

(No Model.)

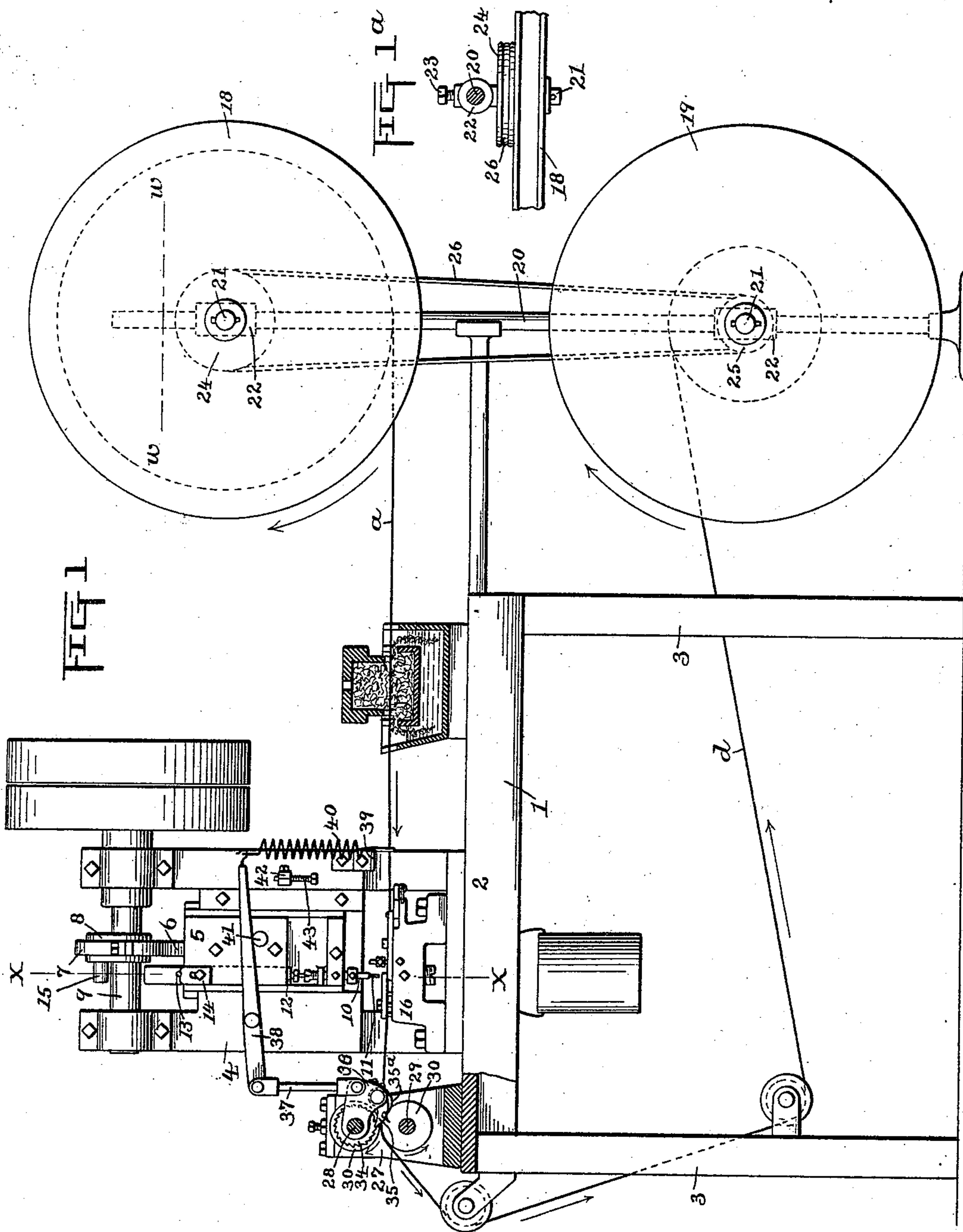
2 Sheets—Sheet 1.

C. F. WURSTER.

MACHINE FOR MAKING TIP CAPS FOR UMBRELLA RIBS.

No. 553,604.

Patented Jan. 28, 1896.



Witnesses:

A. V. Grouper
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Inventor.

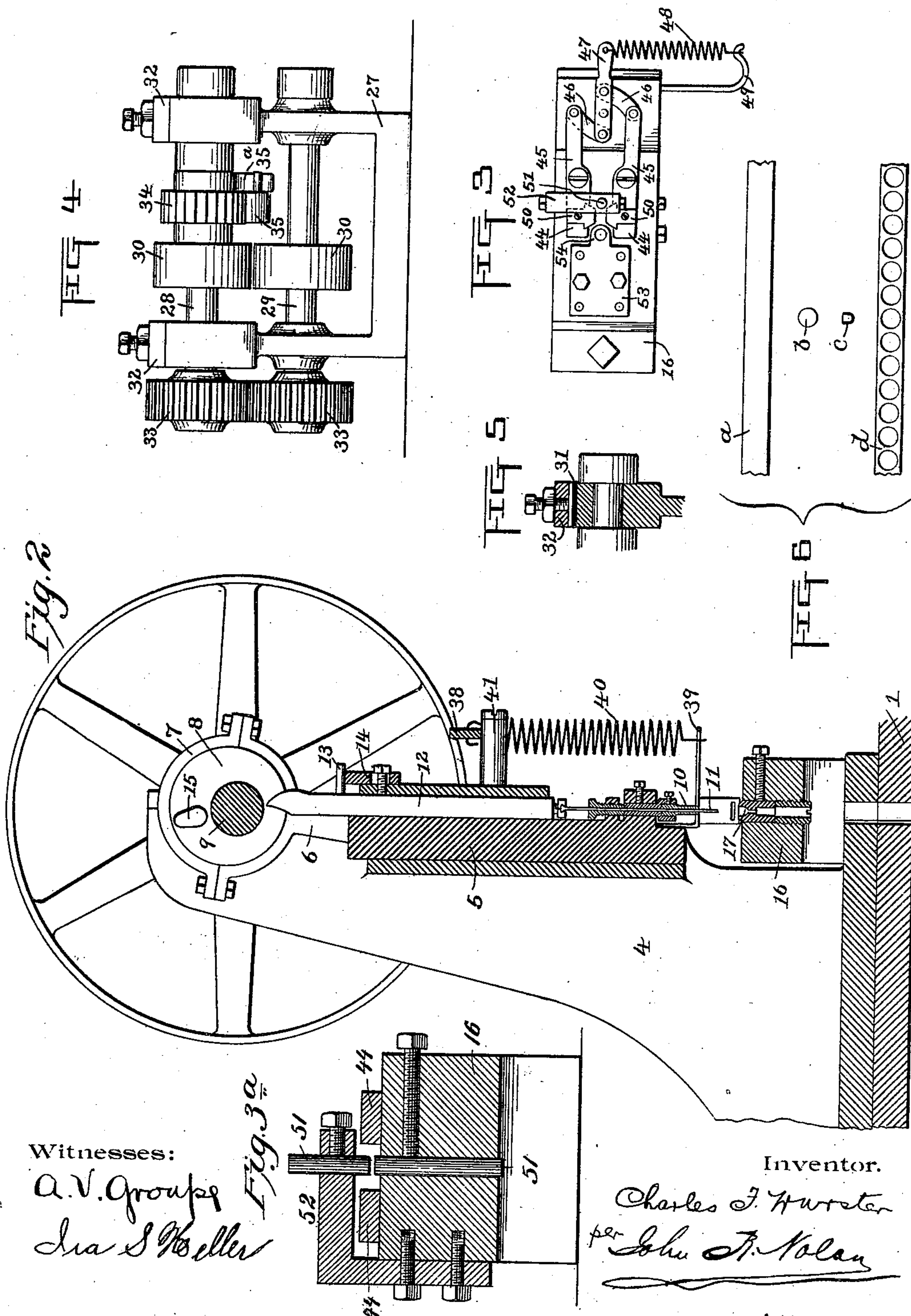
Charles F. Wurster,
per John B. Nolan

Attorney.

2 Sheets—Sheet 2.

MACHINE FOR MAKING TIP CAPS FOR UMBRELLA RIBS.

Patented Jan. 28, 1896.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES F. WURSTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
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MACHINE FOR MAKING TIP-CAPS FOR UMBRELLA-RIBS.

SPECIFICATION forming part of Letters Patent No. 553,604, dated January 28, 1896.

Application filed February 24, 1894. Serial No. 501,349. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. WURSTER, a citizen of the United States, residing at the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Tip-Caps for Umbrella-Ribs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to punching-machines, and more especially to that class of machines whereby tip-caps for umbrella-ribs are formed.

The invention comprises, primarily, feed mechanism whereby a blank strip of metal is progressively conducted to the dies; secondly, a take-up mechanism operating in concert with the feed mechanism to take up the punched-out or waste portion of the strip; thirdly, devices for preserving the alignment of the strip during its passage to the dies, and, finally, in various details of construction that will hereinafter appear.

In the annexed drawings, Figure 1 is a sectional elevation of a machine embodying my invention. Fig. 1^a is a section on the line *w w* of Fig. 1. Fig. 2 is a vertical section, enlarged, on the line *x x* of Fig. 1. Fig. 3 is a plan of the die-block detached. Fig. 3^a is a cross-section of said block enlarged. Fig. 4 is an end view of the feed devices. Fig. 5 is a section of one of the bearings of the shaft 28. Fig. 6 is a view illustrating (a) a portion of the metallic strip preparatory to its being fed to the machine; (b) a disk punched from said strip; (c) a tip-cap formed from said disk, and (d) the punched strip.

The numeral 1 represents the main supporting-frame, comprising a bed-plate 2, with legs or standards 3. Bolted to the bed-plate is the frame 4 of the punching mechanism, which mechanism is of usual construction—that is to say, 5 is a vertically-reciprocative plunger fitted to suitable guides in the front of frame 4 and connected by means of a rod 6 and strap 7 with an eccentric 8 on an upper power-driven shaft 9.

10 is a hollow die secured to the lower end of the plunger, and 11 is a punch fitted within said die so as to be reciprocative independ-

ently thereof. This punch depends from a bar 12 that is fitted within the plunger, the upper end of the bar rising above and being provided with a stud 13 that rests upon a plate 14 secured on the plunger. Projecting laterally from the eccentric is a tappet 15, that is adapted during the traverse of the eccentric to impinge against the opposed end of the bar 12 and thereby forcibly depress the same. Immediately below the plunger is a block 16, in which is supported directly below the die and punch a female die 17 of appropriate form, as shown.

The metallic plate or strip from which the tip-caps are to be formed being placed upon the female die and the plunger descending, the projecting punch 11 impinges against the strip, which punch, being vertically movable independently of the plunger, rests idly upon the strip during the continued movement of the plunger, whereupon the die 10, coacting with the upper edge of the female die, cuts a disk (b) from the strip. This done, the tappet on the eccentric, during its revolution, strikes the upper end of the bar 12 and depresses it, the punch in its descent forcibly striking the cut-out disk and driving it through the female die to impart to said disk the cap-like form desired. During the upward stroke of the plunger the plate 14 abuts against the stud on the bar 12 to retract the bar and its punch.

In view of the fact that the construction and operation of the foregoing-outlined mechanism are well known, no further description thereof is thought necessary.

I shall now describe the means which I have devised to effect the automatic feeding of the strip to the dies, and to wind up the punched or waste portion of the strip as rapidly as it is produced, as follows:

18 19 are two reels supported on a vertical post or standard 20 arranged beyond one end of the main supporting-frame. In the present instance the reels are mounted on laterally-projecting studs 21 of sleeves or collars 22, respectively, which are applied to the post, and are adjustably held in place by means of set-screws 23. The reels are provided with pulleys 24 25, respectively, which are geared by means of an endless band 26, whereby if

one pulley be rotated the motion will be transmitted therefrom to the other. The pulley on the lower reel is preferably smaller than that of the other reel, to the end that said lower reel will be revolved more rapidly than the upper reel for a purpose hereinafter appearing. On the bed-plate, at the end farther from the post or standard 20, is secured a housing 27, in the sides of which are journaled two transverse parallel shafts 28 29, arranged one above the other. On these shafts are fixed two rollers 30, the peripheries of which are preferably scored or otherwise roughened and roll in yielding contact, the "bite" thereof being in line with the dies and the upper reel, or substantially so. The upper roller is maintained yieldingly upon the lower roller by means of rubber strips 31, or other suitable material, interposed between the journal-boxes of the shaft 28 and their respective caps 32. (See Fig. 5.) The shafts are provided with coacting gears 33, whereby they shall be rotated in concert. On the upper shaft, adjacent to the roller thereon, is a ratchet-wheel 34, with the teeth of which engages a pawl 35. This pawl is pivoted to an arm 36, which is, in turn, pivotally supported on the shaft 28, a suitably-disposed spring 35^a maintaining the pawl yieldingly engaged with the ratchet-wheel. The arm is connected by means of a link 37 with the shorter arm of a lever 38 that is fulcrumed on the face of the frame 4, the longer arm of this lever extending in front of the plunger and beyond the opposite end of said frame. Said longer arm is connected with a bracket 39 on the adjacent end of the frame 4 by means of a spiral spring 40, the tendency of which is to draw down said arm and maintain it in contact with a stud 41 on the face of the plunger. By this construction it will be seen that during the descent of the plunger the spring 40, drawing down the longer arm of the lever, will, through the intermediate connections, simply retract the pawl 35 on the teeth of the ratchet-wheel, and that during the ascent of the plunger the stud 41, abutting against the lever-arm, will raise the latter, and, perforce, project the pawl forward. Thus the pawl acting against the opposed ratchet-teeth will move the wheel 34 one step, and therewith the rollers 30 in the directions indicated by the arrows in Fig. 1. Hence if the upper reel be supplied with a strip of blank metal (a) and the free end of the strip be drawn forward into the bite of the rollers, these rollers will intermittently unwind the strip from the reel 18, each movement thereof thus advancing a portion of the strip between the dies, and retracting that portion from which the disks have been stamped.

There is fitted to a suitably-arranged lug 42 on one end of the frame 4 a set-screw 43, which extends into the path of the longer arm of the lever, to serve as a stop to limit the downward movement of said arm before the punch acts upon the cut-out disk. By this

means during the upward stroke of the plunger the lever 38 is not operated until said punch is retracted from the lower die. Were it not for this lost motion between the stud and the lever-arm, the strip would be drawn by the feed-rollers while the male die and punch are engaged with the female die, and thus injure the strip and parts of the machine. When a sufficient length of the strip has been punched, the free end is connected with the lower reel 19, which, rotating in the direction indicated by the arrow, takes up the waste portion as rapidly as the caps are formed. As this lower reel runs at a higher rate of speed than the supply-reel above; it is obvious that the waste or cut-out portion of the strip will be kept taut, the band, of course, slipping on its pulleys from time to time.

In order to insure the passage of the strip centrally to the dies, irrespective of irregularities in the width of the strip, I provide a suitable centering device, which, in this instance, comprises a pair of horizontally-disposed levers 44, pivoted to the die-block beyond the respective edges of the strip, the arms 45 of the levers being pivotally connected by means of links 46 with a centrally-located lever 47 that is in turn pivoted to said block, whereby the act of moving said lever will correspondingly move the free ends of the levers 44 toward or from each other. The lever 47 is held in a normally-central position by means of a spring 48 secured thereto and to an arm 49 on the block, while the acting ends of the levers are equipped with beveled shoes 50 that take against the opposed edges of the strip as the latter proceeds to the dies. Hence said shoes will uniformly recede or advance to accommodate themselves to the width of the strip, as it may vary, and thereby guide said strip centrally to the dies.

Between the levers 44, directly in advance of the shoes, are two vertically-disposed screw set-pins 51, between the opposed ends of which the strip travels, said pins thus preventing vertical displacement of the strip in respect to the shoes. As will be observed, the upper pin is supported by an angle-piece 52, fastened to one side of the die-block, while the lower pin is applied directly to the block. On the face of this block, beyond the centering-levers, is bolted a plate 53, under which the strip passes on its way from the dies to the feed-rollers. The forward edge of the plate is provided with a perforated lug 54, through which the upper die descends. The function of this plate is to preserve still more effectually the alignment of the strip.

I claim as my invention—

1. The combination with co-acting dies and their supporting and operating parts, of an intermittent strip-feeding device located beyond said dies, means for operating said device, and a strip-centering device adjacent to the dies, said centering device comprising the levers 44, links 46 and spring-controlled lever 47, substantially as described.

2. The combination with co-acting dies and their supporting and operating parts, of an intermittent strip-feeding device located beyond said dies, means for operating said device, and the vertically-disposed guides beyond said dies substantially as described.

3. The combination with co-acting dies and their supporting and operating parts, of an intermittent strip-feeding device, located beyond said dies, means for operating said device, a strip-centering device adjacent to the

dies, and vertically-disposed guides between the arms of said centering device, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

CHARLES F. WURSTER.

Witnesses:

CHARLES R. HARRIS,
FRANK CRAVEN.