A. DARVAS.

MACHINE FOR MAKING PAPER BAGS AND THE LIKE.

APPLICATION FILED MAR. 10, 1906.

931,041. Patented Aug. 17, 1909.

2 SHEETS—SHEET 1.

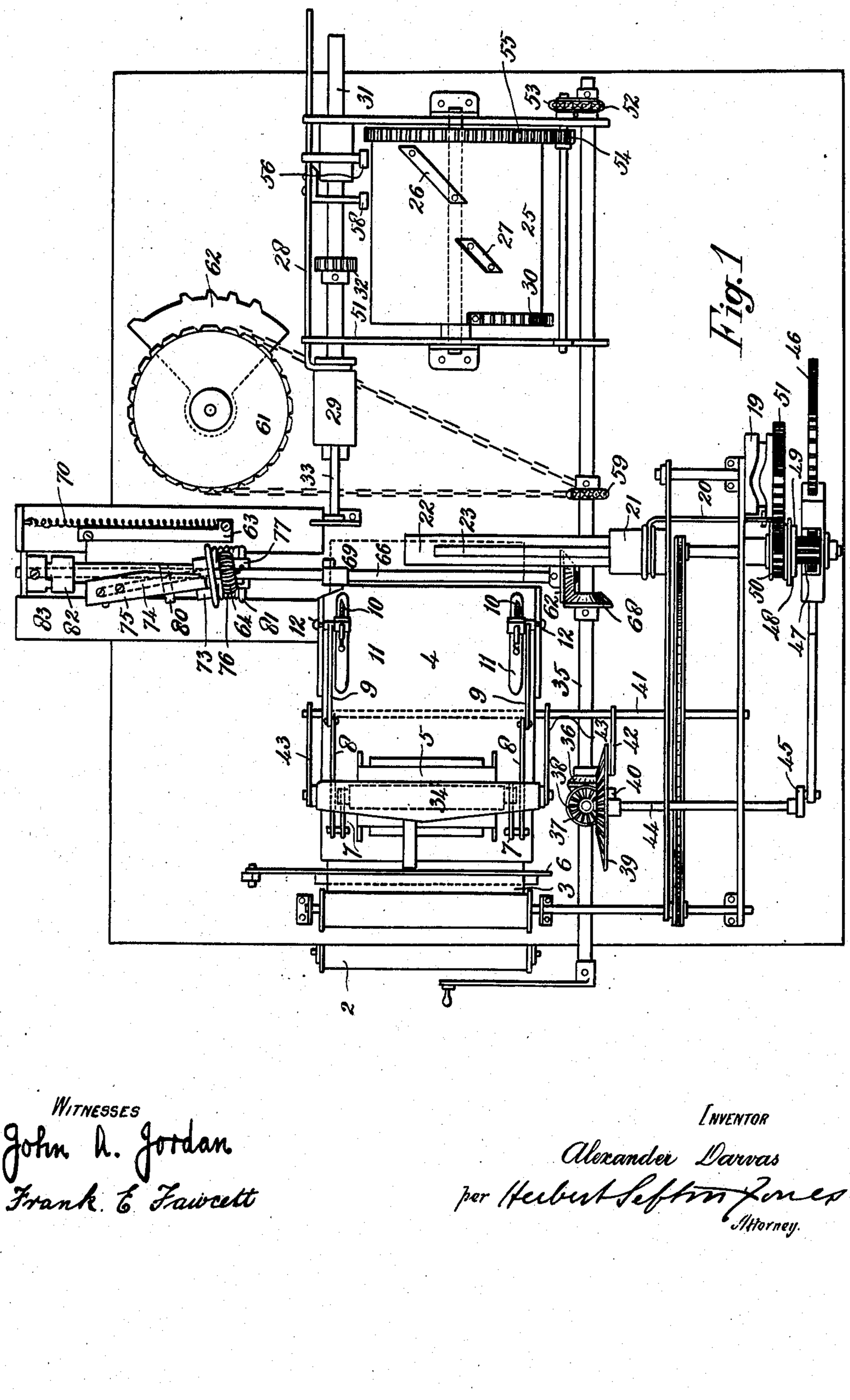

Fig. 1

WITNESSES

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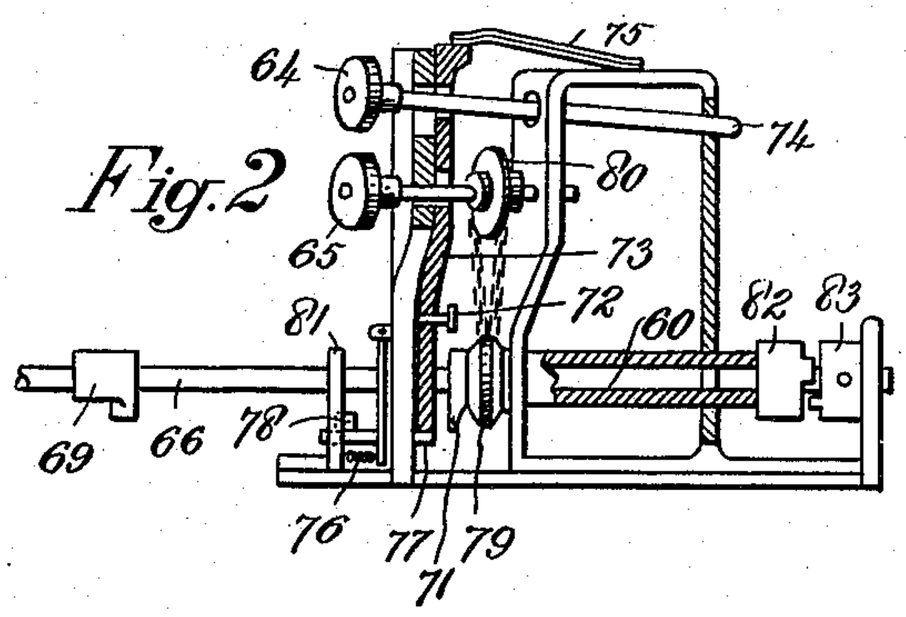
2 SHEETS—SHEET 2.

Fig. 2



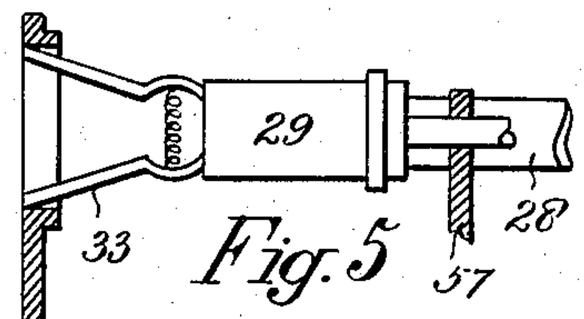


Fig. 5

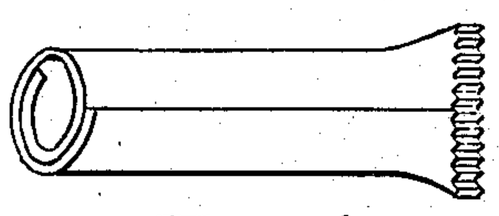


Fig. 4

Fig. 3

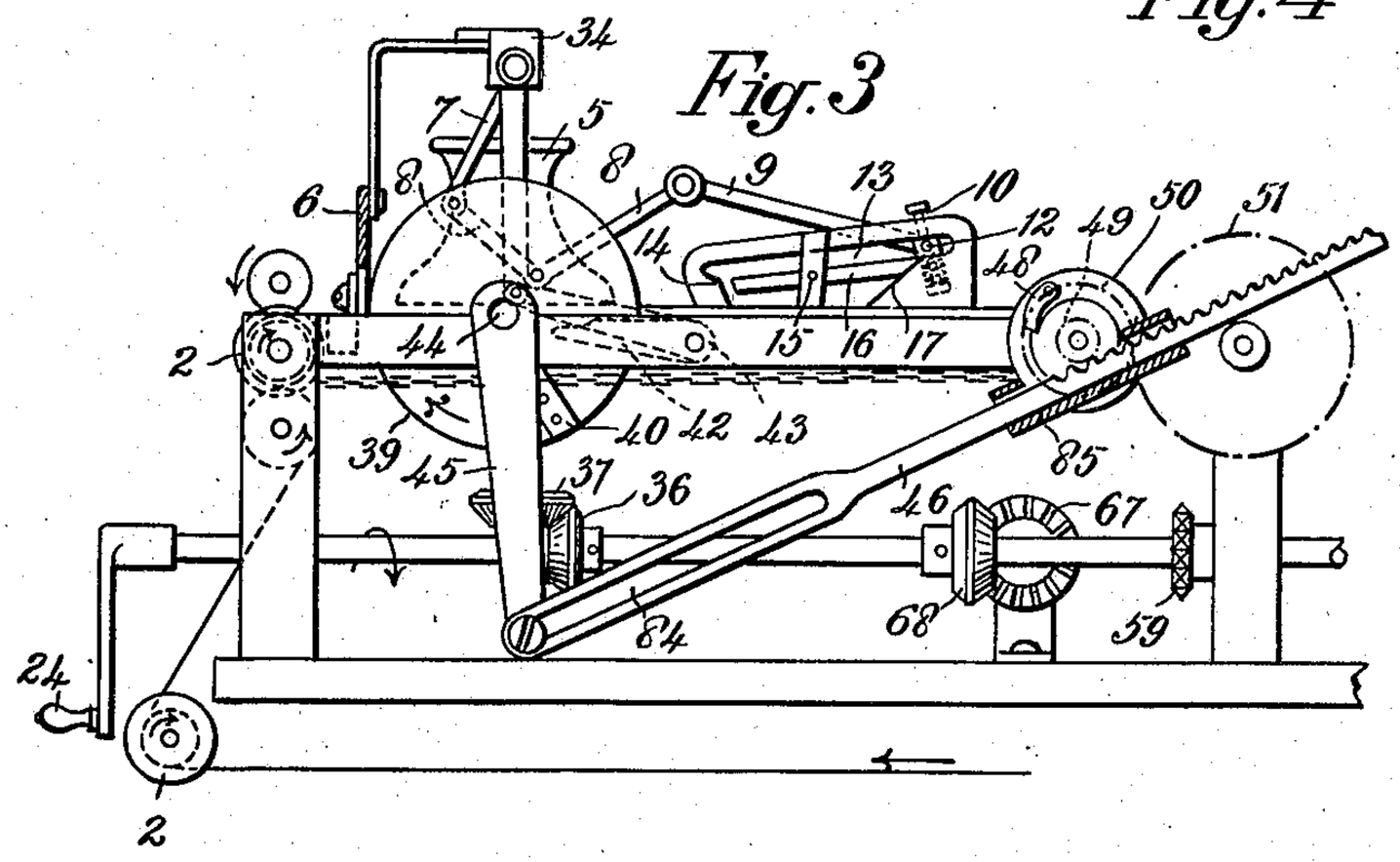


Fig. 6

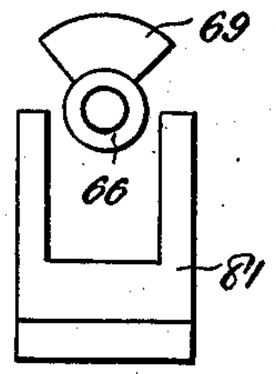


Fig. 8

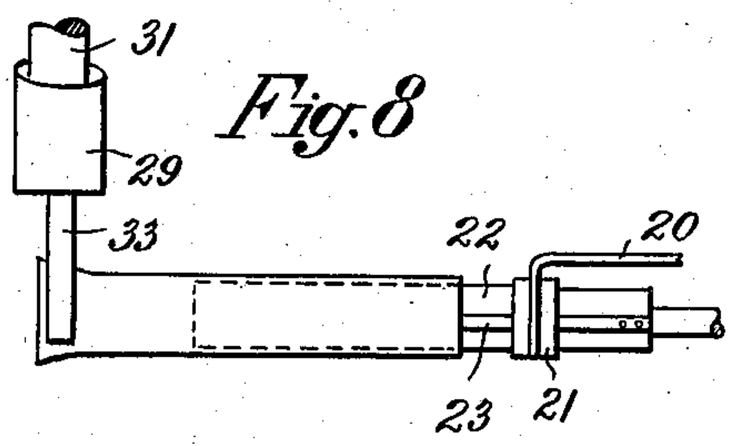


Fig. 7

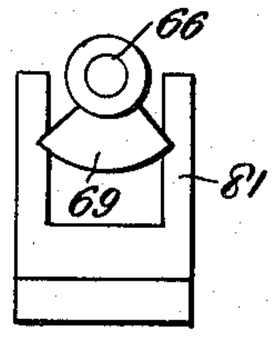
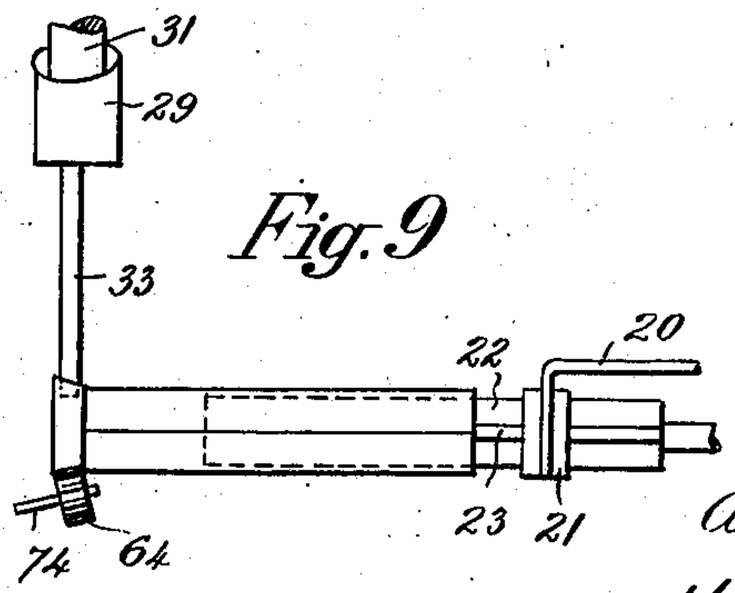


Fig. 9



WITNESSES

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UNITED STATES PATENT OFFICE.

ALEXANDER DARVAS, OF BUDAPEST, AUSTRIA-HUNGARY.

MACHINE FOR MAKING PAPER BAGS AND THE LIKE.

No. 931,041. Specification of Letters Patent. Patented Aug. 17, 1909.

Application filed March 10, 1906. Serial No. 305,306.

To all whom it may concern:

Be it known that I, ALEXANDER DARVAS, a subject of the King of Hungary, residing at 38 Csömöriut, Budapest, in the Empire of Austria-Hungary, have invented a new and useful Improved Machine for Making Paper Bags and the Like, of which the following is a specification.

This invention relates to a machine for making paper bags by cutting off rectangular blanks from a continuous strip of paper, rolling the blank into a tube and folding over one end of the tube, which is then crimped in folds parallel to the tube axis, whereby the bag is secured against unfolding even without the use of gum or other cementing material.

The drawings illustrate the invention as follows:

Figure 1 shows a plan view. Fig. 2 a side elevation and partial section through the folding and crimping device. Fig. 3 a portion of the machine in side elevation. Fig. 4 a finished bag in perspective. Fig. 5 is a separate representation of a portion of the machine partly in section. Figs. 6–9 show details of the machine on an enlarged scale.

The paper feed rolls 2 pass the strip 3 under the paper press 5 on the table 4. The blank is then cut off by the rising and falling knife 6. Forwarding arms 9 with pivoted pins 10 provided with needle points and spring action then catch the blank and push it forward; these pins rise at the end of their course and return to the initial position. This forward motion pushes the paper blanks over the winder 22. The arms 9 receive their motion from the levers 7, 8 connected to the pressure device. The pressure device is moved down by means of a projection 40 fixed upon the shaft 44 of the machine pressing against the arm 42 of a shaft 41 upon which the arms 43 are placed, which arms are articulated to the press 5. The shaft 44 receives motion through the gearing 36, 37, 38, 39 from the main shaft 35, whereby the wheel 39 of the shaft 44 may be used as the carrier of the projection 40. The end of the arm 9 bearing the pins 10 slides by means of a cross bar 12 in a guiding slot 13, which is divided into an upper and a lower track. The end of each lever arm 9 bears a pin 10 (Fig. 2) which pin is surrounded by a spiral spring. These pins slide by means of their pivots 12 in guide slots constructed as follows: upon the pivot 15 there revolves a tongue 16, which divides the aforesaid guide slot into an upper part and an under part. Let us assume that the pivot 12 and with it the pin 10 has arrived at the left end of the guide. The pivot and with it the pin, which has in the meantime engaged with its point the cut-off paper sheet, now moves in the lower guide to the right and carries the paper sheet with it. At the end of the lower guide there is placed an inclined plane 17. When the pivot 12 arrives at this inclined plane 17, it is lifted from the paper sheet 3, and the plane 17 guides the pivot and the pin 10 with it into the upper part 13, the tongue 16 being moved aside. The pivot then moves backward in the part 13. This return motion of the pivot 12 and the pin 10 is effected by means of springs (not shown) actuating the stamping device which moves with it the lever system 7, 8, 9 and the pivot 12. From the upper guide slot 13, the pivot 12 arrives at the point marked 14 in the drawing and descends again to the lower slot underneath the part 16.

The winder 22 connected to the supply table 4 does not extend over the entire width of the supply table, so that only a part of the paper blank finds support upon the winder 22. On the winder is fixed a spring tongue 23 which on the advance of the blank projects from the winder. As soon, however, as the winding motion of the winder is commenced, an axially displaceable sleeve 21 on the winder 22 depresses the tongue 23, so that the end of the paper blank resting upon the winder 22 is held fast between the same and the tongue 23. The winder has a limited motion which is communicated from the shaft 44. Upon this shaft as may be seen in Figs. 1 to 3 there is placed a crank 45, which engages in the slot 84 of a toothed rack 46. The guide piece 85 which serves to support the rack 46 oscillates on the axle of the winder 22. On this axle is placed loose a gear wheel 47 which is connected to the one part of a coupling. The other part of the coupling is fixed upon the axle of the winder 22. The coupling can be formed of the parts 48, 49.

The shaft 47 is rotated only while the shaft 44 is moving through one-fourth of each of its revolutions, the slot 84 and pawl 48 allowing the shaft 47 to remain stationary while the shaft 44 moves through the remaining three-fourths of each revolution. The sleeve 21 pressing the tongue 23 upon

the winder 22 receives the necessary axial motion by means of a grooved drum 19 which is revolved by means of wheels 50, 51 from the axle of the winder 22. The transmission from the grooved drum 19 to the sleeve 21 takes place by means of a rod 20 supported on the frame. At the same height as the winder 22 but standing at a right angle to it and to the free end of the paper blank there is a clamp 33 fixed on the machine which moves to and fro, opens and closes, and moreover can be revolved on its own axis. The motions are effected by means of a drum 25 which is revolved by means of the chain gearing 52, 53 and the wheel gearing 54, 55 from the main shaft 35. Upon the periphery of the drum are arranged several curved cams, of which Fig. 1 shows two. The cam 26 acts upon the roller 56 which is supported on an arm placed loose upon the axle 31 but prevented from being displaced and surrounding in the form of a fork a bar 28. The cam 26 can therefore push the axle 31 out of the position illustrated in Fig. 1 to the left, and moreover the displacement is so great that the one arm of the clip 33 comes to lie above and the other arm beneath the free end of the paper tube presented by the winder. At the same time then the toothed wheel 32 of the axle 31 stands over against a toothed segment 30 of the drum 25. The bar 28 guided in the machine frame which serves as propeller for the box 29 displaceable upon the shaft 31 takes part in the motion of the shaft 31 because it rests against a projection of the shaft 31 by means of a cross arm of the bar 28 which is provided with a roller 58. As soon, however, as the shaft 31 has completed its forward motion, the rod 28 continues the motion in the same direction because in the meantime the roller 58 is influenced by the cam 27 of the drum 25. The displacement of the rod 28 has for a result that the box 29 moves the limbs of the clip 33 toward one another and the clip is consequently closed. At this time the toothed wheel 32 engages with the toothed segment 30 of the drum 25, whereby the axle 31 is caused to make a certain number of revolutions. The open clamp is guided in a slot (Fig. 5) of the machine frame, so that a turning of the axle 31 is prevented as long as the clip is not closed.

For the return motion of the clip 33 and its closing motion, the drum 25 is likewise provided with cams which in Fig. 1 lie upon the underside of the drum. Upon the side opposite to the winder 22 but in the direction of motion of the paper strip somewhat behind with regard to the winder, is placed a press or crimping device. This is illustrated in Figs. 1 and 2 in the form of a pair of rollers 64, 65 which are pressed upon one another by means of a strong spring 75. In the drawings toothed or grooved rollers are shown. These can be arranged somewhat sloping with regard to the transverse axis of the machine as shown in Fig. 1. The lower roller is firmly supported and the upper roller or its axle 74 is supported in slots of the bearing frame and under the influence of the aforesaid spring by means of the piece 73. This latter can be raised by means of a projection 71 operated by the continuously revolved shaft 66 from the main shaft by means of the wheels 67, 68. For this purpose the support is provided above the projection with a roller 72. In the raised position the support is bolted by means of a bolt 77 which is hinged to the bearing frame and is propelled by the influence of the spring 76 as soon as the piece 73 is raised so that the bolt can engage beneath it.

The crimping device is constructed as a slide and can be moved forward on the winder. A spring 70 strives constantly to bring this slide into the position shown in Fig. 1. Only in this withdrawn position can the pair of rolls 64, 65 be caused to revolve because a coupling block 83 fixed upon the shaft 66 engages with the corresponding coupling block 82 fixed on a hollow shaft 60 and a chain gearing 79, 80 forming the driving gear for the pair of rollers 64, 65. The advance motion of the crimping device is effected by means of a toothed segment 62 which is turned by the chain gearing 59, 61 from the main shaft 35, and comes from time to time into engagement with the bar 63 fixed on the crimping device.

The crimping device when brought forward is fastened by means of a bolt 69 fixed upon the shaft 66 (Fig. 2) which on the forward motion of the crimping device can pass behind between a fork 81 placed on the crimping device and the fork 81 can engage with or bolt the crimping device as soon as the toothed segment 62 is in the act of releasing the last tooth of the bar 63. The bolt 69 is arranged to encounter a projection on the locking pin 77; consequently the bolt 69 after bolting the crimping device, withdraws the part 77 and thereby releases the upper roller 64 held in the raised position, before the return of the crimping device under the action of the spring 70.

The bag is produced as follows: In consequence of the one sided arrangement of the winder in front of the supply table 4 only one half of the paper strip projected by means of the part 10 is laid upon the winder 22. Thereupon the sleeve 21 is displaced axially, the spring 23 is pressed down and the paper strip is held firmly upon the winder 22. Immediately after this the winder 22 is set in motion and rolls the paper together into a tube. Even before the end of this winding motion the sleeve 21

moves back again so that the spring 23 can release the innermost paper winding and the subsequent removal of the paper tube from the winder is not obstructed. In the meantime the clip 33 has moved forward and the box 29 which operates the closing of the clip follows, so that the clip is closed and presses flat the end of the paper tube. Hereupon the clip 33 remaining in the closed position receives its motion of revolution so that it withdraws the paper tube to the extent required from the winder and turns in or folds in the clamped end of the paper tube. Meanwhile the opened press formed by the pair of rolls 64, 65 has moved forward and is secured in this position by means of the bolt 69 upon the shaft 66. While the locking pin 77 holding the roller 64 in the raised position is being drawn back, the box 29 is also withdrawn by means of a corresponding curved cam on the drum 25, so as to release the arms of the clip 33. By aid of another curved cam upon the drum 25 the backward motion of the clip 33 is also effected. Hereupon the press 64, 65 closes and seizes the corner of the folded end of the paper tube and withdraws the latter as soon as the clip 33 has moved back sufficiently far from the winder 22 and is itself coupled with the shaft 66 (Fig. 1) so that the end of the paper tube is passed between the rolls throughout its entire width and consequently the fold is thoroughly pressed together or crimped.

As in the illustrated construction, the pressing rolls are grooved and so that the grooves of both rods engage one in the other, the bag formed will have the fold closing the one end waved or crimped transversely to the direction of the fold. If the crimping rollers 64, 65 moreover are placed as shown somewhat at an angle to the transverse axis of the machine, then there is obtained a radially widening crimping of the folded ends as illustrated in Fig. 4.

The above described operation is repeated without interruption as long as the main shaft 35 is kept in motion by means of the crank handle 24.

If in special cases it is desired to gum or cement the outer end of the tubular receptacle, then there may be applied to the periphery of the winder a gumming mechanism of the well known kind.

In the above described construction it is assumed that bags or envelops of cylindrical form are required, but the operation can be equally well carried out with bags of other sections such as prismatic or tapering bags by means of a corresponding formation of the winder 22.

What I claim is:

1. In a machine for making bags from flat paper blanks in combination a feed mechanism, a solid cylindrical winder adapted to engage the paper blank from the feed mechanism, a movable spring tongue adapted to press the blank upon the winder, a spring clip, mechanism for compressing the said clip upon the free end of the rolled paper blank, mechanism for rotating the said clip during its engagement with the blank, and roller mechanism adapted to engage the clipped end of the rolled paper blank and to crimp it in folds approximately parallel to its axis.

2. In a machine for making paper bags from flat paper blanks, in combination a feed mechanism, a solid cylindrical winder adapted to engage one side of the paper blank from the feed mechanism, means for pressing the paper upon the winder, the shaft 44 adapted to transmit rotary motion, the crank 45 on the end of said shaft and rotating with it, a pin on the end of said crank, the slotted bar 46 adapted to receive motion at intervals from the said pin moving in the slot 84, a toothed rack on said slotted bar, an oscillatory support 85 for said bar, a pinion on the end of the winder adapted to mesh with said rack, and means for closing the end of the paper blank.

3. In a machine for making bags from flat paper blanks, a feed mechanism for the paper blank, the winder 22, mechanism adapted to coöperate with the said winder for coiling the blank into tubular form, the clip 33 operating at right angles to the axle of the winder, mechanism for opening the jaws of the said clip, mechanism for closing the said clip upon the free end of the rolled paper blank, mechanism for rotating the said clip for the purpose of folding the blank, and mechanism for crimping the fold of the blank, substantially as set forth.

4. In a machine for making bags from flat paper blanks, in combination a paper feed mechanism, a winder mechanism adapted to coil the paper blank into a tube, rotatable means for compressing and folding over one end of the said tube, the pair of rollers 64, 65, and mechanism for operating the said rollers to crimp the compressed end of the said tube, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALEXANDER DARVAS.

Witnesses:

ERNEST MELLER,

F. A. MALLETT.