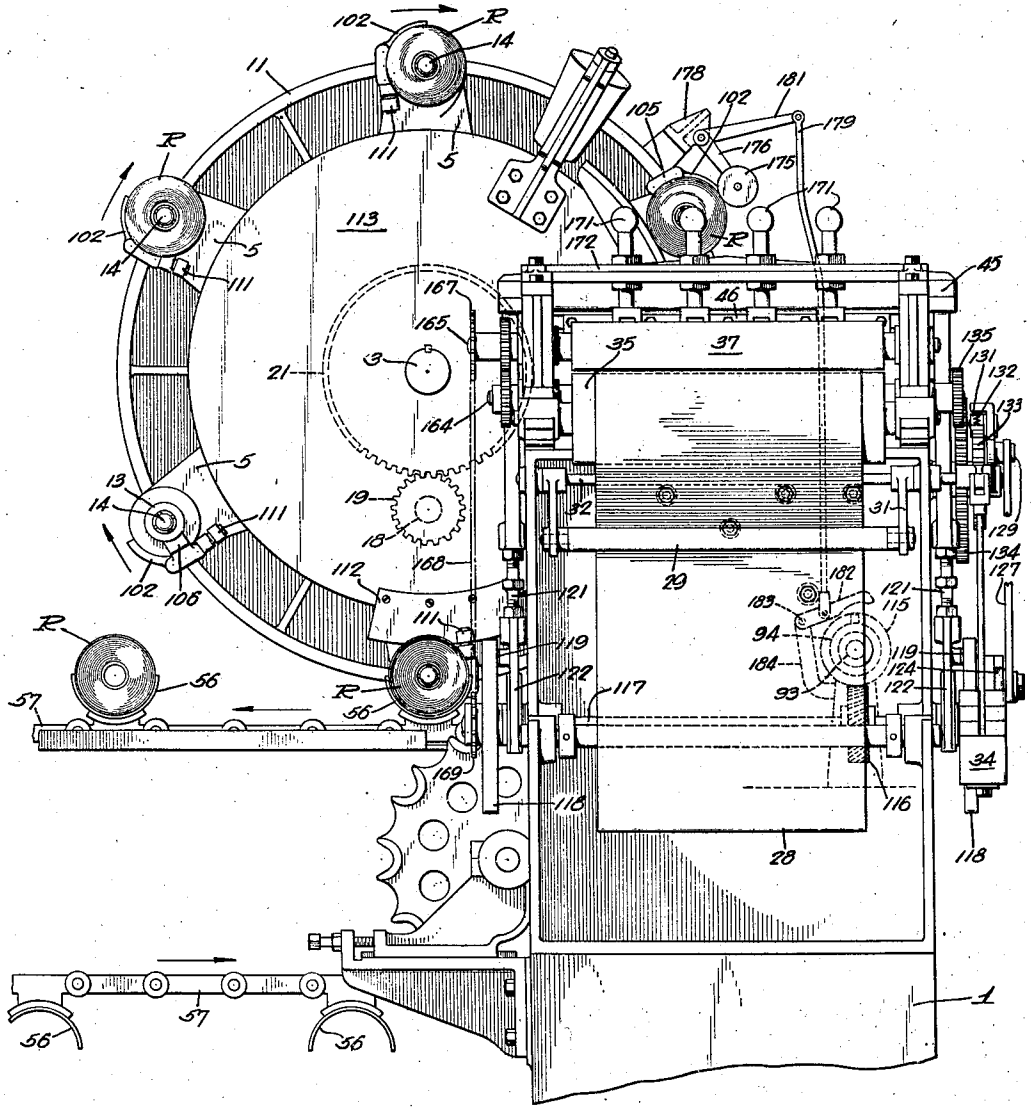
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Fig. 2.



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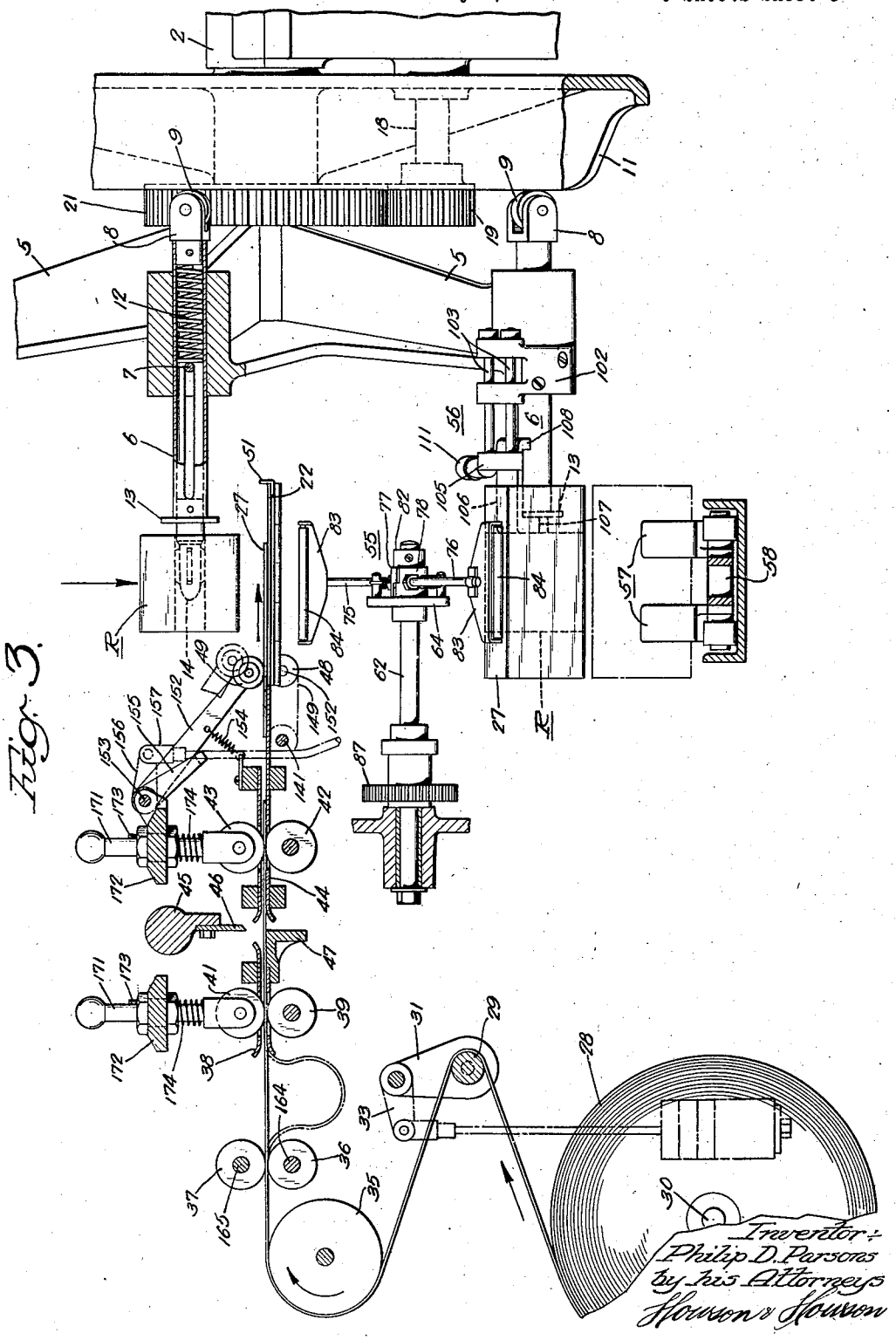


Fig. 3.

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Fig. 4.

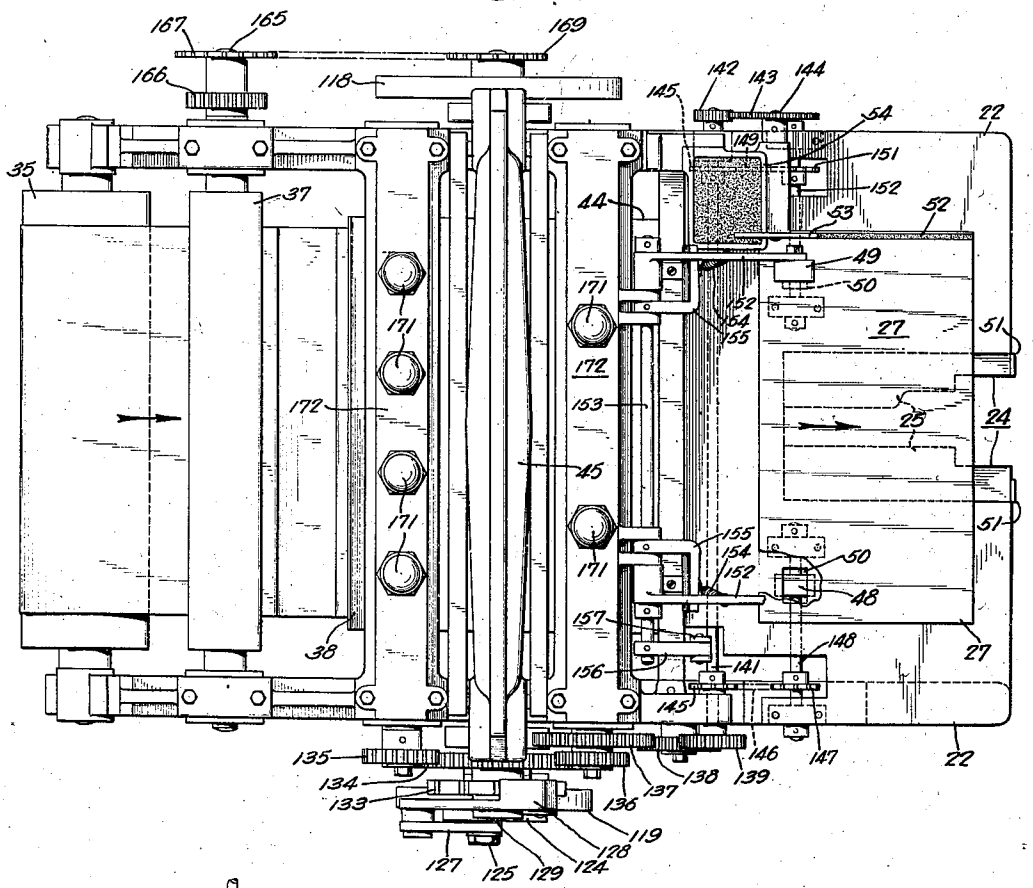
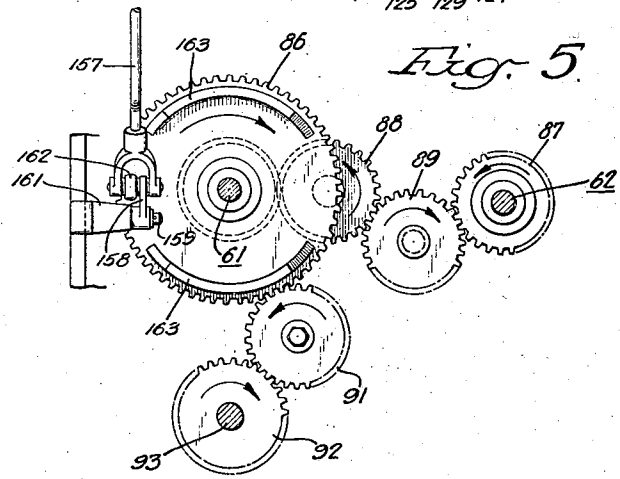


Fig. 5.



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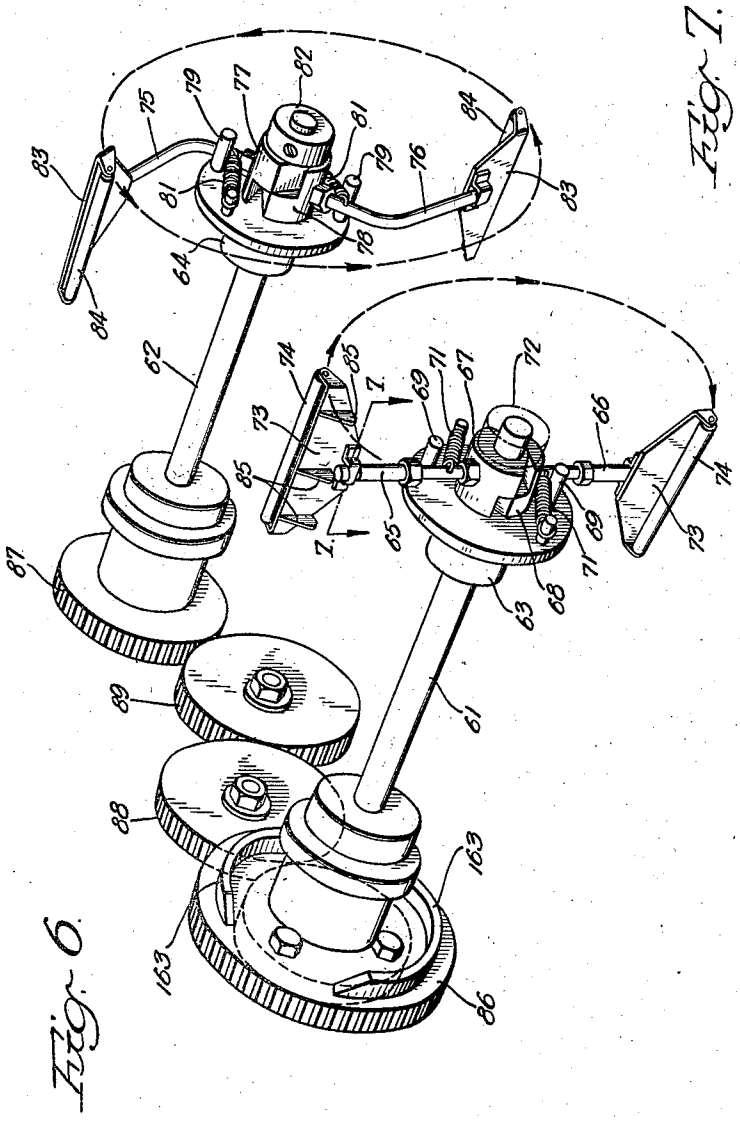


Fig. 6.

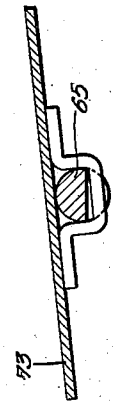


Fig. 7.

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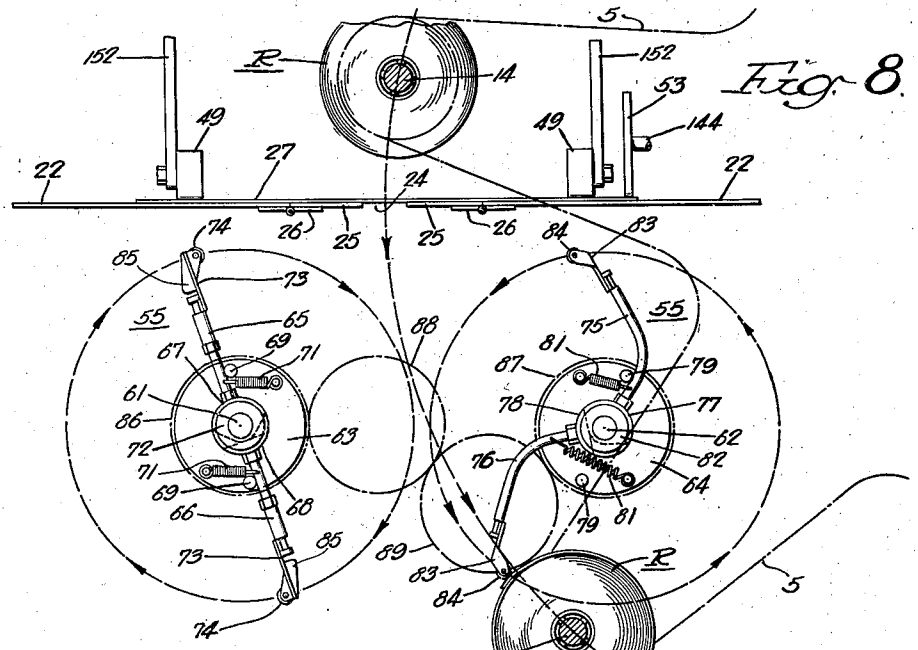


Fig. 8.

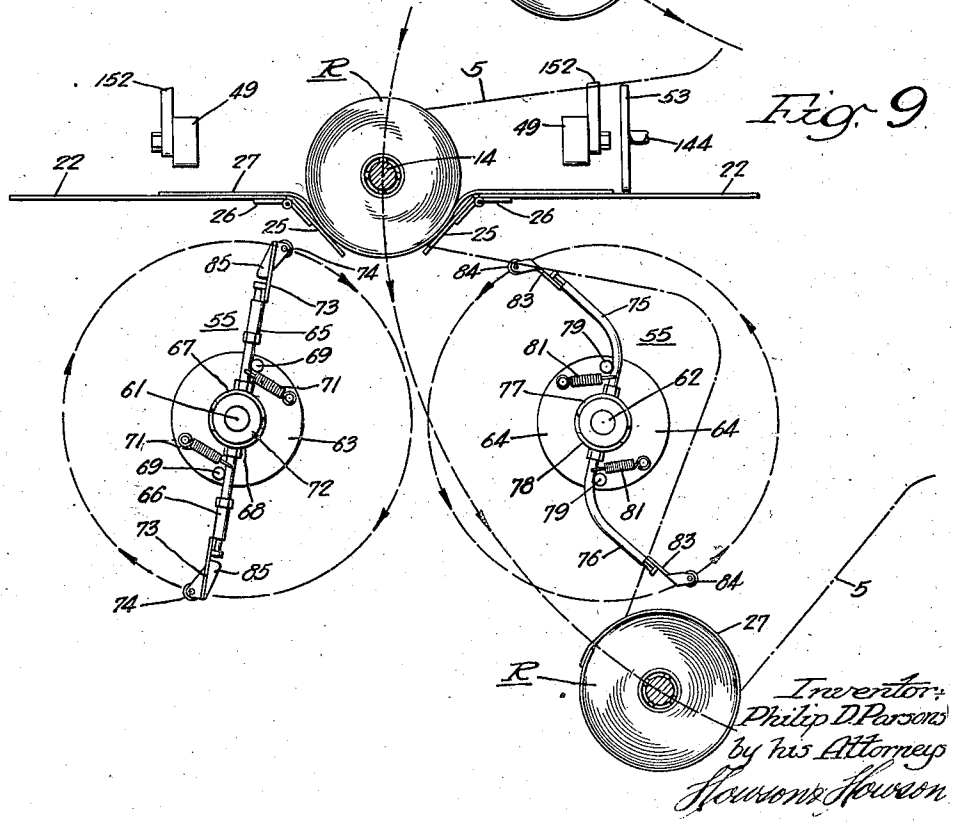


Fig. 9.

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Fig. 10.

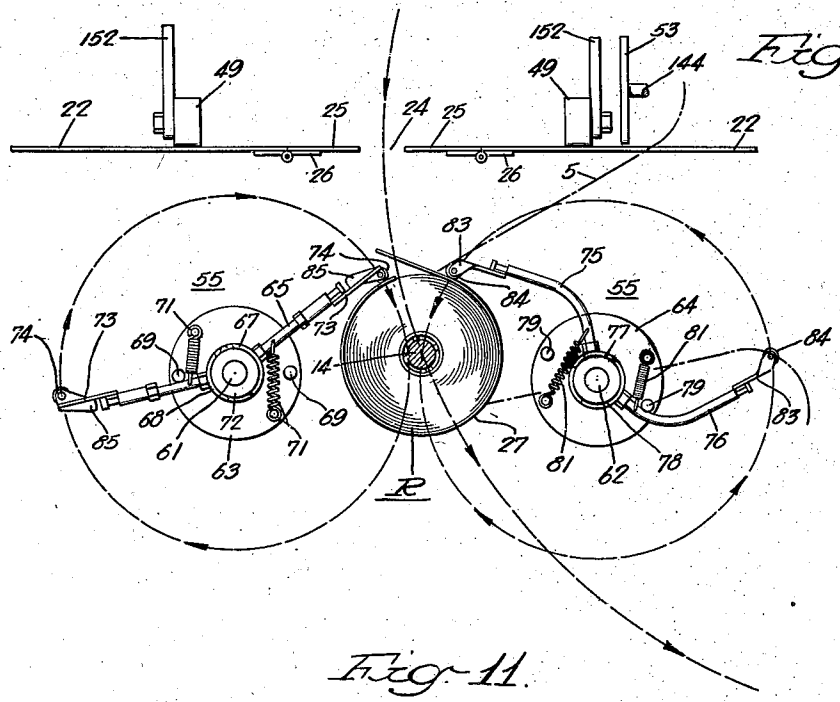
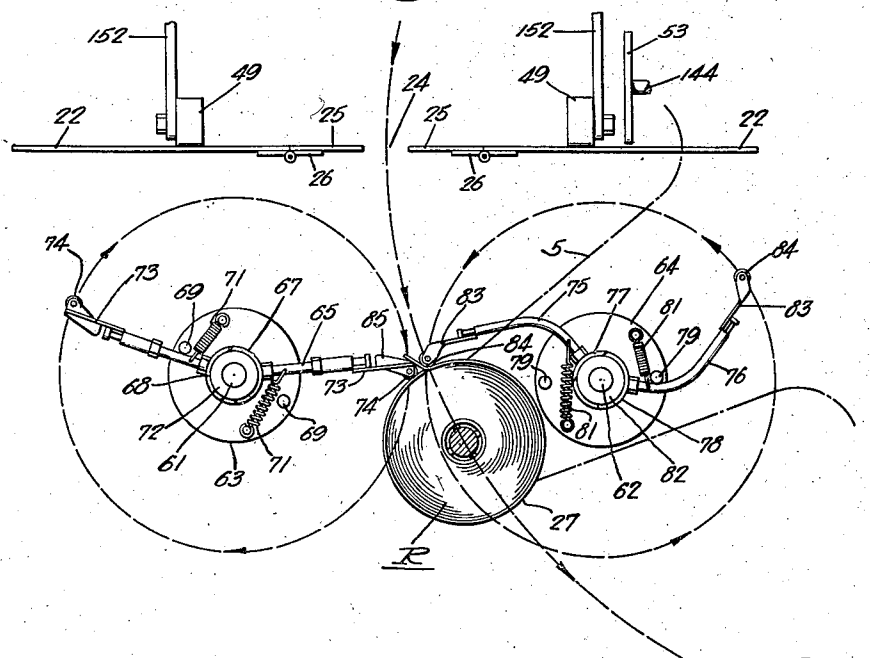


Fig. 11.



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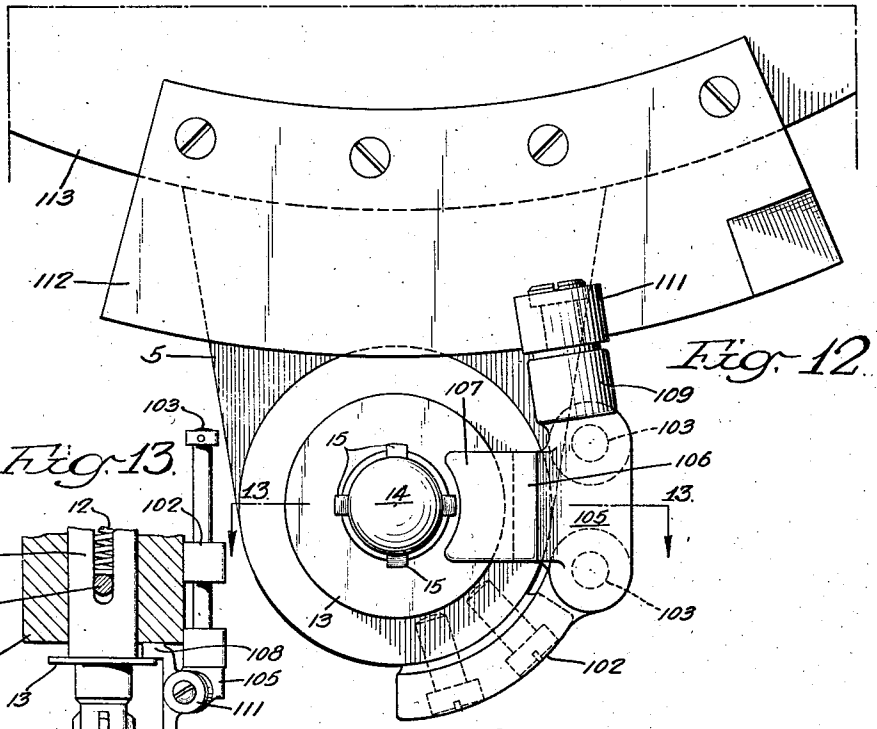


Fig. 12.

Fig. 13.

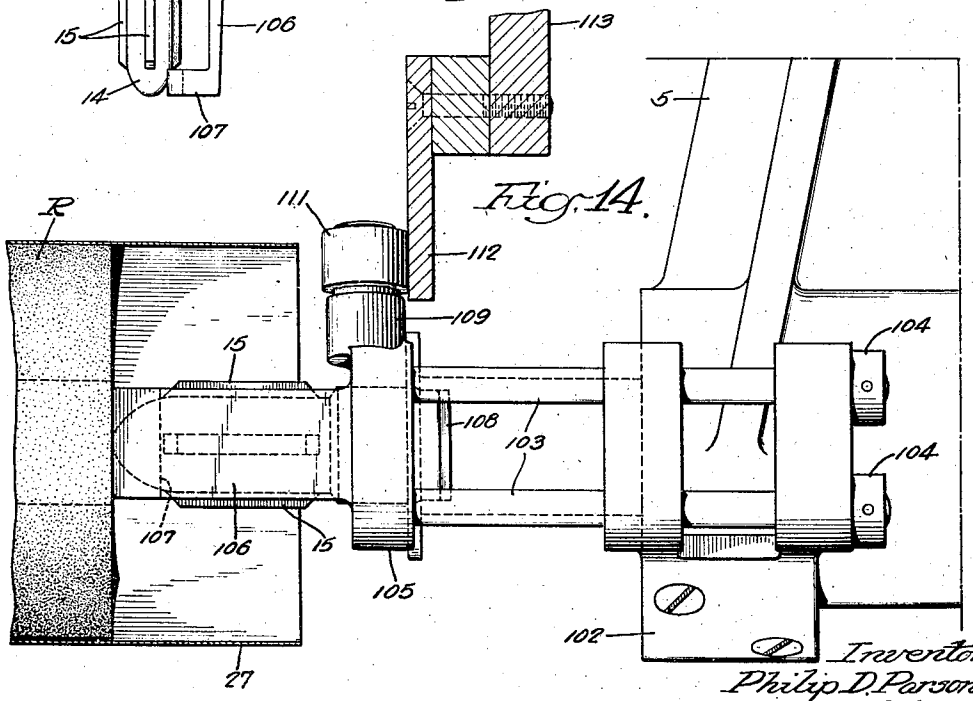


Fig. 14.

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Fig. 15.

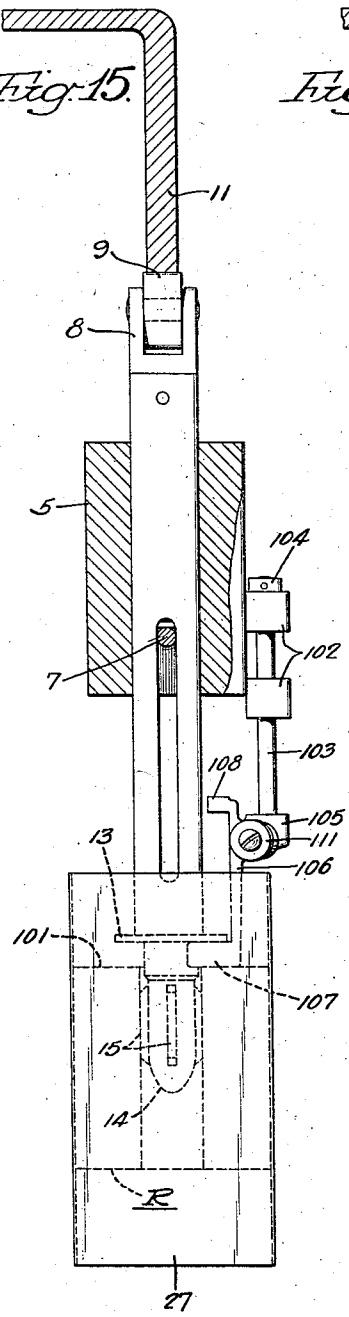


Fig. 16.

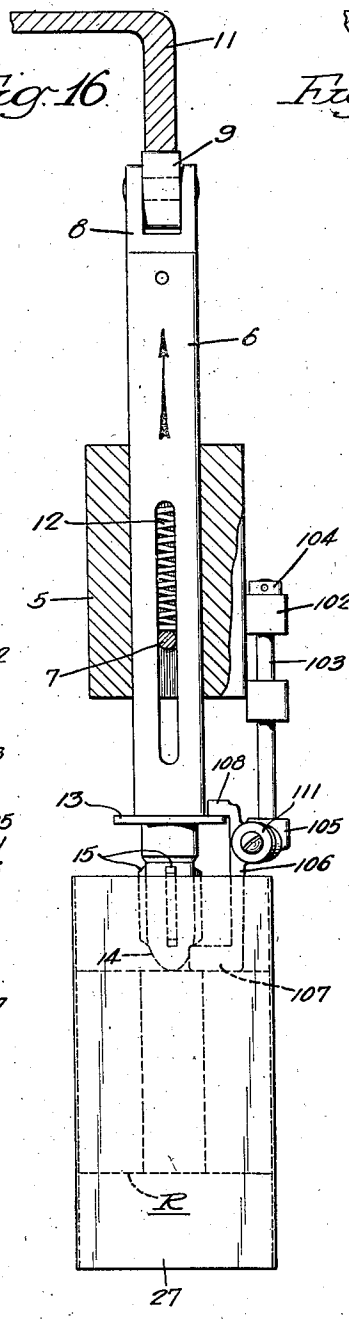
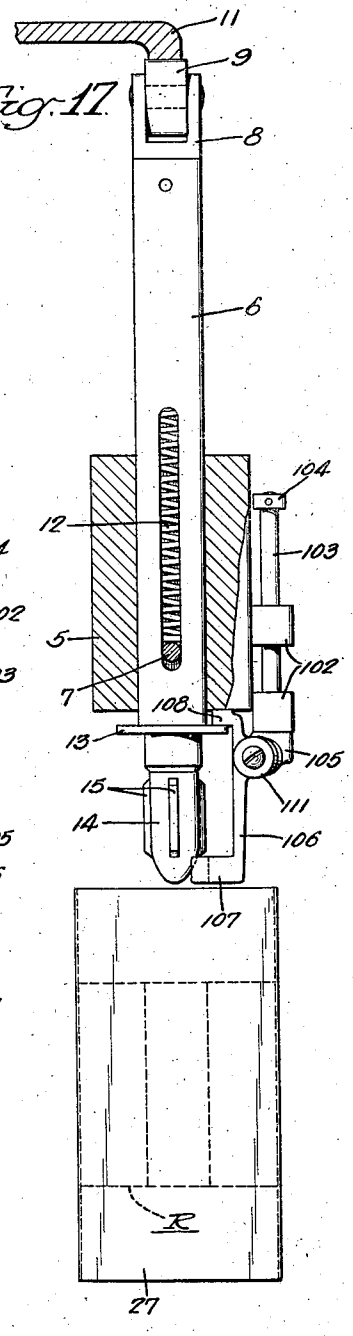


Fig. 17.



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Patented Sept. 27, 1938

2,131,668

UNITED STATES PATENT OFFICE

2,131,668

PACKAGE WRAPPING MACHINE

Philip D. Parsons, Swarthmore, Pa., assignor to Scott Paper Company, Chester, Pa., a corporation of Pennsylvania

Application July 1, 1937, Serial No. 151,539

11 Claims. (Cl. 216—25)

This invention relates to machines for applying wrappers to rolls of toilet paper and the like, and relates more specifically to improvements in machines of the type forming the subject of my prior U. S. Patent No. 2,005,846.

The primary objects of the present invention are to provide novel and improved mechanisms for applying the wrapper sheets to the rolls, and for subsequently discharging the rolls from the machine; and the invention resides in the provision of certain novel and improving details of structure and mechanism hereinafter described and illustrated in the attached drawings, in which:

Figure 1 is a side elevational view of a machine made in accordance with my invention;

Fig. 2 is an end elevational view of the machine;

Fig. 3 is a fragmentary elevational view in section illustrating the interrelation of the various working parts of the machine;

Fig. 4 is a plan view of the wrapper-feeding mechanism forming an integral part of the machine;

Fig. 5 is a fragmentary sectional view on the line 5—5, Fig. 1;

Fig. 6 is a fragmentary view in perspective of the wrapper-applying elements and the immediately associated gearing;

Fig. 7 is a fragmentary section on the line 7—7, Fig. 6;

Figs. 8 to 11, inclusive, are diagrammatic views illustrating the mode of operation of the wrapper-applying elements shown in Fig. 6;

Fig. 12 is a fragmentary enlargement illustrating details of the roll-stripping or discharging mechanism;

Fig. 13 is a section on the line 13—13, Fig. 12;

Fig. 14 is a side view of that portion of the mechanism shown in Fig. 12, and

Figs. 15 to 17, inclusive, are fragmentary sectional views illustrating the mode of operation of the stripping mechanism.

The machine illustrated in the drawings is essentially similar in type and mode of operation to the machine disclosed in the aforesaid U. S. Patent No. 2,005,846.

Referring to Figs. 1 to 3, the machine comprises a suitable base 1 or frame, at one end of which is mounted a pedestal 2 supporting a horizontal stub shaft 3. This shaft 3 forms a journal for a rotating spider 4, in each of the arms 5 of which is slidably mounted a pin 6. Each of the pins 6 is hollow, see Fig. 3, and is longitudinally slotted for reception of a retaining pin 7 in the supporting arm which prevents rotation of the pin in the arm while permitting axial movement thereof on a line paralleling the axis of the shaft 3. Each of the pins 6 has secured in one end thereof a member 8 which carries a roller 9 adapted for engagement with a cam 11 secured in fixed position upon the shaft 3, and a spring 12 in the interior of the pin is confined between the member 8 and the retaining pin 7 and exerts pressure tending to urge the pin and the roller 9 rearwardly into engagement with the cam. Toward the forward end, each of the pins has a flange 13, the function of which will be hereinafter described, and outwardly of this flange the pin terminates in a rounded end portion 14 having longitudinal radially projecting fins 15, see particularly Fig. 17. The terminal end portions 14 of the pins are adapted to support the toilet rolls, as hereinafter described, so that the rolls, as the spider is rotated, are carried in a circular path through the wrapper-applying mechanism hereinafter described.

Power from a suitable source (not shown) is applied to the machine through a shaft 16, this shaft being coupled at 17 to a shaft 18 journaled in the frame. The latter shaft carries a pinion 19 which meshes with a gear 21 secured to the spider 4. These shafts and the spider are continuously driven in the normal operation of the machine.

Positioned in the path of the toilet rolls R as the latter are carried downwardly on the rotating spider 4 is a table 22, this table being supported in part upon brackets 23 secured to the machine frame. The table has a recess 24 forming an opening through which the rolls R are permitted to pass. At each side edge of the recess 24 and hinged to the table 22 is a plate 25, these plates being normally resiliently supported in the plane of the table by springs 26. As shown in Fig. 4 and in Figs. 8 to 11, inclusive, the space between the proximate edges of the plates 25, 25 is considerably narrower than the diameter of the rolls R, so that as the roll is carried downwardly through the opening in the table 22 formed by the recess 24, the plates 25, 25 are depressed about their hinged connection with the table.

Associated with the table 22 is mechanism shown at the left in Figs. 1 and 3 and in Fig. 4 for feeding wrapping sheets to the table 22, one such wrapping sheet being indicated at 27 in Figs. 1, 3 and 4. The wrapper-feeding mechanism comprises means for withdrawing a continuous strip of the flexible wrapping material from a roll 28 of said material supported in the present in-

stance, as shown in Figs. 1 and 3, upon a spindle 30 journaled in the frame of the machine, and for cutting this continuous strip into measured lengths according to the required size of the individual wrapping sheet. In the present instance, the strip of material drawn from the roll 28 passes first over an idler tensioning roller 29 which is journaled between arms 31, 31 depending from a shaft 32 suitably journaled in the machine frame. To this shaft 32 is secured an arm 33 which has attached to its outer end a depending counterweight 34. From the tensioning roller 29 the strip passes to an idler roll 35 journaled in the frame, and thence between feed rollers 36 and 37. From the feed rollers 36 and 37 the strip passes through a guide member 38 to a second feed roll 39 and between this roll and a plurality of presser rolls 41, and from these latter rolls through a second guide 44 to and between a third feed roll 42 and presser rolls 43. Between the sets of feed rolls 39, 41 and 42, 43 and between the adjoining ends of the guides 38 and 44, the strip is subjected to the action of a vertically reciprocating cutter 45, this cutter comprising a blade 46 which cooperates with a member 47 over which the strip passes to shear the latter transversely. From the feed rolls 42, 43 the severed sheets pass from the guide 44 onto the table 22, and are advanced to the proper position upon this table overlying the recess 24 by means of two sets of feed rolls 48, 49, the rolls 48 projecting upwardly through apertures 50 in the table 22, as shown in Fig. 4. The wrapping sheet 27 is advanced by the action of the rollers 48, 49 until the rear or trailing edge of the sheet clears these rollers, at which time it is in the proper position above the recess 24 to receive the rolls R in their downward movements. If the speed of operation is such as to require them, stop lugs 51 may be provided at the outer edges of the hinged plates 25, these lugs acting as positive stops preventing further movement of the wrapping sheet after the rear edge of the latter has cleared the rolls 48, 49.

In passing over the table 22, one of the side edges of the sheet 27 is provided, as shown in Fig. 4, with a strip 52 of adhesive, this adhesive being applied to the sheet through the medium of a rotary applicator disk 53 which projects at one side through a narrow slot in a receptacle 54 containing the adhesive, the disk 53 functioning normally to close this slot in the wall of the adhesive container to prevent escape of the adhesive when the machine is idle. The bottom of the disk 53 engages the edge portion of the wrapper sheet as it passes over the table 22, and being rotated by means hereinafter described transfers the adhesive withdrawn from the receptacle 54 to the sheet.

As the rolls are passed downwardly through the recess 24 of the table 22, they carry with them the individual sheets 27, and elements 55, see Figs. 3 and 8 to 11, inclusive, operating below the table 22 function in a manner hereinafter described to wrap the respective sheets snugly about the individual rolls, and to seal them by means of the adhesive applied as previously described. As this operation is completed and the rolls continue their downward movement on the rotating spider 4, mechanism associated with the pins 6 and indicated generally in Fig. 3 by the reference numeral 56 functions to strip the wrapped rolls from the pins, the rolls being deposited individually in cradles 57 on an endless conveyer 58 in the lower part of the frame, and being carried by this conveyer from the machine in the transverse direction.

The operation of the machine, described above in general terms, corresponds with the operation of the machine described in the aforesaid U. S. Patent No. 2,005,846, but in certain respects hereinafter described the mechanisms, by means of which the function of the machine is carried out, differ from the mechanisms of the prior patent.

By reference to Figs. 6 to 11, inclusive, it will be noted that as the rolls R are carried downwardly on the arms 5 of the spider 4 and are brought into engagement with the sheet 27 supported as previously described upon the table 22, the hinged plates 25, 25 are depressed, see particularly Fig. 9, with the result that the sheet 27 is in effect drawn around the under side of the cylindrical roll. Below the table and at either side of the path of movement of the roll on the spider 4 is a shaft, 61 and 62 respectively, and each of these shafts near its outer end carries a flanged collar 63 and 64. At the front of the collar 63 of the shaft 61 and loosely mounted for oscillation upon the projecting end of the shaft is a pair of arms 65 and 66 which project radially from the shaft and normally in diametrically opposite directions, as shown in Figs. 6 and 8. In order that this radial alignment of the arms 65 and 66 may be obtained, each of the arms is provided with a hub element, 67 and 68 respectively, which are segmental in form and which overlap each other, as clearly illustrated in Fig. 6. The normal position of the arms is determined by a pair of pins 69, 69 which project in the axial direction from the forward face of the collar 63, and are engaged respectively by the arms 65 and 66, the latter being resiliently held against these pins by springs 71, 71. Each of the arms 65 and 66 is thus permitted to turn on the shaft 61 away from the respective stop pins in a direction reverse to the indicated direction of rotation of the shaft 61. A collar 72 secured to the extremity of the shaft and engaging the outer faces of the hubs 67 and 68 retains these hubs against the outer face of the collar 63 and against axial movement on the shaft. Each of the arms 65 and 66, which are adjustable as to length, carries at its outer end a transverse bracket 73, and each of these brackets carries a roller 74. As shown in Fig. 7, the brackets 73 are mounted on the arms to provide for a limited free movement of the brackets from their normal positions, see Fig. 6, around the axes of the arms to which they are secured.

Similarly loosely mounted on the shaft 62 is a pair of arms 75 and 76, these arms differing from the arms 65 and 66 in that they are bent at an angle in the plane in which they are adapted to rotate. The inner ends of the arms 75 and 76 are provided with hub elements 77 and 78 corresponding to the elements 67 and 68 previously described. The normal positions of the arms are determined by pins 79, 79 and springs 81, which resiliently retain the arms against the pins 79 and in the positions in which they are shown in Fig. 6. It will be noted that the arms 75 and 76 are identical in form, and that normally the inner radial ends of the arms are in alignment with each other. A collar 82 secured to the extremity of the shaft holds the arms in place, and each of the arms carries at its outer end a bracket 83, in which are journaled rollers 84, 84. As in the case of the brackets 73, the brackets 83 are mounted on their respective arms for limited self-adjusting movement around the axes of the outer end portions of the arms. As viewed in Fig. 6, the

shaft 61 is adapted to rotate in a clockwise direction, and the shaft 62 in the counterclockwise direction, so that the arms move in opposed paths, as indicated.

Again referring to Figs. 8 to 11, and now specifically to Fig. 10, it will be noted that as the roll R passes downwardly between the depressed hinged plates 25, 25, the wrapping sheet 27 is engaged on diametrically opposite sides of the roll by the rollers 74 and 84 of one arm of each of the sets associated respectively with the shafts 61 and 62, and that the arms, by reason of their resilient pivotal mounting on the shafts, are permitted to accommodate themselves to the contour of the roll in spite of the fact that the shafts 61 and 62 are in continuous rotation. Thus in Fig. 10, it will be noted that the arms 65 and 75, which carry the rollers 74 and 84, then in operative engagement with the roll, have been moved back against the tension of their respective springs 71 and 81 from the stop pins 69 and 79, and that the springs 71 and 81 thereby function to maintain the rollers 74 and 84 in contact with the wrapper. The action of the arms 65 and 75 and of the rollers 74 and 84 carried thereby is such that as the rolls leave the hinged plates 25, 25, these arms and rollers take up the function of wrapping the sheet 27 around the roll. The relation of the arms 65 and 75 is such that the roller 74 on the arm 65, as shown in Figs. 10 and 11, turns the one edge of the wrapper sheet 27 under the other so that the edges, as shown in Fig. 11, are brought eventually, and at this time under the sole action of the roller 84 on the arm 75, into the flat overlapped relation shown at the bottom of Fig. 8. Since the overlapped edge of the wrapper is that edge which as previously described has received a coating of adhesive, the wrapper, after contact with the roller 84 is eventually broken, see Fig. 9, is held securely in position upon the roll. It will be noted also, as shown in Fig. 9, that as the two arms acting as previously described upon the one roll leave the latter, the other two arms of the respective sets move into position to engage the wrapper of a succeeding roll then passing downwardly between the hinged plates 25.

Attention is also directed to the fins or flanges 85 thrown up at the backs of the brackets 73 which carry the rolls 74. When as described above and as shown in Fig. 11 this roller tucks the one edge of the wrapper under the other or overlapping edge, there is contact between this overlapping adhesive-coated edge and the outer end of the bracket 73. The fins 85 then function to prevent the wiping off of the adhesive upon the bracket and preclude an accumulation of adhesive on this bracket which might eventually foul the roller.

The shafts 61 and 62, as shown in Figs. 5 and 6, have connected thereto at their rear ends toothed gears, 86 and 87 respectively, and these gears are interconnected by idler gears 88 and 89 suitably journaled on the frame. Meshing with the bottom of the gear 86 is a second idler gear 91 which in turn meshes with a gear 92 carried by a shaft 93 journaled in the frame of the machine. This shaft, as shown in Fig. 1, is connected through a clutch 94 with a shaft 95. This latter shaft carries at its outer end a sprocket 96 which is connected by a chain 97 with a second sprocket 98 secured to the shaft 18. The shafts 61 and 62 are thus driven continuously, under normal conditions, with the shaft 18, which as previously described is operatively connected with the spider 4, and the movements of the spider and of the rolls carried thereby are thus synchronized with the movements of the wrapper-applying arms 65 and 75.

When the rolls R are placed on the ends of the pins 6 as previously described, these pins under actuation of the cam 11 have been moved to the advanced or extended positions, as shown at the top of Fig. 1, wherein the rolls are in alignment with the wrapper positioned on the table 22 and with the wrapper-applying rollers 74 and 84. This advanced position of the pins is maintained during the wrapper-applying operation described above. When, however, the wrapping operation has been completed and the roll has advanced into the position shown at the bottom of Fig. 9, it becomes necessary to retract the pins 6 in order to permit discharge of the roll from the machine by way of the conveyer 57. Retraction of the pins 6 is effected by the springs 12, and is permitted by the re-entrant portions of the cam 11. In Fig. 15, the pin 6 is shown in the extreme advanced position, and it will be noted that in this position the flange 13 of the pin is only slightly removed from the end 101 of the roll R, the flange 13 and the outer end of the pin being embraced by the cylindrical projecting end of the wrapper 27, which in the present instance extends beyond the end surface 101 of the roll proper.

Secured to the outer end of each of the arms 5 of the spider 4, as shown in Figs. 1 and 14, is a bracket 102 in which are slidably mounted a pair of rods 103, 103, these rods being parallel and being guided for sliding movement in the bracket on lines paralleling the axis of rotation of the spider 4. At the rear end of each of the rods 103 is a collar 104 which limits the sliding movement of the arms in one direction, and at the other end of the rods is mounted a member 105 which carries a stripper finger 106. This finger has at each end a transverse lug, 107 and 108 respectively, which project into path of and at opposite sides of the flange 13 of the associated pin 6. When the pin 6 is advanced to the position in which it is shown in Fig. 15, the flange 13, by engagement with the lug 107, draws the stripper finger 106 and the rods 103 to which it is secured into a similarly advanced position. When the roll R is applied to the end of the pin 6, the lug 107 thus constitutes a stop, which by engagement with the end face of the roll determines the position of the roll on the pin. This is shown in Fig. 15, wherein the lug 107 is confined between the flange 13 and the inner end of the roll. By reason of the spaced relation of the lugs 107 and 108, the pin 6 when retracted is permitted a corresponding free movement with respect to the stripper finger, and in the travel of the flange 13 between the inner or adjacent faces of the lugs 107 and 108, no force is applied directly from the pin to the stripper finger tending to return the latter with the supporting rods 103 toward the retracted position. The roll R, however, by reason of the ribs 15 on the extremities of the pins 6, is more or less firmly wedged on the pins, this being necessary to prevent a possible rotation of the roll with respect to the pin, and it is apparent, therefore, that if some means were not provided for temporarily holding the stripper finger in the advanced position, the roll R would be carried with the pin 6 in the retractive movement of the latter. To prevent this movement of the roll with the pin when the latter is retracted, and to strip the roll

from the pin, the member 105 which carries the stripper finger is provided, as best shown in Figs. 12 and 14, with a boss 109, to which is secured for rotation a roller 111. As the pin 6 with the roll and the now attached wrapper moves toward the bottom of its circular path with the spider 5, and as the cam roller 9 of the pin approaches the re-entrant portion of the cam 11, the roller 111 of the stripper mechanism moves into engagement with the outer face of an arcuate plate 112, which as best shown in Figs. 1, 2, 12 and 14 is attached to the lower part of a circular plate 113 secured to the inner extremity of the stub shaft 3. When so engaged with the plate 112, retractive movement of the stripping finger and its supporting rods 103 is prevented, so that when as shown in Fig. 16 the pin 6 is retracted by the spring 12, the stripper finger 106 remains in position to thereby permit withdrawal of the pin from the roll R. Immediately subsequent to the clearing of the outer end of the pin 6 from the roll, however, the flange 13 engages the lug 108 of the stripper finger, and simultaneously the roller 111 clears the end of the plate 112, so that the spring 12 is then permitted to continue the retractive movement of the pin 6, and with it of the stripper finger 106 into the fully retracted position, as shown in Fig. 17. As the aforedescribed stripping action progresses, the roll occupies a position directly over one of the cradles 56 of the conveyer 57, and when the stripping action is completed, the roll rests in the cradle 56 and is carried thereby from the machine.

The wrapper-feeding mechanism illustrated diagrammatically in Fig. 3, and hereinbefore described in general terms, will now be described in detail. Referring to Fig. 1, it will be noted that the shaft 93 which carries the gear wheel 92 has at its extremity a spiral gear 115, and this gear, see Fig. 2, meshes with a spiral gear 116 carried by a transverse shaft 117 journaled in the casing. At each end, the shaft 117 carries a cam 118 having in its inner face a cam slot (not shown) which receives a roller 119 projecting from one side of a rod 121, these rods depending from opposite sides of the transverse cutter bar 45 which carries the blade 46. The rods 121 are adjustable as to length, as best shown in Fig. 2, and each has at its lower end a fork 122 which embraces a collar on the shaft 117, and is thereby guided in the vertical reciprocatory motion. Rotation of the shaft 117 and of the cams 118 secured thereto results, through the rollers 119, in a vertical reciprocation of the rods 121 of the cutter bar and blade 45—46.

Secured to the outer face of the cam 118, on that side of the machine shown in Fig. 1, is a disk 123 which carries a slotted block 124 forming one element of an adjustable crank mechanism on the shaft 117. The crank pin 125 slidably mounted in the block 124 is adjustable radially of the shaft axis through the medium of a screw 126 to thereby regulate the throw of the crank. The crank pin 125 is connected by a crank rod 127 with one end of a bell crank lever 128 mounted for oscillation on the outer end of a stub shaft 129 secured to the frame. The other arm of the bell crank lever 128 carries a pivoted detent 131 which is held resiliently by a spring 132 in engagement with a ratchet wheel 133 loosely mounted on the stub shaft 129. To this ratchet wheel 133 is secured a toothed gear 134, which as shown in Fig. 1 meshes with pinions 135 and 136 secured respectively to the feed rolls 39 and 42. Suitably secured to the pinion 136 is a gear 137 which meshes with a pinion 138 mounted on a stub shaft 140 secured to the frame, and the pinion 138 in turn meshes with a pinion 139 on one end of a shaft 141, which as shown in Fig. 4 extends from one side of the frame to the other. The shaft 141 carries at its opposite end a pinion 142 which meshes with a gear 143 at one end of a shaft 144 journaled in the frame, which shaft carries at its opposite end the adhesive applicator disk 53. Adjacent each end thereof, the shaft 141 carries a sprocket 145, one of these sprockets being connected by a chain 146 to a sprocket 147 on a shaft 148 journaled in the frame which carries one of the two feed rolls 48. The other of the sprockets 145 is connected by a sprocket chain 149 with a sprocket 151, and this sprocket is secured to a shaft 152 at the opposite side of the frame from the shaft 148 which carries the other of the feed rolls 48. The companion rolls 49, 49 of the rolls 48 are carried in each instance on an arm 152 loosely supported on a rock shaft 153 suitably journaled in the frame. To each of the arms 152 is secured a spring 154 which normally holds the arms in the depressed positions, in which the rollers 49 are in operative relation with the rollers 48.

Secured to the rock shaft 153 is a pair of offset arms 155, the outer ends of which underlie the arms 152, so that when the shaft 153 is turned in one direction, as hereinafter described, the arms 155 act to elevate the arms 152 against the tension of the springs 154 to thereby elevate the rollers 49 from the companion rolls 49. To the outer end of the shaft 153 is secured an arm 156, from the outer end of which a rod 157 extends downwardly and is connected, as shown in Figs. 1 and 5, to a lever 158 pivotally mounted on a pin 159 projecting from a bracket 161 secured to the frame. The lever 158 carries at its outer end a roller 162 which bears against the face of the gear 86 in position for engagement with a pair of spaced cams 163, 163 secured to the gear face, the arrangement being such that during one rotation of the gear 86, the free end of the lever 158 will twice be moved away from the face of the gear by action of the cams 163, thereby elevating the connecting rod 157, and through the arm 156 rocking the shaft 153 in a counterclockwise direction, as viewed in Fig. 1. This rocking movement of the shaft, occurring twice in each full rotation of the gear 86, results in an elevation of the rollers 49, 49 as previously described from the companion rolls 48.

The shafts 164 and 165 of the rolls 36 and 37 are connected together by means of toothed gears 166, 166. The shaft 165 also carries at one end a sprocket 167 connected through a chain 168 with a sprocket 169 secured to one extremity of the shaft 117. As shown in Fig. 3, each of the rolls 41 and 43 is supported at the lower end of a stem 171 slidably supported in cross bars 172 on the frame, the pins having splined connections with said cross bars, as indicated at 173, which permits their vertical reciprocation but prevents the pins from turning in the supports. Each of the stems 171 has attached thereto a spring 174 which forces the stem resiliently downwardly and maintains the rollers 41 and 43 in operative relation with the companion rollers 39 and 42.

It will be apparent from the foregoing description that while the rolls 36 and 37 are continuously rotated, the rolls 39, 42 and 48 receive an intermittent rotation through the action of the ratchet wheel 133 and the associated mech-

anism. This differential movement of the feed rolls 36 and 37 and the rolls 39 and 42 is compensated by a loop formed in the strip of material drawn from the roll 28 in the space between the rolls 36 and 39, as shown in Figs. 1 and 3. The intermittent movement of the web or strip is so timed with the operation of the cutter blade 46 that the portion of the strip acted on by the blade is held stationary during the actual cutting operations, the subsequent operation of the rollers 39 and 42 being sufficient to take up the free loop in the web between the rollers 36 and 39, and, with the rolls 48, to feed the severed portion of the strip into position on the table 22. The intermittent elevation of the rollers 49 as previously described leaves the individual wrappers free from interference as they are drawn downwardly by the rolls through the table recess 24, and also clears the one roll 49 from possible contact with the wet adhesive on the wrapper. Preferably the feed roll 42 is slightly greater in diameter than the roll 39 to insure tension in the paper strip between these rolls when the cutter operates to sever the strip. It will be noted, also, that the feed rolls 48, 49 operate at a sufficiently high effective speed to advance the severed sheet onto the table 22 during the period that the rolls 39 and 42 are moving the strip into position for the next succeeding cut. Preferably the rolls 49 are elevated slightly in advance of the engagement of the wrapper sheets with the stops 51 so that the latter move under their own momentum into engagement with these stops and are entirely free when initially contacted by the rolls R.

Means is provided for rendering the aforedescribed feeding mechanism inoperative in the event that one or other of the pins 6 fails to receive a roll R at the station in which the said rolls are placed on the pins. This device comprises a roller 175 carried by an arm 176 secured to a rock shaft 177, this latter shaft being journaled on a supporting arm 178 secured to the fixed cam 11, as shown in Fig. 1. The arms 176 occupy normally a position in which the roller 175 lies in the path of the rolls R as they move downwardly toward the table 22, and the arm 176 is thereby moved from this normal position by each of the rolls as it contacts the roller 175. This displacement of the arm 176 by the rolls rocks the shaft 177 and elevates a rod 179, the upper end of which is secured to an arm 181 on the shaft 177. The lower end of the rod 179 is secured to a finger 182 pivotally attached at 183 to a bracket 184 secured to the frame of the machine. The finger 182, when depressed, will act upon the clutch 94 to disengage the latter after each full revolution, thereby disconnecting the shaft 93 from the shaft 95; and when in the elevated position, as shown in Fig. 2, the finger 182 permits engagement of the clutch 94, to thereby connect the wrapper-feeding mechanism to the source of power. As previously set forth, the finger 182 is normally in the depressed position, but when elevated through the medium of the roller 175 and by engagement with said roller of one of the rolls R, the finger 182 is elevated, permitting the clutch 94 to engage. The clutch 94 is of the one-revolution type, and when once engaged remains so for a full revolution of the shaft 93 before it can again be disengaged by the finger 182. It is apparent, therefore, that if any one of the pins 6 lacks a roll R, the finger 182 as that pin passes the position of the roller 175 will remain in the normal depressed position, whereby the clutch 94 will be temporarily disengaged and thereby preventing operation of the wrapper-feeding mechanism as that particular pin approaches and passes through the opening in the table 22. For that pin, therefore, the feeding mechanism will fail to feed a wrapping sheet to the table 22.

From the foregoing description, it will be apparent that the machine operates automatically to apply wrappers to the individual rolls, and to subsequently discharge the rolls from the machine. The stripping mechanism is particularly well adapted for operation in connection with roll packages employing wrappers of the character herein disclosed, which in the formative stage are greater in length than the axial dimension of the rolls, said stripping mechanism being designed to operate without interference with the overhanging or projecting portions of the wrapper. It will be understood that subsequent to the application of the wrappers in the machine forming the subject of the present invention, the projecting ends of the wrappers are folded down against the ends of the roll to complete the package, a machine adapted for this operation being disclosed in my copending application Serial Number 70,866. The rotary wrapper-applying elements which have been designated generally in the foregoing description by the reference numeral 55 are highly efficient in the function for which they are intended and maintain their operating efficiency over extended periods of use.

It will be apparent that the machine and its various individual mechanisms are subject to modification in detail without departure from the invention.

I claim:

1. In a machine for applying dry wrappers to cylindrical rolls, the combination with a rotary conveyer for said roll, of means located in the rotary path of said roll on the conveyer for initially engaging the wrapper with the roll and comprising elements operative to turn the opposite end portions of the wrapper partially around the roll, a pair of members rotating on fixed axes in synchronism with the movement of the conveyer and with each other and arranged respectively at opposite sides of said path, and an arm movable with each of said members adapted respectively to engage the free ends of said wrapper as they respectively leave said elements and to lay said ends against the roll in overlapping relation, said arms being resiliently connected with the respective members and being movable with respect thereto in the planes of their rotation to thereby permit the outer ends of the arms to move in conformity with the contour of the roll.

2. In a machine for applying dry wrappers to cylindrical rolls, the combination with a conveyer for said roll, of means located in the path of said roll for initially engaging the wrapper with the roll and comprising elements operative to turn the opposite end portions of the wrapper partially around the roll, a pair of rotating members actuated in synchronism with the movement of the conveyer and with each other and arranged respectively at opposite sides of said path, an arm movable with each of said members adapted respectively to engage the free ends of said wrapper as they respectively leave said elements and to lay said ends against the roll in overlapping relation, and means for resiliently retaining said arms in a predetermined normal position with respect to said members, said re-

taining means providing for movements of the arms with respect to said members in the planes of their rotation to thereby permit the outer ends of the arms to move in conformity with the contour of the roll.

3. In a machine for applying dry wrappers to cylindrical rolls, the combination with a conveyer for said roll, of means located in the path of said roll for initially engaging the wrapper with the roll and comprising elements operative to turn the opposite end portions of the wrapper partially around the roll, a pair of rotating members actuated in synchronism with the movement of the conveyer and with each other and arranged respectively at opposite sides of said path, an arm movable with each of said members and adapted respectively to engage the free ends of said wrapper as they respectively leave said elements to lay said ends against the roll in overlapping relation, a lost motion connection between said members and the respective arms, said connection comprising a stop element on said member adapted for engagement with said arm to limit the movement of the arm with respect to said member in the direction of rotation, and a spring resiliently retaining said arm in engagement with the stop, said spring permitting limited movement of said arm while in engagement with said roll away from said stop in a direction reverse to the direction of rotation of said member.

4. In a machine for applying dry wrappers to cylindrical rolls, the combination with a conveyer for said roll, of a table located in a plane intersecting the path of said roll with the conveyer, said table having an opening for passage of the roll therethrough, whereby as the roll passes through the opening a wrapping sheet previously placed upon said table over said opening is initially engaged with the roll, a pair of rotary members located below the table at opposite sides of said path and adapted for rotation in opposite directions and in synchronism with the movement of said conveyer, an arm mounted on each of said members, each of said arms having at its outer end a roller, and said rollers being adapted to engage the respective ends of the wrapper as it leaves said table and to lay said ends against the roll in overlapping relation, and means for resiliently connecting said arms with the respective rotary members to provide for movement of said arms with respect to said members in the planes of their rotation to thereby permit the outer ends of the arms and said rollers to move in conformity with the contour of the roll.

5. In a machine for applying wrappers to cylindrical rolls, the combination with a conveyer for said roll, of a table located in a plane intersecting the path of travel of said roll with the conveyer, said table having an opening through which said roll is adapted to pass, whereby as the roll passes through said opening a wrapping sheet previously placed upon said table over said opening is drawn downwardly through said opening, means at the under side of said table for completing the wrapping operation, said feeding means comprising a feed roll located below the table and engageable with the wrapping sheet through an aperture in the latter, a companion roll above the table for engaging the upper surface of said sheet, and mechanism operated in synchronism with the movement of the conveyer for elevating the said upper roller as the said wrapping sheets are drawn downwardly through the table opening.

6. In a machine for applying wrappers to cylindrical rolls, the combination with a conveyer for said roll, of a table located in a plane intersecting the path of movement of said roll with the conveyer and having an opening through which said roll may pass, whereby a sheet previously placed upon said table over said opening is drawn downwardly through said opening by the roll and is initially engaged with the latter, said feeding mechanism comprising a feed roll located below the table and adapted for engagement with the wrapper sheet through an aperture in the table, a companion roll located above the table and engageable with the upper surface of said sheet, mechanism operating in timed relation with the movement of said conveyer for elevating the said upper feed roll as the said wrapper sheets are drawn downwardly through said opening, and mechanism located below the table and adjacent the path of travel of the roll for laying the ends of the said wrapper against the roll in overlapping relation.

7. In a machine for wrapping hollow cylindrical rolls, the combination with a conveyer comprising a pin adapted to enter the interior of the roll to support the latter on the conveyer, of mechanism operating in synchronism with said conveyer for applying a wrapper to said roll, and mechanism for stripping the wrapped roll from the pin, said stripping mechanism comprising means for longitudinally retracting the pin from the normal operative position, an element engageable with the end of the roll and movable by and with the pin into the advanced or normally operative and the retracted positions, a lost-motion connection between the pin and said element permitting an initial limited retractive movement of the former independently of the latter, and means for retaining said element in the advanced position during said initial retractive movement of the pin.

8. In a machine for wrapping hollow cylindrical rolls, the combination with a conveyer comprising a pin adapted to enter the interior of the roll to support the latter on the conveyer, of mechanism operating in synchronism with said conveyer for applying a wrapper to said roll, and mechanism for stripping the wrapped roll from the pin, said stripping mechanism comprising means for longitudinally retracting the pin from the normal operative position, an element engageable with the end of the roll and movable by and with the pin into the advanced or normally operative and the retracted positions, a lost-motion connection between the pin and said element permitting an initial limited retractive movement of the former independently of the latter, means for retaining said element in the advanced position during said initial retractive movement of the pin, and means for rendering said retaining means inoperative at the termination of said initial retractive movement to permit movement of both the pin and the element into the fully retracted positions.

9. In a machine for wrapping hollow cylindrical rolls, the combination with a conveyer comprising a pin adapted to enter the roll to support the latter, of means operating in synchronism with the movement of the conveyer to longitudinally advance and retract the pin, and means for stripping the roll from the pin in said retractive movement, said stripping means comprising an element mounted movably on the conveyer and adapted in an advanced position to engage the end of said roll, means for retaining said element

in the advanced position during an initial retractive movement of the pin, and means operative after termination of said initial retractive movement to move said element with the pin to the fully retracted positions.

10. In a machine for wrapping hollow cylindrical rolls, the combination with a conveyer comprising a pin adapted to enter the interior of the roll and to support the latter on the conveyer, of mechanism operating in synchronism with said conveyer for applying to said roll a wrapper of greater length than the axial dimension of the roll, said wrapper thereby projecting beyond the roll end, and mechanism for stripping the wrapped roll from the pin, said mechanism comprising an element engageable with the end of the roll inside the projecting wrapper end, and means for reciprocating said element in the direction of the roll axis.

11. In a machine for wrapping hollow cylindrical rolls, the combination with a conveyer comprising a pin adapted to enter the interior of the roll to support the latter on the conveyer, of mechanism operating in synchronism with said conveyer for applying a wrapper to said roll, means for periodically retracting the pin in the conveyer from a normal operative position, and means for retaining the roll in the advanced position during the retractive movement of the pin whereby the roll is stripped from the latter, said means comprising a stripping finger mounted on said conveyer adjacent the pin for reciprocatory movement longitudinally of the latter, a flange on said pin, spaced elements on said finger projecting into the path of said flange and at opposite sides thereof whereby the longitudinal movements of said pin may effect longitudinal movements of the finger in the same direction, and means for retaining the finger in the advanced position during the initial retractive movement of the pin and while said flange is moving in the space between said finger elements.

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