

No. 672,188.

Patented Apr. 16, 1901.

A. E. GRANT & J. H. VAN HOEVENBERGH.  
FOLD COLLAR SHAPING MACHINE.

(Application filed Nov. 3, 1900.)

(No Model.)

3 Sheets—Sheet 1.

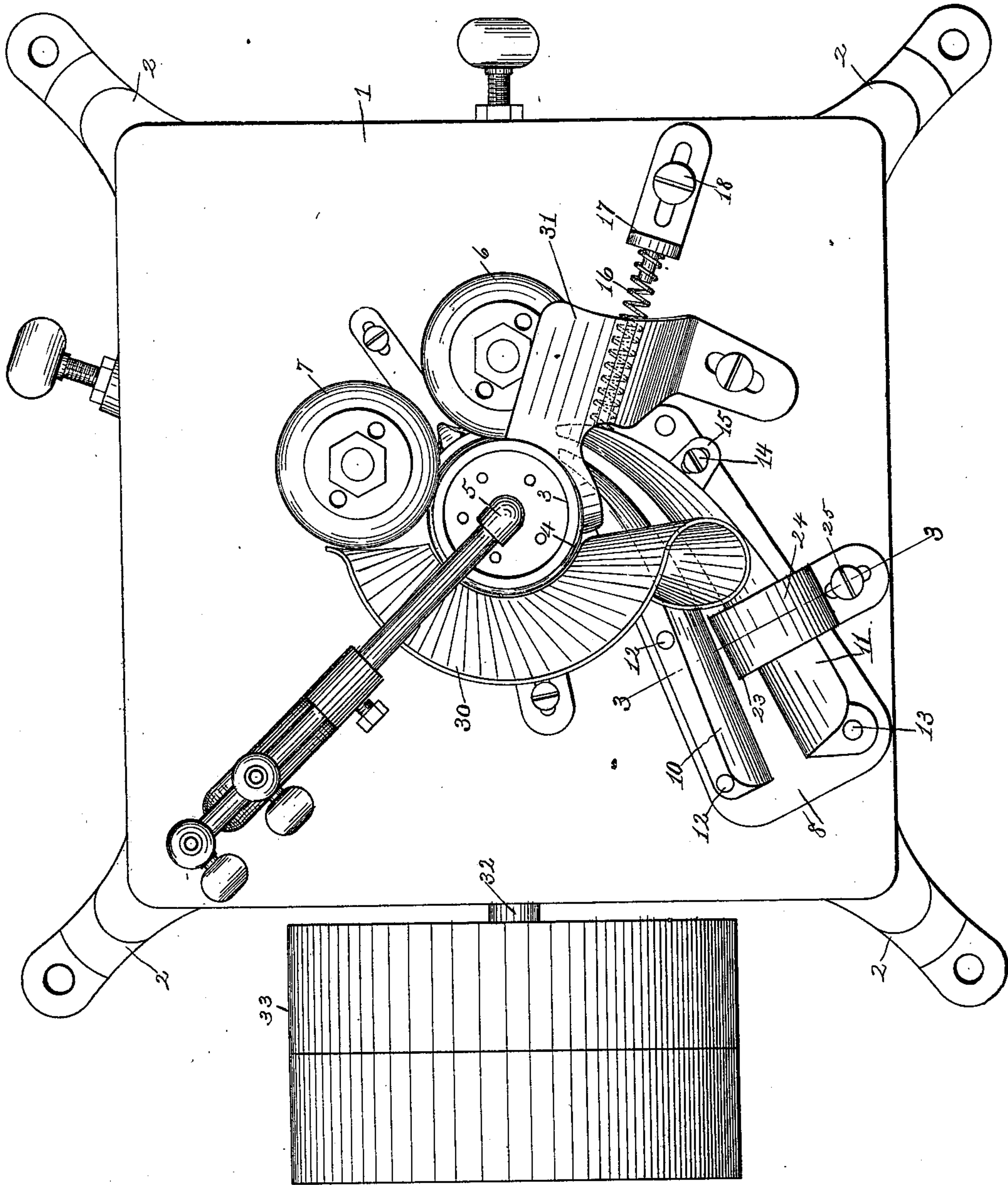


Fig. 1.

Witnesses  
J. G. Curtis  
E. M. O'Reilly.

Inventors:  
Albert E. Grant  
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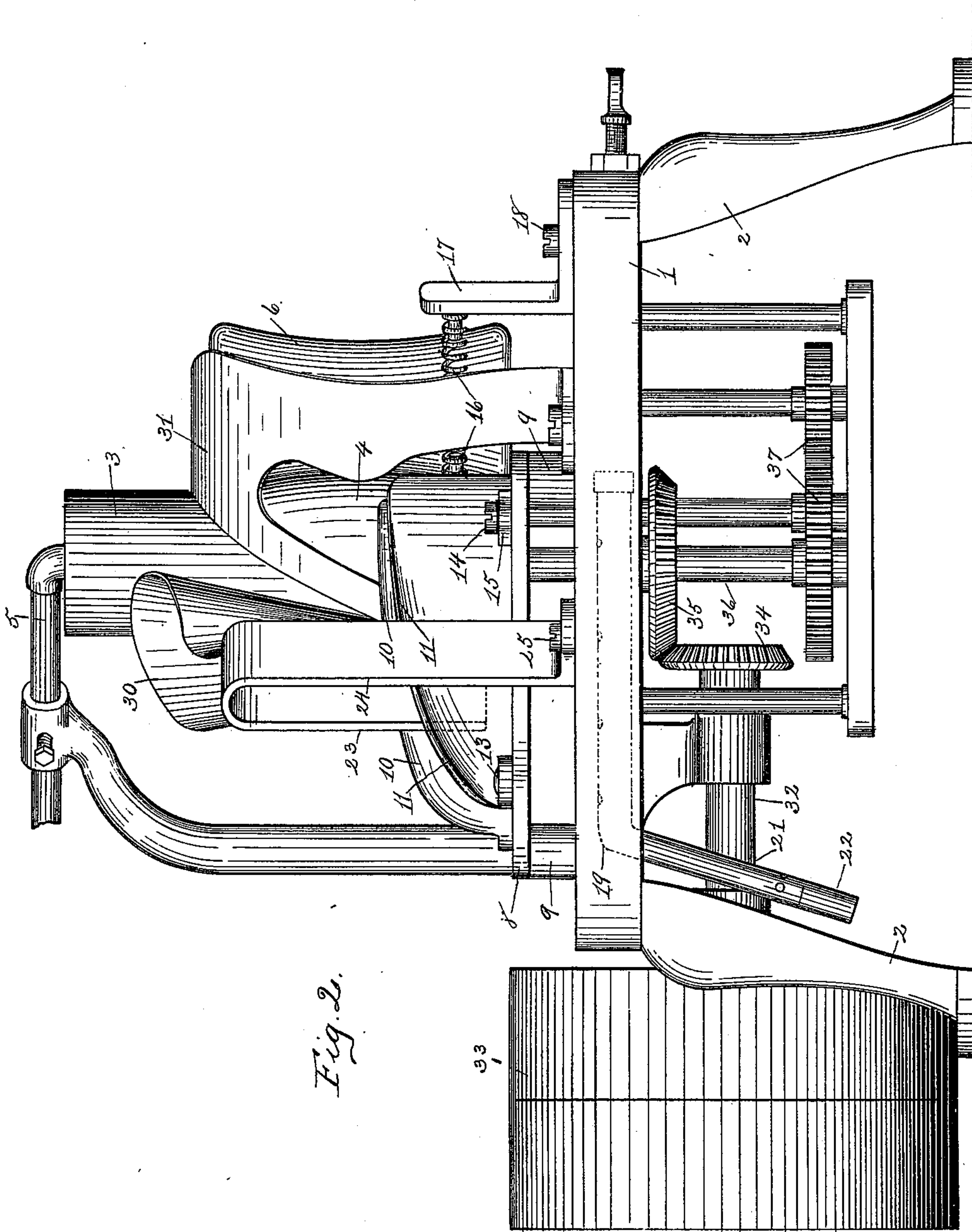


Fig. 2.

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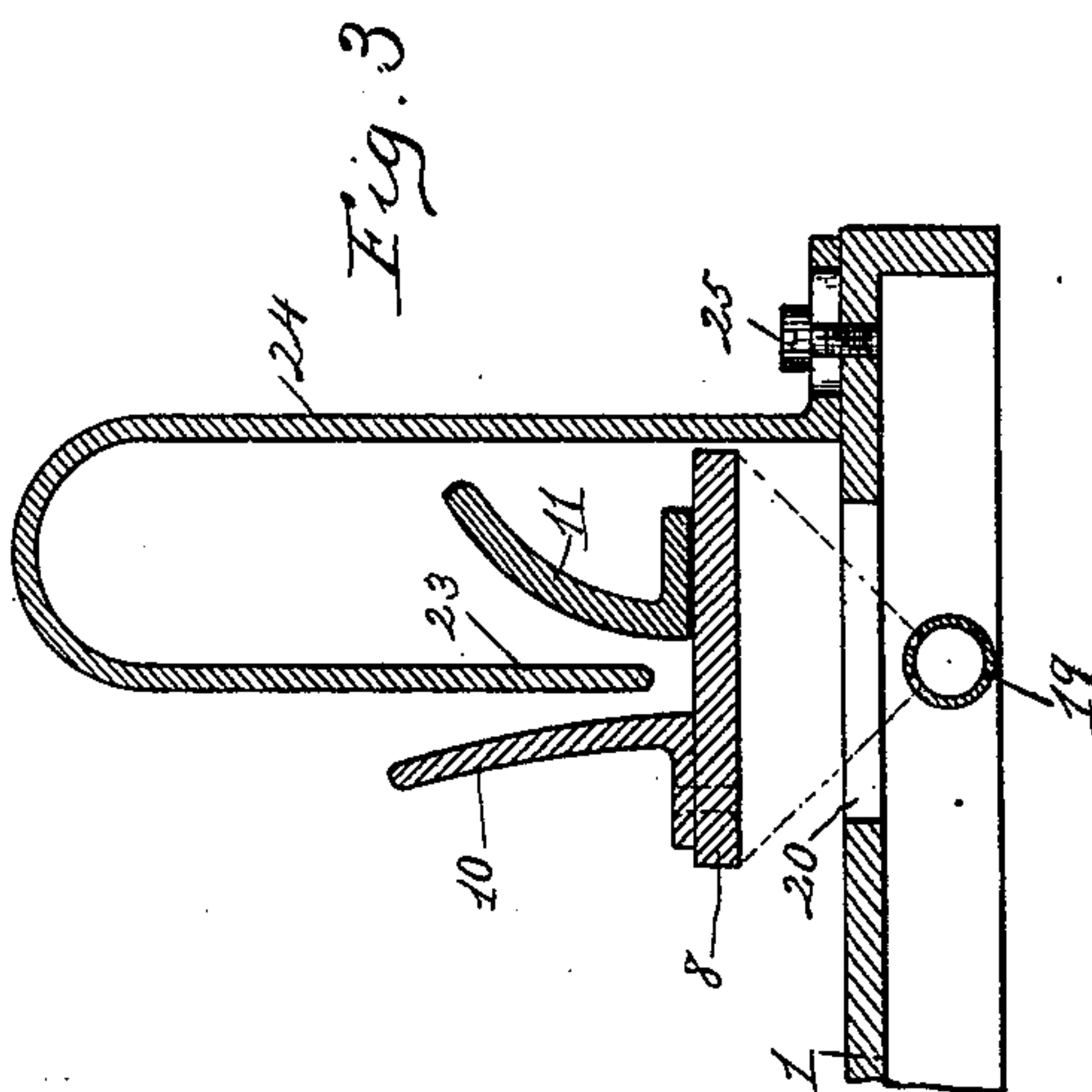
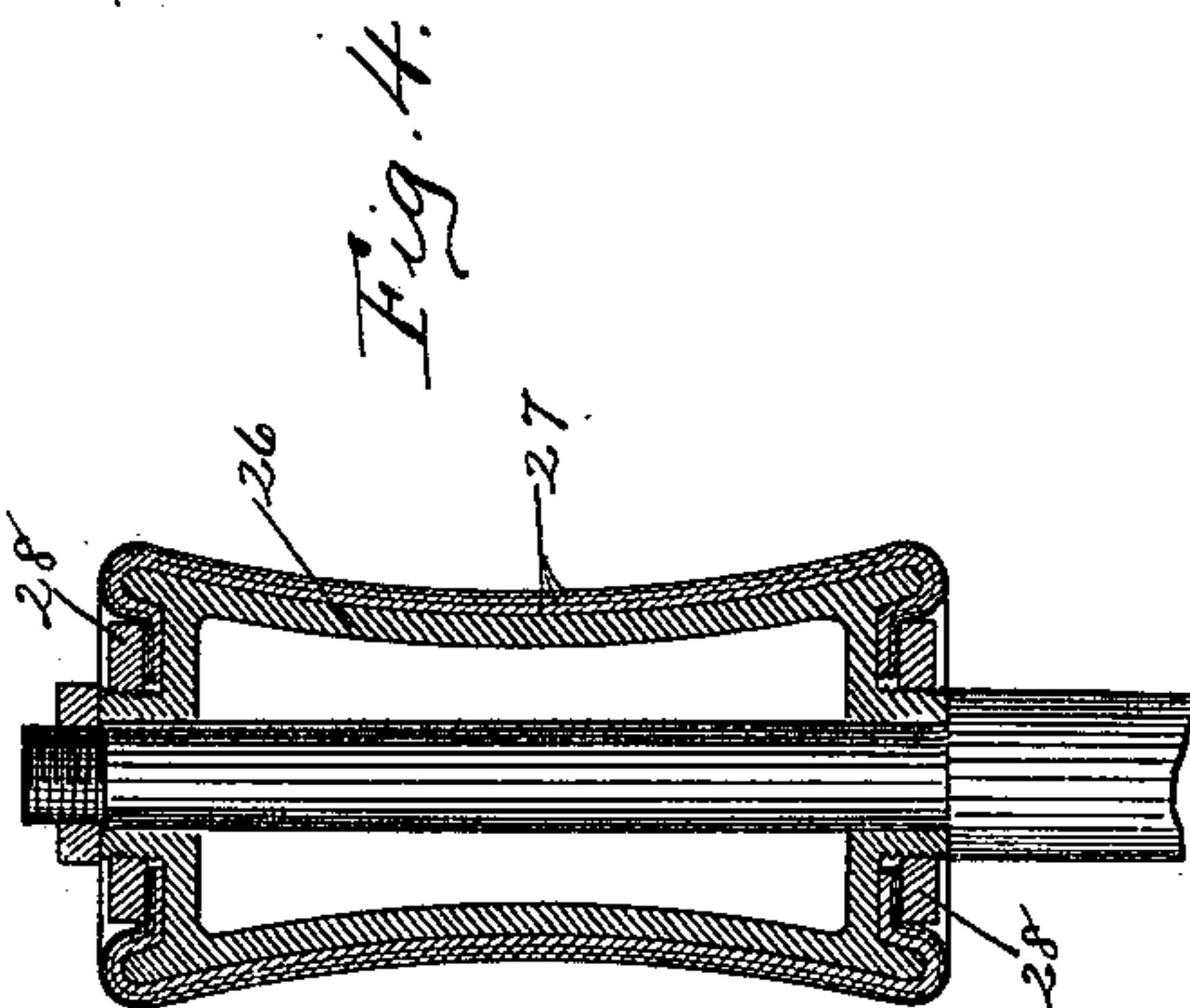
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# UNITED STATES PATENT OFFICE.

ALBERT E. GRANT AND JOHN H. VAN HOEVENBERGH, OF TROY, NEW YORK,  
ASSIGNORS TO SAID ALBERT E. GRANT, OF SAME PLACE.

## FOLD-COLLAR-SHAPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,188, dated April 16, 1901.

Application filed November 3, 1900. Serial No. 35,378. (No model.)

*To all whom it may concern:*

Be it known that we, ALBERT E. GRANT and JOHN H. VAN HOEVENBERGH, citizens of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Fold-Collar-Shaping Machines, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification.

Similar characters refer to similar parts in the several figures.

Figure 1 of the drawings is a top plan view of our improved fold-collar-shaping machine. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical section of the same, taken on the broken line 3 3 in Fig. 1. Fig. 4 is a central vertical section of one of the clothed rolls.

In machines of this class much difficulty has been experienced in securing a perfectly folded and shaped fold-collar, and much loss has been occasioned by the rupturing of the threads and fibers of the fabric along the folded edge of the collar. It is well known that a stiffly-starched collar cannot, while cold and dry, be sharply folded without breaking or exerting undue strain upon the fibers and threads of fabric along such fold, but that if the starched collar is first steamed by dampening the same along such fold-line and then quickly applying heat to such dampened portion the threads and fibers become so softened as to permit the article to be manipulated as desired without injury. In folding and shaping fold-collars, which are also called "turn-down" collars, either by machinery or by hand, it is customary to thus dampen the inner surface of the collar along the fold-line before subjecting the same to the iron or shaping-roll.

The object of our invention is to so soften the collar along its fold-line by means of heat and moisture before the same is subjected to the shaping iron or roll.

Referring to the drawings, 1 is the bed of our improved machine, supported upon legs 2. Rotatively mounted upon the bed is a hollow shaping-roll preferably having a cylindrical upper end 3 and bulged or swelled to frusto-spherical form near its lower end at 4. This roll may be heated in any known manner, as by gas-heating apparatus 5, extending interiorly thereof. As a means for bending a folded collar around this shaping-roll a pair of clothed pressing-rolls 6 and 7 are provided, each rotatory upon a vertical axis contiguous to the shaping-roll and in position to press and hold an inserted collar against the shaping-roll until the spirally-curved shape is permanently imparted to the collar. In front of the shaping and pressing rolls is located a feed-trough leading to the entrance between the shaping-roll and the first of the pressing-rolls 6. This feed-trough comprises a bed-plate 8, supported a short distance above the bed of the machine by posts 9, erected from the bed, and side members 10 and 11, the member 10 being fixed upon the upper side of said base-plate, as by rivets 12, and the member 11 being movably supported upon said base-plate, to which it is pivoted at 13, whereby it is adapted to swing in a horizontal plane toward and from the fixed side member 10. The member 11 is guided in its movements by the screw 14, inserted through and loosely fitting a slot in an ear 15, offset from said member. A coil-spring 16, inserted between the inner end of the movable member 11 and a bracket 17, erected from the bed of the machine, tends to yieldingly force the movable member toward the fixed side member of the trough. The bracket 17 is secured to the bed of the machine by the screw 18, inserted through a slot in the shank of the bracket, whereby the position of the bracket may be varied to vary the tension of the spring 16. We provide means for heating said trough comprising a gas-burner 19, located beneath the bed of the machine, a portion of the bed being cut away at 20 directly beneath the trough to permit the flame from the burner to have free contact with the under side of the base-plate of the trough. The burner is supplied by a pipe 21, having nipple 22, adapted for connection with a hose leading from a gas-supply.



The trough - channel is approximately straight except at its inner end, where it terminates in a gradual curve at the entrance between the shaping-roll and the first of the 5 presser-rolls. A presser-arm 23 depends from the bracket 24 into the trough-channel in position to force the folded edge of an inserted collar to the bottom of said trough. The bracket is adjustably supported in a 10 fixed position upon the bed by means of a screw 25, inserted through a slot in the shank of the bracket.

The presser-rolls 6 and 7 preferably comprise each a core 26, upon which the clothing 15 fabric 27 is wound, the edges of the clothing fabric being introverted upon the ends of the core and clamped thereon by a screw ring or nut 28, as shown in Fig. 4, whereby the introverted edges of the fabric are tightly secured without sewing and an ornamental appearance is imparted to the ends of the roll. 20

30 is a conical guide which receives the collars from the rolls and guides them in a spiral path upwardly over the stripper guard- 25 plate 31, the inner edge of which closely fits the shaping-roll to serve as a stripper therefor and which forms a bridge over the feed-trough, extending upwardly over the presser-roll 6 to guide the collars above said roll as they are delivered. 30

The operation of shaping collars by means of our improved machine is as follows: The fold-collar, which has been ironed out flat in the usual manner, is dampened by the application of moisture along the fold-line on the 35 inner side of the collar and is then loosely folded up to V shape in cross-section and introduced into the outer end of the trough, with its folded edge on the under side in proximity to the base-plate of the trough, and 40 is then passed inwardly through the trough beneath the presser-arm 23, which forces the folded edge of the collar down into the bottom of the trough, where it is subjected to heat, which causes the moisture to be converted into steam and to penetrate the plies of the collar. It will be seen from an inspection of Fig. 1 that a collar so inserted is maintained in an approximately straight position 50 while traveling a considerable distance through said trough in contact with the heated base-plate and sides thereof. Ample opportunity is thus afforded for the generation of steam and transmission of the steam through the plies of fabric to the outer ply before the 55 collar reaches the shaping-roll. It will thus be seen that when the collar reaches the shaping-roll it has been so softened by the heat and moisture which has penetrated its every part along the fold-line that any desired degree of curvature can be imparted thereto without danger of breaking the threads and 60 fibers.

The inner end of the feed-trough is curved, 65 as shown, so as to gradually bend the collar to curved form as it approaches the shaping-roll, and the degree of pressure exerted by

the walls of the trough upon the folded edge in thus shaping the collar can be regulated as desired by means of the spring 16. The 70 collar upon leaving the trough is bent around the heated shaping-roll by the pressure-rolls 6 and 7 and is delivered from said rolls to the conical guide 30, which causes it to traverse a spiral path upwardly over the stripper 75 guard-plate 31, where it is removed by the operator.

Rotary movements may be imparted to the shaping and pressing rolls in any known manner. We have shown a driving-shaft 32, 80 mounted in bearings on the frame of the machine and provided with a belt-pulley 33, adapted to receive a driving-belt. (Not shown.) A bevel-gear 34 on the drive-shaft meshes with a like gear 35 on the shaft 36, 85 which supports the shaping-roll, and intermeshing gears 37 on the respective roll-shafts cause rotary movements to be imparted to the pressure or feed rolls in the usual manner.

What we claim as new, and desire to secure 90 by Letters Patent, is—

1. In a machine for shaping fold-collars, the combination with a shaping-roll and means for bending a folded collar around the same; of a heated feed-trough leading to said roll. 95

2. In a machine for shaping fold-collars, the combination with a shaping-roll and means for bending a folded collar around the same; of a guide-trough leading to said roll and having a comparatively straight portion; and 100 heating mechanism for said trough.

3. In a machine for shaping fold-collars, the combination with a shaping-roll and means for bending a folded collar around said roll; of a guide-trough having a comparatively 105 straight portion terminating in a gradually-curved end adjacent to said roll; and means for heating said trough.

4. In a machine for shaping fold-collars, the combination with a shaping-roll; and means 110 for bending a folded collar around the same; of a feed-trough having a movable side member, and means for yieldingly forcing said movable side member toward the other side member. 115

5. In a machine for shaping fold-collars, the combination with a shaping-roll and means for bending a folded collar around said roll; of a feed-trough having a movable side member; means for yieldingly forcing said mem- 120 ber toward the other side member; and means for heating said trough.

6. In a machine for shaping fold-collars, the combination with a heated feed-trough; of mechanism for forcing the folded edge of an 125 inserted collar to the bottom of said trough.

7. In a machine for shaping fold-collars, the combination with a feed-trough having a movable side member; means for yieldingly forcing said movable member toward the other 130 side member; and means for heating said trough; of a presser located within said trough and adapted to force the folded edge of an inserted collar to the bottom thereof.



8. In a machine for shaping fold-collars, the combination with a shaping-roll, and means for bending a folded collar around the same; of a feed-trough having a movable side member; means for yieldingly forcing said movable member toward the other side member; means for heating said trough; and a presser located in said trough and adapted to force the folded edge of an inserted collar to the bottom thereof.

9. In a machine for shaping fold-collars, the combination with a shaping-roll and means for bending a folded collar around said roll; of a feed-trough leading to said roll; a guide-plate bridging said trough; and a conical guide adapted to receive the shaped collars

from said roll and guide them to said bridging guide-plate, substantially as described.

10. In a machine for shaping fold-collars, the combination with a shaping-roll; means for heating said roll; and means for bending a folded collar around said roll; of a feed-trough leading to said roll; and means for heating said feed-trough, substantially as described.

In testimony whereof we have hereunto set our hands this 2d day of November, 1900.

ALBERT E. GRANT.

JOHN H. VAN HOEVENBERGH.

Witnesses:

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E. M. O'REILLY.