H. N. GRISSINGER

PAPER STRIP FEEDING MECHANISM.

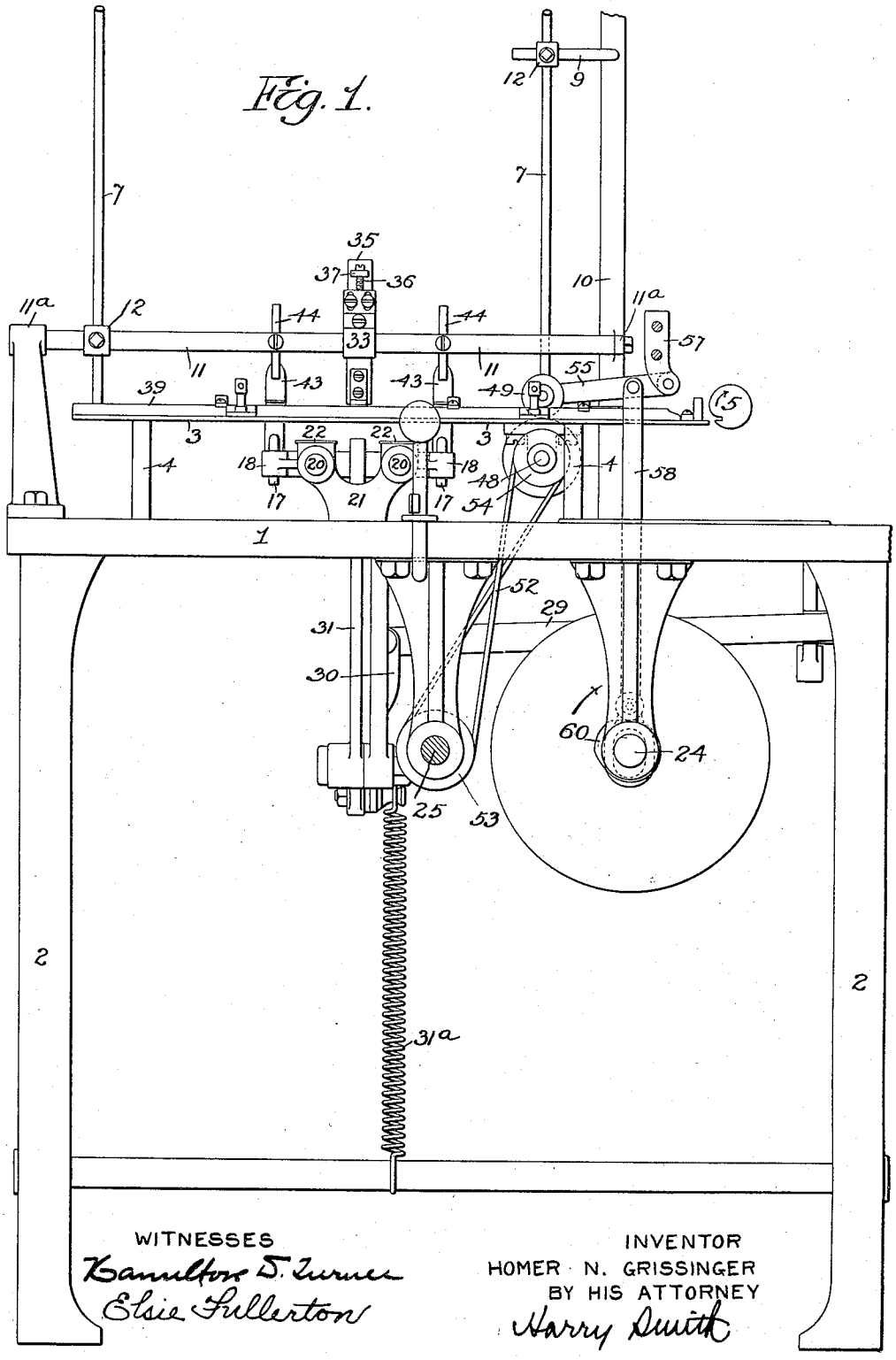
APPLICATION FILED MAY 28, 1913.

1,149,752.

Patented Aug. 10, 1915.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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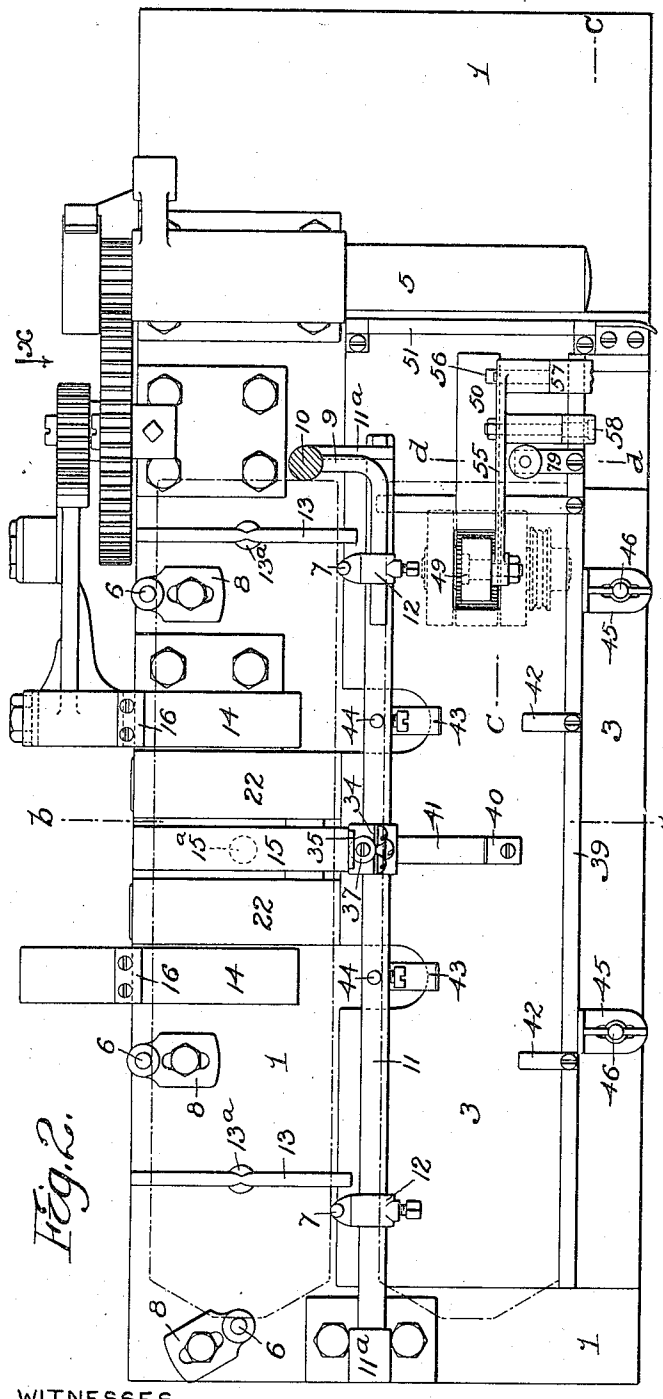


Fig. 2.

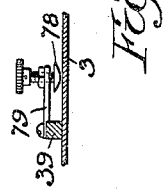


Fig. 6.

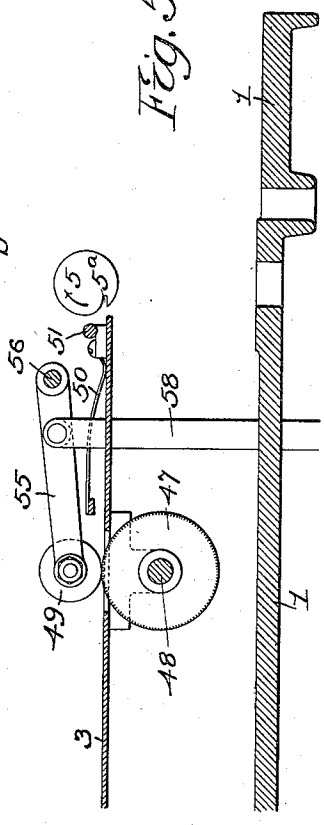


Fig. 5.

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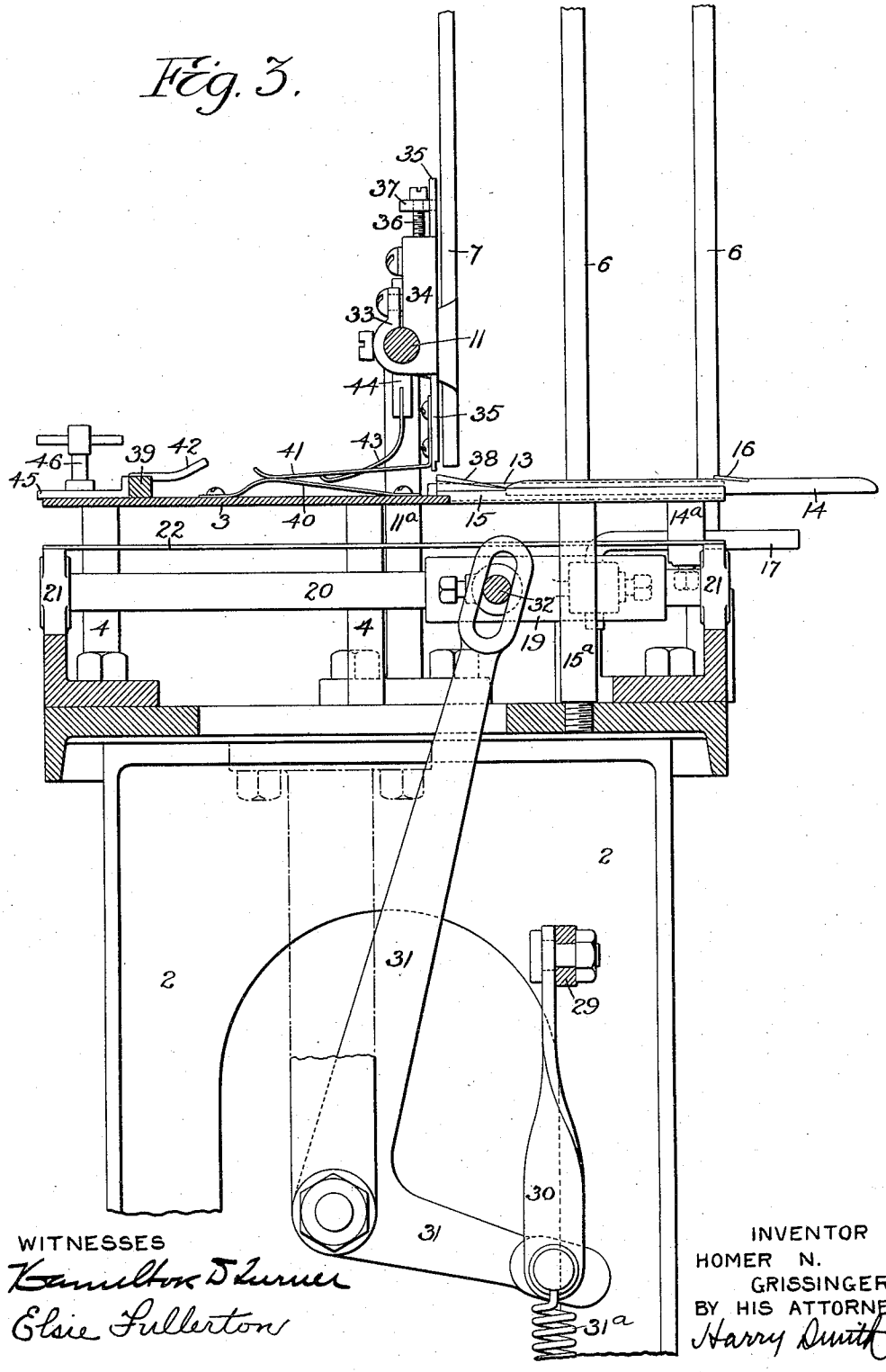
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 7.

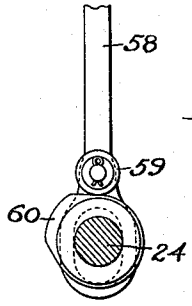
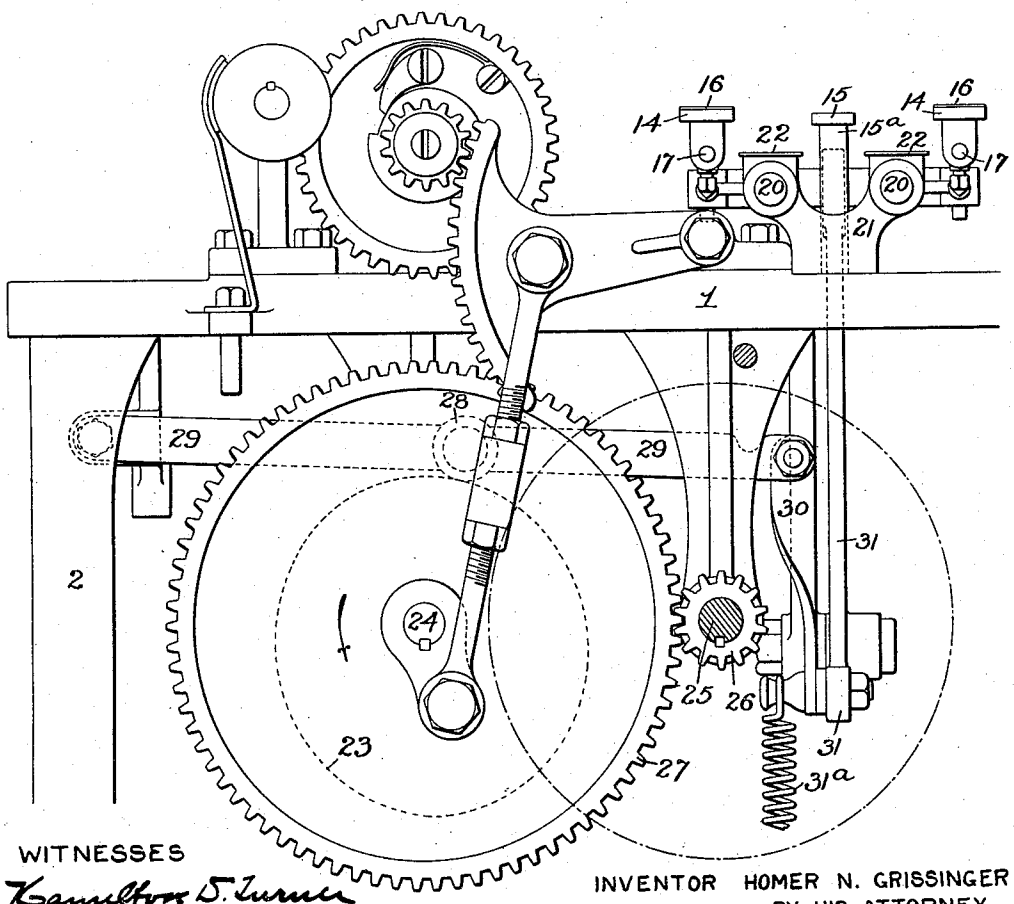


Fig. 4.



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HOMER N. GRISSINGER, OF PHILADELPHIA, PENNSYLVANIA.

PAPER-STRIP-FEEDING MECHANISM.

1,149,752. Specification of Letters Patent. **Patented Aug. 10, 1915.**

Original application filed April 13, 1912, Serial No. 690,644. Divided and this application filed May 28, 1913. Serial No. 770,324.

To all whom it may concern:

Be it known that I, HOMER N. GRISSINGER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Paper Strip-Feeding Mechanism, (a division of my application Serial No. 690,644, filed April 13, 1912,) of which the following is a specification.

The object of my invention is to provide mechanism for quickly and accurately feeding strips of paper to a winding or equivalent device, an object which I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a tube-forming machine constructed in accordance with my invention; Fig. 2 is a plan view of the same; Fig. 3 is a transverse section, on an enlarged scale, on the line *b*—*b*, Fig. 2; Fig. 4 is a side view of part of the machine looking in the direction of the arrow *x*, Fig. 2; Fig. 5 is a longitudinal section on the line *c*—*c*, Fig. 2, showing in elevation the winding mandrel and certain elements of the paper feeding mechanism; Fig. 6 is a transverse section of part of the machine on the line *d*—*d*, Fig. 2, and Fig. 7 is a view, partly in transverse section and partly in elevation, of the mechanism employed for raising and lowering one of the feed rolls of the machine.

In the drawings, 1 represents the main table or bed of the machine mounted upon suitable legs 2, and 3 is another table supported above the table 1 upon suitable posts 4 and serving for the support and guidance of the strips of paper from which the tubes are to be made, 5 representing the mandrel upon which the strips of paper are wound in order to produce the tubes.

The strips of paper are of such width as to produce a tube of the desired length and said strips are also of such length as to provide the desired number of plies in said tube. A stack of these strips is deposited in an open cage consisting of vertical posts 6 and 7, the posts 6 being mounted upon the table 1, preferably by means of slotted feet 8 which permit of adjustment of the posts to accommodate variations in the width and length of the strips, one of the posts 7 being mounted on a bent arm 9 projecting from a post 10 on the table 1 and the other of the said posts 7 being mounted upon a rod 11 which is mounted at each end upon suitable supports 11^a projecting upwardly from the table 1, as shown in Figs. 1 and 2, these latter posts being, by preference, mounted so as to be adjustable from and toward each other upon their respective supports, as for instance by means of sleeves 12 which can be secured in position after adjustment by means of suitable set screws.

The stack of paper strips is supported upon bars 13 (Figs. 2 and 4) and upon plates 14 and 15, the bars 13 being supported upon posts 13^a and the plate 15 upon a post 15^a, which posts project upwardly from the table 1, as shown in Fig. 3. Each of the plates 14 has a pusher tongue 16 for engaging the lower strip of the stack and pushing it laterally onto the table 3, and each of these plates is mounted by means of a post 14^a upon a bent rod 17 mounted so as to be adjustable vertically in a stud 18, projecting from a sliding head 19 which is mounted so as to be movable laterally on transverse rods 20, each of these rods being carried, at each end, by a member of a forked bearing 21 on the table 1, said forked bearing also carrying plates 22 disposed above the rods 20 and serving to protect the latter from dust or other foreign matters which might otherwise fall upon them from the stack of strips or from the mechanism above the rods, and which would interfere with the free sliding movement of the heads 19. (See Figs. 1 and 3.) Laterally reciprocating motion is imparted to the heads 19 and thence to the sliding plates 14 by means of a cam 23 (see dotted lines Fig. 4) this cam being mounted upon a shaft 24, and this shaft being mounted in suitable bearings below the table 1 and being driven from the main driving shaft 25 by means of a spur pinion 26 on the latter shaft meshing with a spur wheel 27 on the shaft 24, as shown in Fig. 4. The cam 23 acts upon an anti-friction roller 28 (see dotted lines Fig. 4) carried by an arm 29 which is pivoted at one end to a fixed support at one end of the machine, and is connected at its other end by means of a twisted link 30 to one arm of a bell crank lever 31, the latter lever being also mounted upon a fixed support on the main frame and its other arm being slotted at the upper end for engagement with a rod 32 which connects the sliding heads 19, as shown in Fig. 3. A

spring 31ª tends to move the lever 31 in a direction opposed to that in which it is moved by the action of the cam 23.

Mounted upon the rod 11, as by means of a clamp 33, is a head 34 in which is vertically guided a plate 35 (Fig. 3) which can be adjusted vertically by means of an adjusting screw 36 carried by the head 34 and bearing upon a collar 37 which engages a slot in the plate 35, as shown in Figs. 2 and 3, whereby the lower end of the plate 35 can be depressed so as to bear such relation to an inclined lug 38 (Fig. 3) at the inner end of the plate 15 as to accord with the thickness of a single strip of paper, thereby preventing the projection of more than one strip at a time from the pile or stack. The lowermost strip of the pile or stack is thus pushed laterally forward over the table 3 until its outer edge comes in contact with a stop bar 39 on said table, the strip in its forward passage passing between a pair of springs 40 and 41, the former being secured to the table 3 and the spring 41 being secured to the lower portion of the plate 35, as shown in Fig. 3. These springs thus exert such friction upon the selected strip as to prevent backward movement of the same with the sliding plates 14 and also to hold it in its proper longitudinal position. As the front edge of the strip approaches the stop bar 39 it is deflected by means of bent fingers 42 on said bar so as to be sure to contact therewith, the strip being thereby properly positioned upon the table 3 for being subsequently fed forward in the direction of its length for engagement with the winding mandrel 5. As the strip is fed laterally over the table 3 its upper face is also acted upon by springs 43 carried by posts 44 which pass through openings in the rod 11 and are adjustable vertically therein so as to determine the position of the springs 43 in respect to the strip, each post being secured in position after adjustment by a suitable set screw. As the strips may vary slightly in width the stop bar 39 is adjustable laterally on the table 3, said bar being carried by slotted feet 45 which can be secured to the table 3 by means of suitable clamp screws 46. The feeding of the successive strips forwardly, or in the direction of their length, to the mandrel 5, is effected by means shown in Figs. 1, 2, 5, 6 and 7, said feeding device comprising a roller 47 carried by a shaft 48 mounted in suitable bearings below the table 3, the roller 47 having a knurled or roughened surface so as to increase its hold upon the strip, which is pressed into contact with said roller 47 by means of a presser roll 49 bearing upon the top of the strip. As the strip is fed forward by the rollers 47 and 49 it passes under a spring plate 50 above the table 3, and is thereby held down in contact with the table so that its forward edge will enter a slot 5ª in the mandrel 5, as shown in Fig. 5. During the winding of the paper strip around the mandrel said strip bears against a bar 51 which crosses the table 3 near the front end of the same and occupies a position slightly above the table, as shown in Fig. 5.

The roller 47 is continuously rotated from the main shaft 25 as by means of a belt 52 adapted to pulleys 53 and 54 on the main shaft 25 and roller shaft 48 respectively, as shown in Fig. 1, but during the time that the paper strip is being fed transversely onto the table 3 and over the roller 47 the latter has no driving action upon the strip, the roller being in driving relation with said strip only when the latter is pressed down upon the surface of the roller by the presser roll 49, which is alternately raised and lowered so as to render the roller 47 operative for feeding purposes only after the paper strip has first been properly positioned upon the table 3 by means of the devices before described.

In order to effect the desired raising and lowering of the presser roller 49 the same is mounted so as to be free to turn in the free end of an arm 55 which is mounted upon a fixed stud 56 carried by a suitably mounted bearing 57, as shown in Figs. 1 and 2. To the arm 55 is connected the upper end of a bar 58, which is forked at its lower end, as shown in Fig. 7, so as to embrace the shaft 24, the bar carrying an anti-friction roller 59 which is acted upon by a cam 60 on said shaft 24 so as to impart the desired rising and falling movements to the roller 49 at the proper time.

If, from any mischance, more than one strip of paper is fed onto the table 3 from the stack the forward feed of said plurality of strips to the winding mandrel will be prevented by means of a stop button 78 which is mounted so as to be vertically adjustable in an arm 79 projecting laterally from the stop bar 39, as shown in Figs. 2 and 6, this button serving to permit the passage of a single strip of paper but preventing the passage of the upper strip if there is more than one.

I claim:

1. The combination, in a paper strip feeding machine, of two sets of feeding devices, one operating to feed the strip transversely and the other to feed said strip longitudinally in a direction at right angles to that of the first, said transverse feeding mechanism comprising a reciprocating pusher for removing strips in succession from the bottom of a pile and said longitudinal feeding mechanism comprising a pair of feed rollers, means for rotating one of them and means for separating said feed rollers at intervals while the strip is being passed sidewise between them.

2. In a paper strip feeding machine, the combination of means for feeding strips of paper longitudinally, and means for transversely feeding successive strips of paper from a pile into position for engagement by said longitudinal feeding devices, said transverse feeding devices having, as elements, laterally sliding pushers and an interposed supporting plate having a raised lug at its delivery end.

3. In a paper strip feeding machine, the combination of means for feeding strips of paper longitudinally, and means for transversely feeding successive strips of paper from a pile into position for engagement by said longitudinal feeding devices, said transverse feeding devices having, as elements, laterally sliding pushers, an interposed plate having a raised lug at its delivery end, and a check plate bearing such relation to said lug that only a single strip of paper can pass between the same.

4. In a paper strip feeding machine, the combination of means for feeding strips of paper longitudinally, and means for transversely feeding successive strips of paper from a pile into position for engagement by said longitudinal feeding devices, said transverse feeding devices having, as elements, a pusher slide, a pair of spring retainers between which the strip of paper is caused to pass during its transverse movement, and a stop bar for limiting the transverse movement of the strip.

5. In a paper strip feeding machine, the combination of means for feeding strips of paper longitudinally, and means for transversely feeding successive strips of paper from a pile into position for engagement by said longitudinal feeding devices, said transverse feeding devices having, as elements, a pusher slide, a pair of spring retainers between which the strip of paper is caused to pass during its transverse movement, and a stop bar for limiting the transverse movement of the strip, said stop bar having bent fingers for depressing the edge of the strip into position to contact with the bar after the front edge of said strip has passed the spring retainers.

6. In a paper strip feeding machine, the combination of means for feeding strips of paper longitudinally, and means for transversely feeding successive strips of paper from a pile into position for engagement by said longitudinal feeding devices, said transverse feeding devices having, as elements, a pusher slide, a pair of spring retainers between which the strip of paper is caused to pass during its transverse movement, and springs for pressing upon the top of the strip on each side of said spring retainers.

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

HOMER N. GRISSINGER.

Witnesses:
KATE A. BEADLE,
HAMILTON D. TURNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."