

J. F. WILKINSON.
Machines for Making Cop-Tubes.

No. 157,953.

Patented Dec. 22, 1874.

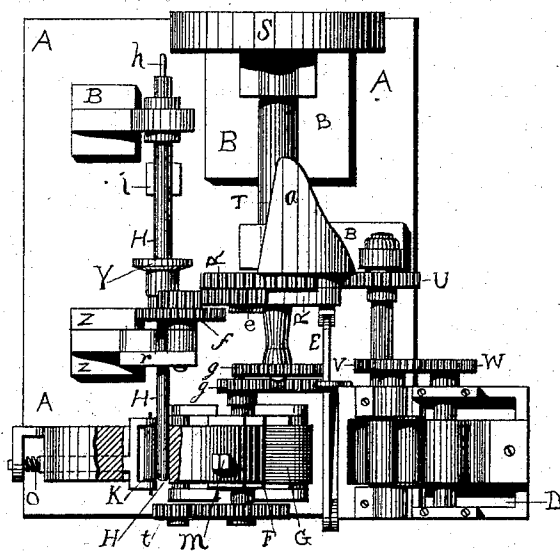


FIG. 1.

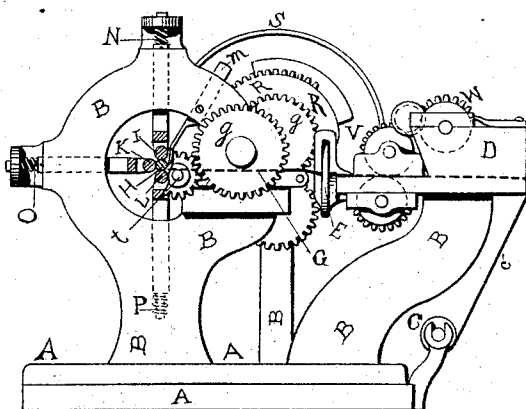


FIG. 2.

WITNESSES.

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JOHN F. WILKINSON, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM M. MARCHANT, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR MAKING COP-TUBES.

Specification forming part of Letters Patent No. **157,953**, dated December 22, 1874; application filed September 19, 1874.

To all whom it may concern:

Be it known that I, JOHN F. WILKINSON, of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain Improvements in Machinery for the Manufacture of Paper Cop-Tubes, of which said invention the following is a specification:

My said invention comprises a series of devices for receiving, gumming, and cutting the paper, for compactly rolling the same into the desired tubular form, and for throwing off the completed tubes.

The accompanying drawing is hereby made a part of this specification, similar letters of reference indicating corresponding parts.

Figure 1 of said drawing is a top view of the entire device, and Fig. 2 is an end view thereof, showing those parts in which the tube is made.

A is the base of the machine. B B and Z are the supports for the gearing and other running parts of said device. C is the roll of paper from which the cop-tubes are made, the line C' indicating the passage of the paper upward and into the gum-box. D shows said gum-box, in which one surface of the paper is gummed while passing through it. E is a lever, operated at one end by the automatic gear hereinafter described, the other end being attached to a movable knife, which, at the proper time, and in the manner hereinafter described, descends and cuts the paper into the desired lengths. F indicates a feed-rack, (somewhat hidden in the drawing by the contiguous parts,) by which, and in combination with G, an endless apron, the severed strips of paper are carried to and introduced between the end of the spindle and calendering-rolls, hereinafter described. H shows said spindle, and I K L, respectively, an upper, rear, and under calendering-roll, the end of the spindle H revolving between them. M is a shoe supporting the front of the end of the spindle, and gently pressing upon the tube while the same is being made. N O P are, respectively, an upper, rear, and under spiral spring, governing, respectively, the action upon the forming-tube of the connected calendering-rolls I K L. R is an automatic gear, which operates the entire device, and which

has the cam *a* attached to one of its sides, and the catch or projection *e* attached to the opposite side. S is the driving-pulley, and T the central shaft. U V W show the gearing, which, receiving motion at regular intervals from said automatic gear, operate the distributing-rolls in the gum-box D. Y is a shoulder on the spindle H, which is operated upon by the cam *a* at each revolution, in the manner and for the purposes hereinafter described. *f* is a set of gearing which transmits motion from the automatic gear to the spindle. *g g* are gearing connected with said automatic gear R, and which communicate motion to the feed-rack F. *t* is a gear, through which motion is communicated to the endless apron G. A weight is attached to the end *h* of said spindle by means of a cord, which passes under the bearing, and over a pulley placed at *i*. The object of said weight is to cause the spindle to return to its place after it has thrown off the completed tube, as hereinafter described. Instead of said weight a spring may be used for the same purpose. The end of said spindle, surrounded by the calendering-rolls aforesaid, I prefer to flute or groove lengthwise, to the end that air may be admitted to the interior of the tube while the latter is being made, and for the further purpose of facilitating the removal of the completed tube from the spindle.

The mode of operating the device above set forth is substantially as follows: The paper from the roll C passes up into and through the gum-box D, as seen in Fig. 2, in which box it has its upper surface evenly gummed; thence it passes under the knife or shears attached to the lever E, and onto the endless and moving apron G, on which it is carried under the feed-rack F to the spindle H. Here the gummed paper is received on and is wound around the fluted or grooved end of said spindle, the calendering-rolls I K L pressing the coils of paper closely together during the formative process of the tube. The springs N O P regulate the amount of the pressure of said calendering-rolls upon the growing tube. At the time when there has passed under the knife sufficient paper to form a tube, the said knife, being depressed by the action of the

catch *e* during the revolution of the automatic gear *R*, descends and severs the paper. By reason of intermitting the gearing on the part *R* the revolution of the gearing *U V W* stops, and the supply of paper now ceases until the severed strip has been converted into a completed tube, when the gearing again connects, and another strip of paper is furnished and severed from the roll in the manner aforesaid. At the point when the severed strip has been entirely wound around the grooved end of the spindle, thus completing the tube, the cam *a* impinges on the shoulder *Y*, and as the revolution of the part *R* continues the result is that the spindle *H*, bearing the finished tube, is carried or crowded outward. In this outward motion of said spindle the completed tube strikes against a shoulder, (seen at *r*;) on the upper part of the support *Z*, when said tube is removed from or pushed off the end of the spindle, and said tube drops into a receptacle previously prepared for it. This occurs just as the end of the cam *a* passes the shoulder *Y*, and then by the action of the weight attached to the end *h* of the spindle, as aforesaid, said spindle is immediately returned to its former place, the grooved end thereof ready to receive another strip of paper, at that instant introduced to it, as above mentioned.

An important feature of that part of the device in which the tube is formed—to wit, the

fluted or grooved end of the spindle *H* and the calendering-rolls *I K L*—is the relative size, as compared with each other, of the said parts *H I K L*. The fluted end of the spindle is made somewhat larger than the rolls *I K L*, the result sought, and thereby attained, being that the gummed paper will readily and invariably wind around the spindle instead of the rolls, as the tendency of the paper is to follow the larger surface.

The distributing-rolls in the gum-box *D* do not materially differ from similar mechanism used for spreading printer's ink, and for other similar purposes, and are not herein claimed as radically new; but

What I do claim as new, and which I desire to secure by Letters Patent, is—

1. The automatic gear *R*, having the cam *a* and catch *e*, in combination with the spindle *H* and lever *E*, all constructed in the manner and used for the purposes substantially as described and shown.

2. The combination of the spindle *H* with the calendering-rolls *I K L* and shoe *M*, all in the manner and for the purposes substantially as set forth.

JOHN F. WILKINSON.

Witnesses:

ISAAC SHOVE,

JOHN P. GREGORY.