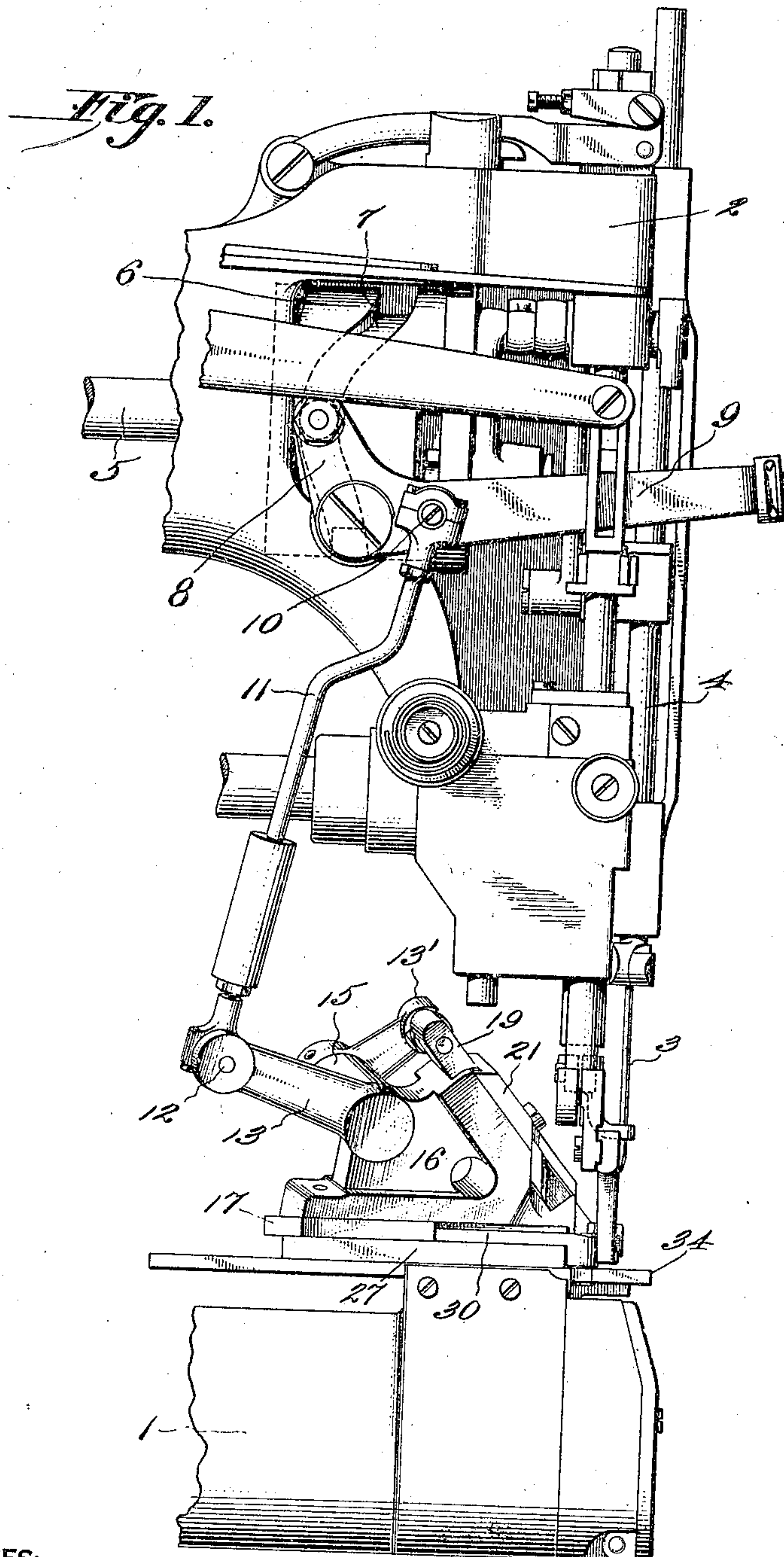


Jan. 2, 1923.

P. A. HERR.
MEANS FOR FORMING AND ATTACHING WELTS.
FILED JUNE 7, 1919.

1,440,541.

2 SHEETS—SHEET 1.



WITNESSES:

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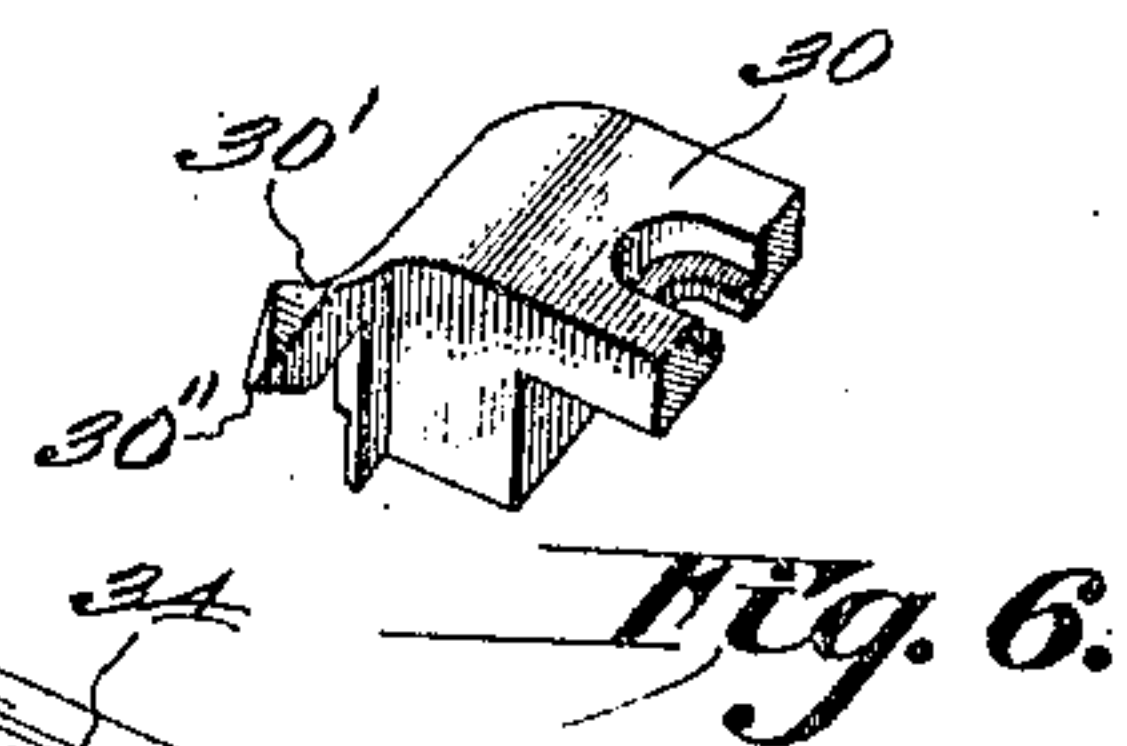
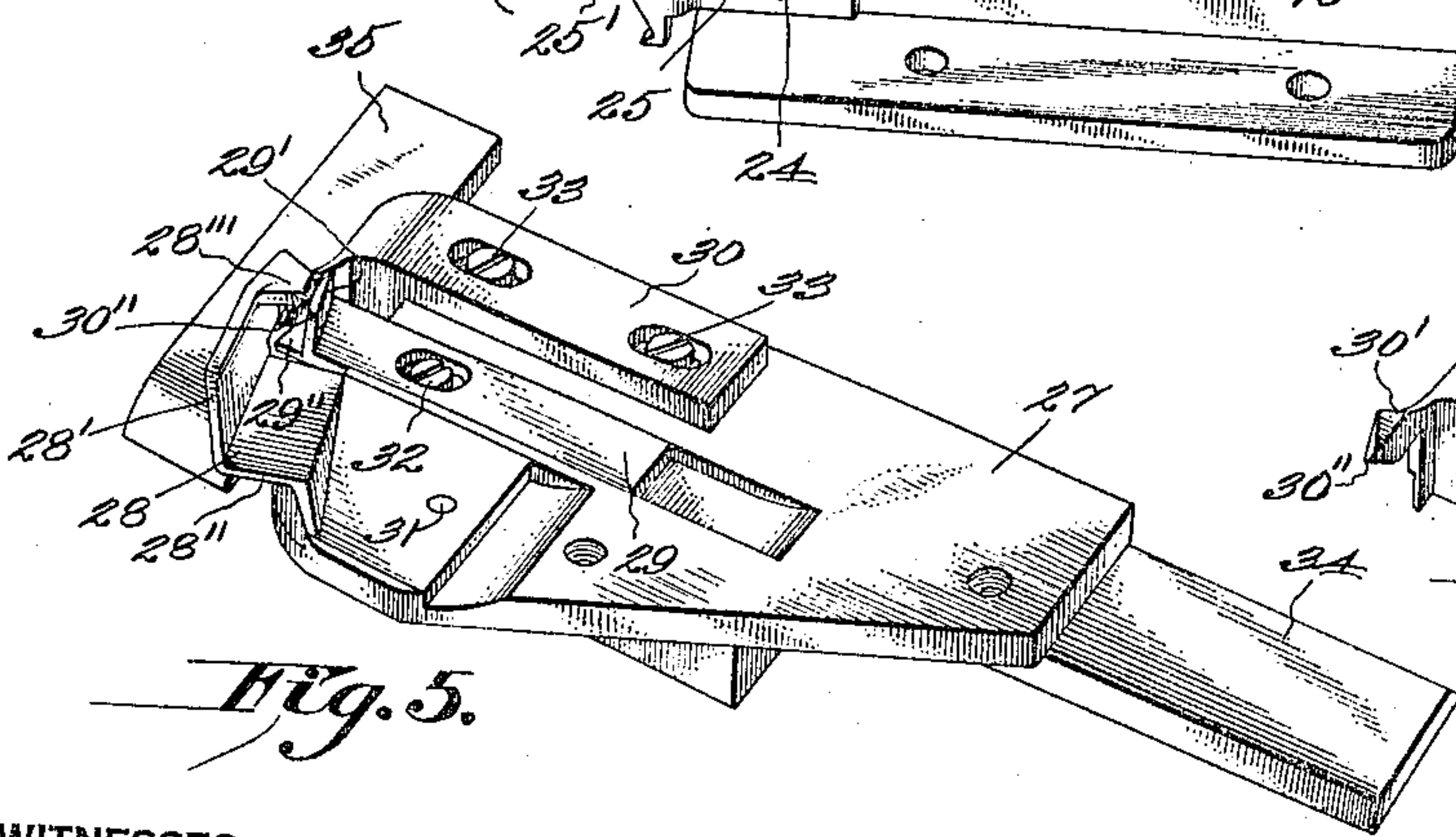
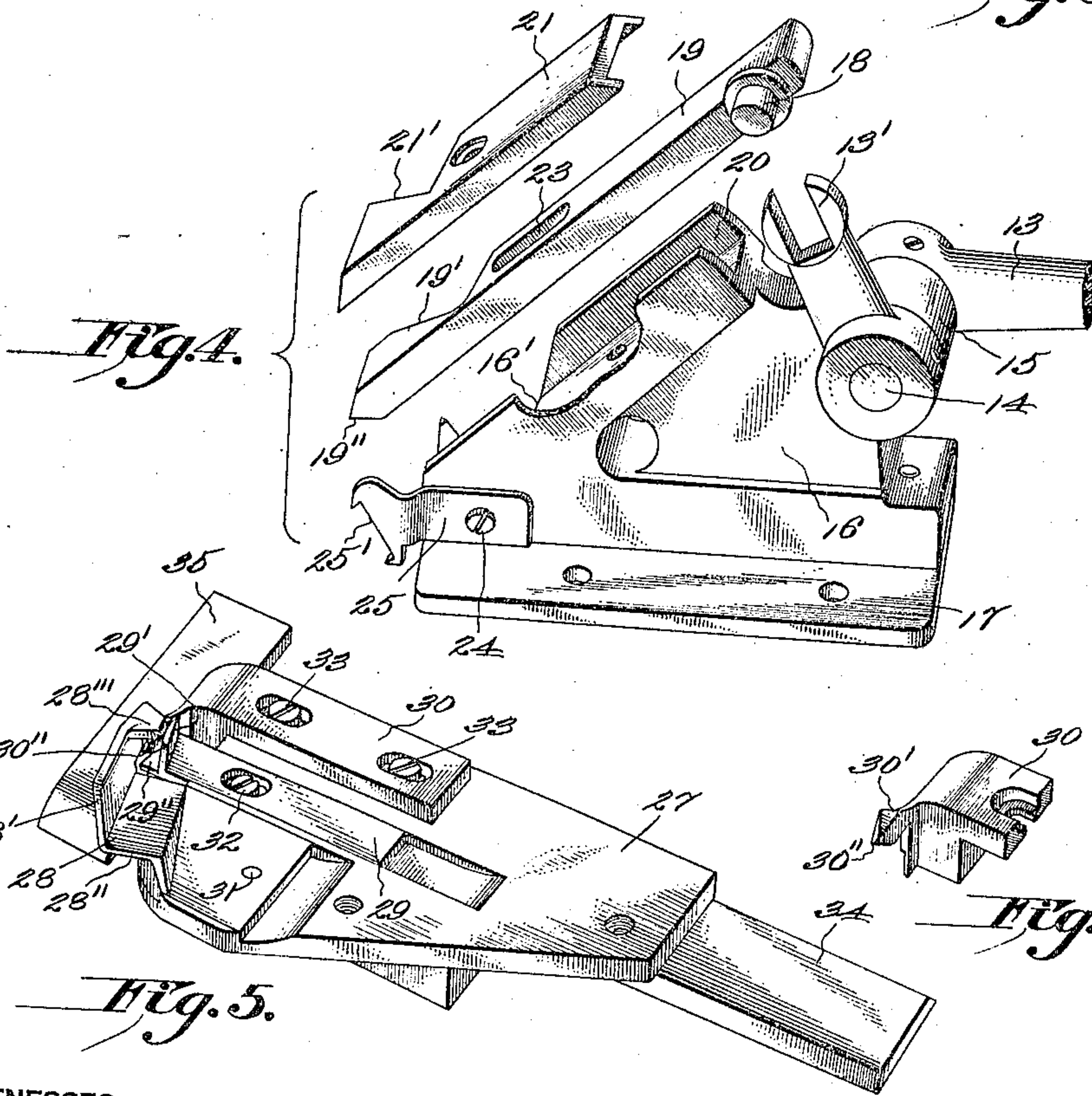
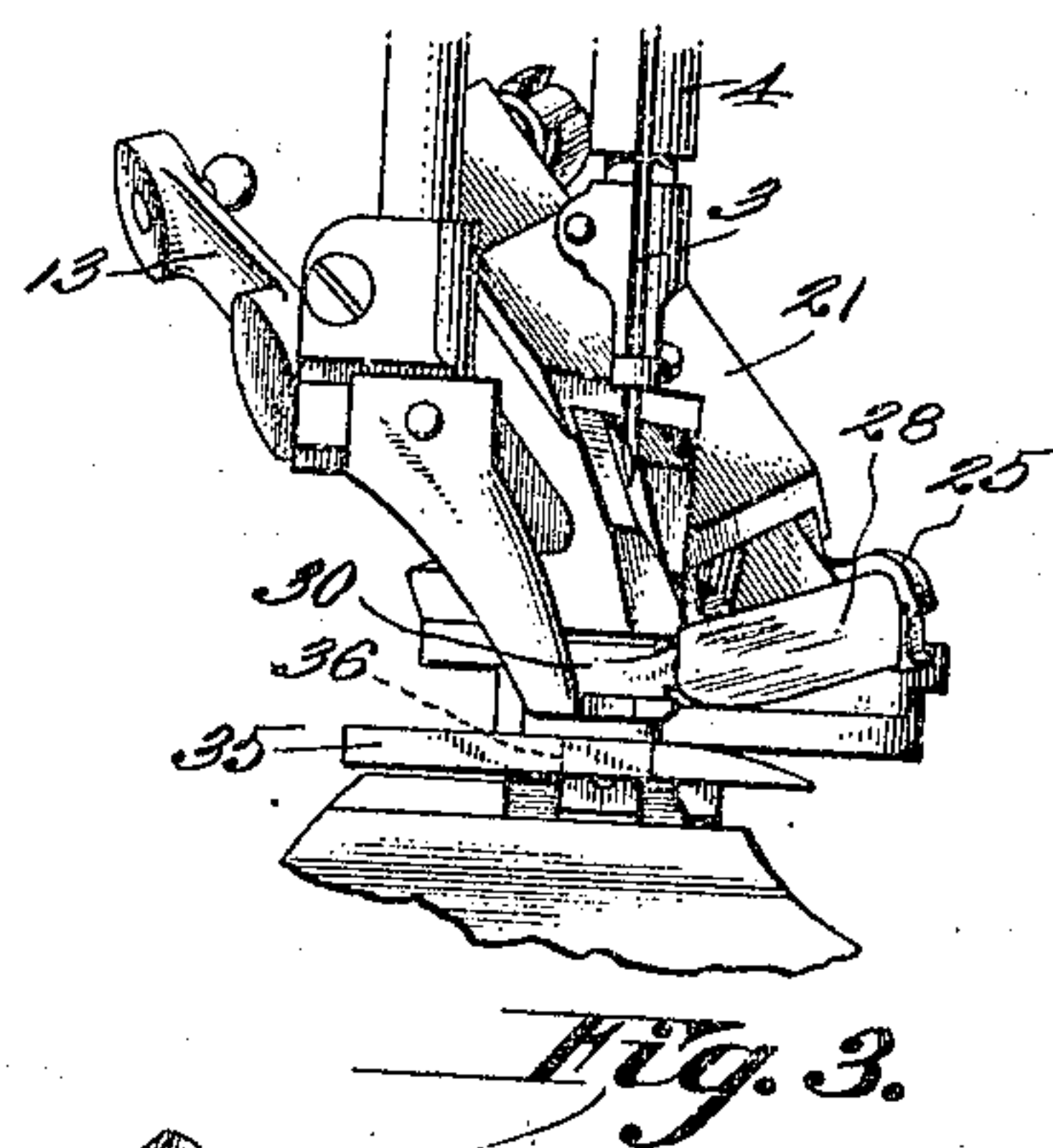
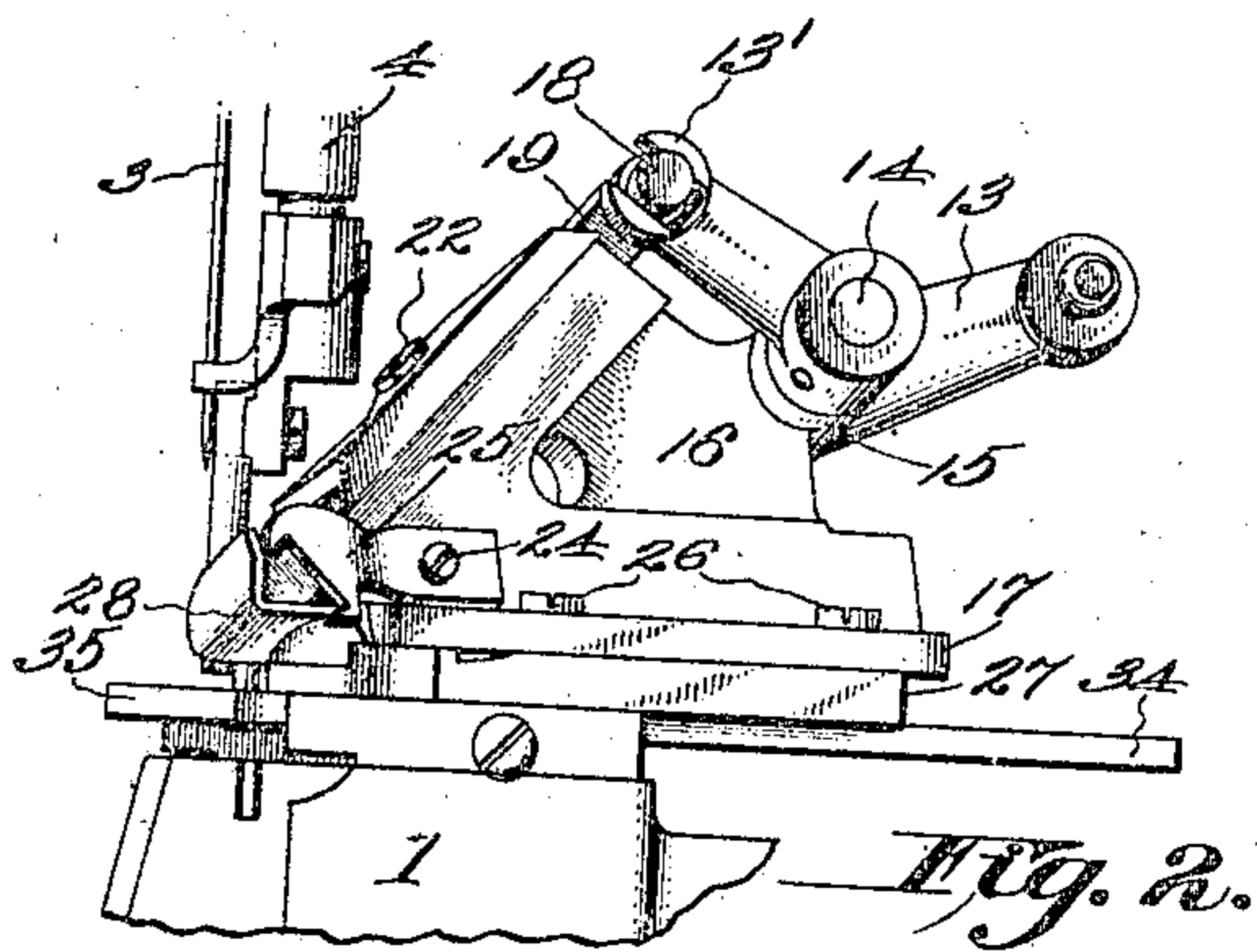
ATTORNEY

Jan. 2, 1923.

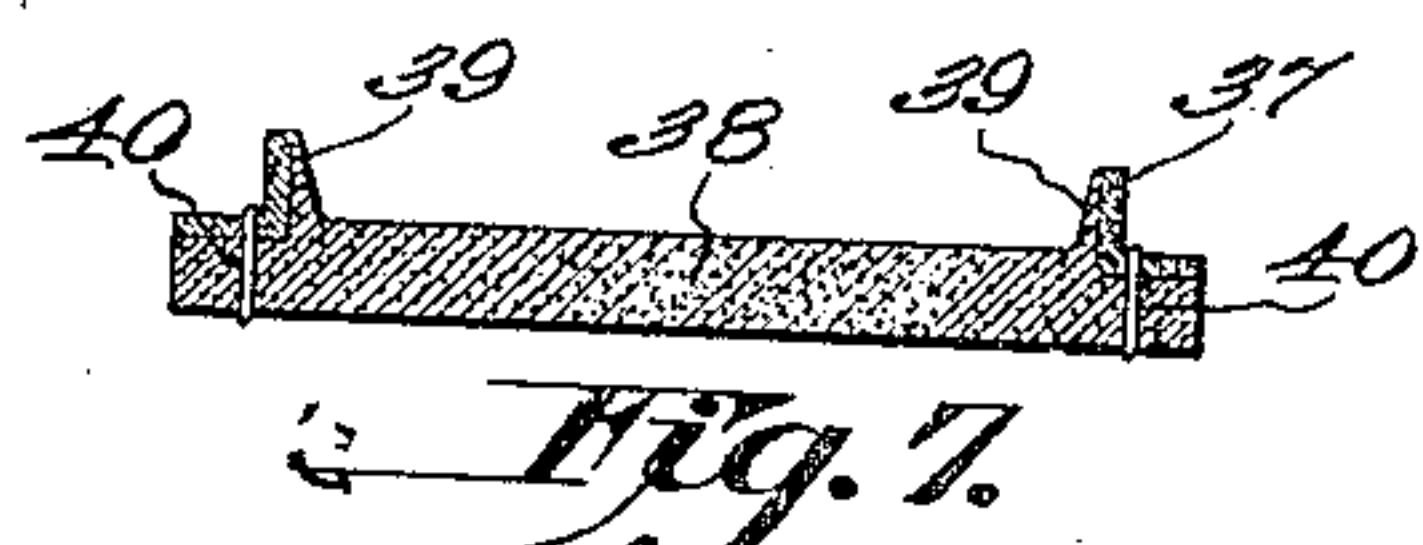
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

PARK A. HERR, OF HILLSIDE, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

MEANS FOR FORMING AND ATTACHING WELTS.

Application filed June 7, 1919. Serial No. 302,511.

To all whom it may concern:

Be it known that I, PARK A. HERR, a citizen of the United States, residing at Hillside, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Means for Forming and Attaching Welts, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention aims to provide a new device for conducting a welt strip to a shoe sole preliminary to stitching the strip thereto with a flange or vertically arranged portion in a contiguous reinforcing position to a feather channeled slightly inward from the edge of the sole. It further aims to provide a device of such construction that it will not require the operator to manipulate the strip while it is being stitched by a sewing machine to the sole leaving her free to handle the shoe sole itself. It also aims to provide a device which will bend or crease a strip lengthwise into substantially right angular form while it is being conducted to the stitching point and without requiring a separate creasing or bending operation before the strip reaches the operator. Further, it aims to provide a device which will leave the operator's view of the stitching point unobstructed. And finally it aims to so construct and organize the attachment that a minimum of friction will be opposed to the work-advancing mechanism of the sewing machine by the passage of the strip through the attachment.

The construction comprises essentially a strip-guide having an angular guiding channel and a cooperating and reciprocating member which moves transversely of the extent of the guiding channel and intermittently strikes against a strip passing through the strip-guide. Edge-guides are provided to gauge the edges of the respective flanges of the folded strip after it has been bent by the reciprocating member and one of these edge-guides is preferably made adjustable so that an edge of the strip and the margin of the sole may be flush. The bending or reciprocating member is operated by a movable or reciprocating part of the machine, in the present instance, being connected to a reciprocatory take-up.

It will be seen that the chief characteristic

feature of the described method of operation is the formation of the flat strip into a longitudinally channeled strip in advance of the stitching by a compressive bending force to produce with precision a sharply defined shape of cross-section desired while the feed of the work is in progress and without imposing upon the latter an excessive resistance consequent upon the shaping of the strip suitable for performing its required office in the shoe structure. In the method of forming and attaching the welt strip, as performed by the present mechanism, the lateral bending thrust upon the strip is applied while the work is stationary between stitch-spacing advance movements and is wholly relieved during advance of the work, thereby facilitating movement of the strip with the shoe sole by removal of objectionable resistance to its travel relatively to the stitching mechanism.

It is old in the prior art to bend the flat strip or welt by means of stationary guides or by passing it through an angularly shaped opening in a stationary member immediately before feeding it to the stitching mechanism. By these means, however, the strip or welt is bent only temporarily and is not pressed after being bent to make the crease permanent. Furthermore if in these devices it is attempted to place the guides sufficiently close together or form the angularly shaped opening sufficiently small to give a more or less permanent bend the resistance to the passage of the strip or welt is so great as to tend to score or abrade its surface and stretch or strain the strip to an undersirable extent. Also an extra strain is placed on the feeding mechanism and the advance of the work is impeded. Applicant believes he is the first to construct a device in combination with a machine for attaching the strip or welt which bends it and then compresses it by means of a positively moving member, and which is so operated as to press on the strip only when it is not being fed forwardly by the feeding mechanism.

The invention is illustrated in the accompanying drawings in which Fig. 1 represents a rear side elevation of a cylinder-arm or horn machine of the type disclosed in the patent to Park A. Herr, No. 1,265,448, dated May 7, 1918. Fig. 2 is a front side elevation

of the attachment and the immediately adjacent portion of the horn. Fig. 3 is an end elevation of the same. Fig. 4 shows in spaced perspective the reciprocating bending or creasing member and its channeled carrier. Fig. 5 is a perspective of the strip-guide, and associated edge-guide and bend or crease maintaining member. Fig. 6 is a perspective detail of the bend or crease maintaining member alone and Fig. 7 represents the work done with the attachment.

The attachment, as illustrated, is applied to a sewing machine having a cylindrical or horn-shaped work-supporting arm 1 above which is vertically spaced the head 2 of the bracket-arm. A needle 3 carried by a needle-bar 4 is operatively sustained and actuated in the head 2 and from a main-shaft 5 in any suitable manner as disclosed, for instance, in my prior Patent No. 1,265,448, granted May 7, 1918, the needle being reciprocated up and down through the work and cooperating with the loop-taking device (not shown), and being given as well bodily sidewise or lateral movement in substantially a plane transverse the axis of the horn so as to feed the work. No feed-dog is employed in the machine illustrated, but it will be understood that the invention could be employed on a machine in which the work is advanced by a feed-dog.

On the main-shaft 5 is a barrel-cam 6 which is peripherally grooved as indicated at 7 to actuate the short end 8 of a take-up member 9 for controlling the needle-thread. To the take-up 9 at 10 is universally joined one end of a link 11 whose opposite end 12 is also universally connected to a bellcrank-lever 13 which is fulcrumed on the pin 14 journaled in the boss 15 carried by a bracket 16 upon a plate 17. The bracket 16 is so arranged with respect to the line of feed, to the plane in which the work advances and to the vertical that the axis of the pin 14 extends downwardly and convergently towards the line of feed from front to back as disclosed in Figs. 1, 2 and 3.

One extremity of the lever 13 is forked as indicated at 13' to embrace a friction-roller 18 disposed laterally of a reciprocating bending or creasing member 19 which is slidably mounted in a channel 20 provided in the bracket 16. A cover 21 is provided to confine the member 19 to rectilinear movement during the operation of the machine and a screw 22 (Figs. 2 and 4) which passes loosely through a slot 23 in the member 19, is threaded into the bottom of the channel 20 to hold the cover 21 in place. Notches 21', 19' and 16' are provided in the cover, the bending or creasing member and the bracket, respectively, to clear the needle-bar. The lower end of the bending or creasing member 19 is chisel-pointed as indicated at 19'' and preferably its intersecting faces are

disposed at right angles. To the bracket 16 is secured by a screw 24 a strip-gauge 25 having a shallow notch 25' at its forward free end.

The plate 17 and bracket 16 attached thereto are detachably connected by the screws 26 to a base-plate 27. The base-plate 27 is cut away to receive the component parts of the strip-guide proper which comprise an angle-piece 28 having intersecting flanges 28' and 28'' disposed respectively in planes inclined to a vertical plane through the line of feed and the horizontal plane in which the work advances. In other words the apex of the angle-piece 28 i. e., the line of intersection of the flanges, extends in a direction parallel to the axis of the pin 14 downwardly and convergently with respect to the direction of feed.

The flange 28' is provided with an overhanging lip 28''' which gauges the width of the portion of the strip intended to reinforce the feather channeled in the sole. The strip-guide also comprises an edge-gauge 29 having vertical and horizontal flanges 29' and 29'', respectively, and a crease- or bend-holding member 30 with a rearwardly extending projection 30' (Figs. 5 and 6) having an ironing edge 30'' disposed laterally of the vertical flange 29' of the edge-gauge 29 and above its horizontal flange 29''. The three parts 28, 29 and 30 are detachably secured to the base-plate 27 by the screws 31, 32 and 33, the last-named two passing through elongated and countersunk slots which permit lateral adjustment of the edge-gauge and bend-maintaining member, respectively.

To the bottom of the base-plate 27 in any suitable manner is secured a bar 34 having at its end adjacent the needle a work-supporting plate 35 which is apertured as indicated at 36 (Fig. 3) to receive the needle.

The attachment is intended for the special purpose of applying a reinforcing strip 37, see Fig. 7, to the margin of a shoe sole 38 between a feather 39 channeled therefrom and the outside edge of the sole. Stitches 40 are passed through the marginal flange of the reinforcing strip and desirably as close as possible to the base of the vertical flange. The attachment previously described in detail enables this to be done with ease.

The shoe sole is positioned on top of the work-supporting plate 35 with its feather held vertical by the outside of flange 28' of the angle-piece 28 and the strip 37 is conducted to the stitching point from a source of supply through the gage 25 and angle-piece 28 and under the crease- or bend-holding projection 30'. While the machine is operating the bend- or crease-forming member 19 is reciprocated and its chisel-point 19'' intermittently strikes against the strip and in cooperation with the angle-

piece 28 bends it into substantially the form shown in cross-section in Fig. 7 and in this form it is maintained by the lateral projection 30' until it reaches the stitching point or at least a point in close proximity thereto.

The member 19 may be actuated by any moving part of the machine but the take-up 9 is employed to actuate it in the machine illustrated, being already timed so as to withdraw the bend- or crease-forming member 19 from contact with the strip while it is being advanced by the needle so as to reduce as much as possible the resistance to the passage of the strip through the attachment.

Having thus set forth the nature of the invention, what I claim herein is—

1. A strip-guide having an angular guiding channel in combination with a member cooperating therewith and movable relative thereto and automatic means for imparting repeated movements to said member during normal operation to bend a strip longitudinally in its passage through the strip-guide.

2. A strip-guide having an angular guiding channel in combination with a member cooperating therewith and reciprocatory with respect thereto and automatic means for reciprocating said member repeatedly to bend and crease a strip longitudinally.

3. A strip-guide having an angular guiding channel in combination with a member cooperating therewith and reciprocatory with respect thereto for bending or creasing a strip longitudinally, said member being movable in a path at a substantial angle to the extent of the channel and automatic means for reciprocating said member repeatedly for the purpose set forth.

4. A strip-guide having an angular guiding channel in combination with a reciprocatory member movable transversely to the channel and in a path intersecting the apex of the channel and automatic means for reciprocating said member repeatedly during normal operation to longitudinally bend or crease a strip of material between said member and said channel.

5. A strip-guide comprising an angular member, a cooperating edge-guiding member, a crease- or bend-holding member adjacent the delivery end of the guide, in combination with a crease- or bend-forming member cooperating with said angular member of the guide to bend a strip into angular form and automatic means for repeatedly moving said crease or bend forming member toward and from the angular member during normal operation.

6. A strip-guide comprising an angular member, a cooperating edge-guiding member, and a crease- or bend-holding member adjacent the delivery end of the guide, in combination with a crease- or bend-forming member cooperating with said angular mem-

ber of the guide to bend a strip into angular form, said edge-guiding member and said crease- or bend-holding member being separately adjustable to accommodate strips of different widths.

7. A sewing machine having stitch-forming and work-advancing mechanism including a needle, in combination with an angular strip-guide, a member movable relative to said strip-guide to bend or crease a strip longitudinally in its passage through the guide, and actuating means for said member acting to disengage it from the work during the feed thereof.

8. A sewing machine having stitch-forming and work-advancing mechanism including a needle, in combination with an angular strip-guide, a member movable relative to said strip-guide to bend or crease a strip longitudinally in its passage through the guide, and actuating means for said member acting to disengage it from the work during the feed thereof, said means including a lever operatively connected to said member and connections between said lever and a moving element of the sewing machine.

9. A sewing machine having stitch-forming and work-advancing mechanism including a needle, in combination with an angular strip-guide, a member movable relative to said strip-guide to bend or crease a strip longitudinally in its passage through the guide, and actuating means for said member, said means including a lever connected to said member and connections between said lever and a movable element of the sewing machine.

10. A sewing machine having stitch-forming and work-advancing mechanism including a needle and a take-up, in combination with an angular strip-guide, a member movable relative to said strip-guide to bend or crease a strip longitudinally in its passage through the guide, and actuating means for said member, said means including a lever operatively connected to said member and a link connecting said lever to said take-up.

11. A strip-guide comprising an angle-piece with flanges disposed approximately horizontally and vertically but at a downward inclination from front to back, an edge-guiding lip overhanging and carried by one of said flanges, an edge-guiding member adjustable relative to the other of said flanges, and a bend- or crease-holding member, in combination with a slidable member for bending or creasing a strip against said angle-piece, means for slidably sustaining said member at an inclination to both flanges of the angle-piece and transverse to the length thereof, a lever sustained by said means and operatively connected with said member, and means for operating said lever

timed to hold the member out of contact with the strip when the work is being advanced.

12. In combination, a strip-guide having an angular guiding channel, means for feeding a strip longitudinally of the channel and movable means for intermittently pressing the strip into the angle of the channel to crease or bend the same longitudinally as it passes through the guide.

13. A sewing machine having stitch-forming and work-advancing mechanism, in combination with an angular guide for guiding a strip to the stitch-forming mechanism, movable means for intermittently pressing the strip into the angle of the guide to crease or bend the same longitudinally as

it passes therethrough, and means for operating said creasing or bending means.

14. A sewing machine having stitch-forming mechanism and step-by-step work-feeding mechanism, means for guiding a strip to the stitch-forming and work-feeding mechanisms, and means for intermittently applying pressure to the strip to bend or crease the same longitudinally, said means so constructed and arranged as to apply the bending pressure to the strip when it is stationary and to release the strip when it is being moved forwardly by the feeding mechanism.

In testimony whereof, I have signed my name to this specification.

PARK A. HERR.