May 10, 1932. E. G. RIDER 1,857,260

WRAPPER TABBING MECHANISM

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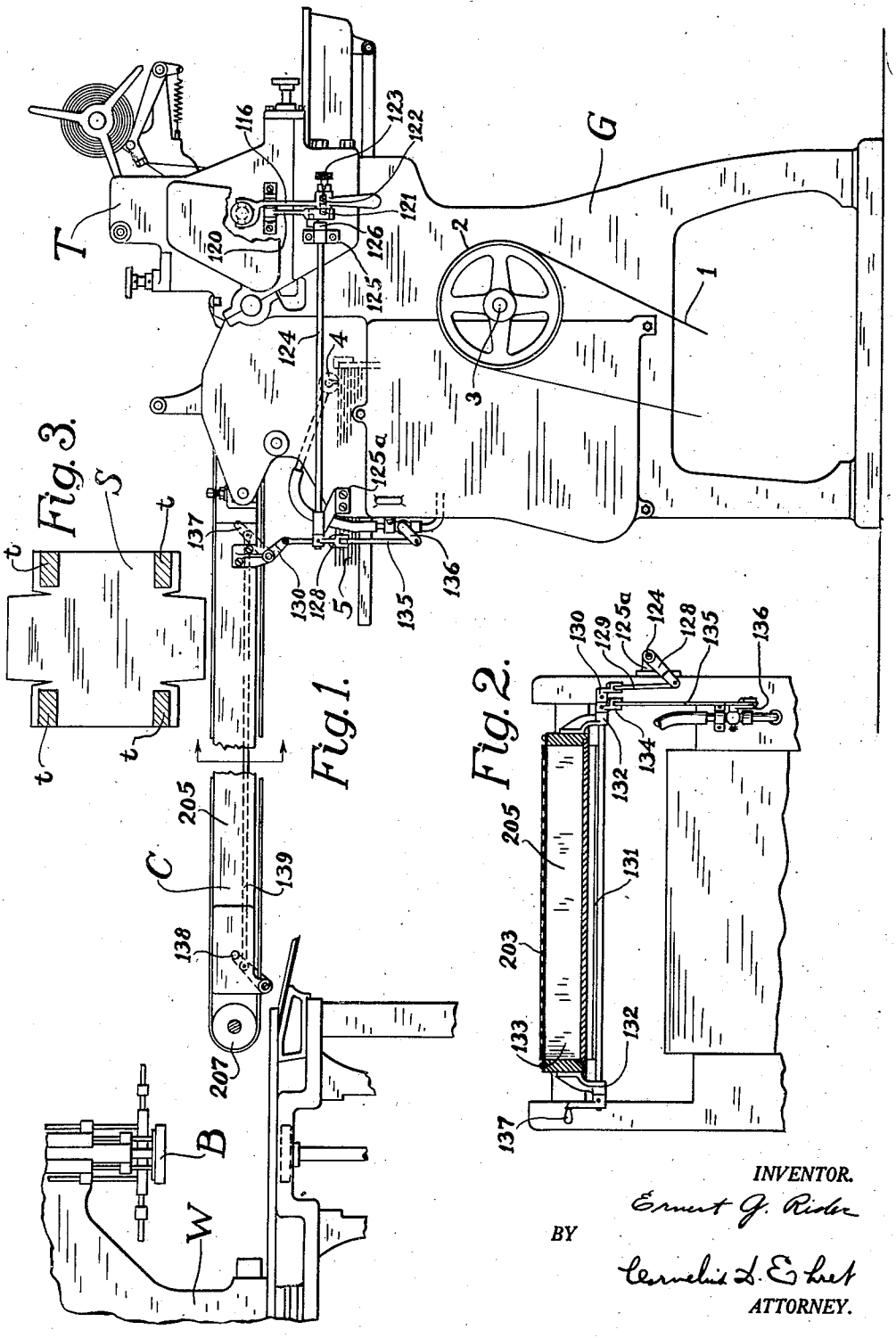


Fig. 3.

Fig. 1.

Fig. 2.

INVENTOR.
Ernest G. Rider

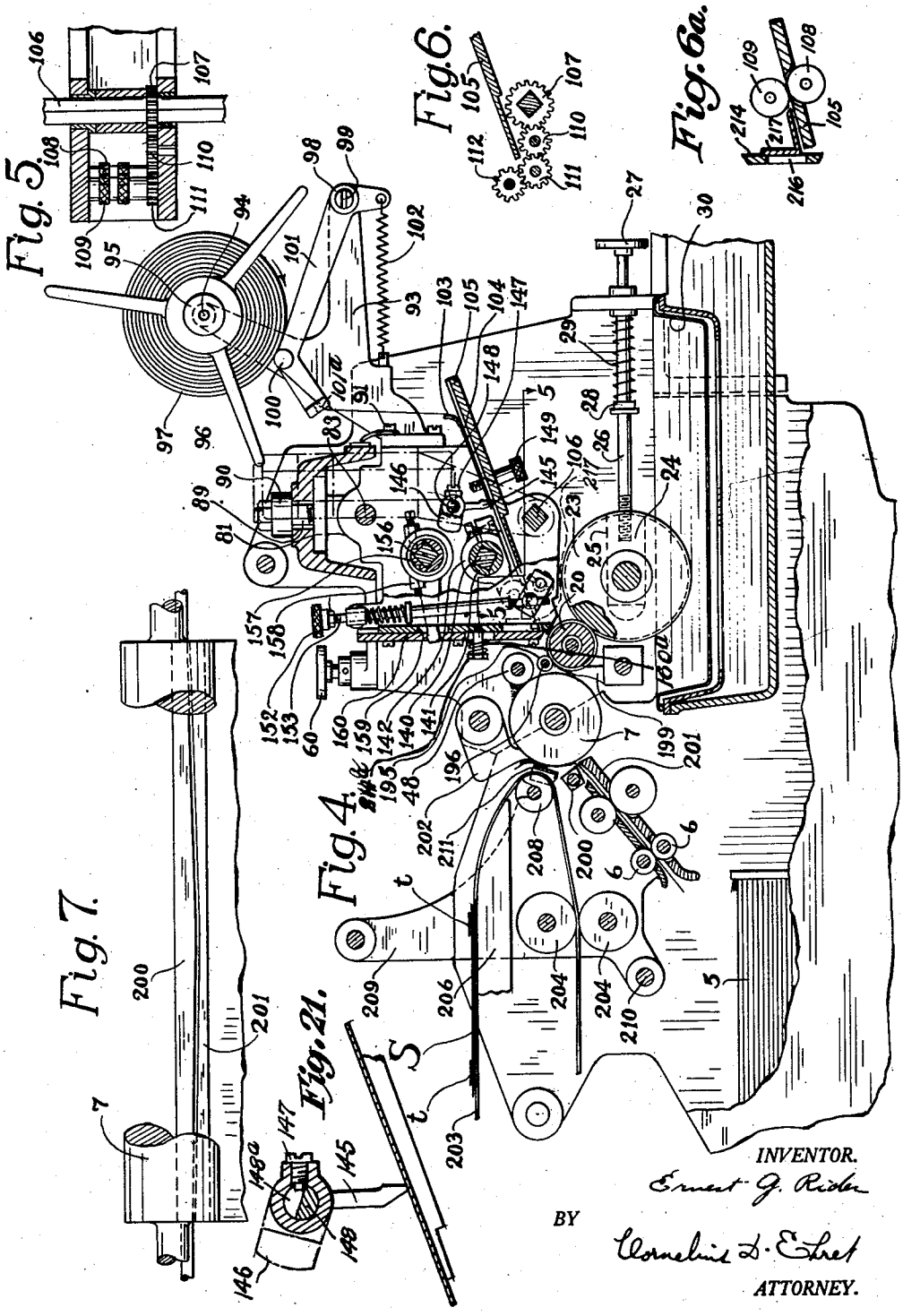
BY

Cornelius L. Eckert
ATTORNEY.

May 10, 1932. E. G. RIDER 1,857,260

WRAPPER TABBING MECHANISM

Filed July 21, 1928 6 Sheets-Sheet 2



May 10, 1932. E. G. RIDER 1,857,260

WRAPPER TABBING MECHANISM

Filed July 21, 1928 6 Sheets-Sheet 3

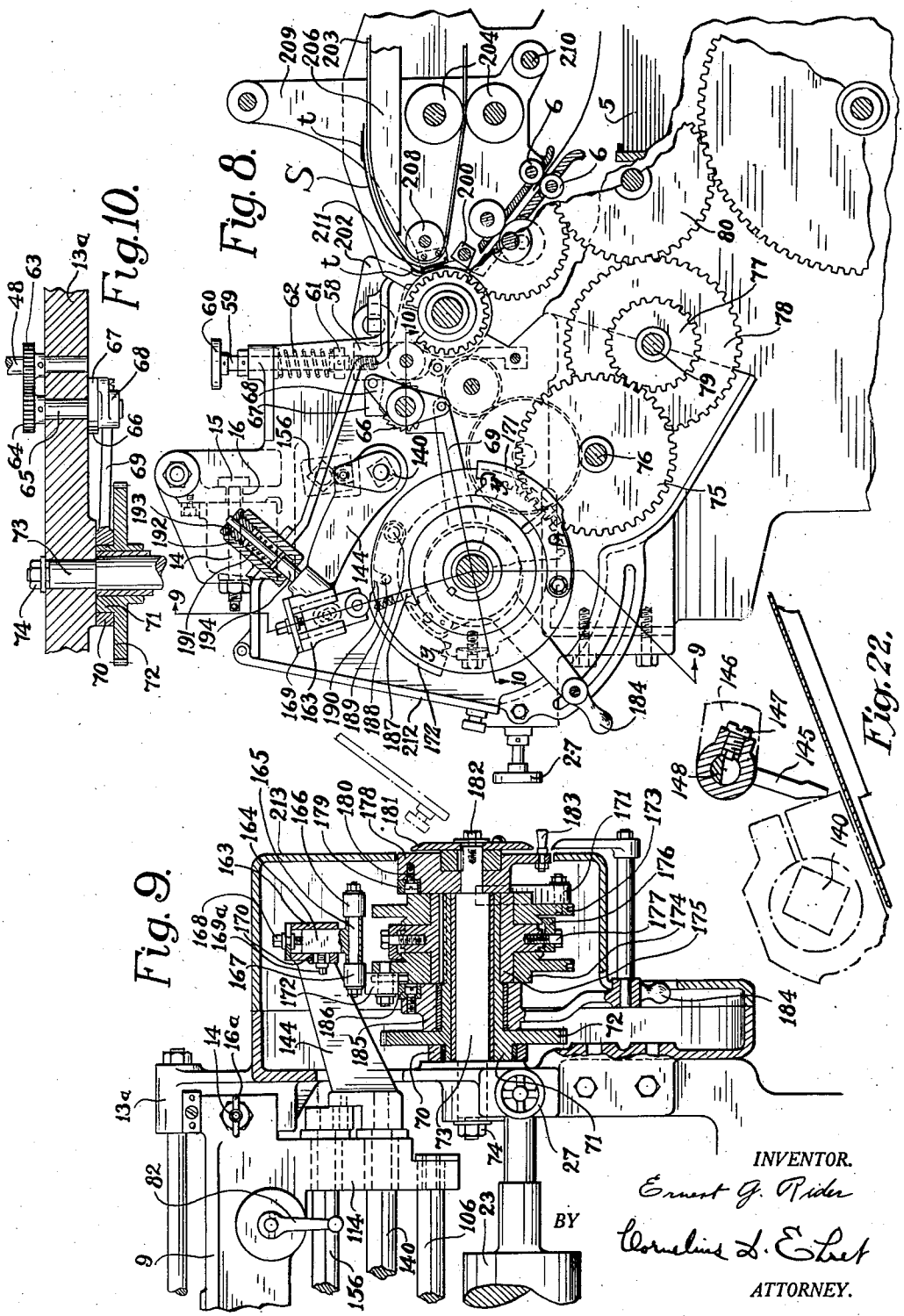


Fig. 8.

Fig. 10.

Fig. 22.

Fig. 9.

INVENTOR.
Ernest G. Rider
BY
Cornelius L. Ethet
ATTORNEY.

May 10, 1932. E. G. RIDER 1,857,260

WRAPPER TABBING MECHANISM

Filed July 21, 1928 6 Sheets-Sheet 4

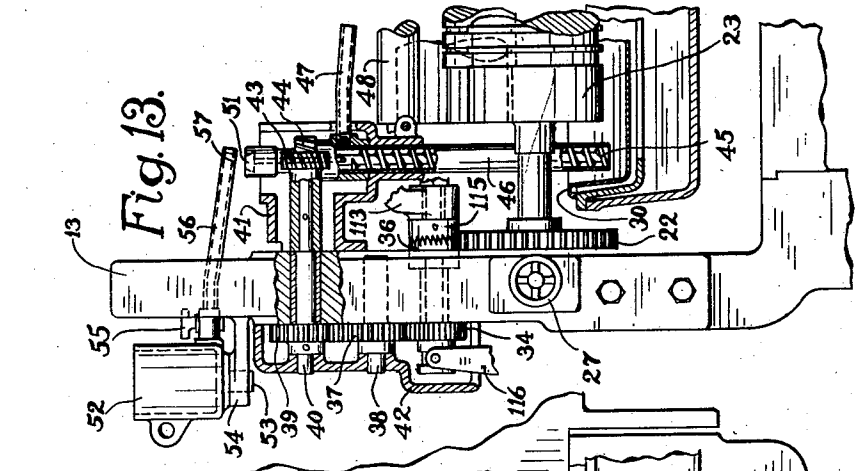


Fig. 13.

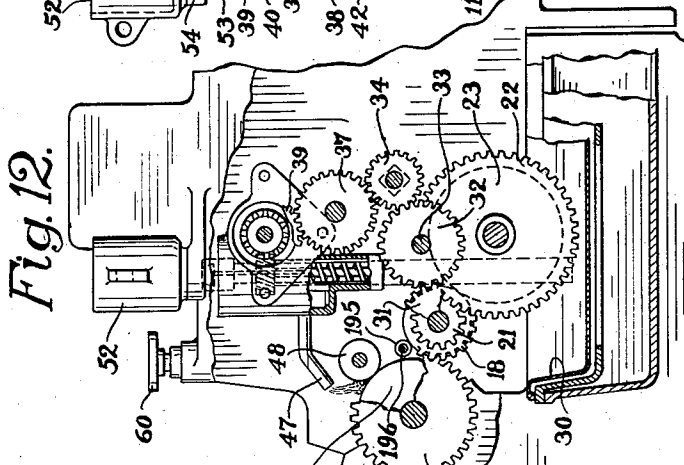


Fig. 12.

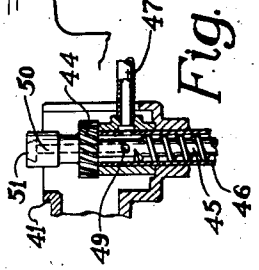


Fig. 14.

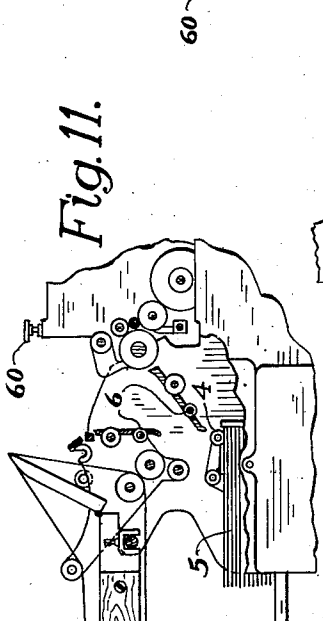


Fig. 11.

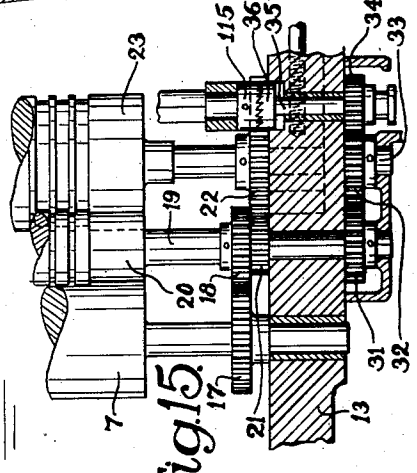


Fig. 15.

INVENTOR.

Ernest G. Rider

BY

May 10, 1932. E. G. RIDER 1,857,260

WRAPPER TABBING MECHANISM

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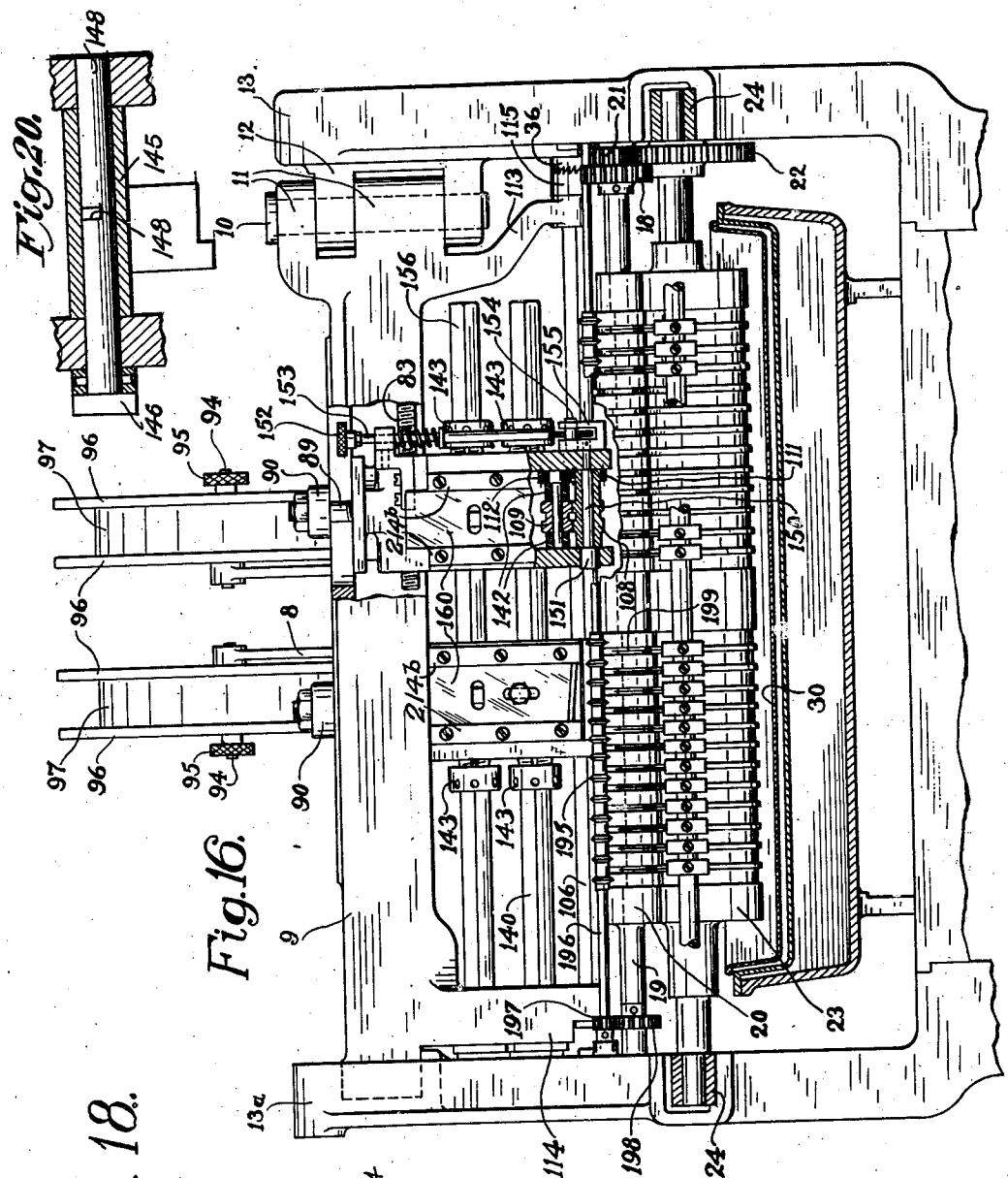


Fig. 20.

Fig. 16.

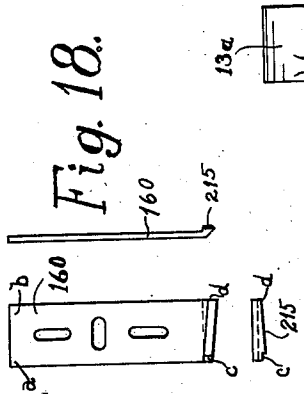


Fig. 18.

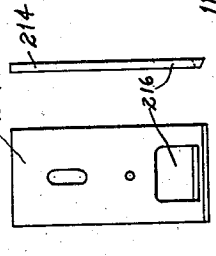


Fig. 19.

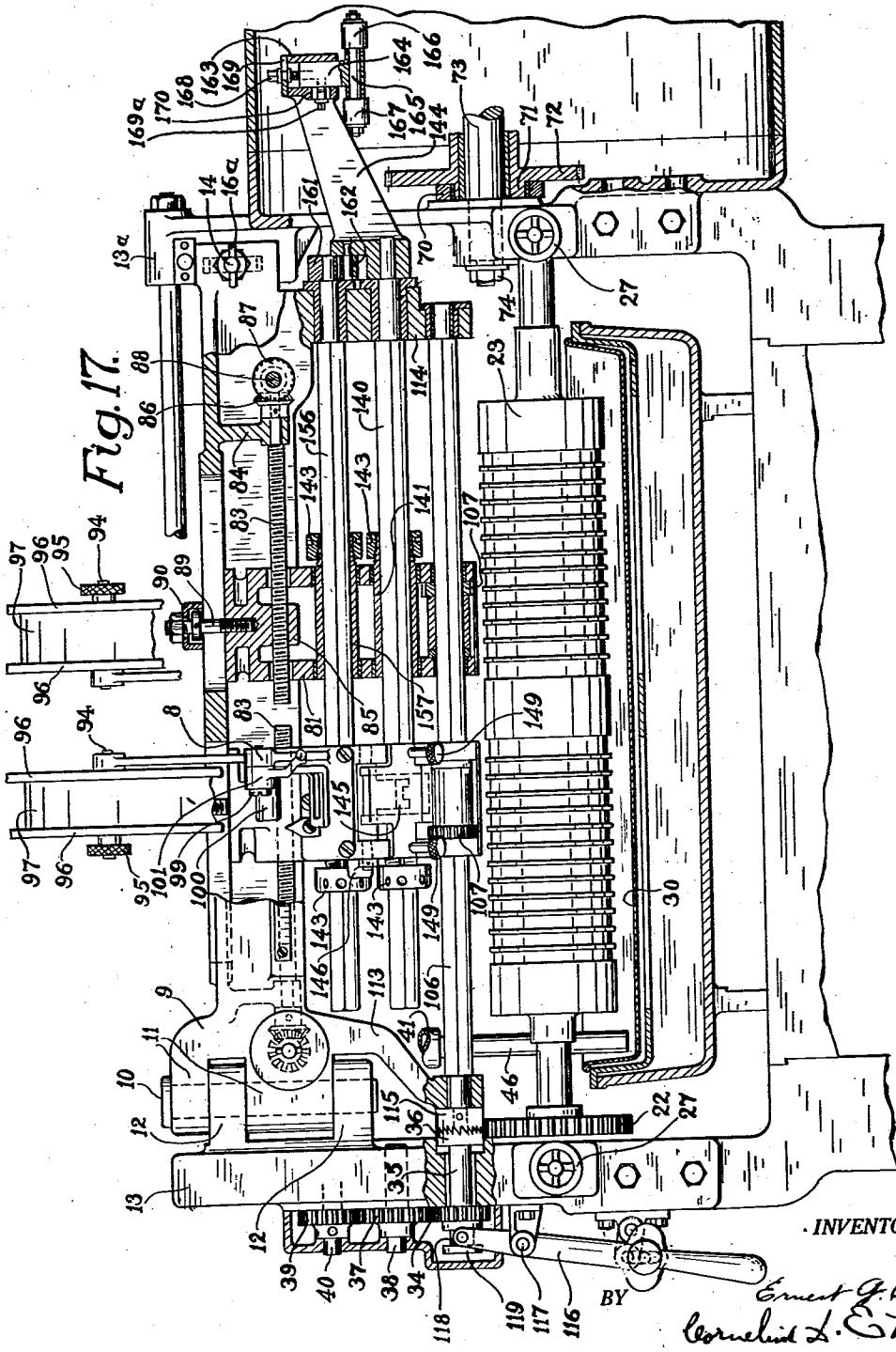
INVENTOR.
Ernest G. Rider
BY Cornelius L. Eberl
ATTORNEY.

May 10, 1932. E. G. RIDER 1,857,260

WRAPPER TABBING MECHANISM

Filed July 21, 1928 6 Sheets-Sheet 6

Fig. 17.



INVENTOR.

Ernest G. Rider

BY Cornelius L. Eliot

ATTORNEY.

Patented May 10, 1932 1,857,260

UNITED STATES PATENT OFFICE

ERNEST G. RIDER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO STOKES AND SMITH COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

WRAPPER TABBING MECHANISM

Application filed July 21, 1928. Serial No. 294,436.

My invention relates to apparatus for applying adhesive to individual sheets, wrappers, labels, or the like, hereinafter generically termed "wrapper", and particularly to wrappers to which are applied and secured by adhesive, reinforcing or staying elements or tabs, for covering or wrapping cartons, containers, and boxes, and especially unstayed boxes, hereinafter generically termed "boxes".

In accordance with my invention, particularly in mechanism in which during application of adhesive to wrappers, tabs are substantially simultaneously coated and applied thereto, wrappers, preferably untabbed, are fed at a large angle and preferably in a slightly bowed or curved condition into engagement with an adhesively coated member, as a roller, a polygonal structure, as a rectangular bar, having an edge adjacent the periphery of the roller and extending longitudinally thereof adjacent the point of initial engagement between the wrappers and roller, insuring coating of the entire surface of the wrapper including its leading edge.

Further in accordance with my invention, adjacent the region in which the wrapper moves out of engagement with the adhesive-applying roller, there is provided structure, as a guide plate, to maintain the wrapper and tabs thereon in engagement with each other and to insure their separation as an entity from the roller.

Further in accordance with my invention, there is provided a disengageable connection to permit the feeding, coating, and transporting of untabbed wrappers, preferably included in a control linkage, or equivalent, by which an operator, as of a box-wrapping machine, may simultaneously render inoperative wrapper feeding mechanism and tab strip feeding and cutting mechanism.

Further in accordance with my invention, structure, on which is mounted the tab strip cutting and feeding mechanism, of the tabbing unit attached to the wrapper coating machine, or gluer, is adapted to be moved, as upon a pivot, to permit access to elements, as rolls, of the gluer, or to facilitate replacement, repair, or adjustment of the tabbing mechanisms.

Further in accordance with my invention, the position of the shaft of a feed roll of at least one of the tab-feeding mechanisms may be shifted to vary the normal spacing between coacting feed-rolls; preferably the shaft terminates in eccentrics adjustably mounted for rotation in the frame of the tab-feeding mechanisms.

Further in accordance with my invention, in tabbing mechanism tabs, severed from tab strip, are engaged by a rotating presser roll to force them into positive engagement with an adhesive-coated roller.

My invention further resides in the features of construction and arrangement hereinafter described and claimed.

For an illustration of one of the various forms my invention may take, reference is to be had to the accompanying drawings in which:

Fig. 1 is a side elevational view of apparatus embodying my invention.

Fig. 2 is a front elevational view, partly in section, illustrating details of construction of the wapper-conveying and adhesive-applying mechanisms.

Fig. 3 is a plan view of a wrapper having tabs applied thereto by mechanism herein described.

Fig. 4 is a side elevational view, in section, illustrating details of a tabbing mechanism unit mounted on an adhesive-applying device.

Fig. 5 is a plan view, taken on line 5—5 of Fig. 4, showing in detail part of the tab-feeding mechanism.

Fig. 6 is a diagrammatic side elevational view, showing the driving mechanism for the tab-feeding rolls.

Fig. 6*a* is a detailed view in side elevation with parts in section of the tab-feeding rolls and tab-stripping structure.

Fig. 7 is a rear elevational view fragmentary in character, showing guide plates of wrapper-feeding mechanism.

Fig. 8 is a side elevational view, partly in section, of the tabbing unit mounted on an automatic blowing apparatus and in association with wrapper-conveying mechanism.

Fig. 9 is an end elevational view, partly in

section, taken on line 9—9 of Fig. 8, disclosing mechanism for effecting adjustments to vary the length and spacing of tabs as applied to wrappers of different shapes and sizes.

Fig. 10 is a fragmentary plan view taken on line 10—10 of Fig. 8, disclosing driving mechanism for intermittently rotating a scraper roll which controls the amount of adhesive on the wrapper-coating roll.

Fig. 11 is a diagrammatic side elevational view illustrating a detail of construction of apparatus embodying my invention.

Fig. 12 is a side elevational view, partly in section, of mechanism for pumping adhesive to the wrapper-coating roll.

Fig. 13 is an end elevational view of mechanism shown in Fig. 12.

Fig. 14 is a detailed view of a portion of the pumping mechanism shown in Figs. 12 and 13.

Fig. 15 is a plan view, partly in section, disclosing a clutch mechanism associated with the tab-feeding and cutting mechanism.

Fig. 16 is a front elevational view of the tabbing mechanism mounted on the automatic gluing apparatus.

Fig. 17 is a front elevational view, partly in section, of mechanism shown in Fig. 16.

Figs. 18 and 19 are detail views of improved tab cutting mechanism shown in Fig. 4.

Fig. 20 is a detail view in plan and on enlarged scale of tab braking mechanism shown in Fig. 4.

Fig. 21 and Fig. 22 illustrate in side elevation, the tab brake in operative and inoperative positions, respectively.

Referring to the drawings, particularly Fig. 1, there is illustrated an adhesive-applying unit G, mechanism generically indicated at T for severing tabs, applying the severed tabs to the wrapper during coating of the wrapper with adhesive, conveying unit C and a wrapping unit W.

The adhesive-applying unit G may be of any suitable type capable of applying adhesive to wrappers or box-wrapping paper, or other suitable material and delivering coated wrappers in succession, preferably at uniform intervals. For example, the unit G may be of the same general type disclosed in Nitsch and Federwitz Letters Patent No. 1,472,614, granted October 30, 1923, or in Stokes Letters Patent No. 1,611,693, granted December 21, 1926, or in Nitsch and Baker application, Serial No. 3,316, filed January 19, 1925, or in Federwitz and Bailey application, Serial No. 40,769, filed July 1, 1925, or in Davis application, Serial No. 122,096, filed July 13, 1926. In the mechanisms of the aforesaid patents and applications the wrappers as stacked in the gluing mechanism are one-piece wrappers. As disclosed in Stokes application, Serial No. 175,991, filed March 17, 1927, there may be associated with the gluing mechanism, apparatus for forming a composite wrapper from stacks of component parts and feeding the wrappers as formed and in succession to the adhesive-applying roll of the gluing unit.

The tabbing unit or mechanism T may be of the general character as disclosed, for example, in U. S. Letters Patent to Reifsnyder and Schwerdtle, No. 1,060,026, granted April 29, 1913, or to Nitsch, Weightman and Streeper, No, 1,451,782, granted April 17, 1923, or to Stokes, No. 1,611,693, granted December 21, 1926, or Rider application, Serial No. 227,144, filed October 19, 1927. However, the tabbing mechanism herein disclosed is specifically different in certain details of construction and arrangement.

The conveying unit C may be of the same general character disclosed in the aforesaid Federwitz and Bailey application, Serial No. 40,769, or in the Federwitz and Bailey application, Serial No. 70,462, filed November 21, 1925, or in Rider application, Serial No. 299,215, filed August 13, 1928, or, as shown, specifically the same in all essential details of construction as that disclosed in Stokes application, Serial No. 195,361, filed May 31, 1927.

The wrapping machine W may be of any suitable character, for example, as illustrated in U. S. Letters Patent to Smith, No. 691,329, Nitsch and Federwitz, No. 1,540,900, or Federwitz and Bailey, Nos. 1,541,036 and 1,451,255.

In the example illustrated, and referring particularly to Figs. 1 and 4, the adhesive-applying unit G is of the same general type disclosed in the aforesaid Nitsch and Federwitz Letters Patent, No. 1,472,614. Unit G is driven at suitable speed by any suitable source of power through the belt 1, which engages the periphery of a pulley 2 connected as by a key to the main driving shaft 3 of the gluing unit. At predetermined intervals, as explained more fully in the aforesaid Nitsch and Baker application, the suction roller 4 functions to deliver single wrappers S in succession from the stack 5 of unglued wrappers through the rotary feed roll mechanism designated generally at 6 into engagement with the glue distributing roller 7 which is continuously driven in any suitable manner as by a train of gears, not shown, from the drive shaft 3.

The tabbing mechanism T is removed as a unit from the automatic gluer G and comprises the side frames 13, 13*a* suitably connected as by a cross bar fastened at each end to the side frames. As disclosed most clearly in Figs. 16 and 17 the individual tab cutting and feeding units 8 are mounted upon a bridge member 9 pivotally mounted as by a pin 10 passing through lugs 11 of bridge member 9 and projecting abutments 12 of

side frame 13 of the gluing mechanism. As is most clearly shown in Fig. 8 the opposite or free end of the bridge 9 is adapted to be releasably held in engagement with the other side frame 13*a* of the gluing mechanism by a key member 14 comprising a bolt having an oblong head 15 whose width is suitably small to permit its passage through a slot 16 in the frame member 13*a* when it is desired to swing the bridge member and attached tabbing mechanism for the purposes hereinafter described. After the bridge is swung into position with the head 15 of the key 14 on the opposite side of the side frame 13*a*, rotation of the key member as by handle 16*a* prevents displacement of the bridge. Preferably the shank of the key member threaded as shown passes through a hole in the bridge and engages a nut secured thereto to effect positive clamping of the bridge 9 to the frame member 13*a* upon rotation of handle 16*a* in the proper direction.

Affixed to one end of the shaft on which adhesive-applying roller 7 is mounted, is a gear 17 which engages the gear 18 pinned to the shaft 19 of the intermediate glue roll 20. A gear 21 also secured to the shaft 19 meshes with gear 22 affixed to the shaft on which the glue transporting and agitating roll 23 is mounted, Fig. 15. As shown in Fig. 4, the ends of the shaft of roll 23 are each journaled in a block 24 slidable in a groove 25 of the corresponding side frame 13 or 13*a* and adjustable therein by a threaded rod 26 which passes through an end wall of the side frame and is provided with a hand wheel 27. Between a collar 28 affixed to rod 26 and the end frame there is disposed a spring 29 which continuously forces the glue roll 23 inwardly to its adjusted position but which permits movement of the roll in a reverse direction therefrom in the event that an obstruction passes or tends to pass between the rolls 23 and 20. As shown in Fig. 4, a considerable portion of the periphery of the roller 23 is beneath the surface of adhesive contained within the reservoir or tray 30 disposed in the usual manner, as in the aforesaid applications and patents referred to, between the side frames of the gluing unit G, and is driven in a clockwise direction to agitate the glue and to apply a coating thereof to the intermediate roller 20 for the purpose hereinafter more fully explained.

As shown, the surfaces of the rollers 20 and 23 are grooved, the high or raised portions of one roll engaging the corresponding grooves of the other roller, which construction prevents ridges of glue forming on the periphery of the rolls and being transferred to the tabs as hereinafter described as streaks. To an extension of shaft 19, which extends through side frame 13, there is secured, as shown in Figs. 12 and 15, a gear 31 which meshes with and drives gear 32 mounted on a stud shaft 33 and which in turn meshes with gear 34 disposed at one end of a longitudinally movable shaft 35 which passes through side frame 13 and on the opposite end is provided with a clutch member 36. As most clearly shown in Fig. 17, the gear 34, through an idler gear 37 mounted on said stud shaft 38, drives the gear 39 affixed as most clearly shown in Fig. 13 to shaft 40 which projects through the side frame 13 into the interior of a pump casing 41 bolted or otherwise suitably attached thereto. The cover plate 42 suitably fastened to the side frame may be utilized to enclose the gear train 31, 32, 34, 37, and 39.

The inner end of shaft 40 is provided with a worm gear 43 which engages worm gear 44 suitably affixed to a rod 45 which extends downwardly through a tube 46 below the surface of the adhesive in the reservoir 30 and is provided with a spiral thread, which during rotation of the rod 45 in the proper direction, as when driven by shaft 40, transports the glue upwardly and through a tube or conduit 47 and discharges it to form a fountain of glue between the approaching surfaces of the wrapper-coating roll 7 and a roller 48, whose purpose and operation will hereinafter be more fully described. During operation of the pump, the gear 43 exerts a downward thrust on gear 44 forcing the lower face of the latter against a bearing surface which constitutes the sole bearing for the pump rod.

A hole 49 extending transversely of the shaft 45 above its conveying thread is in communication with a passage 50 which terminates in an enlarged chamber 51 at the upper end of the shaft. Preferably when the mechanism is stopped, water or other suitable cleansing fluid in a container or cup 52 having a positioning pin 53 which passes through a hole in a bracket 54 extending from side frame 13, is permitted to pass by manipulation of the valve 55 through a pipe 56 having an opening 57 disposed immediately above and in registering relation with chamber 51. The water passes downwardly through passage 50 and out of hole 49 and then downwardly through the interior of the pump casing 46 to clean its interior. A portion of the water flows through the pipe 47 to remove any accumulation of glue therein and also to clean rolls 48 and 7.

The position of roller 48 may be varied in somewhat the same manner as that of roller 23 in that the ends of the roller or of the shaft on which it is mounted are each journaled, as shown in Fig. 8, in a block 58 whose position may be varied by a rod 59 which threadably engages a hole in the block and whose rotation may be effected by a hand wheel 60 to vary the distance between rollers 48 and 7. Between a collar 61 affixed to the rod 59 and the frame there is disposed a spring 62 which urges the roller 48 to its adjusted position

but permits its retraction if foreign matter passes between the rollers 7 and 48. The roller 48 functions as a scraper, and to prevent accumulation of foreign matter upon and wear of roller, it is intermittently rotated by mechanism to be described, in a manner and for substantially the same purpose, generally disclosed in Federwitz application Serial No. 187,646, filed April 29, 1927.

Referring to Figs. 8 and 10, a reduced end of the roller 48, or of a shaft on which it is mounted, is journaled in side frame 13*a* and is provided with a gear 63 which is driven by gear 64 fastened to the inner end of a shaft 65 which passes through the side frame and to which is secured on the opposite end, a ratchet 66 adapted to be rotated by a pawl 67 loosely pivoted to one arm of a bell crank lever 68 and to the other arm of which is connected the eccentric rod 69. An eccentric strap 70 may be integrally formed with rod 69 and embraces an eccentric 71 which, as shown, constitutes a hub portion of a gear 72 freely rotatable on a stud shaft 73 provided with a threaded extension which passes through side frame 13*a* and to which it is clamped as by nut 74. The gear 72 is driven by gear 75 rotatably mounted on stud shaft 76 threaded into an extension of the side frame 13*a* of the tabbing mechanism unit and which in turn is driven by and engages gear 77 co-axially rotatable with gear 78. The gears 77 and 78 may be formed as a unit or as two separate gears suitably fastened together and are freely rotatable on a shaft 79 threaded for example into an extension of the side frame 13*a*. The gears 72, 75, 78, etc. are removable with the tabbing mechanism unit from the frame of the adhesive-applying unit G. The gear 78 is driven by an intermittently rotating gear 80 of the gluing device G.

As viewed in Figs. 4 and 17, the tabbing units 8 each comprises a casting or block 81 whose upper machined face engages a machined lower surface of the bridge member 9. Each of the tabbing units 8 may be individually moved by an operator from the back of the machine, as by a crank handle 82, toward or away from a central position by threaded rods 83 each of which is journaled in a bracket 84 dependent from the bridge 9 and engages a threaded boss 85 of a casting 81. A bevel gear 86 secured to the end of each shaft 83, engages a bevel gear 87 secured to the inner end of shaft 88 to which is secured the adjusting crank 82. The tabbing heads or units may be clamped individually in their adjusted positions by a bolt 89 which passes downwardly through a narrow slot in the bridge 9 and threadably engages the upper portion of casting 81, the bottom surface of the bridging strap 90 engaging the upper face of the cross bar.

To each of the castings 81 there is secured as by bolts 91 a bifurcated bracket member 93. One arm of the bracket threadably engages an end of a stud shaft 94, the opposite end of which is threaded to receive a clamping nut 95 to hold in position the spiders 96, 96 held in spaced position on shaft or rod 94 by spacing washer or tubing not shown on which a roll 97 of suitable tabbing material, as paper, may be disposed. The tabbing strip as it is removed from the roll 97, passes as shown, over the lug 100, adjacent the free end of an arm of the bell crank lever 101, through a guide opening 101*a* at the end of the arm, and under the curved lip 103 of the guide plate 104 disposed between the side walls of the tabbing head 81 on to the lower guide plate 105 formed for example by the bottom of the casting. To the other end of the bell crank lever is secured a biasing spring 102 tending to cause clockwise rotation of the lever as viewed in Fig. 4, for the purpose of forming a brake to prevent movement of roll 97 under its inertia and to maintain a substantially constant tension on the tap strip.

The shaft 106, preferably of polygonal cross section, as shown most clearly in Figs. 5 and 17, extends through the hollow hub of gear 107 of the respective tabbing heads to drive the tab strip feed rolls 108, 109, whose surfaces are preferably knurled, through an intermediate idler gear 110 which engages gear 111 secured to the shaft of the lower feed roll 108 and which in turn meshes with gear 112 secured to the shaft of the upper feed roll 109. The hollow hub of gear 107 and the shafts of gears 110 and 111 remain fixed with respect to the casting 81 and to each other, but the shaft of the upper feed roll 109 is movable with respect thereto as hereinafter described, although the motion is so limited that the gear 112 is always in engagement with gear 111. The ends of shaft 106 are supported by brackets 113 and 114 extending downwardly from the main portion of the bridge member 9. The end of shaft 106 passing through bracket 113 is provided with a clutch member 115. When the bridge 9 is in position, the clutch member 115 is in a position to be engaged by the clutch member 36 carried by shaft 35. Reciprocation of the clutch member 36 into and out of contact with member 115 is effected by operating lever 116 pivoted as at 117 to the frame 13 and having a yoke or finger secured to an end thereof engaging groove 118 of a clutch collar 119 secured to shaft 35.

An arm 120 pivoted co-axially with lever 116 and rotatable independently thereof, is provided with a depression 121 to receive the end of a locking plunger 122 slidable within an enlarged portion of clutch operating lever 116 and having an actuating knob 123. The arm 120 is adapted to be rocked by shaft 124 supported by brackets 125 and 125*a* secured

to the side frames of the adhesive-applying unit G and having a crank arm 126 suitably connected to the arm 120 as by a crank pin. At the front end of the gluing mechanism G, to the shaft 124 is attached arm 128 connected by link 129 to an arm 130 pinned or otherwise suitably secured to shaft 131 supported by brackets 132 secured to opposite sides of the suction chamber 133 of the conveyor C. There is also secured to shaft 131 an arm 134 connected by link 135 to the operating lever 136 of a valve controlling the suction supplied to the sheet-lifting and transporting roller 4. On the opposite side of the conveyor, the shaft 131 is provided with an actuating handle 137 to permit an operator simultaneously to prevent the feeding of sheets by cutting off the suction to the roller 4 and to prevent the feeding of tabs by operating the clutch mechanism between shaft 106 and its operating gear train 31, 32, 34, etc. To facilitate the control of the wrapper and tab feeding by an operator of the wrapper mechanism W, there is provided adjacent the wrapping machine a pivoted actuating handle 138 suitably connected to the handle 137 as by connecting link 139.

Referring particularly to Figs. 4, 16 and 17, the rocker shaft 140 is rotatably mounted in bracket 114 of bridge 9 and passes through the hub portions 141 of oscillating arms 142 which are each disposed between the side walls of the respective tabbing head 81; preferably the shaft is polygonal in cross section and corresponds in shape to the hole through which it passes in the hub portion 141, which portion is preferably split and extends exteriorly of the casting. A nut 143 having a slight internal taper is threaded onto the split extension to clamp the rocker arm tight in position after adjustment of the tabbing unit transversely of the machine has been effected by handles 82, as above described.

Upon rotation of arm 144 in a clockwise direction as viewed in Fig. 8, the tab strip is engaged by the upper and lower feed rolls 108 and 109 to effect movement of the strip toward the front of the adhesive-applying unit. A finger 145 engaging the upper surface of the tab strip and biased as by weight 146 to rotate in a counter-clockwise direction, as viewed in Fig. 4, prevents reverse movement of the strip which would, as will hereinafter appear, vary the length and spacing of the tabs upon the wrappers to which they are applied. Pin 148 to which weight 146 is secured and on which finger 145 is loosely mounted is provided with a slot 148*a* coacting with screw 147 which passes through a hub portion of locking finger 145, as shown most clearly in Figs. 20 to 22. When it is desired to remove the tension on the tab or during a rethreading of the tab, the weight 146 which is disposed outside of the tabbing heading is moved to effect clockwise rotation of pin or shaft 148, that is from the position shown in Fig. 21 to the position shown in Fig. 22. Upon engagement between the wall of the aforesaid slot and the upper side of screw 147, the locking finger 145 is moved in clockwise direction to inoperative position Fig. 22. Reverse rotation of pin 148 restores the locking finger to the normal position, Fig. 21. The lower guide plate 105 may be readily removed to permit access to the tab feed-rolls or substitution of another guide plate having different width of groove suitable for guiding a tab strip of different width.

To ensure uniform feeding of the tab strips by the separate tabbing heads, at least one head is provided with an adjustment to change the pressure between the tab feeding rolls 108 and 109. Referring particularly to Figs. 4 and 16, the lower feed roll 108 is rotatable on a shaft 150 which terminates at its ends in eccentrics 151 rotatable in the respective side frames of the tabbing head. The shaft 150 may be disposed angularly about the axis of rotation of the eccentrics to vary the pressure between the feed rolls by rotation of knob 152 disposed upon and secured to the upper end of shaft 153 having a lower extremity which threadably engages the pin 154 rotatably mounted in the legs of a yoke member 155 which constitutes a crank arm secured to the mounting shaft assembly of the lower feed roll.

The shaft 156, preferably polygonal in cross section, is rotatably mounted in bracket 114 of the bridge 9 and passes through the hub portions 157 of the knife actuating arms 158 of each of the tabbing heads, which arms at the front end pass through a slot 159 in the tabbing head to engage a reciprocable knife 160. To the extension of the shaft 156 which projects through the supporting bracket 114 is attached a U-shaped member 161 which straddles and is engaged by a roller 162, or equivalent mounted upon the rocker arm 144. Referring to Fig. 17, the free end of the rocker arm 144 is provided with a head portion 163 having a slot or hollow therethrough in which a slidably adjustable block 164 is received and through the lower end of which passes a shaft 165 to provide a bearing for the rollers 166 and 167 disposed on opposite sides of the block 164. An adjusting member 168 projects through a plate 169 engaging the upper surface of the head 163 and is provided with flanges which engage respectively the opposite sides of the plate. The block is clamped in its desired adjusted position by threaded member 169*a* which extends through an elongated slot 170 in the side of head 163 and threadably engages the block 164.

Referring to Figs. 4, 18 and 19, the upper edge of the tab cutting blade 160 normally

bears against the guide plate while the inwardly directed cutting portion 215 of the blade lies within the opening 216 of the guide plate, the corner or shoulder *c* of the blade engaging or embracing an edge of the opening. In this position the blade 160 is parallel to the guide plate. As clearly disclosed in Fig. 18, the cutting end or edge of the blade is inclined in both the horizontal and vertical planes. Consequently, as the blade moves downwardly, its corner *d* engages and rides upon the lower edge of the opening 216 causing the blade as a whole to pivot about its upper edge *a*, *b*. As the downward movement of the blade continues it also rocks longitudinally due to the divergence of the cutting edge 215 and the body of the blade in the horizontal plane, the blade rocking about its point of contact with the lower edge of the opening 216. During the cutting of the tab, therefore, the blade has two components of motion, moving it out of parallelism with the guide plate, the first a rocking movement which separates the lower portion of the blade from the guide plate, and the second a twisting movement which increases the separation between the guide plate and the edge *a*, *c* of the blade.

The blade may be described as "floating" as it is not rigidly connected to any part of the mechanism. It is biased toward face to face engagement with guide plate 214 by spring 160*a* which bears against the blade and the head of a screw or blade 214*a* which passes through an elongated slot in the blade and threads into plate 214. The side guides 214*b* assist in maintaining an upright position of the blade but do not restrict either its twisting or rocking movement above described. Because of the peculiar movement of the blade, there results a shearing rather than a cutting action which ensures complete severance of the tab from the tab strip even though the cutting edge of the blade and the co-acting edge of the guide plate have become dulled by long and continued use. It is of the utmost importance in mechanism of this character that the severed tab immediately upon return movement of the blade drops into engagement with the transfer roll 20 or is free to be moved thereby; otherwise the tabs will not register properly with the wrapper. With the blades hithertofore used, frequent resharpening was necessary to maintain them in proper condition, whereas when a blade of this character is used, it may be dulled as above mentioned without its operation impaired. In actual practice, the intervals between the sharpening periods for this type of blade are greatly increased, avoiding shut-downs of the machine and consequent loss in production.

A combined guiding and stripping member 217 is positioned adjacent the feed rolls 108 and 109 to prevent the edge of the tab strip from adhering to and traveling around the feed rolls. The lower edge of the member projects through the opening 216 in the knife-guiding plate 214 to guide the tab strip into proper position between the tab cutting surfaces, and to strip the severed tab from the knife 160 during upward movement thereof.

The rollers 166 and 167 are adapted to engage respectively the cams 171 and 172 pivotally mounted respectively to the discs 173 and 174 which are angularly adjustable on a hub member 175, the clamping lugs 176 and bolts 177 therefor being provided to clamp the discs 173 and 174 in their adjusted position. The hub 175 is keyed or otherwise suitably affixed to and rotates with the hollow hub of gear 72. The period of engagement between roller 166 and its actuating cam 171 may be varied to change the length of the tabs by angular adjustment of member 178 about the axis of the stud shaft 73. The lower surface of cam 171 is adapted to ride upon the adjustable stop 179 suitably secured as by screws 180 to the inner face of the tab length adjusting member 178. Movement of the arm 144 to separate the feed rolls as roll 166 or 167 passes off its respective cam is effected by a spring 191 disposed within a hollow casing 192 and engaged at one end by an adjustable block 193 and at its other end by a movable plunger 194 projecting through the casing into engagement with arm 144. The index plate 181 clamped to the end of shaft 73 as by bolt 182 indicates the position of the stop 179 as determined by movement of handle 183 suitably affixed to the member 178. Similarly the period of engagement between the roller 167 and cam 172 may be varied by movement of actuating handle 184 connected to the stop supporting member 185 freely rotatable on the hub portion of gear 72. The stop member 186 secured thereto is similar to stop 179 above described. Both stop members 179 and 186 are notched, as at *x*, the notches cooperating with the complementary notches *y* of the free ends of the cams 171 and 172 to ensure their abrupt inward movement and positive movement of rocker arm 144 as the cams pass beyond the stops. Without these notches, there is a lag or delayed action of the cams which makes it difficult precisely to time the operation of the rock shaft.

Upon engagement of a cam with its corresponding roller, the arm 144 is rotated in a clockwise direction, as viewed in Fig. 8, causing rotation of the rocker arms 142 to the position shown in Fig. 4, to bring the upper feed roll 109 into contact with the tab strip to feed it during continued engagement between the cam and its follower. Each of the cams is provided with a spring-pressed plunger 187 projecting from the inside of the cam and engaging the hub member 175 to

force the cams to rotate outwardly about their pivots 188, which rotation, however, is limited by pins 189 projecting from the face of the cam-supporting member 175 and engaging slots 190 of the cams.

The interval between the tab feeding apparatus and therefore the spacing of the tabs on the wrapper, is varied by changing the relative positions of the cams 171 and 172 upon the hub member 174 and the length of the tabs is varied as above described. The leading edges of the tabs, preferably practically at the time of their severance from the tab strips by knives 160, are caught between the adhesive-coated intermediate roller 20 and the tab feeding rollers 195 mounted upon shaft 196 to which is secured gear 197 driven by gear 198 attached to an end of shaft 19 of the intermediate roller 20. By this arrangement the tab is under positive control necessary to ensure their proper position upon the wrappers. The tabs coated on their wrapper-engaging surfaces are separated from the intermediate roll 20 by strippers 199 and brought into contact with the wrapper-coating roller 7. The tabs, now coated on both sides with adhesive, are transported by roller 7 and applied to a wrapper S while a coating of adhesive or glue is being applied to the wrapper and while a portion remains to be coated. A second group of tabs in the meanwhile has been cut, the interval being determined as above explained by the spacing between cams 171 and 172 and it is applied to the wrapper while there yet remains a portion to be coated.

Adjacent the glue roll 7, the sheet S passes through an aperture formed by an edge of the upper guide bar 200 and an upwardly inclined portion of the lower guide plate 201. The angle at which the wrappers are fed to the roll is very great and the guiding surfaces terminate closely adjacent the roll to insure that the leading edge of the wrapper is coated with adhesive despite tendency of the wrapper sheet to curl. Preferably, as shown, the top guide bar 200 is wider substantially near its center than at the ends and the lower guide plate is shaped to conform therewith to feed the sheet to the glue roller in a slightly bowed condition, the curvature being transverse of the direction of feed.

The leading edge of the wrapper when deflected from the roller 7 by strippers 202 engages a porous or perforated conveyor 203 driven by rollers 204 connected through suitable gearing or the like to the driving mechanism of the gluer G. The conveyor belt passes over a suction chamber 205, preferably having a perforated top, and provided with a hinged nose portion 206 extending in close proximity to the roller 7 whereby suction is applied to the wrapper immediately after it leaves the coating roller to prevent curling.

The conveyor belt 203 passes over idler roll 207, which is preferably adjustable, and idler roll 208, which latter, together with the upper sheet feeding roll 6 and the conveyor belt-driving rolls 204, is mounted on a frame 209 pivoted, as at 210, to permit ready access to the gluing and tabbing mechanisms. The hinged nose portion 206 of the suction chamber 205 is engaged and moved to a clear position by the frame 209 when the latter is thrown back for the purpose specified. There is attached to the throw-back frame 209 an additional guide plate 211 to prevent the wrapper from separating from the tab as the former leaves glue roll 7. In the absence of this guide plate there is a tendency for the sheet to leave the roll before it is engaged by strippers 202, the tab, however, tending to stick to the glue roll.

When it is necessary or desirable to adjust, replace or repair the tabbing heads and to render more accessible portions of the gluing mechanism, as the glue rolls, the key member 14 is rotated to unclamp the bridge 9 from the frame 13*a*, the hinged cover plate 212 of a housing 213 enclosing the actuating arm 144 and associated driving mechanism is raised to permit the bridge 9 to be swung about its pivot 10 carrying with it the tabbing heads and the mechanism for actuating the tab strip feeding and cutting mechanism embodied therein. When untabbed wrappers are to be utilized, as for example with stayed boxes, the plunger 123 is moved out of engagement with arm 120 to disconnect the clutch actuating lever therefrom, whereby the driving connection to the tabbing mechanism may be disconnected.

In the arrangement disclosed, the tabbed, coated wrappers are removed from the conveyor belt 203 by the operator of a box-wrapping machine W under the control of the operator, or of the gluing machine G as described in the Federwitz and Bailey application aforesaid. In either event, a box, particularly an unstayed box blank, is superimposed on a tabbed, coated wrapper in the path of the form-block structure B of the wrapping machine, simultaneously to wrap and stay the box, as is exemplified, before material setting of any of the adhesive applied to the tabs or wrapper. During continued operation of the device, a succession of tabbed, coated wrappers is delivered by the conveyor to the operator to be applied to a succession of boxes.

It will be understood that in so far as certain aspects of my invention are concerned, the sheets may be fed automatically directly into the path of the form-block, as shown in the aforesaid Federwitz and Bailey application Serial No. 40,769.

What I claim is:

1. Wrapper coating mechanism comprising an adhesive-coated member, means to feed an individual wrapper into engagement therewith, and sheet-guiding structure pro-

viding a curved aperture through which a wrapper is fed by said means into engagement with said member in a bowed condition.

2. Wrapper coating mechanism comprising an adhesive coated roll, a polygonal member having an edge adjacent the periphery of said roller, a second member cooperating with said edge of said first member to provide a narrow, curved aperture, and means to feed an individual wrapper through said aperture into engagement with said roll.

3. Wrapper coating mechanism comprising an adhesive coated roll, means to feed an individual wrapper into engagement therewith, a member having a wrapper guiding face disposed to provide a large angle between the approaching surfaces of said roll and a wrapper fed by said means, and second member coacting with said first member to provide a narrow, curved aperture through which the wrapper is fed into engagement with said roll.

4. Wrapper coating mechanism comprising an adhesive coated roll, means to apply tabs to said roll, means to feed a wrapper into engagement with said roll in timed relation to said tab applying means to receive tabs, and a polygonal member having an edge adjacent the periphery of said roll in a region of engagement between said roll, tabs thereon, and a wrapper surface.

5. Wrapper coating mechanism comprising a continuously movable adhesive-coated member, means intermittently to feed wrappers thereto, means operating in timed relation to said wrapper feeding means to supply tabs to said adhesive coated member, and means operable simultaneously to render inoperative said wrapper feeding and tab supply means during continued movement of said adhesive coated members.

6. Wrapper coating mechanism comprising a continuously movable adhesive coated member, means intermittently to feed wrappers thereto comprising a suction member, means operating in timed relation to said wrapper feeding means to supply tabs to said adhesive coated member, and means operable simultaneously to effect discontinuance of suction by said member and to render inoperative said tab supply means.

7. Wrapper coating mechanism comprising a movable adhesive coated member, means intermittently to feed wrappers thereto, means operating in timed relation to said wrapper-feeding means to supply tabs to said adhesive coated member, and means to render inoperative said tab supplying means.

8. In a box-wrapping system comprising wrapper feeding, tab feeding, and coating mechanisms, wrapper transporting mechanism, and a box-wrapping machine, means disposed adjacent said box-wrapping machine operable simultaneously to render ineffective said wrapper feeding and tab feeding mechanisms without interruption of the operation of the wrapper transporting mechanism.

9. Wrapper tab mechanism comprising at least two units each comprising a roll, a rocker arm, a second roll carried by said rocker arm and moved thereby adjacent said first roll to feed a tab strip; a shaft common to the rocker arms of said units, and means to shift the position of the axis of rotation of the first of said rolls of at least one of said units to obtain uniform feeding of the tab strips by the different units.

10. Wrapper tabbing mechanism comprising a roll, a rocker arm, a second roll movable therewith adjacent said first roll to feed a tab strip, a knife, a second rocker arm associated therewith to effect movement thereof, structure operatively connecting said rocker arms, common operating means therefor comprising a cam follower, and a cam engaging said cam follower to effect oscillation of said arms.

11. Wrapper tabbing mechanism comprising a roll, a rocker arm, a second roll movable therewith adjacent said first roll to feed a tab strip, a knife, a second rocker arm associated therewith to effect movement thereof, structure operatively connecting said rocker arms, common operating means therefor comprising a cam follower, a cam engaging said cam follower to effect oscillation of said arms, a stationary abutment effecting desired period of engagement between said cam and cam follower, said abutment and said cam being notched to effect their abrupt separation.

12. Wrapper tabbing mechanism comprising tab strip feeding mechanism having a rocker element, tab strip cutting mechanism having a rocker element, said rocker elements being operatively connected, a shaft for oscillating said elements, a cam follower movable with said shaft, and a cam engaging said cam follower to effect oscillation of said shaft.

13. Wrapper tabbing mechanism comprising tab strip feeding mechanism having a rocker element, tab strip cutting mechanism having a rocker element, said rocker elements being operatively connected, a shaft for oscillating said elements, cam follower structure movable with said shaft, and cams alternately engaging said cam follower structure to effect cutting and feeding of tabs at desired intervals.

14. Wrapper tabbing mechanism comprising feed rolls, a rocker arm effecting tab strip feeding relation thereof, an operating shaft for said arm, cam follower structure carried thereby, a cam adapted to engage said cam follower, a stationary abutment determining the period of engagement between said cam and cam follower, the separating

surfaces of said cam and abutment being notched to effect their abrupt separation.

15. Wrapper tabbing mechanism comprising a knife, a rocker arm to effect tab strip cutting operation thereof, an operating shaft for said arm, cam follower structure carried thereby, a cam adapted to engage said cam follower, a stationary abutment effecting said engagement, the separating surface of said cam and abutment being notched to effect positive actuation of said knife.

16. Tabbing mechanism comprising side frames, a member bridging said frames and pivotally mounted on one of them, tab strip feeding mechanism mounted on said member and movable therewith, a rocker shaft for effecting operation of said feeding mechanism supported by and movable with said bridging member, a cam follower carried thereby, and a cam adapted to engage said cam follower supported by side frame structure.

17. Tabbing mechanism comprising side frames, a member bridging said frames and pivotally mounted on one of them, tab strip cutting mechanism mounted on said member and movable therewith, a rocker shaft for effecting operating of said cutting mechanism supported by and movable with said bridging member, a cam follower carried thereby, and a cam adapted to engage said cam follower supported by side frame structure.

18. Wrapper tabbing mechanism comprising tab strip feeding and cutting mechanism, a movable adhesive coated member to transport and coat tabs as severed from a tab strip, and structure adjacent said member pressing the severed tabs into engagement therewith.

19. Wrapper tabbing mechanism comprising tab strip feeding and cutting mechanism, a movable adhesive coated roll to transport and coat tabs as severed from a tab strip, and roll structure adjacent said roll pressing the severed tabs into engagement therewith.

20. Wrapper tabbing mechanism comprising tab strip feeding and cutting mechanism, a grooved adhesive coated roller to transport and coat tabs as severed from a tab strip, and a complementarily grooved roller supplying an adhesive coating to said first roller.

21. Wrapper tabbing mechanism comprising tab strip feeding rolls, a knife for cutting the tab strip, and means to strip the tab strip from said feed rolls and the tabs severed therefrom from said knife.

22. Tabbing mechanism comprising roll structure for feeding tab strip in one direction along guide plate structure, means continuously tensioning said strip and tending to effect its movement in reverse direction, mechanism for cutting tabs from said strip, and means freely permitting movement of said strip by said roll structure toward said cutting mechanism and opposing movement in said reverse direction by said tensioning means to ensure tabs of desired length comprising a pivotally mounted member engaging said tab strip on said guide, and biased to rotate in said reverse direction.

23. Wrapper tabbing mechanism comprising a rock shaft, a tabbing unit adjustable to different positions along said shaft comprising a rocker arm slidably engaging said shaft and rocked thereby, a roll carried by said rocker arm, a second roll, and means to shift the position of the axis of rotation of said second roll to compensate for different positions assumed by said first roll for different adjustment of the unit along said shaft.

24. Tabbing mechanism comprising a knife having a cutting-edge inclined with respect to the body thereof in different planes, means for floatingly supporting said knife, and structure supporting a tab strip in the path of movement of said knife and having an edge cooperating with the inclined cutting edge thereof to effect rocking movement of the blade with components of said movement in different planes.

25. Wrapper coating mechanism comprising an adhesive coated roll, means to apply tabs to said roll, means to feed a wrapper into engagement with said roll in timed relation to said tab applying means to receive tabs, a wrapper-guiding member associated with said feeding means, and a polygonal member having an edge adjacent the periphery of said roll forming with an edge of said wrapper-guiding member an aperture through which a wrapper is fed into engagement with said roll and tabs thereon.

26. Wrapper coating mechanism comprising an adhesive coated roll, means to apply tabs to said roll, means to feed a wrapper into engagement with said roll in timed relation to said tab applying means to receive tabs, a wrapper-guiding member associated with said feeding means, and a polygonal member having an edge adjacent the periphery of said roll forming with an edge of said wrapper-guiding member, a curved aperture through which a wrapper is fed in bowed shape into engagement with said roll and tabs thereon.

27. Wrapper coating mechanism comprising an adhesive coated member, means to feed a wrapper into engagement therewith, means to apply tabs to said member for application to a wrapper, means to transport the tabbed, coated wrapper, means to strip the tabbed, coated wrapper from said member and to effect its engagement with said transporting means, and structure adjacent said adhesive coated member and interposed between said wrapper feeding means and said stripping means to insure stripping of the tabs and wrapper as an entity from said member.

28. Wrapper coating mechanism comprising an adhesive coated roll, means to feed a

wrapper into engagement therewith, means to apply tabs to said roll for application to a wrapper, means to transport the tabbed, coated wrapper, means to strip the tabbed, coated wrapper from said roll and to effect its engagement with said transporting means, and structure adjacent the periphery of said adhesive coated roll and interposed between said wrapper feeding means and said stripping means to insure stripping of the tabs and wrapper as an entity from said roll.

29. Wrapper coating mechanism comprising an adhesive coated member, means to feed a wrapper into engagement therewith, means to apply tabs to said member for application to a wrapper, means to transport the tabbed, coated wrapper comprising pivoted structure terminating adjacent said member, means to strip the tabbed, coated wrapper from said member and to effect its engagement with said transporting means, and a member carried by said pivoted structure normally positioned adjacent said adhesive coated member to insure stripping of the tabs and wrapper therefrom as an entity.

30. A unit mechanism for attachment to a wrapper feeding and coating mechanism comprising side frames adapted to be secured to said latter mechanism, structure bridging said frames and pivotally mounted on one thereof, and tab strip feeding and cutting units mounted on said structure and movable therewith.

31. A unit mechanism for attachment to a wrapper feeding and coating mechanism comprising side frames adapted to be secured to said latter mechanism, structure bridging said frames and pivotally mounted on one thereof, tab strip feeding and cutting units mounted on said structure and movable therewith, and means to adjust the spacing of said units carried by and movable with said bridging structure.

32. Tabbing mechanism comprising side frames, means to maintain said frames in proper spaced relation, a member pivotally supported to one of said frames and adapted to be moved into and out of engagement with the other of said frames, means to lock said member in engagement with said other of said frames, and tab strip feeding and cutting mechanism mounted on said member and movable therewith.

33. Tabbing mechanism comprising side frames, a member bridging said frames and pivotally supported by one thereof, tab-strip cutting and feeding mechanism mounted on said member and movable therewith, and driving means therefor including cooperating elements carried by said bridging member and side frame structure respectively.

ERNEST G. RIDER.