G. W. SWIFT, Jr.

TAG MACHINE.

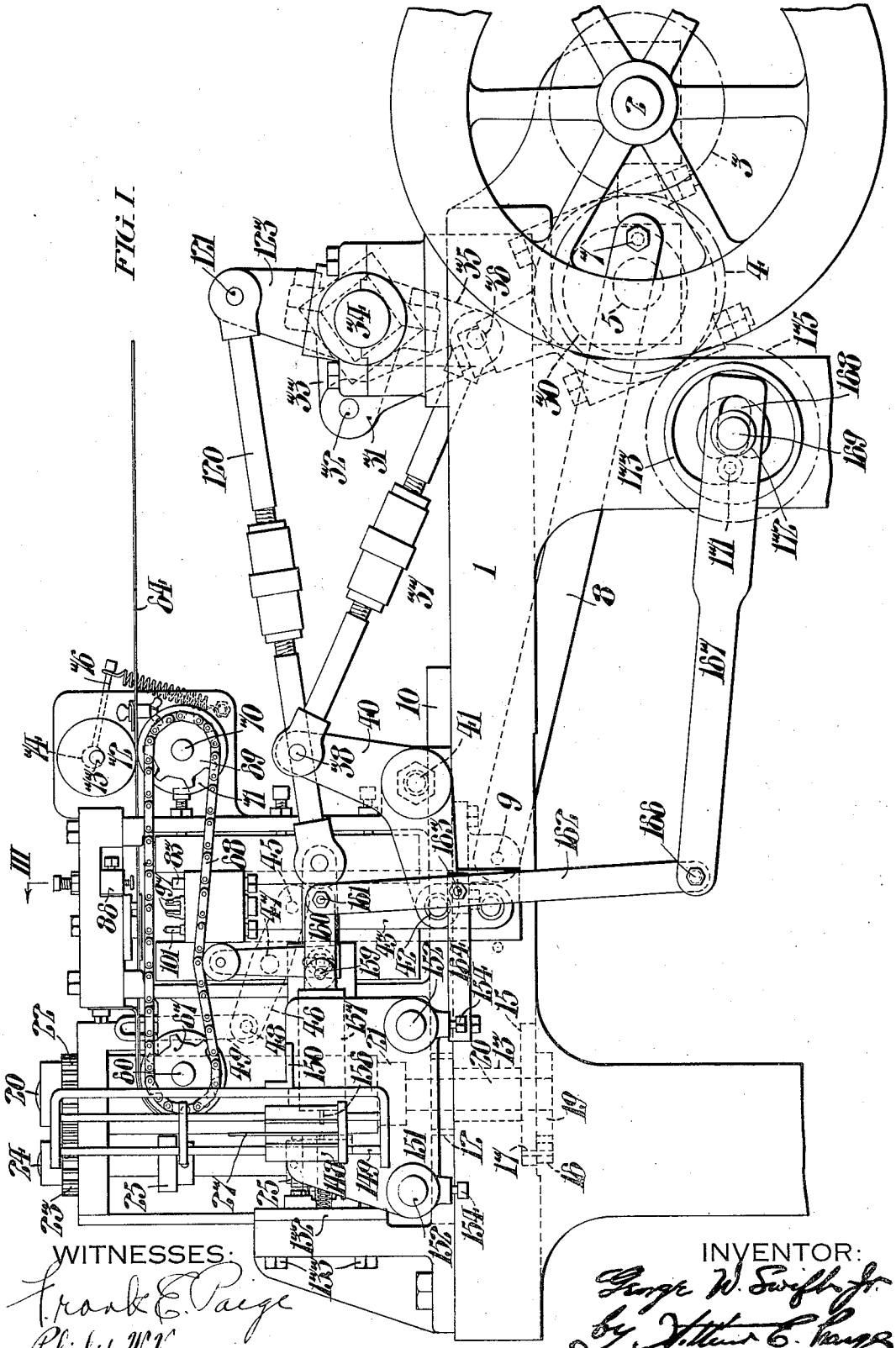
APPLICATION FILED JULY 28, 1915.

1,202,123.

Patented Oct. 24, 1916.

4 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

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Philip W. Vessey.

INVENTOR:

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4 SHEETS—SHEET 2.

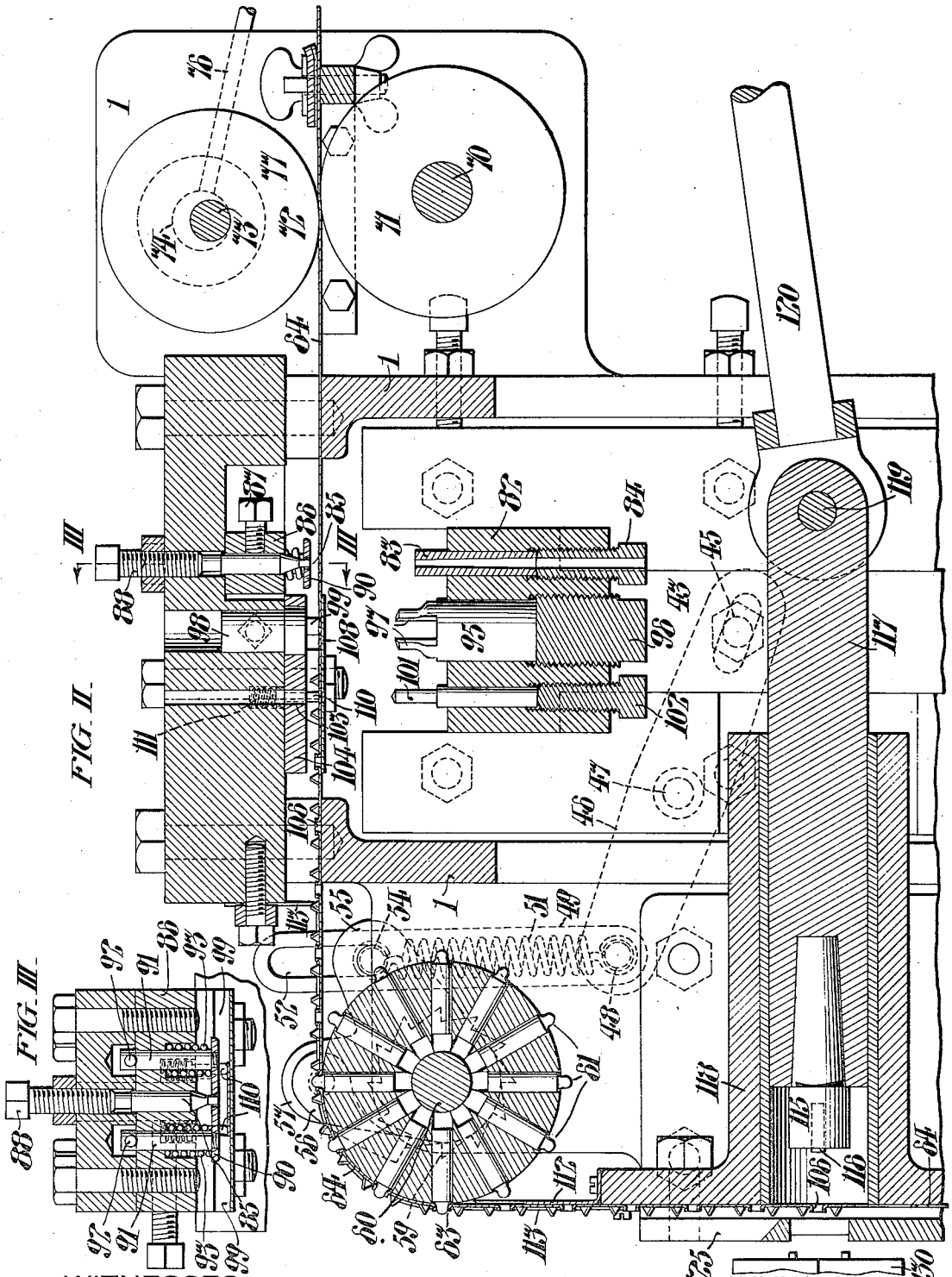


FIG. II.

FIG. III.

WITNESSES:

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4 SHEETS—SHEET 3.

FIG. IV.

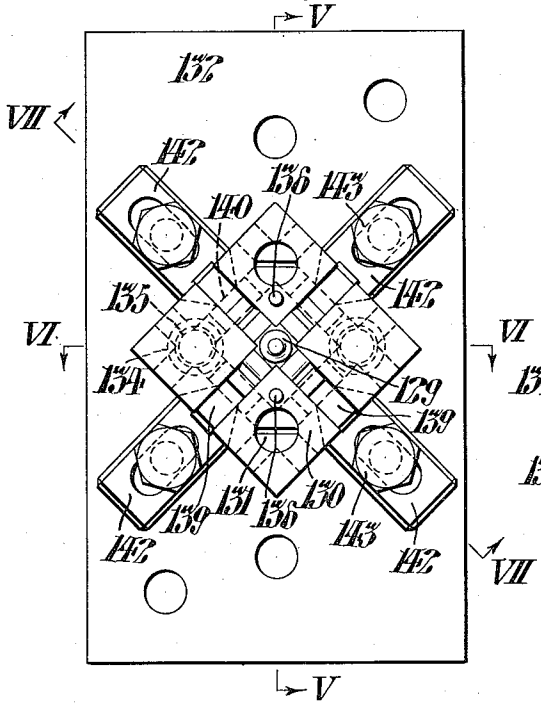


FIG. V.

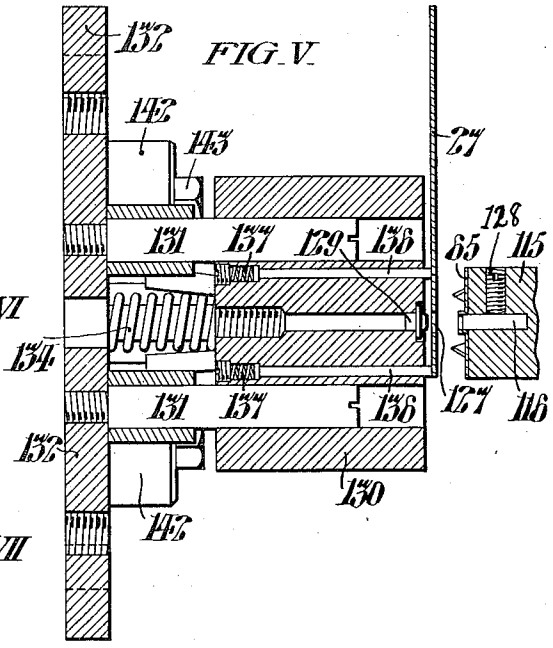


FIG. VI.

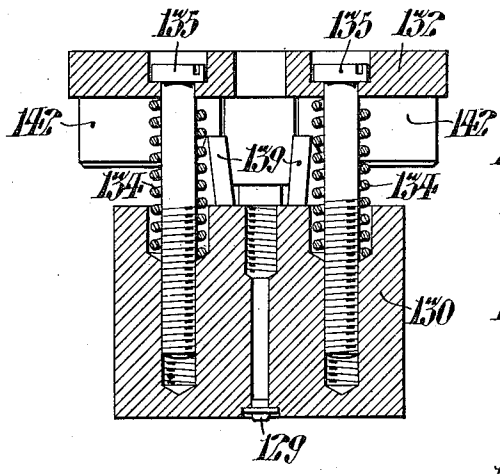
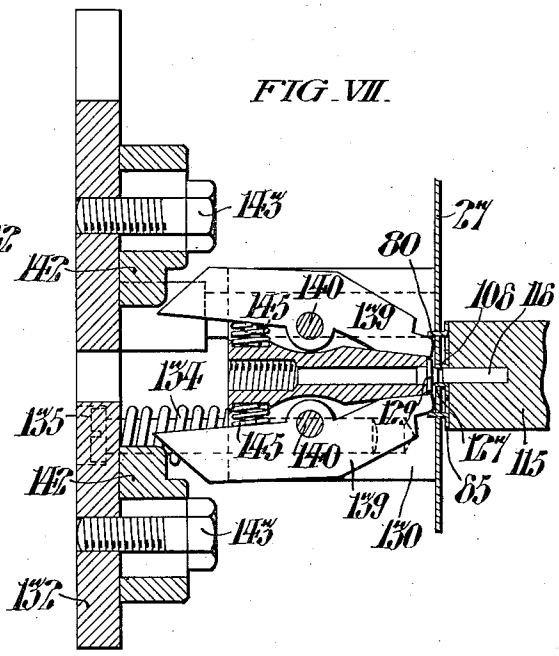


FIG. VII.



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4 SHEETS—SHEET 4.

FIG. VIII.

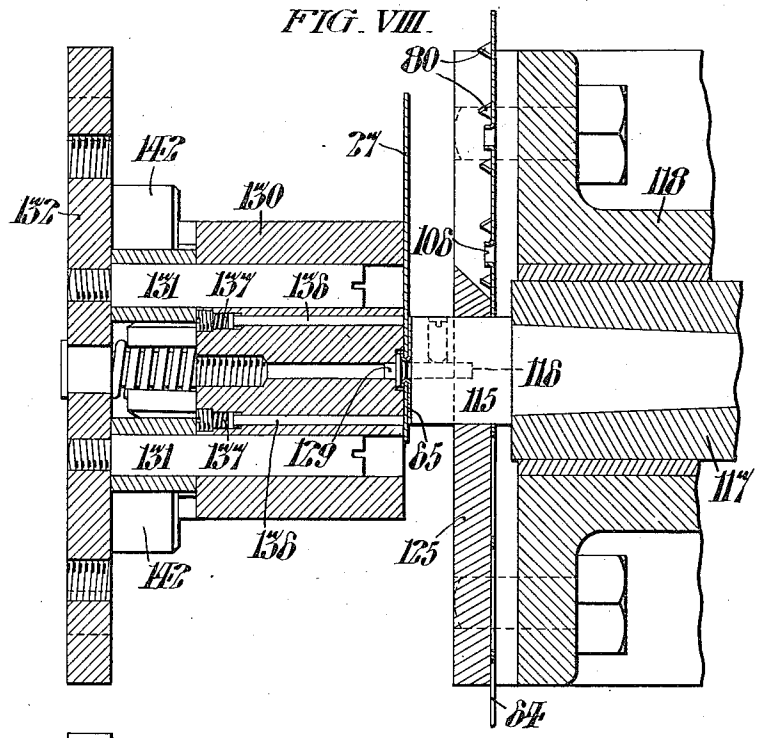


FIG. IX.

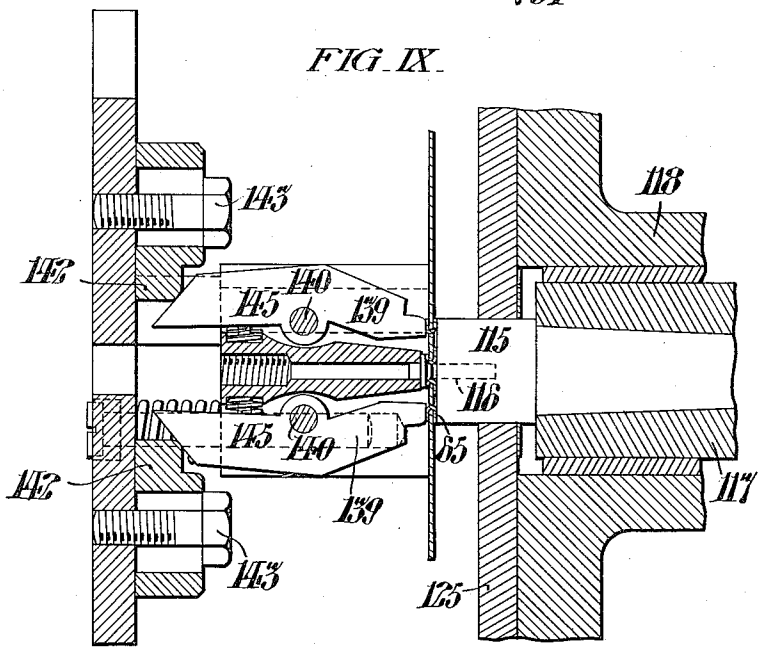


FIG. X.

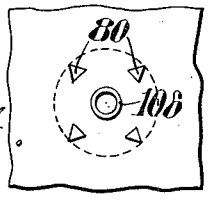
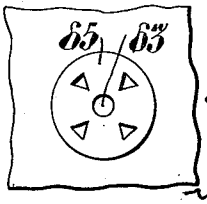


FIG. XI.



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UNITED STATES PATENT OFFICE.

GEORGE W. SWIFT, JR., OF BORDENTOWN, NEW JERSEY.

TAG-MACHINE.

1,202,123. Specification of Letters Patent. Patented Oct. 24, 1916.

Application filed July 28, 1915. Serial No. 42,251.

To all whom it may concern:

Be it known that I, GEORGE W. SWIFT, Jr., a citizen of the United States, residing at Bordentown, in the State of New Jersey, have invented a certain new and useful Improvement in Tag-Machines, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to mechanism for producing tags which are adapted to be attached by a string, wire, or other connector extending therethrough, and particularly to means for reinforcing the hole or holes in the tag body for the attaching means.

The specific form of my invention herein described automatically forms from a sheet metal strip and attaches to each tag a reinforcing plate having an eyelet formed therein in concentric relation with a circular series of pointed projections which are driven through the tag body, at right angles to said plate, and then bent or clenched parallel with said plate, to rigidly connect the latter with the tag body.

My invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawings; Figure I is a fragmentary front elevation of a machine conveniently embodying my invention. Fig. II is a vertical sectional view of a portion of the machine shown in Fig. I, but on a larger scale; section being taken centrally longitudinally with respect to a strip of sheet metal from which the tag reinforcing plates are formed. Fig. III is a fragmentary vertical sectional view taken on the line III, III in Figs. I and II. Fig. IV is an inside face view of the reinforcing plate clenching mechanism; of which a fragment appears at the lower left hand corner of Fig. II. Fig. V is a vertical sectional view taken on the line V, V and in the direction of the arrows shown in Fig. IV; said view being taken in the same plane of section as Fig. II but on a larger scale. Fig. VI is a horizontal sectional view taken on the line VI, VI and in the direction of the arrows shown in Fig. IV. Fig. VII is an oblique sectional view taken on the line VII, VII and in the direction of the arrows shown in Fig. IV. Fig. VIII is a sectional view similar to Fig. V but with the same parts in a different position and with additional parts of the mechanism which appear, on a smaller scale, at the lower left hand corner of Fig. II. Fig. IX is a sectional view similar to Fig. VII but showing the parts in the same position as they occupy in Fig. VIII. Figs. X and XI are fragmentary elevations of respectively opposite sides of a tag body provided with a reinforcing plate, as formed and applied by the mechanism shown in the preceding figures.

The tag machine shown in said Figs. I and II includes the frame 1 having journals for the main shaft 2 by which all of the elements of the mechanism are coöperatively actuated. Said shaft 2 has the gear wheel 3 fixed thereon in engagement with the gear wheel 4 on the counter-shaft 5 which is also journaled in said frame. Said counter-shaft 5 carries the eccentric 7 which is connected by the rod 8 with the pivot pin 9 of the gear rack 10 which is mounted to reciprocate on said frame 1 in operative relation with the gear 12 on the shaft sleeve 13 which has at its lower end the disk 15 to which the pawl 16 is pivotally connected by the pin 17 in coöperative relation with the ratchet wheel 19 on the shaft 20 of the feed roller 21 which is mounted to rotate on said frame 1. Said shaft 20 has at its upper end the gear 22 which meshes with the gear 23 on the shaft 24 which carries the pair of rollers 25 in opposition to said roller 21; so that during the operation of the machine a tag body web 27, of paper or other suitable fabric, is progressed between said rolls 21 and 25, away from the observer with reference to Fig. I. Said shaft 5 also carries the eccentric 30 which is connected by the rod 31 with the pivot 32 on the arm 33 of the rock shaft 34 which has the arm 35 with the pin 36 connected by the rod 37 with the pivot pin 38 on the bell crank lever 40 which is fulcrumed at 41 on said frame 1 and has its opposite arm connected by the pin 42 with the vertical slide bar 43 which is mounted to reciprocate on said frame 1 and has the pin 45 connected with the lever 46 which is fulcrumed at 47 and has at its opposite end the pin 48 connected with the link 49 and the spring 51. The upper end of said link 49 has the slot 52 for engagement with the pin 54 on the bell crank lever 55, with which said spring 51 is also connected; the arrangement being such that

upward movement of said link 49 effects positive movement of said lever 55, but downward movement of said link 49 may be effected with differential movement of said lever 55 to the extent permitted by said spring 51 and slot 52. Said lever 55 carries the pawl 56, with which it is connected by the pin 57, and said pawl is in operative relation with the ratchet wheel 59 on the shaft 60 which has the pin wheel 61 for engagement with the holes 63 in the metal strip 64 from which the reinforcing plates 65 are formed.

As shown in Fig. I, said shaft 60 has at the front end thereof the sprocket wheel 67 connected by the chain 68 with the sprocket wheel 69 on the shaft 70 of the feed roll 71 which is opposed by the roll 72 having the shaft 73 mounted in the eccentric bearing 74 which may be turned in said frame 1 by the handle 76 so as to press said roll 72 more or less toward said roll 71 to straighten said strip 64 which passes between said rolls from beneath the adjustable wiping plate 77 shown in Fig. II.

In its passage from the straightening rolls 71 and 72 to said pin wheel 61, said strip 64 is punched with circular holes, where the eyelets are to be formed, and punched to form circular series of pointed projections 80, and the margins of said perforations are pressed to form eyelets. Said three operations are performed simultaneously upon three successive regions of said strip 64, from which three successive plates are subsequently to be cut, and said operations are performed by vertical reciprocation of the die cross head 82 shown in Fig. II which is carried at the upper end of said slide bar 43. Said cross head carries the female die 83 which is vertically adjustable in said head by means of the tubular screw 84. Said die 83 is opposed by the male die 85 which is vertically adjustable in the bearing block 86 and held in adjusted position by the set screws 87 and 88. Said die 85 is provided with the stripper plate 90 which, as shown in Fig. III, is carried by the vertical plungers 91 having stops 92 which encounter the upper surface of said block 86 and limit the downward movement of said plate 90 under pressure of the springs 93. The effect of said dies 83, 85, and their appurtenances above described is to punch circular perforations in said strip 64, of the diameter of the opening in said die 83 through which the punchings are discharged. Said cross head 82 also carries the male die 95 which is vertically adjustable therein by the screw 96. Said die 95 has at its upper end four punch projections 97. Each of the triangular configurations of the openings in said plate 65, as shown in Fig. XI, and said die 95, is opposed by the die 98 which is intermediate of the pair of guides 99 which direct said strip 64 between them, so that the latter is punched by the projections 97, upon the upward movement of said cross head 82, to form the pointed projection 80 shown in Figs. II and X. Said cross head 82 also carries the male die 101 which is vertically adjustable therein by the screw 102 and is in vertical alinement with the opening 103 in the female die 104. The construction and arrangement of said dies 101 and 104 is such that when said die 101 is thrust through the perforations in said strip 64 made by said dies 83 and 85, the margin of said perforations is pressed to form the tubular eyelets 106, as shown in Fig. II. Said die 101 is provided with the stripper plate 108 which is, however, held in stationary relation with the female die 104. In order to prevent crushing said pointed projections 80, which extend upwardly from said strip 64 as indicated in Fig. II, I provide the pair of plungers 110 which bear upon the opposite longitudinal edges of said strip 64, as indicated in Fig. III, and are pressed downwardly by the springs 111.

Said strip 64 extends around said pin wheel 61, which has its pin teeth engaging the holes 63 in the eyelet tubes 106 in said strip, as shown in Fig. II, and passes downwardly between the edge guides 112 and the central guide 113, which direct said strip vertically so as to successively present its eyelet tubes in axial alinement with the male die 115, as shown in Fig. II. Said die 115, which has the central stud 116 adapted to fit in said eyelet tubes 106, is carried by the plunger 117 which is mounted to reciprocate in the bearing 118 which is in stationary relation with said frame 1. As shown in Figs. I and II, said plunger 117 is pivotally connected by the pin 119 with the rod 120 which has its opposite end connected by the pin 121 with the arm 123 on said shaft 34; so that said die 115 is reciprocated in proper coöperative relation with the other elements of said machine. Said die 115 is adapted to coöperate with the female die 125, shown in Figs. II, VIII and IX, so as to punch from said strip 64, the circular reinforcing plates 65, one such plate being formed by each movement of said die 115 to the left with reference to Figs. I and II. When thus punched from the strip 64, each plate 65 is carried through the die 125, by said die 115, as shown in Fig. V, and the continued movement of said die in that direction thrusts said plate 65 against the tag body 27, which has been previously provided with the perforation 127 to receive the eyelet tube 106 of said plate, as shown in Fig. VII. Said stud 116 which is adjustably secured in said die 115 by the set screw 128 shown in Fig. V, is opposed by the stud 129 which is mounted in the die block 130. Said die

block is mounted to reciprocate upon the parallel bearing bars 131 which are rigidly connected with the base plate 132, as shown in Fig. V. As shown in Fig. I, said base plate is held in rigid relation with the machine frame 1 by the screws 133. Said die block 130 is normally inwardly pressed to the position shown in that figure, by the springs 134 shown in Fig. VI encircling the screws 135 which may be longitudinally adjusted in said block 130 to vary the position in which the latter is normally presented, in accordance with the thickness of the tag body 27 to be operated upon. Moreover, in order to permit its intermittent feeding movement by the rolls 21 and 25 above described; said tag body 27 is normally fended from the face of said block 130 far enough to avoid catching upon the stud 129 in said block, by the fender plungers 136 which are mounted to reciprocate in said block 130 as shown in Fig. V and provided with springs 137 normally projecting them as shown in that figure. However, as said die 115 is pressed against said block 130, by the traverse of said plunger 117, shown in Fig. II, said studs 116 and 129 shown in Figs. V and VII coöperative to clench the eyelet tube 106 through said tag body 27; said stud 129 being flared so as to flange said tube 106 to a larger diameter than the perforation 127 through which it is thrust as shown in Fig. VIII; in which position said fender plungers 136 have been thrust into the die block 130, from their normal position shown in Fig. V, so as to permit the tag body to come against the face of said block.

Of course, when said reinforcing plate 65 is pressed against the tag body 27, as above described, the pointed projections 80 on said plate are forced through said tag body 27, and, as indicated in Fig. VII, each projection 80 is thrust upon the inclined end of a clenching lever 139. As shown in Fig. IV, there are four of said levers 139 which are respectively fulcrumed upon pins 140 in said die block 130 and have their outer ends, which are inclined, presented in operative relation with respective cam blocks 142 which are adjustably secured in rigid relation with the frame 1 by the bolts 143. Each of said levers 139 is normally held in the position shown in Fig. VII by respective springs 145. However, as said block 130 is thrust toward the left, with reference to Figs. V and VII, by the die 115, during the eyelet clenching operation above described, the inclined ends of said levers 139 encounter said cam blocks 142 which tilt said levers 139 so as to spread them radially outwardly with respect to said plate 65 at their ends engaging the pointed projections 80 of said plate, with the effect of clenching said projections in connection with the tag body through which they have been thrust as above described. The effect of such clenching operation is shown in Figs. IX, X and XI.

The screw thread at the outer end of the socket in which the stud 129 is seated in the block 130 is merely to receive a tool which is screwed therein, through the axially alined opening in the base plate 136, to eject said stud 129 from its seat in said block 130 when said stud becomes worn to such a degree that it becomes necessary to replace it.

Said tag body is supported in the position shown in Fig. I, during its traverse through the machine, by the outwardly flared sheet metal guides 148, which are vertically adjustable upon the rods 149 which are supported by the angle bracket 150 upon the carriage 151. Said carriage may be adjusted longitudinally upon the bearing bars 152, which are in rigid relation with the frame 1, and is secured in adjusted position by the set screws 154 shown in Fig. I. Said carriage supports the mechanism for providing the tag body 27 with a series of said perforations 127 and is adjustable, as described, in accordance with the dimensions of the tags to be formed from said body. As indicated in Fig. I, said punching mechanism includes the metal die 156 which is carried by the plunger 157 which is mounted to reciprocate in said carriage 151 and is pivotally connected by the pin 159 with the link 160 which is pivotally connected by the bolt 161 with the upper end of the lever 162 which is fulcrumed at 163 on the bracket 164 which is rigidly connected with said carriage 151. The lower end of said lever 162 is pivotally connected by the bolt 166 with the rod 167 which has the slot 168 through which the shaft 169 extends. Said rod 167 has the cam roller 171 and is held by the collar 172 on said shaft 169 with said roller 171 in coöperative relation with the cam 173 on said shaft 169. Said cam is rotated in coöperative relation with the other mechanism above described by the gear 175 on said shaft 169 which engages said gear 4 on the shaft 5.

I do not desire to limit myself to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

I claim:—

1. In a tag machine, the combination with means for progressing a tag body web; of means for perforating said web with a longitudinal series of circular openings; means for progressing a metal strip transversely to the direction of progression of said web; means arranged to perforate said strip with a longitudinal series of circular openings; means arranged to press pointed projections from said strip in series concentric with the

respective perforations therein; means arranged to press the margins of the perforations in said strip to form eyelet tubes, in unitary relation with said strip; means arranged to punch tag reinforcing plates from said strip, each containing one of said perforations and series of projections; means arranged to successively present each of said plates with its eyelet tube extending through one of the perforations in said web, and its projections also extending through said web; and means arranged to clench said eyelet tube and projections in engagement with said web, including a central flanging die arranged to register with said tube, a circular series of clenching levers, concentric with said die and respectively engaged by said projections; and stationary cams respectively operative upon said levers to separate their ends engaged with said projections.

2. In a tag machine, the combination with means for progressing a tag body web; of means for perforating said web with a longitudinal series of circular openings; means for progressing a metal strip; means arranged to perforate said strip with a longitudinal series of circular openings; means arranged to press pointed projections from said strip adjacent the respective perforations therein; means arranged to press the margins of the perforations in said strip to form eyelet tubes, in unitary relation with said strip; means arranged to punch tag reinforcing plates from said strip, each containing one of said perforations and projections; means arranged to successively present each of said plates with its eyelet tube extending through one of the perforations in said web, and its projection also extending through said web; and means arranged to clench said eyelet tube and projection in engagement with said web, including a die arranged to register with said tube, a series of clenching levers respectively engaged by said projections; and cam means operative upon said levers.

3. In a tag machine, the combination with means for progressing a tag body web; of means for perforating said web; means for progressing a metal strip; means arranged to perforate said strip; means arranged to press pointed projections from said strip adjacent the respective perforations therein; means arranged to press the margins of the perforations in said strip to form eyelet tubes, in unitary relation with said strip; means arranged to punch tag reinforcing plates from said strip, each containing one of said perforations and projections; means arranged to successively present each of said plates with its eyelet tube extending through one of the perforations in said web, and its projection also extending therethrough; and means arranged to clench said eyelet tube and projections in engagement with said web, including a die arranged to register with said tube, a clenching lever engaged by said projection; and cam means operative upon said lever.

4. In a tag machine, the combination with means for progressing a tag body web; of means for perforating said web; means for progressing a metal strip transversely to the direction of progression of said web; means arranged to perforate said strip; means arranged to press pointed projections from said strip in series concentric with the respective perforations therein; means arranged to punch tag reinforcing plates from said strip each containing one of said perforations and series of projections; means arranged to successively present each of said plates with its projections extending through said web; and means arranged to clench said projections in engagement with said web, including a series of clenching levers respectively engaged by said projections; and stationary cams operative upon said levers to separate their ends engaged with said projections.

5. In a tag machine, the combination with means for progressing a tag body web; of means for progressing a metal strip transversely to the direction of progression of said web; means arranged to press pointed projections from said strip; means arranged to perforate said strip; means arranged to punch tag reinforcing plates from said strip each containing one of said perforations and a plurality of said projections; means arranged to successively present each of said plates with its projections extending through said web; and means arranged to clench said projections in engagement with said web, including a flanging die arranged to register with said perforation, a series of clenching levers respectively engaged by said projections; and cam means operative upon said levers.

6. In a tag machine, the combination with means for progressing a tag body web; of means for progressing a metal strip; means arranged to perforate said strip; means arranged to press pointed projections from said strip; means arranged to punch tag reinforcing plates from said strip each containing one of said perforations and a plurality of said projections; means arranged to successively present each of said plates with its projections extending through said web; and means arranged to clench said projections in engagement with said web, including a series of clenching levers respectively engaged by said projections; and cam means operative upon said levers.

7. In a tag machine, the combination with means for progressing a tag body web; of means for progressing a metal strip; means arranged to perforate said strip; means ar-

ranged to press pointed projections from said strip; means arranged to punch tag reinforcing plates from said strip each containing one of said perforations and a plurality of said projections; means arranged to successively present each of said plates with its projections extending through said web; and means arranged to clench said projections in engagement with said web.

8. In a tag machine the combination with means for progressing a tag body web; of means for progressing a metal strip; means arranged to perforate said strip; means arranged to press pointed projections from said strip; means arranged to punch tag reinforcing plates from said strip, each containing one of said perforations and a plurality of said projections; and means for successively affixing said plates to said web.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this twenty-first day of July, 1915.

GEORGE W. SWIFT, JR.

Witnesses:

ARTHUR E. PAIGE,

ANNA ISRAELVITZ.