

No. 673,145.

S. TRETHEWEY.  
SWAGING ROLL.

Patented Apr. 30, 1901.

(Application filed July 6, 1900.)

(No Model.)

Fig. 1.

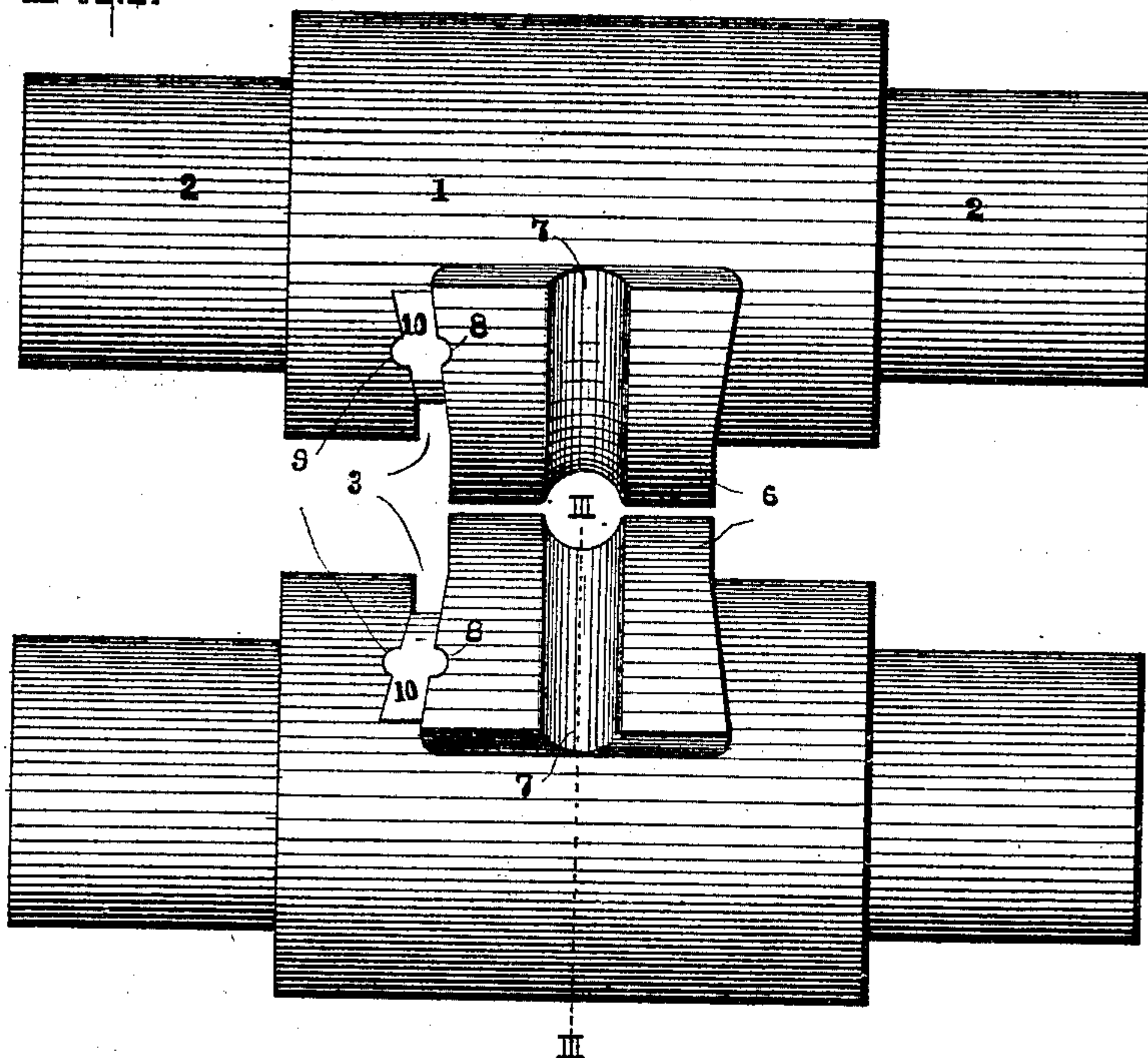


Fig. 2.

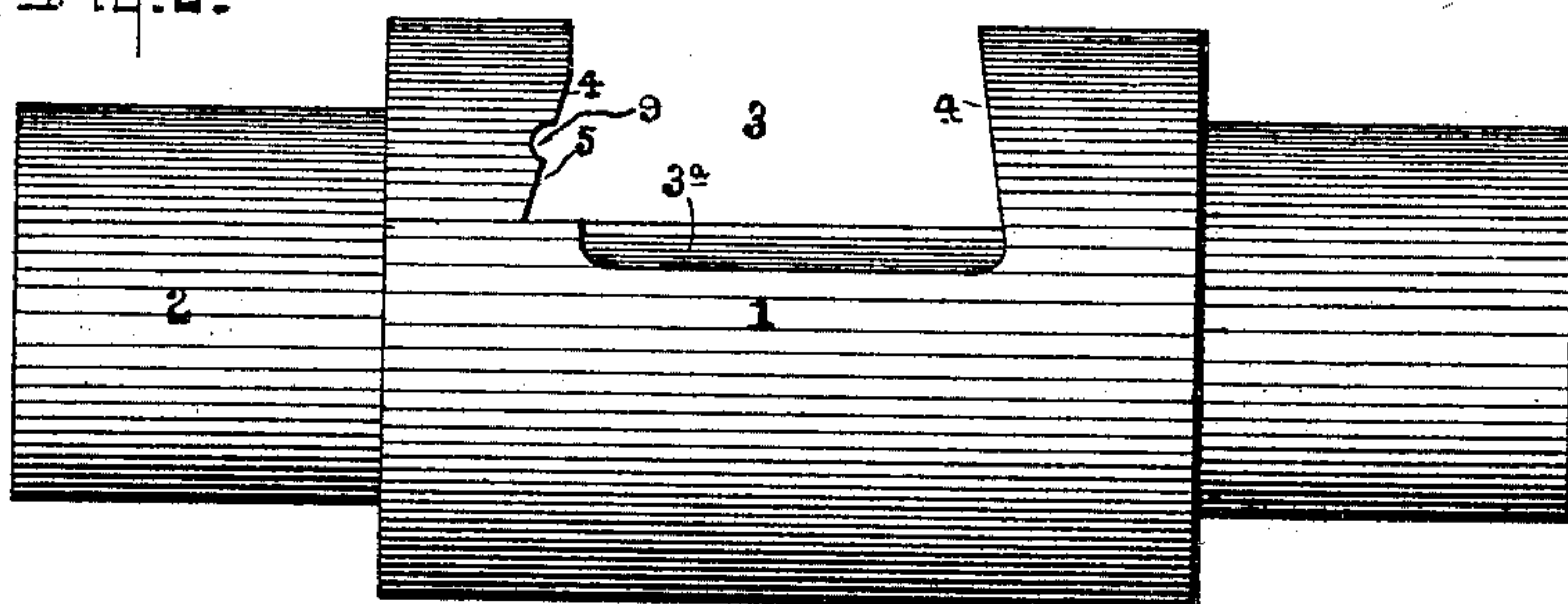


Fig. 3.

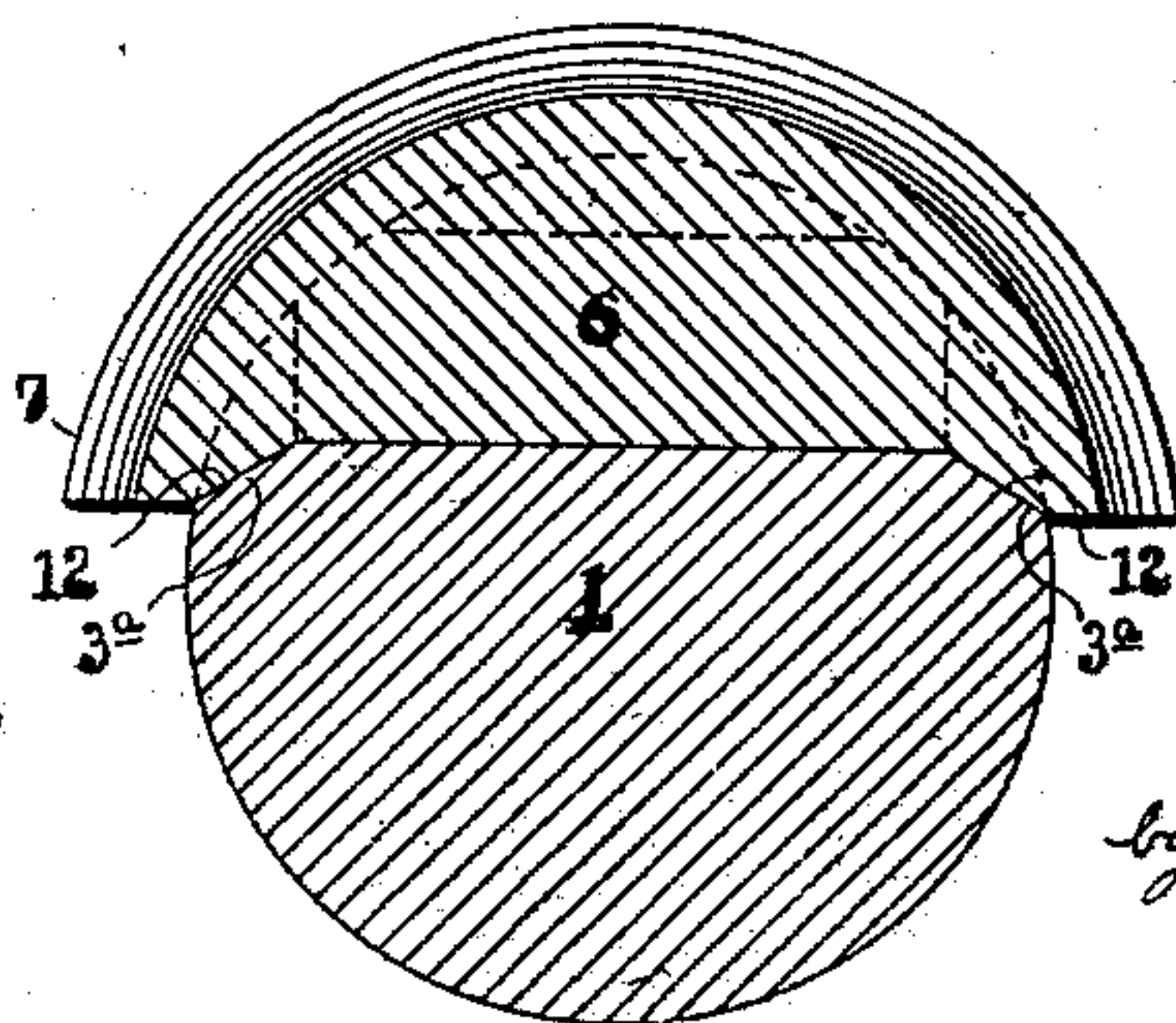
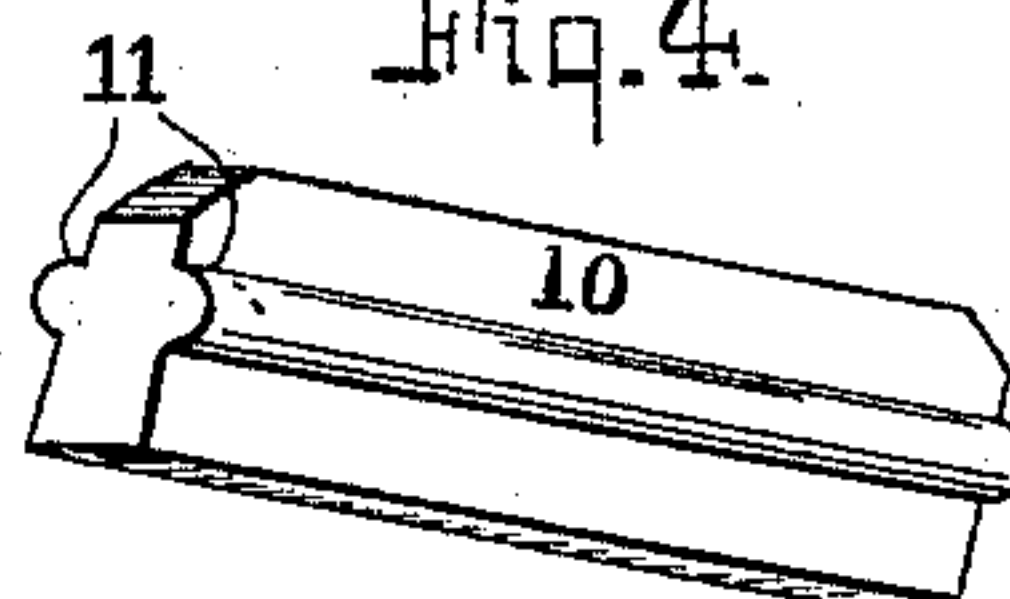


Fig. 4.



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# UNITED STATES PATENT OFFICE.

SAMUEL TRETHEWEY, OF PITTSBURG, PENNSYLVANIA.

## SWAGING-ROLL.

SPECIFICATION forming part of Letters Patent No. 673,145, dated April 30, 1901.

Application filed July 6, 1900. Serial No. 22,679. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL TRETHEWEY, a citizen of the United States of America, and a resident of Pittsburg, county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Swaging-Rolls, of which the following is a specification.

Referring to the drawings, which make part of the specification, Figure 1 is an elevation of a pair of rolls, showing my improvement. Fig. 2 is an elevation of a roll adapted to be fitted with my improvement. Fig. 3 is a sectional view along the line III III in Fig. 1, and Fig. 4 is a perspective of my improved form of key.

My invention, briefly stated, consists in certain new and useful improvements in that form of swaging-rolls in which swage and roll-body are made separate and the swage fixed to the roll-body by mechanical means. A great drawback experienced in the use of this type of roll has been the difficulty in fixing the swage to the roll-body so as to prevent and overcome the tendency on the part of the swage to turn or follow around the roll. This I effect by providing the bottom of the recess with an angular bearing-surface, against which the swage is held snugly by means of the angular sides of the recess and swage and a key. My key is made with a lip or projection on both sides registering with channels in both recess-wall and swage, thus fixing the key firmly in position and providing a secure method of holding the swage in place.

The following is a detailed description of my invention, reference being had to the drawings:

1 1 are rolls. 2 2 are the journals thereof. 3 3 are recesses cut in said rolls at one side of the centers thereof. Said recesses are provided with sides 4 4, inclined inwardly, and on one side of each of said recesses and extending the full length thereof is key-seat 5, whose inner side is inclined inwardly at a greater angle than the side of the recess, which key-seat is also slightly tapered longitudinally, as usual. Recess 3 is not cut down as far as the center of the roll by some distance, so that the roll is not weakened by the loss of the metal removed, and the bottom of said recess is cut away at an angle at its extremities 3<sup>a</sup> 3<sup>a</sup>, as shown in Fig. 3, to gain addi-

tional firmness in setting the swage, as will be explained below. The swage 6 is, roughly speaking, semicircular in shape, with swaging-face 7. The sides of said swage 6 are inclined to fit the walls of recess 3, into which recess said swage is fitted. Along one of the side surfaces of swage 6 is cut channel 8, and a like channel 9 is cut along the side surface of key-seat 5.

10 is a key having one of its surfaces inclined at an angle corresponding to the inclination of the side of swage 6, while the other side of said key corresponds to the inclination of the side of the key-seat 5 and being also slightly tapered longitudinally to fit key-seat 5. 11 11 are lips or projections on the sides of said key and integral therewith, which engage channels 8 and 9. It will thus be readily seen that any tendency on the part of swage 6 to rise in recess 3 would likewise tend to force key 10 tighter in its seat, and thus enable it more firmly to hold the swage in position. Swage 6 at its extremities 12 12 is provided with angular prolongations adapted to fit snugly against the angular bearing-surfaces described above at the extremities of recess 3. By this means a greater bearing-surface is given to swage 6 on the roll, and the angularity of said bearing-surface prevents said swage when held snugly in place from sliding or following around the roll.

It is apparent, then, that when the swage is in place in the recess 3 and key 10 is driven into key-seat 5 and the lips 11 11 engage channels 8 and 9 the swage and key being largest at their bases and being contained in a recess likewise largest in its base will only be wedged more firmly in place by any tendency toward being pulled out of said recess. The arrangement of angular bearing-surfaces for the base of said swage against the surface of the roll further prevents any lateral motion on the part of the swage when in position.

In case the wear on the bearing-surfaces on the swage and the roll-body results in a looseness in the parts, so causing lost motion, I remove the swage from the roll-body and plane off the bottom of the recess in the roll-body until a sharp angular bearing-surface is again obtained. I then cut out the bearing-surface of the swage to fit the new bearing-surface on the roll-body. This operation will result in



setting the swage farther into the roll-body, which will of course cause the swaging-surface to become eccentric to the roll-body. I therefore turn the swage on a lathe to remove this eccentricity. A new channel 8 must be cut in the side of the swage, as lip 11 on key 10 will no longer register with the original channel 8 when the swage is set farther into the roll-body. By this means I am enabled to maintain at all times the swage snugly on the roll-body. If, however, I placed the swage in a complete circle around the roll-body, I would be unable to take up the wear and prevent lost motion and a new swage would have to be substituted.

Among the many advantages attendant upon the use of my invention in addition to the one above mentioned may be named economy in the use of material. If the roll and swage were cast integral, the whole construction would need to be of a fine and costly grade of steel, such as tool-steel, and when the swage was worn out the whole roll would be thrown away as useless. In the use of my invention I may make the body of the roll of any cheap grade of steel, such as open-hearth or Bessemer steel, and the swage alone of an expensive grade of metal. In case the swage became worn out another could be substituted without necessitating renewal of the roll-body. The firmness and solidity gained by casting roll and swage integral are gained in my invention by the novel method of fixing the swage to the roll-body, especially the novel arrangement of an angular bottom for the recess, against which the swage is held firmly, and my novel form of key. I therefore gain all the advantages of an integral casting without incurring the disadvantages above enumerated. As is well known, the process of swaging is effected by drawing the blank on a mandrel through the roll, and when one pass has been completed it is again passed through in the same direction, and so on. My swages only surround the roll-bodies for a portion of their perimeters, so that when the blank has passed through the swages it may be quickly passed back between the plain surfaces of the rolls and so be ready

to be drawn back again through the swages when they have turned into position. The superiority of my improvement will thus be apparent.

I have described my invention minutely; but I do not intend to limit myself thereby, but claim, broadly—

1. In swaging-rolls, a roll; a recess in said roll having a flat bottom surface cut away at its extremities to form angular bearing-surfaces, and a swage adapted to be seated in said recess.

2. In swaging-rolls, a roll; a recess in said roll having a flat bottom surface cut away at its extremities to form angular bearing-surfaces, and a swage keyed in said recess.

3. In swaging-rolls, a roll; a recess in said roll having inclined sides and a flat bottom surface cut away at its extremities to form angular bearing-surfaces; a swage adapted to be seated in said recess, and a key fitted to hold said swage in said recess.

4. In swaging-rolls, a roll; a recess in said roll having a flat bottom surface cut away at its extremities to form angular bearing-surfaces, and a swage adapted to be fixed in said recess and having extremities adapted to engage said bearing-surfaces.

5. In swaging-rolls, a roll; a recess in said roll having a flat bottom surface cut away at its extremities to form angular bearing-surfaces; a swage seated in said recess; a key retaining said swage in place; channels on said swage and said roll, and projections on said key registering with said channels.

6. In swaging-rolls, a roll; a recess in said roll having a flat bottom surface cut away at its extremities to form angular bearing-surfaces; a swage adapted to be seated in said recess and having extremities fitted to engage said bearing-surfaces, and means for fixing said swage in said recess.

Signed by me at Pittsburg, Pennsylvania, this 26th day of June, 1900.

SAMUEL TRETHERWEY.

Witnesses:

EDWARD A. LAWRENCE,  
J. BOYD DUFF.