

No. 625,575.

Patented May 23, 1899.

M. J. LOUGHRAN.
APPARATUS FOR ROLLING METAL.

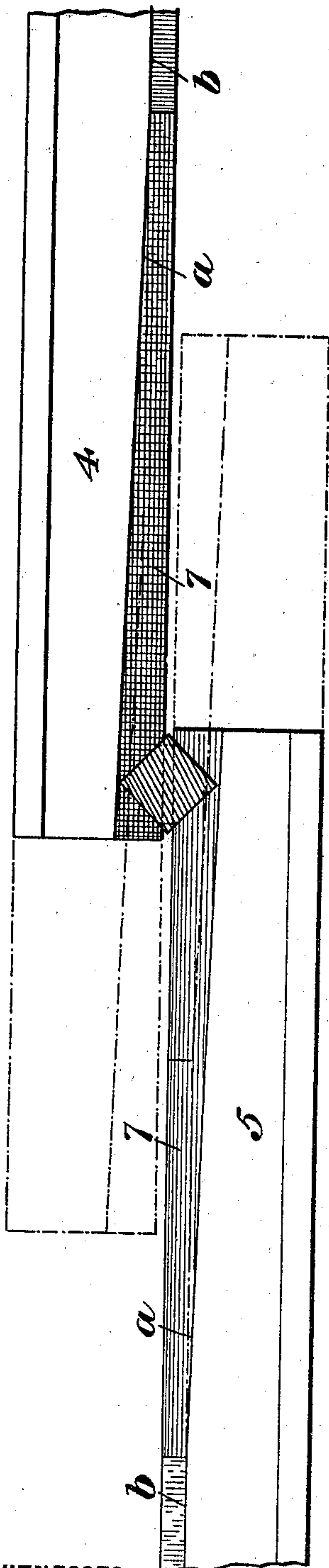
(Application filed May 12, 1898.)

(No Model.)

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Fig. 1.

III



WITNESSES

T. A. Comer
S. J. Stoddard

Fig. 2.

III

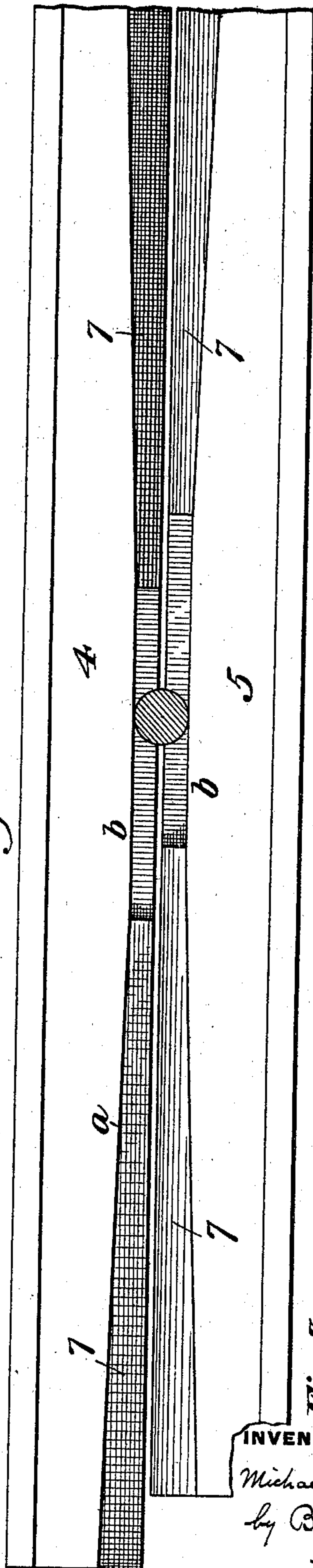
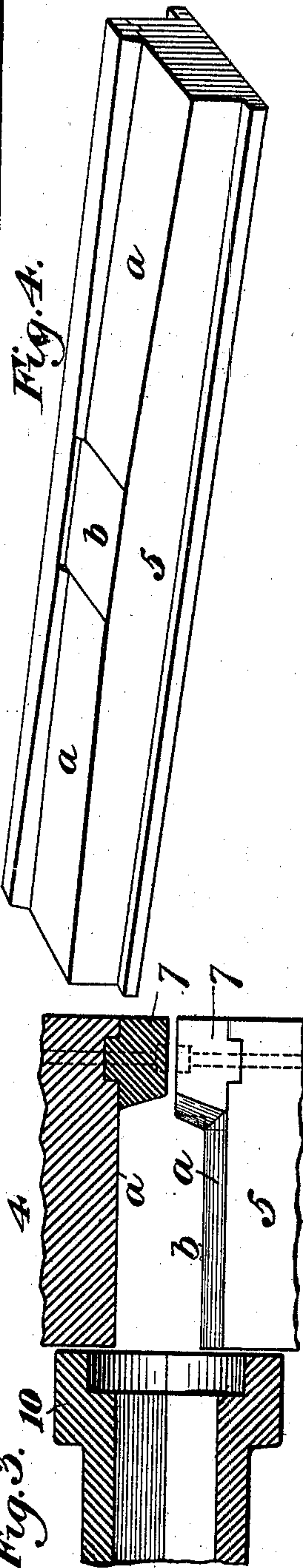


Fig. 3.

10



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Fig. 5.

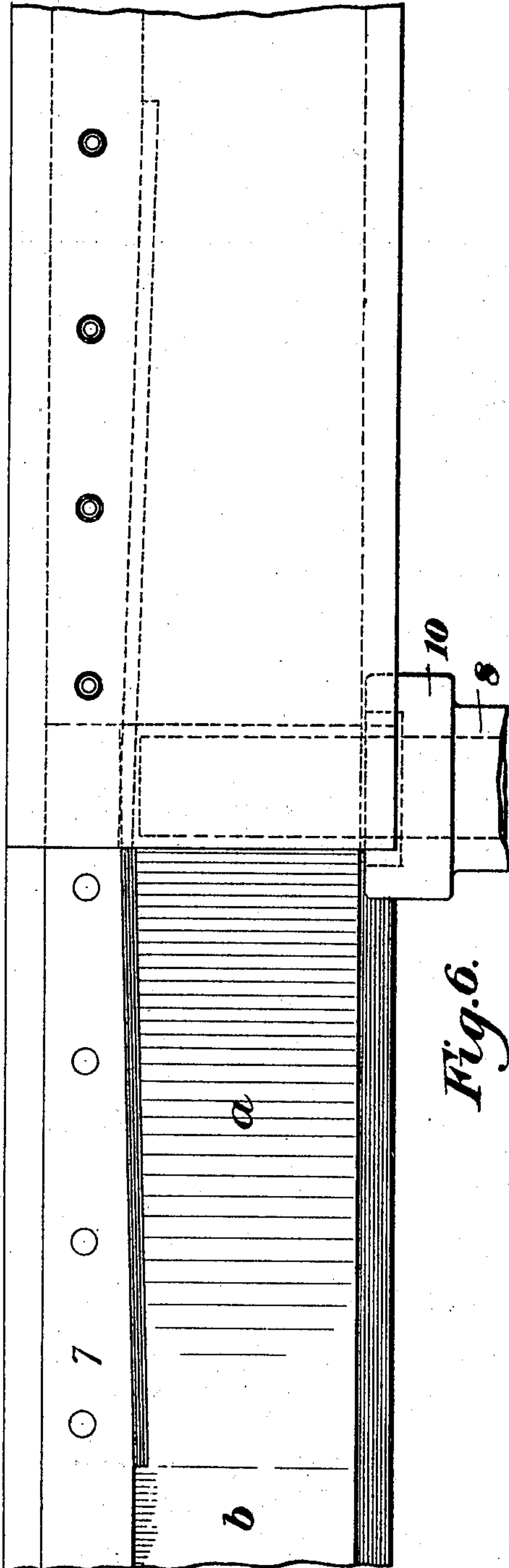
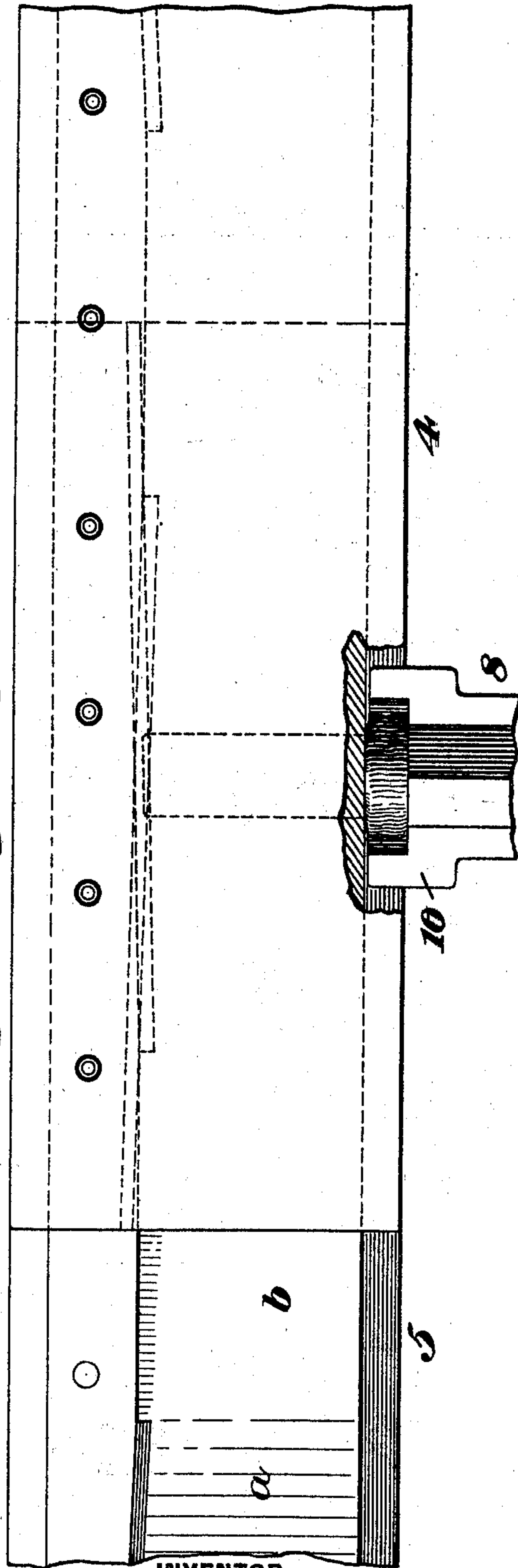


Fig. 6.



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3 Sheets—Sheet 3.

Fig. 7.

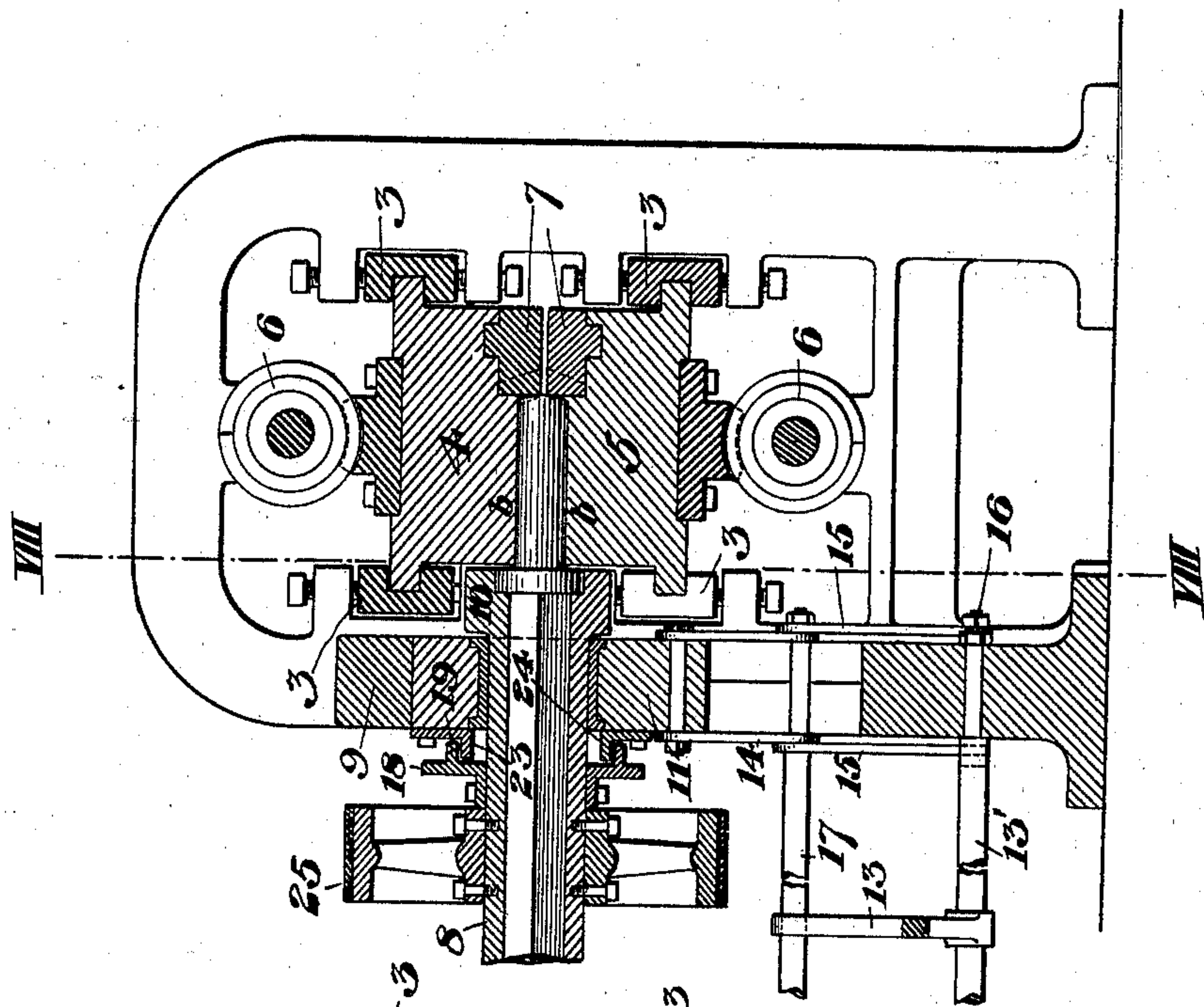


Fig. 9.

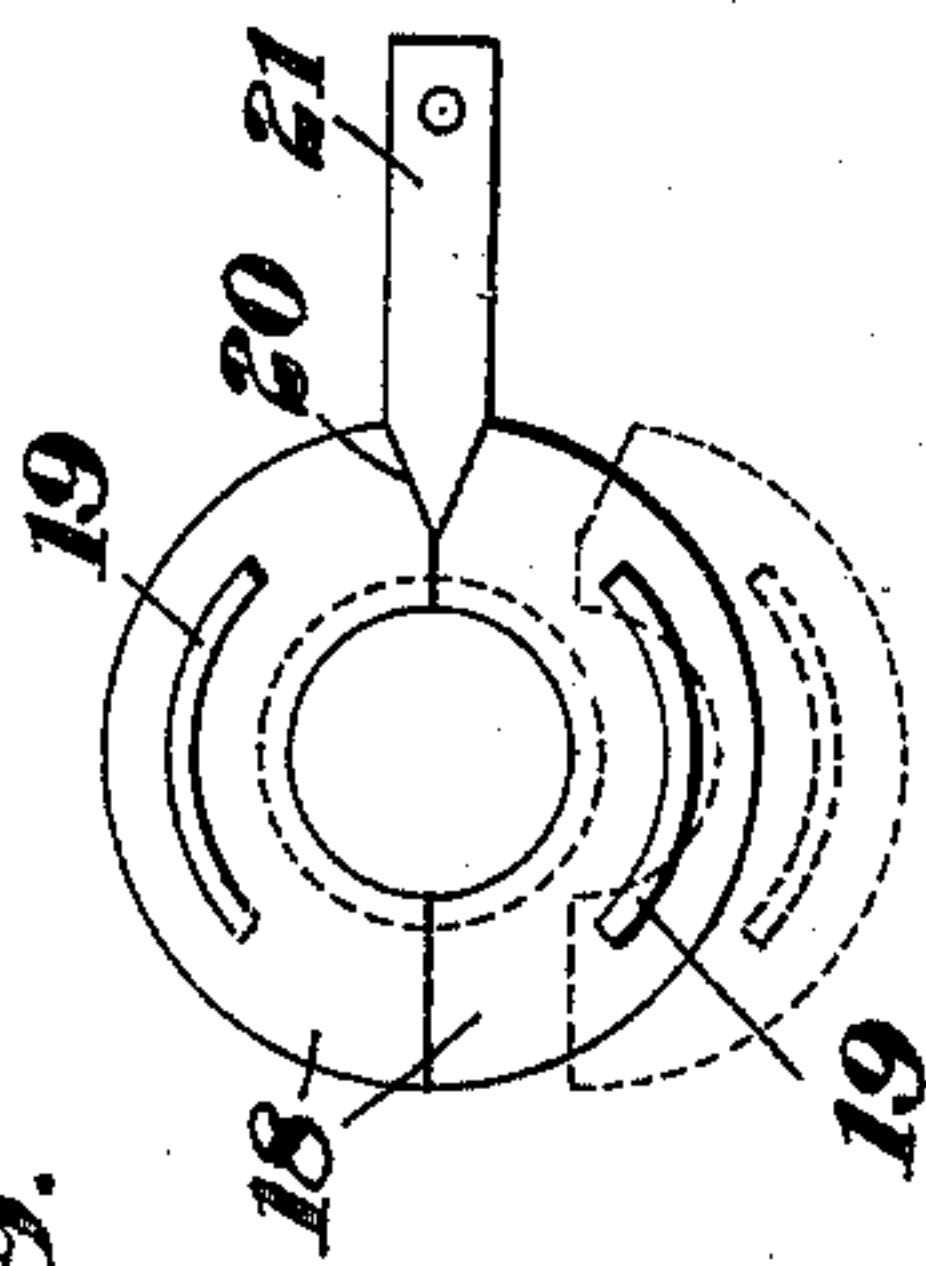
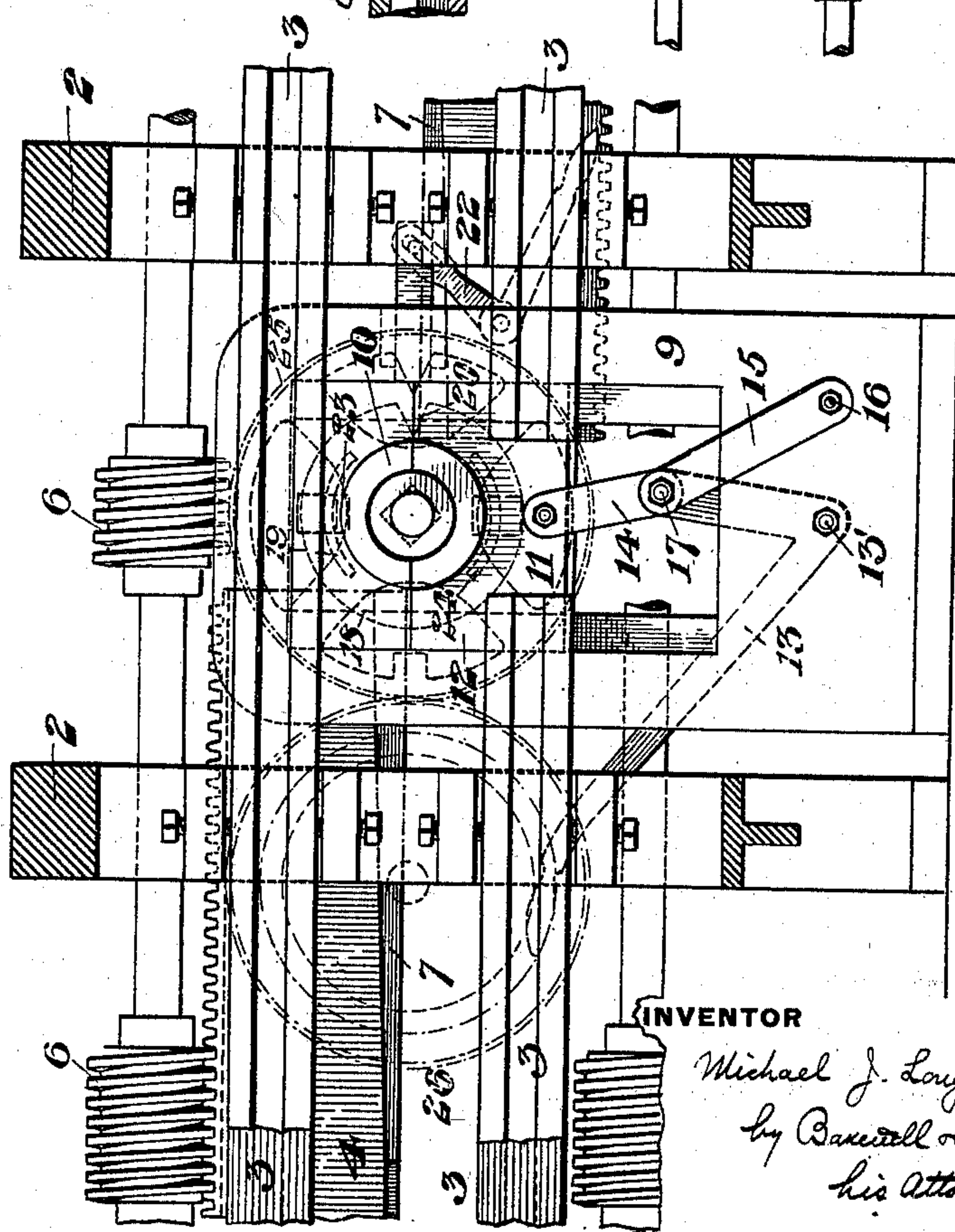


Fig. 8.



WITNESSES

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UNITED STATES PATENT OFFICE.

MICHAEL J. LOUGHRAN, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR ROLLING METAL.

SPECIFICATION forming part of Letters Patent No. 625,575, dated May 23, 1899.

Application filed May 12, 1898. Serial No. 680,481. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL J. LOUGHRAN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Rolling Metal, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figures 1 and 2 are side elevations of the platens employed in my apparatus, showing their positions before and after their action upon the metal. Fig. 3 is a cross-section on the line III III of Fig. 1. Fig. 4 is a perspective view showing one of the platens. Fig. 5 is a partial plan view corresponding to Fig. 1. Fig. 6 is a similar view after the metal is partially rolled. Fig. 7 is a sectional elevation of one end portion of the machine. Fig. 20 8 is a cross-section on the line VIII VIII of Fig. 7, looking toward the left; and Fig. 9 is a detail view showing one of the supporting-rings and the stop detached.

My invention relates to the rolling of metal articles—such as axles, flanged nuts, coupling-pins, large screw-blanks, &c.—wherein the end portion is of different cross-section from that of the body or rounds, where some portion is larger than the blanks from which 30 the article is to be made; and its object is to provide a new and improved apparatus by which one or both end portions of the article are rolled into the desired shape while the body is supported in a rotatory holder.

35 To that end it consists in a pair of platens, which may be either flat platens or in the roller-and-concave form, in combination with a rotatory socket in which the metal is held while its end portion is acted upon by the platens, together with means for rotating the holder, as well as in providing a forming-recess in the holder, into which the metal is forced by the platens.

45 It consists, further, in the construction and arrangement of the parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, in which I have shown one end portion of my apparatus as applied to the rolling of axles, 2 2 represent a pair of hous- 50 ings placed parallel to each other and form-

ing a part of one end of the machine. Each of these housings is provided with inner supports and guides 3 for a pair of platens 4 and 5, which are moved therethrough by screws or worms 6, engaging suitable teeth upon the rear faces of the platen. The forming-face of each platen is inclined in opposite directions, as shown at *a a* in Fig. 4, these inclines leading to an intermediate horizontal plane portion *b*. The platens are supported so as to leave the necessary space between their forming-faces, and their outer sides are closed by the removable blocks or strips 7 7, the inner faces of which are beveled and also inclined in opposite directions, as shown in Fig. 3.

A rotatory holder 8 for the article is supported at a point midway between the housings in a bearing carried in suitable supports 9, the end of this holder being closely adjacent to the inner edges of the platens and being enlarged to form a head 10, containing a recess of greater diameter than the width of the forming-space between the platens. The lower bearing 11 is movable vertically, being guided at its ends by suitable ribs 12, and is moved by a bell-crank lever 13, actuating a shaft 13', the end of which forms the joint of a toggle-lever composed of two links 14 and 15, the upper of which is pivotally connected to the bearing 11, while the lower is pivoted at a fixed point 16. The joint between the two links is formed by a shaft 17, which extends to the other side of the machine, such side portion being the same in construction as that shown. The holder is made in the form of a split sleeve, being divided into two parts, and to it, inside of the housing at each end, is secured a two-part supporting-collar 18, each half having a laterally-projecting flange 19 in the shape of an arc of a circle, as shown in Fig. 9. The juncture of the two parts is cut away at one side, as shown at 20, to form a recess, into which a stop 21 may be moved by means of a bell-crank lever 22, loosely connected to it. When the holder is stopped in this position, the parting between the two portions of the holder will be horizontal and the upper flange 19 will be above a projecting lug or lip 23 upon the housing. When the lower bearings

11 at each side of the machine are lowered, so as to open the holder, these cooperating flanges and lugs will hold the upper part of the rotatory holder from dropping down. A
 5 similar lug or lip 24 may be placed below the holder and will act to steady the parts and also to draw down the lower half of the holder when the bearing is lowered. The holder is positively rotated by a split wheel 25, each
 10 half of which is secured to the corresponding half of the holder, this wheel being engaged by a suitably-driven wheel 26. (Shown in Fig. 8.)

The cavity extending through the holder
 15 to receive the article is of square or other angular cross-section to fit the body of the article, or in case of a round being placed in the holder the piece will rotate under the action of the platens, and after the lower bear-
 20 ings are dropped and the article inserted within the holder these bearings are lifted, so as to close the holder upon the body of the article, which is thus secured therein with its ends between the platens. The platens
 25 being in the position shown in Fig. 1, the screw-shafts are actuated simultaneously by connecting-gearing, so as to move the platens in opposite directions longitudinally to each other. At the same time the holder is rotated
 30 by its connecting-gearing, and as the metal is acted upon by the platens it is reduced in size, and the inclined faces at the outer ends of the matrix-cavities force the surplusage of metal back into the recesses in the heads of
 35 the holder. This action proceeds until each end of the axle-blank is formed into a round, and the collars are formed between these cylindrical end portions and the body within the recesses in the head. When the central
 40 horizontal faces of the platens register with each other, as shown in Fig. 2, the operation is complete, and the platens then moving on in the same directions as before will release the blank, as the cavity gradually enlarges
 45 by the platens reaching the opposite position to that shown in Fig. 1. The bearings for the holder then being dropped, the axle is pulled out endwise and another blank being inserted and the bearings again raised to
 50 place the platens are driven in the opposite direction to that employed upon the former blank, thus giving the same action upon the blank in place. If desired, after the rolling operation the motion of the platens may be re-
 55 versed to release the blank, though I prefer the method of operating above described.

The advantages of my invention will be apparent to those skilled in the art, since the end portion of the blank is quickly and easily
 60 reduced to the desired shape, and the collars are formed at the same operation. The inwardly-projecting portions of the platen acting upon the ends of the blank serve to gradually force the metal inwardly to form the
 65 collars.

A single pair of platens may be used where only one end of an article is to be shaped, the shape of these platens may be varied as desired, the holder may be allowed to rotate
 70 without positive means for causing such rotation, and the shape of the holder and means for supporting it may be changed, and other variations in the apparatus may be made by those skilled in the art without departing
 75 from my invention, since

What I claim is—

1. The combination with a rotatory socket or holder having an angular cavity arranged to receive metal of angular cross-section, of mechanism for positively rotating the holder, 80
 a pair of platens arranged to act upon the projecting end portion of the metal held in the socket, and mechanism for moving at least one of the platens longitudinally past the other while operating upon the metal; sub- 85
 stantially as described.

2. The combination with a socket or holder having a forming-recess, of a pair of platens arranged to act upon the projecting end portion of metal held in the socket and force the 90
 metal into the forming-recess, and means for moving at least one of the platens longitudinally past the other while operating upon the metal; substantially as described.

3. The combination with a socket or holder 95
 having a forming-recess, of a pair of platens arranged to act upon the projecting end portion of metal held in the socket and force the metal into the forming-recess and means for moving the platens longitudinally of each 100
 other; substantially as described.

4. The combination with a socket or holder, of a pair of platens having inwardly-projecting portions with inclined faces arranged to force the metal toward the holder and mech- 105
 anism for moving the platens longitudinally of each other; substantially as described.

5. The combination with a split sleeve or socket having an angular cavity arranged to hold a bar of metal of angular cross-section, 110
 said holder being rotatably supported, of a pair of platens arranged to act upon the projecting end portion of the metal in the holder and means for moving at least one of the platens longitudinally of the other; substantially 115
 as described.

6. The combination with a split sleeve having an angular cavity, and a forming-recess at the end of the cavity, of a pair of platens having inwardly-projecting portions arranged 120
 to act upon the end of the metal and force it into the forming-recess and means for moving the platens longitudinally of each other; substantially as described.

7. The combination with a split sleeve ar- 125
 ranged to contain a bar of metal, of means for clamping the parts of the sleeve together about the bar, bearings in which the sleeve is rotatably mounted, platens arranged to act
 130 upon the projecting end portion of the metal

held in the sleeve and means for moving the platens longitudinally of each other; substantially as described.

5 8. The combination with a split sleeve rotatably supported in bearings, of means for lowering the bearings to separate the portions of the sleeve, and a pair of platens arranged to act upon the projecting end portions of the

metal held in the sleeve; substantially as described. 10

In testimony whereof I have hereunto set my hand.

M. J. LOUGHRAN.

Witnesses:

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G. B. BLEMING.