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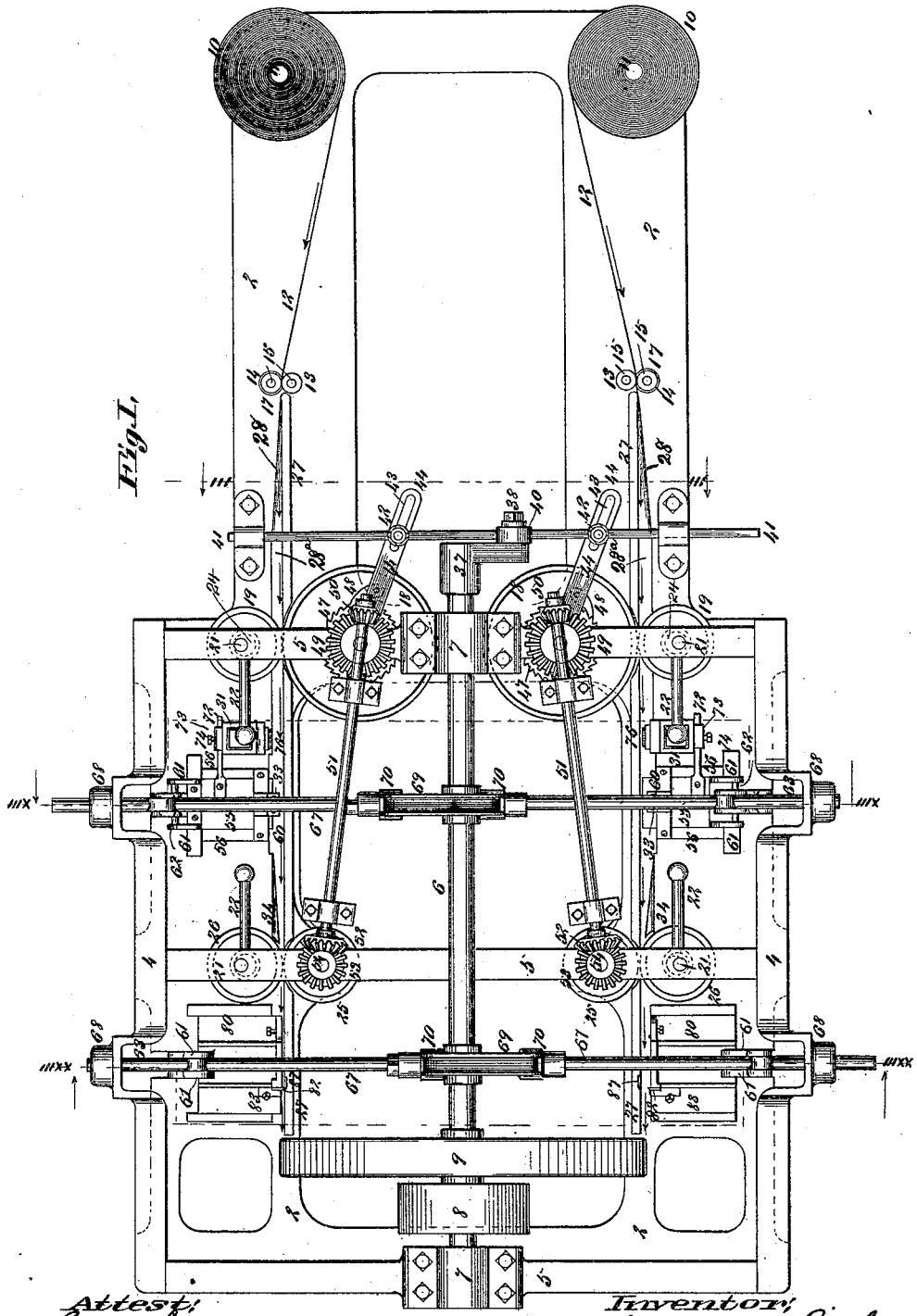
W. M. LITTLE.

TAG MACHINE.

No. 493,592. Patented Mar. 14, 1893.

Fig. 1.



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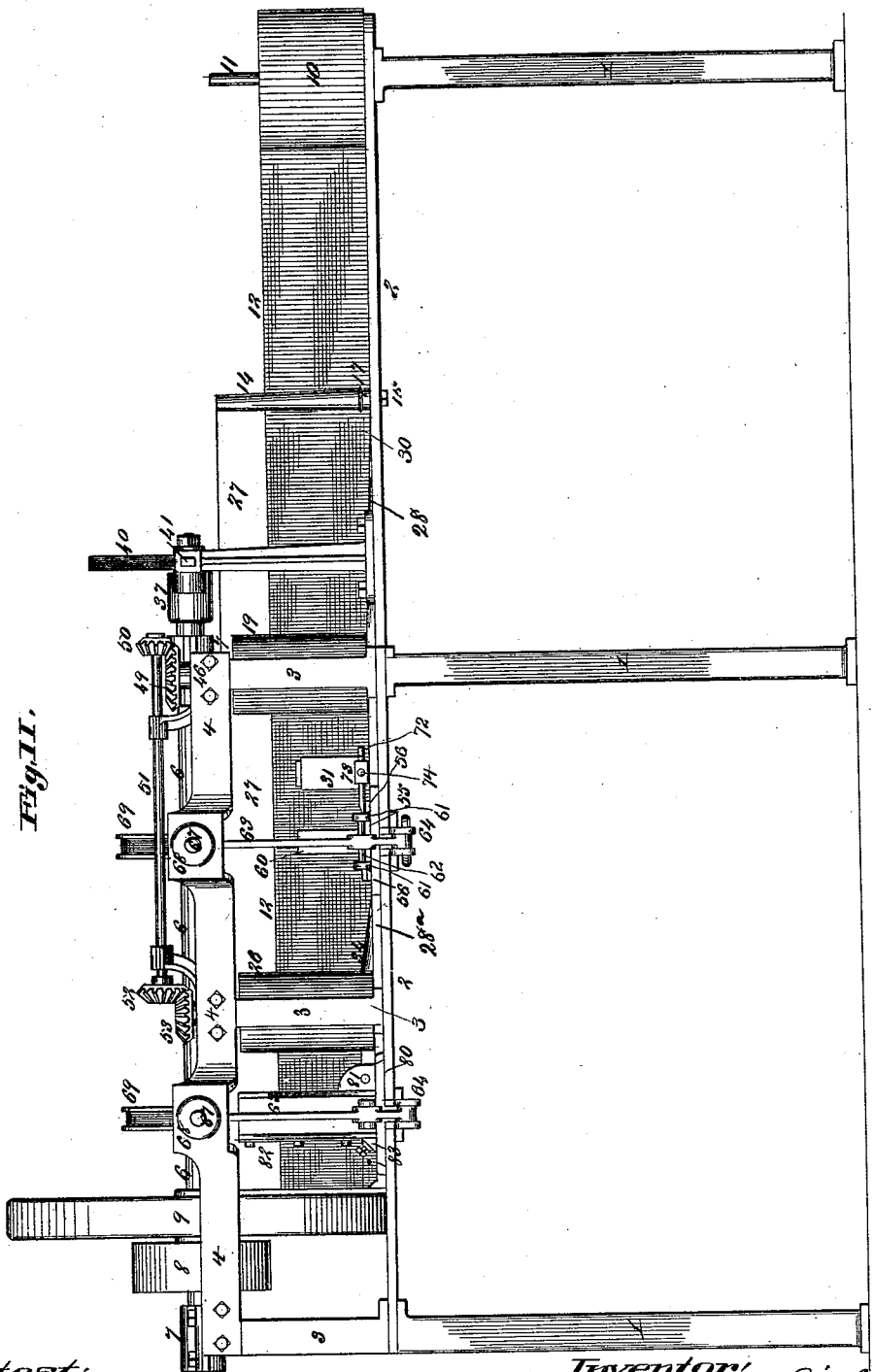

Fig. II.

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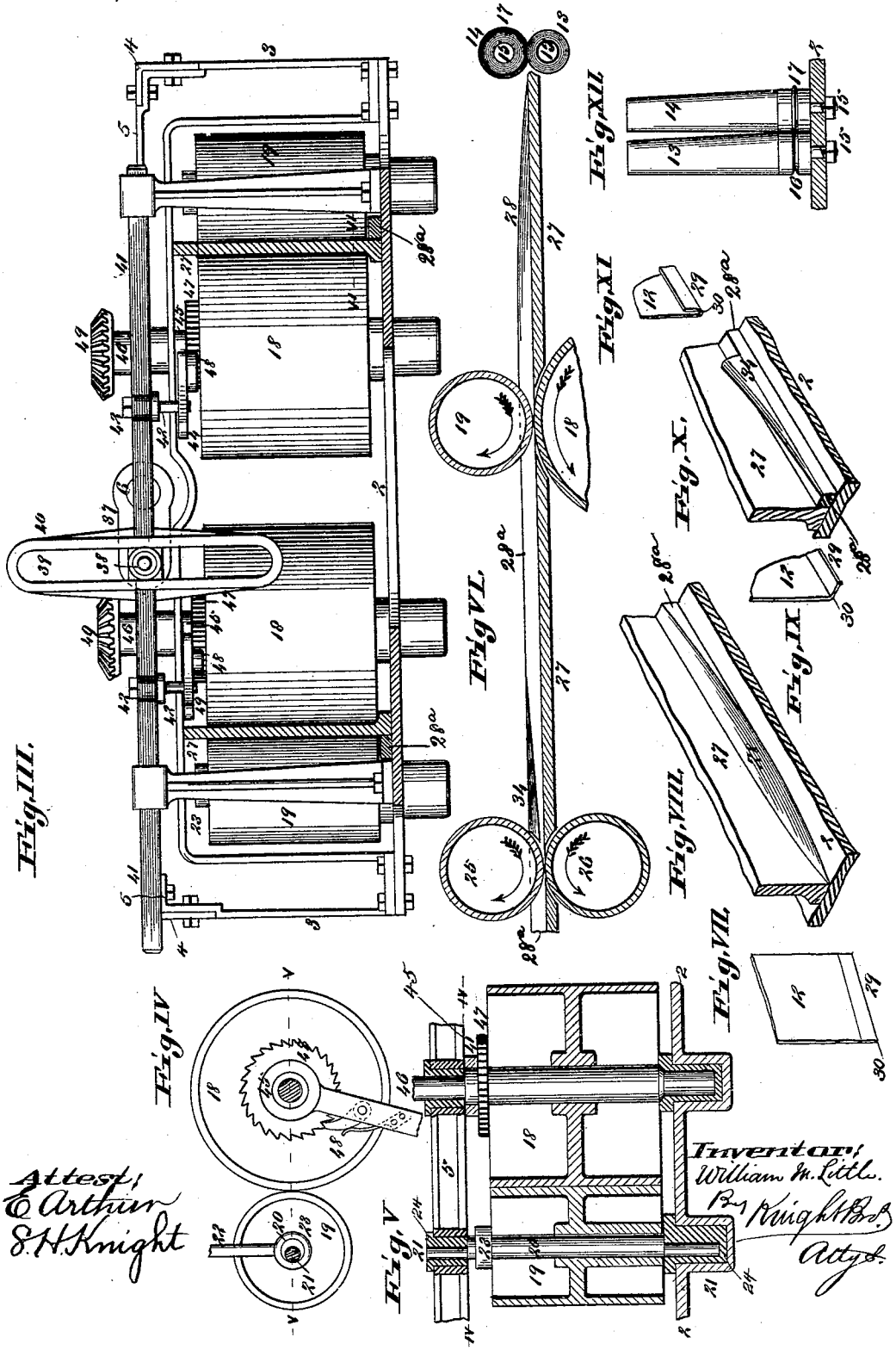

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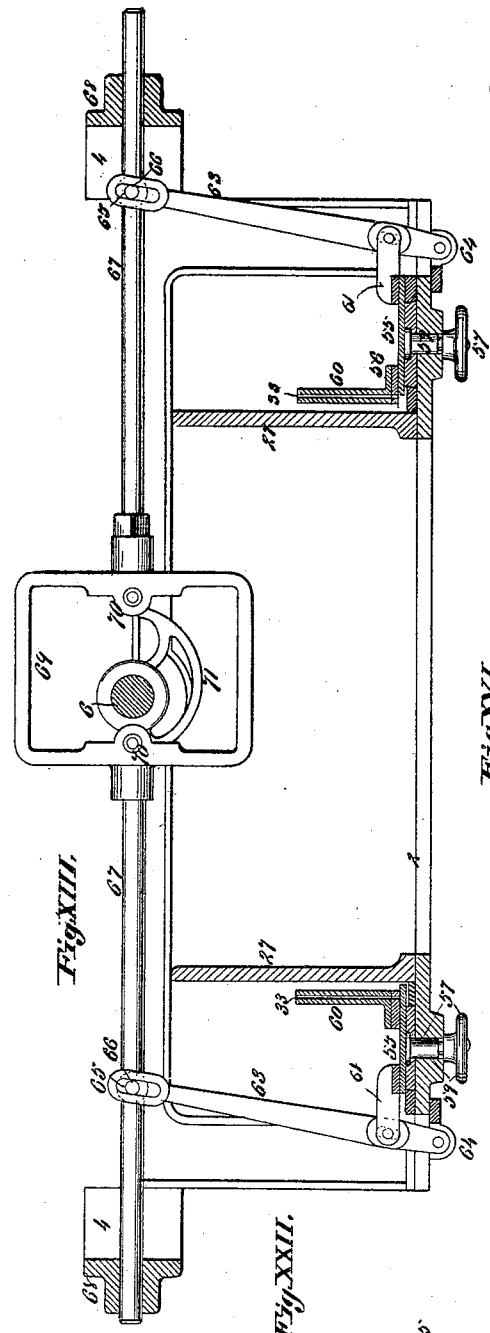


Fig. XIII.

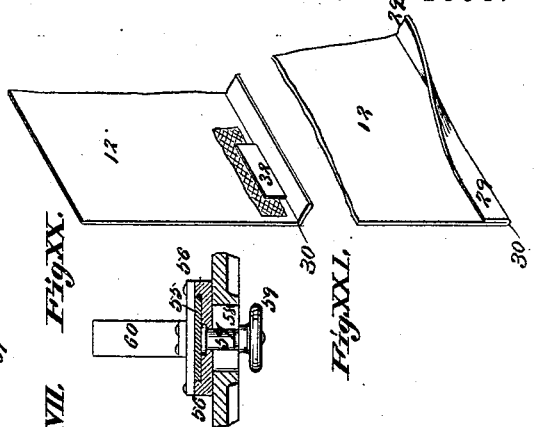


Fig. XX.

Fig. XXI.

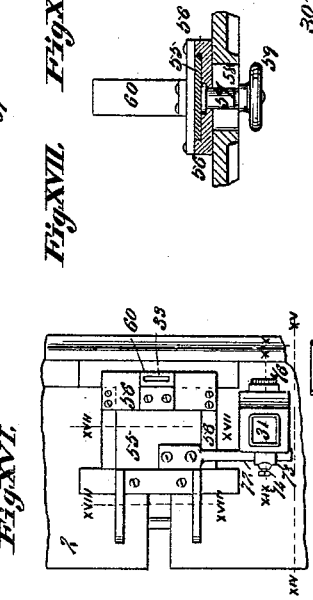


Fig. XVI.

Fig. XVIII.

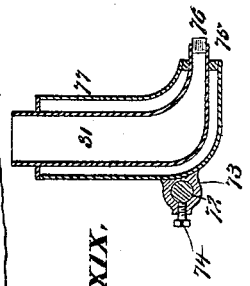


Fig. XIX.

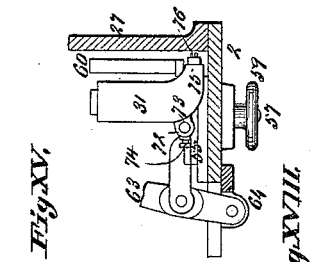


Fig. XV.

Fig. XVII.

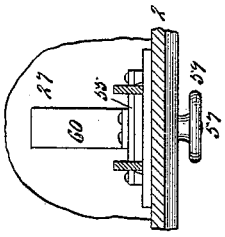


Fig. XXII.

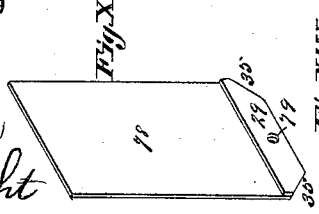
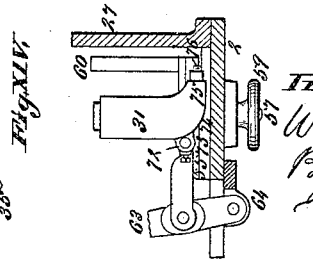


Fig. XIV.



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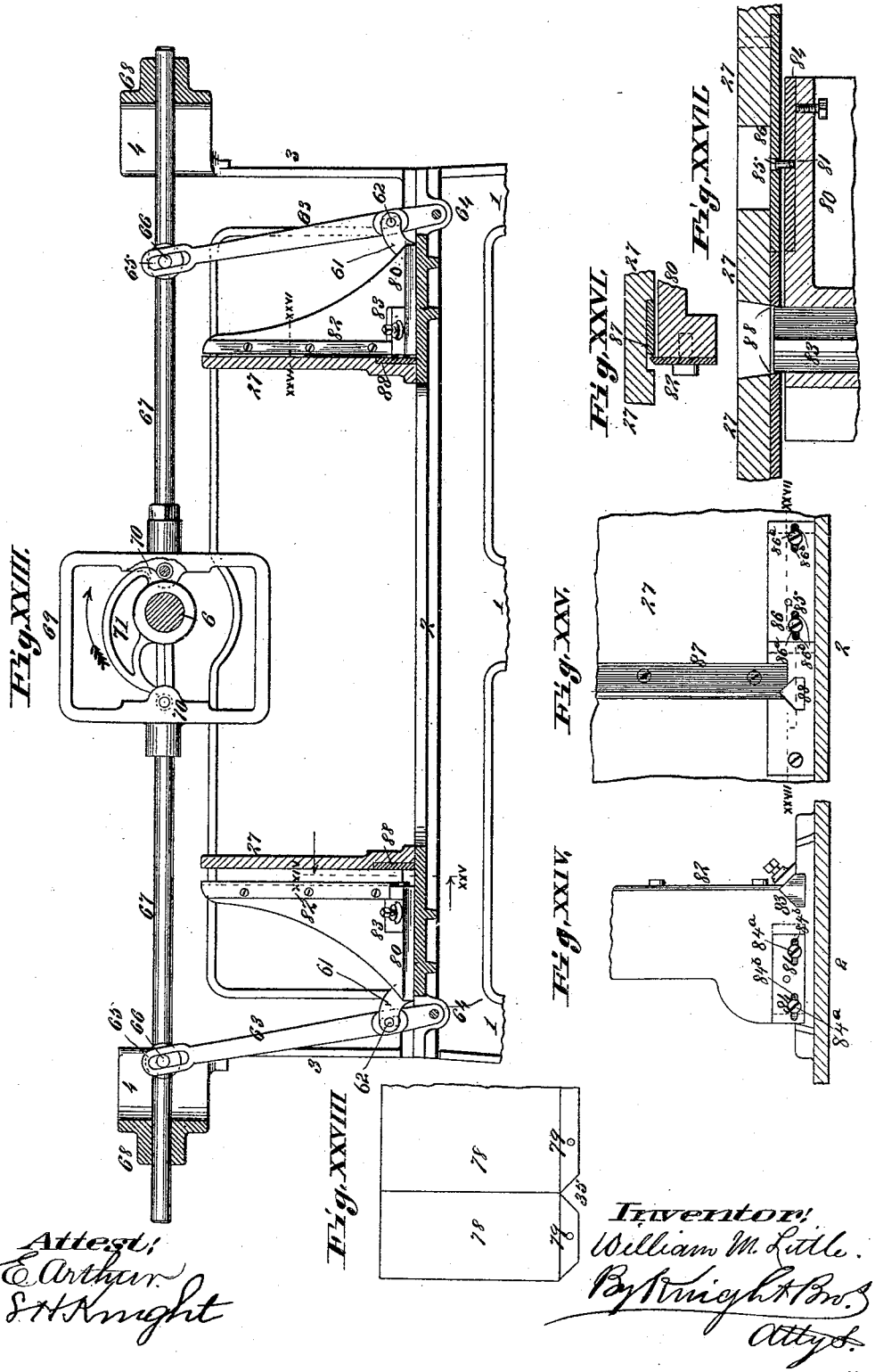

UNITED STATES PATENT OFFICE.

WILLIAM M. LITTLE, OF VANDALIA, ILLINOIS, ASSIGNOR TO THE R. L. LITTLE MANUFACTURING COMPANY, OF ILLINOIS.

TAG-MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,592, dated March 14, 1893.

Application filed November 13, 1889. Serial No. 330,156. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. LITTLE, of Vandalia, in the county of Fayette and State of Illinois, have invented a certain new and useful Improvement in Tag-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This machine takes the paper from the roll and turns out the finished tag, having its eye strengthened by a metal or other plate or strip; the scope of the invention being set forth in the claims.

Figure I is a top view of the machine. Fig. II is a side elevation of the machine. Fig. III in a transverse section, at III—III, Fig. I. Fig. IV is a detail horizontal section at IV—IV, Fig. V. Fig. V is a vertical section at V—V, Fig. IV. Fig. VI is a detail horizontal section at VI—VI, Fig. III. Fig. VII is a detail view of part of a tag strip after creasing and before folding. Fig. VIII is a detail perspective view of the first part of the folder. Fig. IX is a perspective view of part of the tag strip after passing the first part of the folder. Fig. X is a detail perspective view of the second part of the folder. Fig. XI is a view of part of the tag strip after the full fold has been made and before passing between the compression and feed rollers. Fig. XII is an elevation of the creasing rollers. Fig. XIII is a transverse section at XIII—XIII, Fig. I. Figs. XIV and XV are transverse sections at XIV—XV of Fig. XVI, showing the glue pot respectively in the backward and forward position. Fig. XVI is a detail plan view of the frame showing the glue pot and slide. Fig. XVII is a vertical longitudinal section at XVII—XVII of Fig. XVI. Fig. XVIII is a vertical longitudinal section at XVIII—XVIII of XVI. Fig. XIX is an enlarged transverse section of the glue pot at XIX—XIX, Fig. XVI. Fig. XX is a detail perspective view of the tag strip showing the fold half made, the glue applied and the metal reinforce in position. Fig. XXI is a detail perspective view of the tag strip showing the fold in process of being formed. Fig. XXII is a perspective view of the finished tag. Fig. XXIII is an enlarged transverse section taken at XXIII—XXIII, Fig. I. Fig. XXIV is a detail longitudinal section taken at XXIV—XXV, Fig. XXIII, looking toward the left as indicated by the arrow adjacent to the numeral XXIV. Fig. XXV is a detail longitudinal section taken at XXIV—XXV, Fig. XXIII looking toward the right as indicated by the arrow adjacent to the numeral XXV. Fig. XXVI is a detail horizontal section taken at XXVI—XXVI, Fig. XXIII. Fig. XXVII is a detail horizontal section taken at XXVII—XXVII, Fig. XXV. Fig. XXVIII is a view of a tag before separation from the strip.

The main frame of the machine may have any suitable construction. It is shown supported on legs 1.

2 is a horizontal table or frame.

3 are standards giving support to an upper frame having longitudinal bars 4 and transverse bars 5.

6 is the main shaft which extends lengthwise of the machine, and which turns in boxes 7.

8 is the drive pulley and 9 a fly-wheel, on the shaft.

The rolls 10 of paper from which the tags are made are supported on vertical arbors 11. There are two of these rolls in the machine which is illustrated, the machine having duplicate parts for forming two strips of paper into tags at the same time. It is obvious that the machine might be single if preferred working up only one strip of paper. Where, as in this case, two strips are used, the tag-forming mechanism upon each side acts alternately, one side being at rest while that upon the other side is in motion. The duplicate parts upon the opposite sides are marked with the same numbers, and the description is not needlessly duplicated. The strip of paper 12 from each roll passes first between the two vertical creasing rollers 13, 14, which turn on vertical arbors 15 fixed in the horizontal table 2. The roller 13 has a circumferential groove 16, receiving a circumferential rib 17 upon the other roller 14 so that the strip in passing between these rollers is grooved or creased where subsequently the fold is made. From the creasing rollers the strip 12 passes

between the two vertical rollers 18 and 19. The roller 18 has positive intermittent rotation, while the roller 19 acts as a mere pressure roller and turns loose on a vertical arbor 20, whose ends 21 are made eccentric to the body of the arbor so that as the arbor is turned, the roller 19 is carried to or from the roller 18, the means of turning this arbor being an arm 22 upon a collar 23 fast upon the arbor. The ends 21 rest in circular blocks 24 in which they are placed eccentrically so that by the turning of the arbor and also of the blocks, the roller 19 may have adjustment either longitudinal or transverse of the machine, or both. The roller 18 is not a feed roller, but the purpose of the rollers 18, 19 is to keep the strip 12 stretched between them and the vertical feed rollers 25, 26, and to prevent its being raised by the folder. The roller 25 is the active roller, while the roller 26 is a mere pressure roller. The roller 26 turns on an arbor similar to the arbor 20, and supported in a similar manner and for a like purpose, namely, to give means for the adjustment of the roller (26) relatively to the roller 25.

Between the pairs of rollers 13, 14 and 25, 26 the fold is made in the lower edge of the strip 12 and the glue and reinforce are applied. The folder has an upright plate or wall 27 against which the strip 12 lies flat.

The lower part of the folder has a rib 28^a formed with a winding inclined face 28, which folds the lower edge 29 at right angles to the vertical body of the strip, the angle being at the groove or crease 30, see Figs. VI, VII, VIII, IX, XX, XXI. As soon as the fold is turned at a right angle, the glue-pot 31 moves forward and glues part of the strip against which the reinforce 32 is set and beyond the edges of the reinforce so as to hold the folded edge in place when it is brought up against the body. Just after the strip 12 is glued the reinforce 32 is cut from its strip, resting in the slot 33, and forced against the glued part of the paper strip 12, by the end of the cutter. The edge or fold 29, as the strip 12 moves forward is forced upward and against the body of the strip (12) by an under part 34 of the folder and immediately thereafter the strip passes between the rollers 25, 26 and the edge is pressed flat against the body of the paper strip when it adheres. The reinforce I purpose to make of tin, but do not confine myself to this, or indeed to any particular material. After the fold is stuck fast in place, the tags are cut off the strip and at the same time the corners 35 are beveled, the shears being of such a form as to accomplish this by a single movement. As each tag is cut off, the tag next following has the tie hole 79 punched in it.

I will now describe the operating parts more in detail with the actuating mechanism.

37 is a crank on the main shaft. The wrist pin 38 of the crank works in a vertical slot 39 of a yoke 40 upon a sliding bar 41. The sliding bar carries two pins 42, each of which works in the slot 43 of an arm 44 of a loose collar 45 upon the shaft 46 of the roller 18. The shaft 46 carries a ratchet wheel 47, and the collar 45, a spring pawl 48 engaging the ratchet wheel. The construction is such that the reciprocation of the bar 41 causes the intermittent rotation of the shaft 46. This shaft (46) carries a bevel wheel 49 that engages a bevel pinion 50 on a shaft 51 which carries a bevel pinion 52 that engages a bevel wheel 53 fast upon the shaft 54 of the roller 25, so that the rollers 25 and 18 have simultaneous periods of action and rest. The cog wheels and pinions 49, 50, 52, 53 are so proportioned that the surface speed of the roller 25 always exceeds that of the roller 18, so that there is a slight slip of the strip 12 between the rollers 18, 19 and the strip is always on a stretch between the two pairs of rollers, (18, 19 and 25, 26.) It will be seen that while one of the feed rollers 25 is being turned forward, by the action of one of the pawls 48 upon its ratchet wheel 47, the other feed roller is at rest as the pawl 48 which actuates it is running backward on its ratchet wheel 47.

55 is a cutter blade or cutter working in guides of a longitudinal adjustable bracket 56. This bracket rests on the table 2 and has a stud 57 passing through a longitudinal slot 58 in the table with a nut 59 screwing on the stud, and bearing against the under side of the table at each side of the slot 58. By tightening the nut the bracket is held in position. The bracket 56 carries an upright 60 in which is the vertical slot 33 in which fits loosely the strip of tin or other material from which the reinforce 32 is cut. As the cutter 55 moves backward the reinforce strip slips downward in the slot in front of the cutter, and as the cutter moves forward it cuts off the reinforce and carries it forward against the glued part of the tag strip (12).

61 are lugs upon the cutter which are connected by a pin 62 with a lever 63, the lever being fulcrumed to the table 2 at 64. The upper end of the lever has a slot 65 in which works a pin 66 upon a rod 67 extending transversely in the machine and working endwise in guides 68. 69 is a yoke, at the middle of the rod, carrying anti-friction rollers 70, upon each side, against which works a cam 71 upon the main shaft 6. The cam gives the endwise motion to the rod. While one cutter 55 is moving backward the other cutter is moving forward, see Figs. I, II and XIII.

72 is an arm extending longitudinally from the cutter 55 and sustaining the glue pot 31. The glue pot has a lug 73 through which passes the arm.

74 is a set screw working in the lug and bearing against the arm so as to hold the glue pot in position, while allowing its adjustment on the arm. The cutter and the glue pot move forward simultaneously, and the distance of the pot from the cutter is such that the tag is glued at one forward movement of

the cutter, and the reinforce is applied to the same tag at the next forward movement.

The glue pot has a discharge nozzle 75, stopped with some porous pad 76, which will allow the glue to pass through it and by which it will be smeared on the tag strip. The glue pot is preferably surrounded by a steam or hot water jacket 77, to keep the glue hot. In making tags of different widths, the glue pot may be at different distances from the cutter 55. The adjustable character of the bracket 56 is called for to enable it to be set at a different distance from the cutter 82 by which the tags 78 are cut from the strip 12. The lugs 61 are placed so far asunder as to allow this longitudinal adjustment of the cutter bracket 57, see Fig. II.

It has been described how the fold is pressed flat against the body of the strip 12 by the rollers 25, 26. This leaves the strip in condition for punching the string hole 79, and cutting the tag off the strip. These operations are done simultaneously, but on contiguous tags.

80 is a slide carrying the punch 81 and the movable cutters 82, 83. This slide is actuated by the same means as the cutter 55 to which reference is made, the same reference numbers being used. The punch 81 is upon a movable plate 84, and the punch hole 85 is in a movable plate 86, attached to the guide-plate 27.

Pin 84^a and slot 84^b provide means by which the plate 84 may be adjusted and pins 86^a and slots 86^b provide means by which the plate 86 may be adjusted. The purpose of making the punching device movable is to allow the punch to be set a different distance from the cutter 82, as must be done when a tag of a different width is being made.

82 is the straight upright movable cutter attached to the slide 80 and working in conjunction with the fixed cutter 87 to cut the straight side of the tag, while at the same time the beveled corners are cut by the V-formed cutter 83 working in conjunction with a fixed cutter 88 of similar form.

The machine may be used to make tags without any reinforce by removing the cutter 55. It may also be used for making tags without the end fold by setting the lower edge of the strip above the creasing rib and groove on the rollers 13, 14, and removal of the glue pot.

I claim as my invention—

1. The combination of the upright creasing rollers, the upright guide rollers, the folder consisting of an upright wall, a rib having a winding inclined part, and an under part, and the upright feed-roller; for manipulating a strip of paper supported on edge substantially as described.

2. The combination of the upright guide rollers, the upright feed-rollers, and the folder, located between the guide rollers and the feed rollers, consisting of an upright wall, a rib having a winding inclined part, and an under part; for manipulating a strip of paper supported on edge substantially as described.

3. The combination of the upright creasing rollers, the upright guide rollers, the upright feed rollers, and the folder located between the guide rollers, and the feed rollers; for manipulating a strip of paper supported on edge substantially as described.

4. The combination of the upright guide rollers, the upright feed-rollers, the folder located between the guide-rollers and the feed-rollers, mechanism for operating the guide rollers, and mechanism for operating the feed rollers and imparting a greater speed to the latter than the mechanism imparts to the guide rollers; substantially as described.

5. The combination of the vertical creasing rollers, the vertical guide rollers and the vertical feed rollers having intermittent movement, the folder, and a gluing device; the whole arranged for manipulating a strip of paper supported on edge; substantially as described.

6. The combination of the creasing rollers, the guide rollers, the feed rollers, mechanism for imparting intermittent rotary movement to the guide rollers and to the feed rollers, the folder, the glue pot having a nozzle and a pad, mechanism for reciprocating the glue pot and a device for cutting off and applying a reinforce; substantially as described.

7. The combination of the vertical fixed cutter 87, the angular fixed cutter 88, the plate 86 having a punch-hole 85 and the reciprocating slide 80 having the vertical cutter 82 the angular cutter 83 and the plate 84 having the punch 81; substantially as described.

8. The combination of the vertical fixed cutter 87, the angular fixed cutter 88, the adjustable plate 86, having a punch-hole 85 and the reciprocating slide 80 having the vertical cutter 82, the angular cutter 83 and the adjustable plate 84 having the punch 81; substantially as described.

9. The combination of the upright creasing rollers, the folder consisting of an upright plate, a rib having a winding inclined part, and an under part, and the upright feed rollers adapted to give a forward movement to and manipulate the strip which is supported on its edge; substantially as and for the purpose set forth.

10. The combination of the upright creasing rollers, the upright guide rollers, the folder consisting of an upright plate, a winding inclined part, and an under part, the upright feed rollers, the reciprocating gluing and reinforcing devices, and reciprocating cutting and punching devices; the whole arranged to operate upon a strip supported on its edge and transform it into finished tags; substantially as set forth.

11. The combination of the bracket having an upright strip holder, the cutter blade adapted to sustain the strip, to cut the reinforce from the same, and to apply the rein-

force to the tag-strip, and the gluing device located in a position adjacent to the bracket; substantially as and for the purpose set forth.

12. The combination with a set of upright creasing rollers, guide rollers, and feed-rollers and a folder; of another set of upright creasing rollers, guide rollers, and feed rollers and a folder parallel therewith, and mechanism common to both sets having reciprocating bars and connecting devices by which each set is operated intermittently and alternately, substantially as described.

13. The combination of devices for operating upon a tag strip supported on its edge consisting of the upright creasing rollers, the folder having an upright wall, the upright guide rollers, the gluing device, the re-inforcing device, the upright guide rollers, and the cutting and punching devices; substantially as set forth.

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In presence of—
J. G. SEAMAN,
D. C. MCCORD.