

A. BEVAN.
GRINDING AND POLISHING ROLL.
APPLICATION FILED NOV. 25, 1907.

938,547.

Patented Nov. 2, 1909

2 SHEETS—SHEET 1.

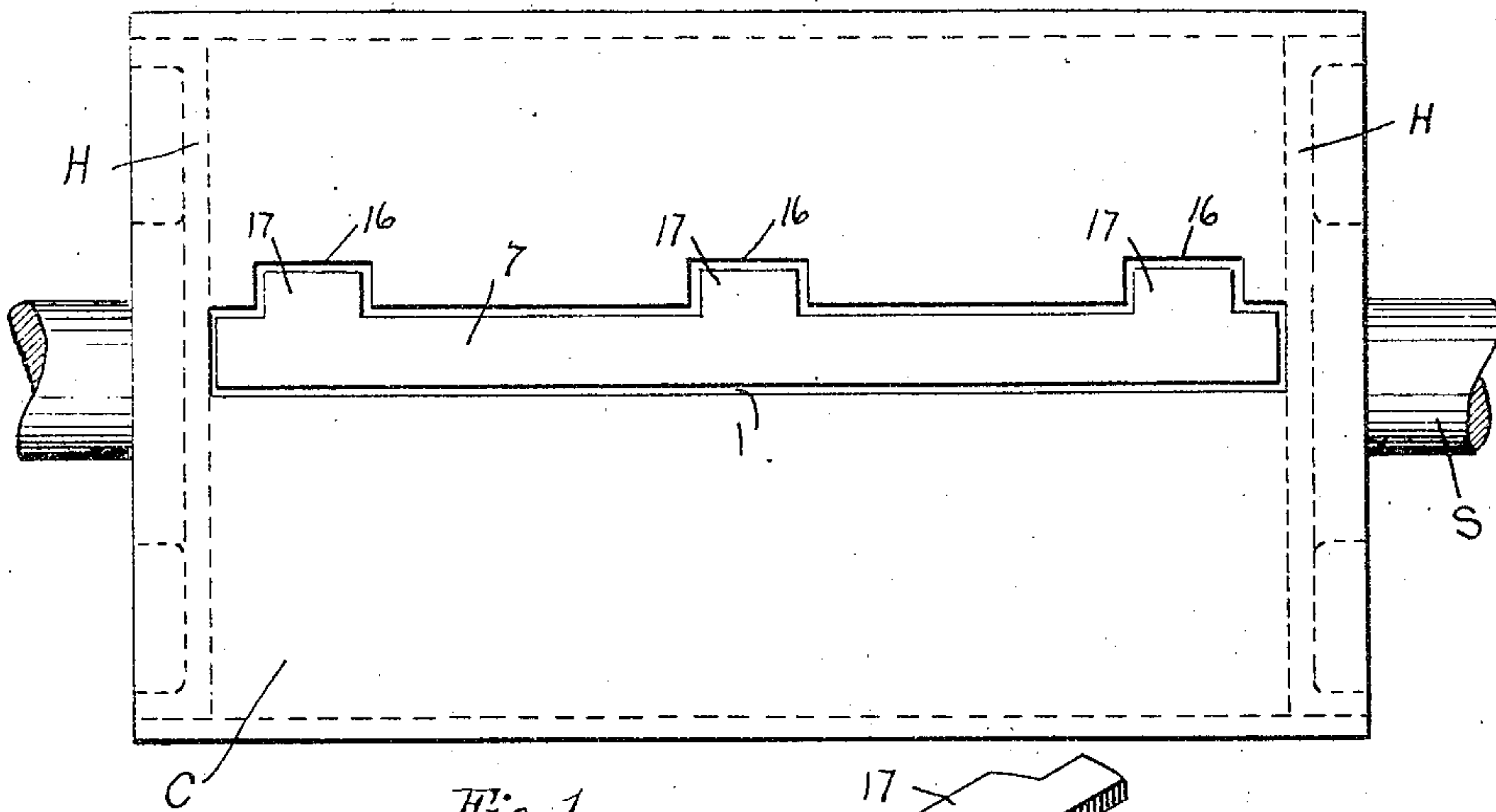


Fig. 1

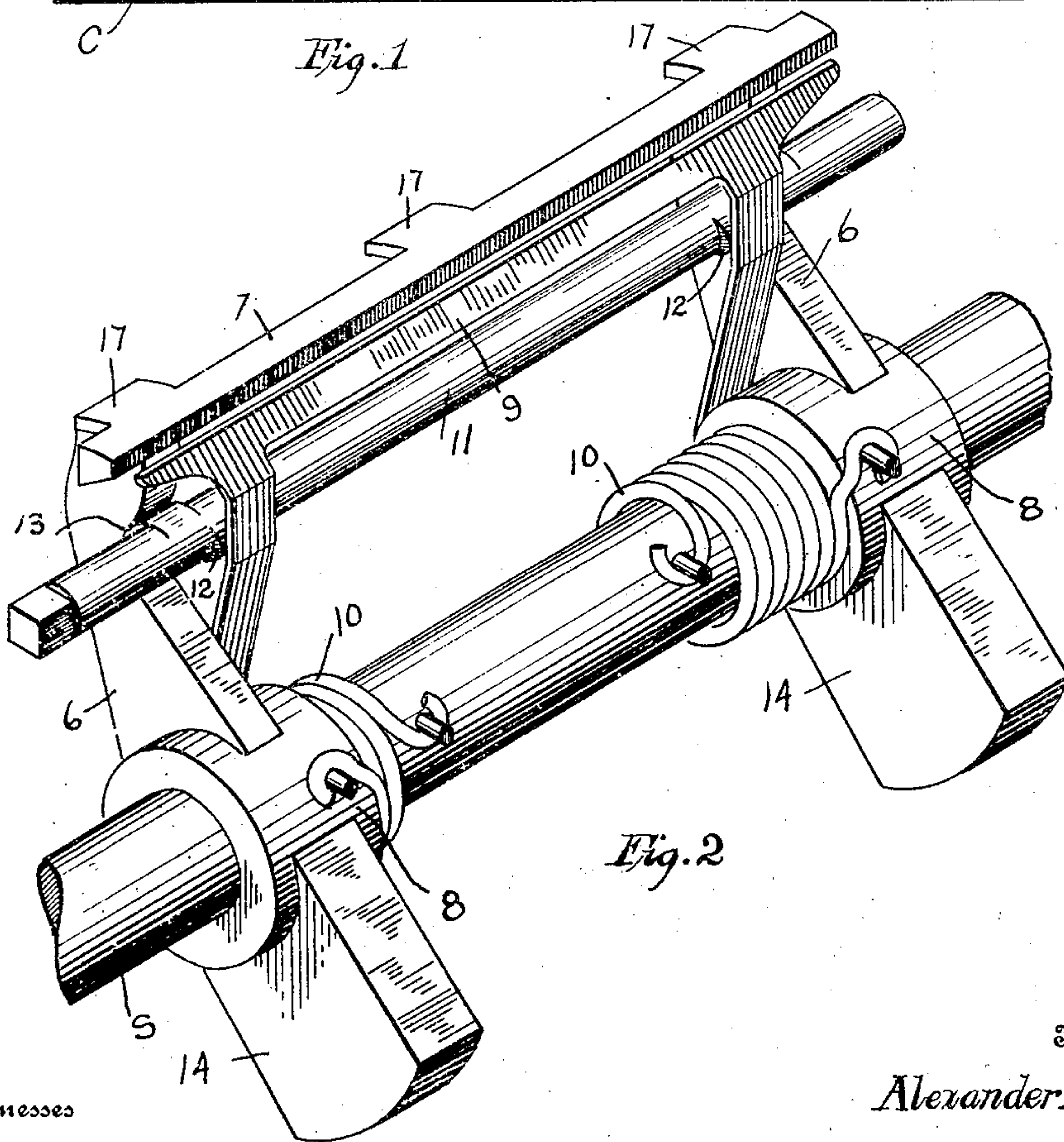


Fig. 2

Witnesses

John T. Lavanagh
E. J. Ogden

Inventor

Alexander Bevan

By

Howard E. Barlow

Attorney

A. BEVAN.
GRINDING AND POLISHING ROLL.
APPLICATION FILED NOV. 25, 1907.

938,547.

Patented Nov. 2, 1909.
2 SHEETS—SHEET 2.

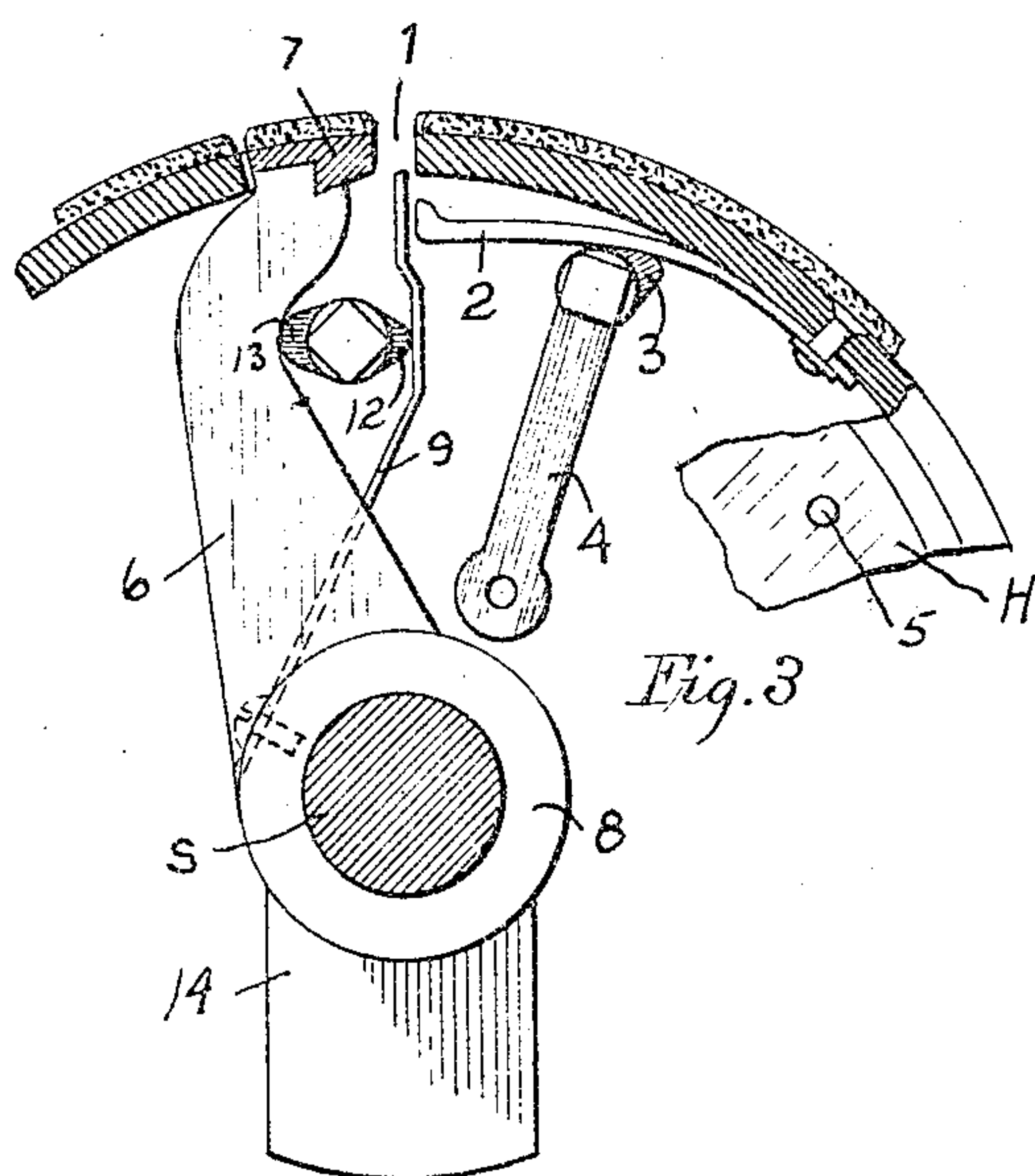


Fig. 3

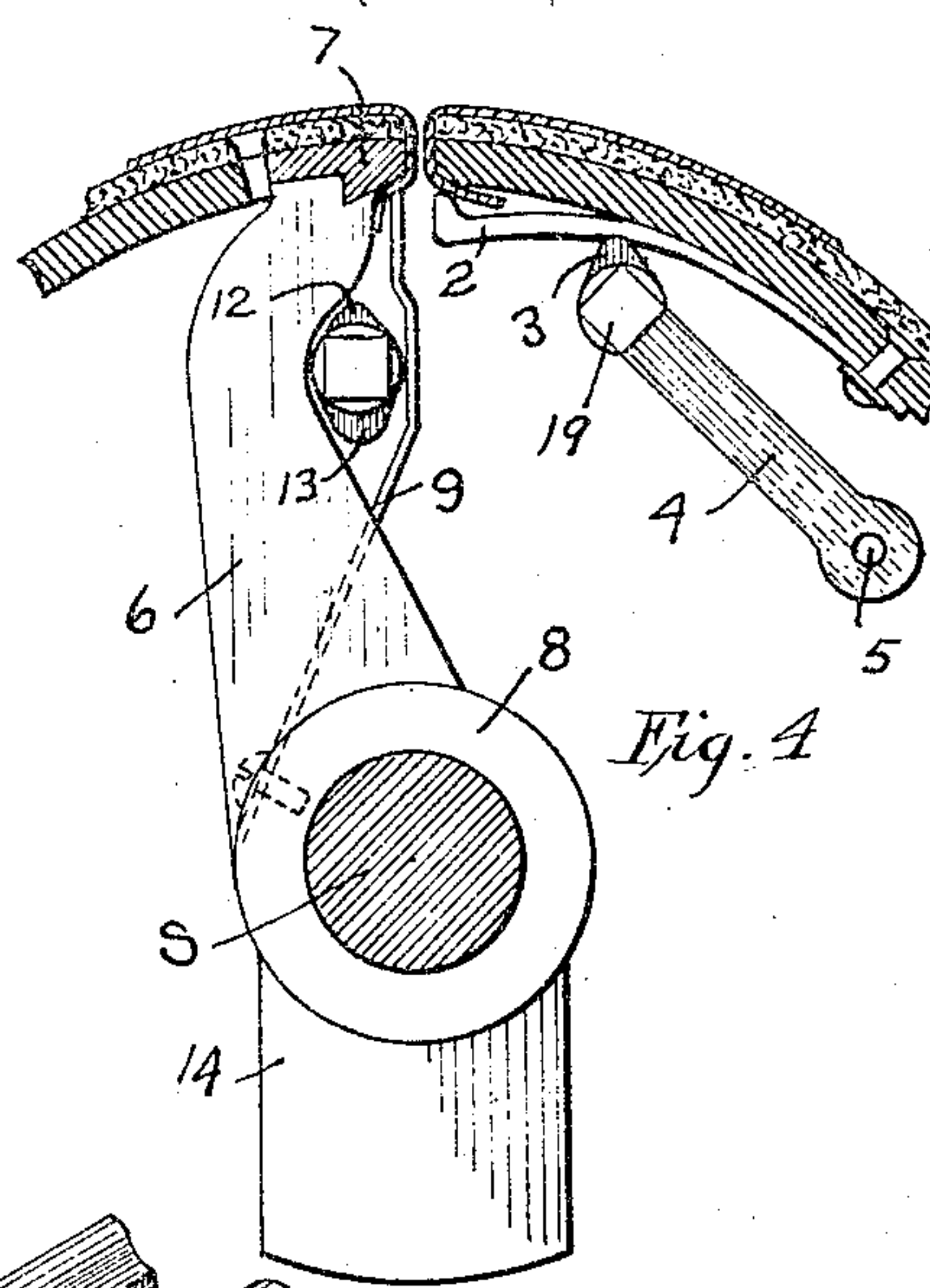


Fig. 4

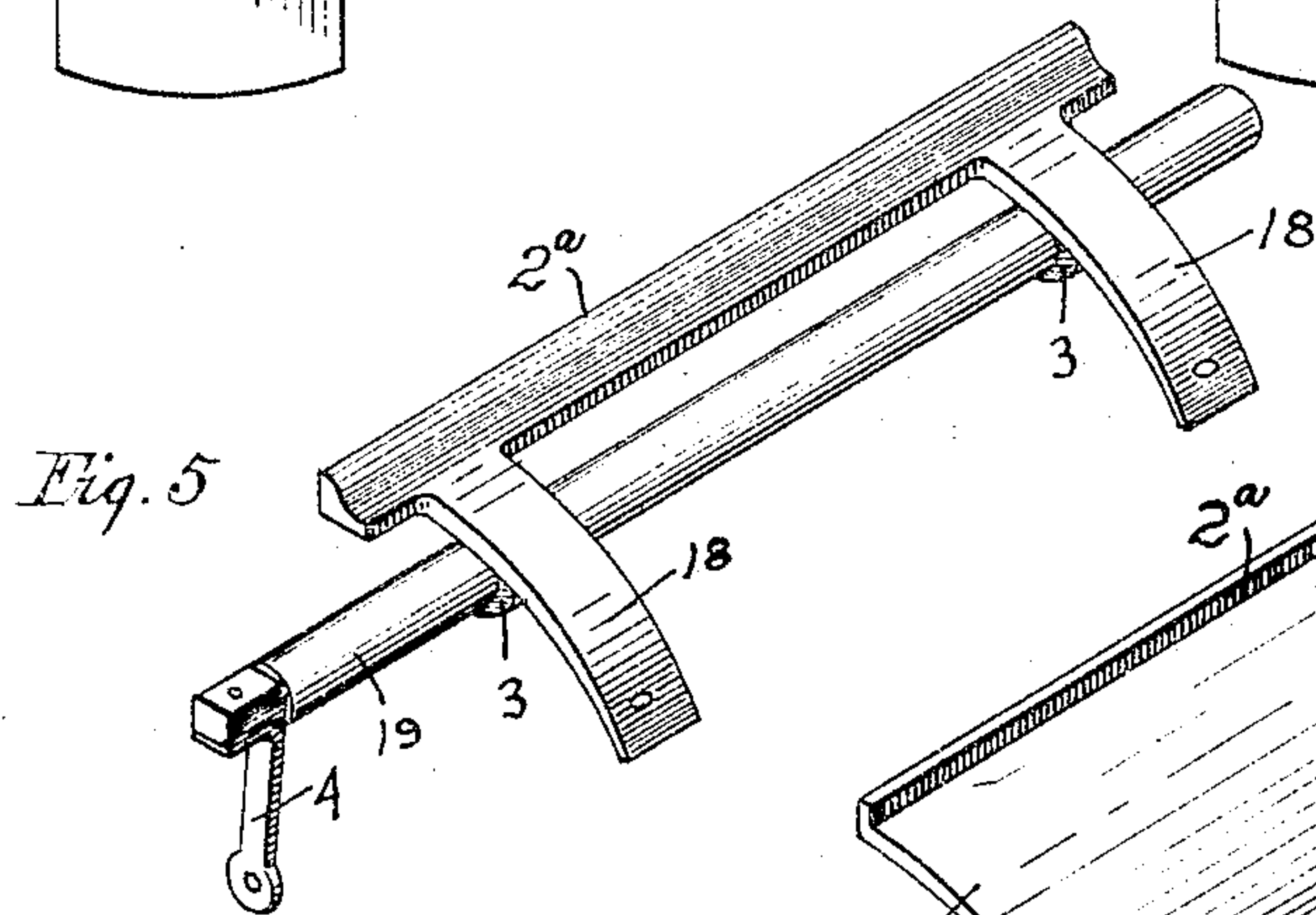


Fig. 5

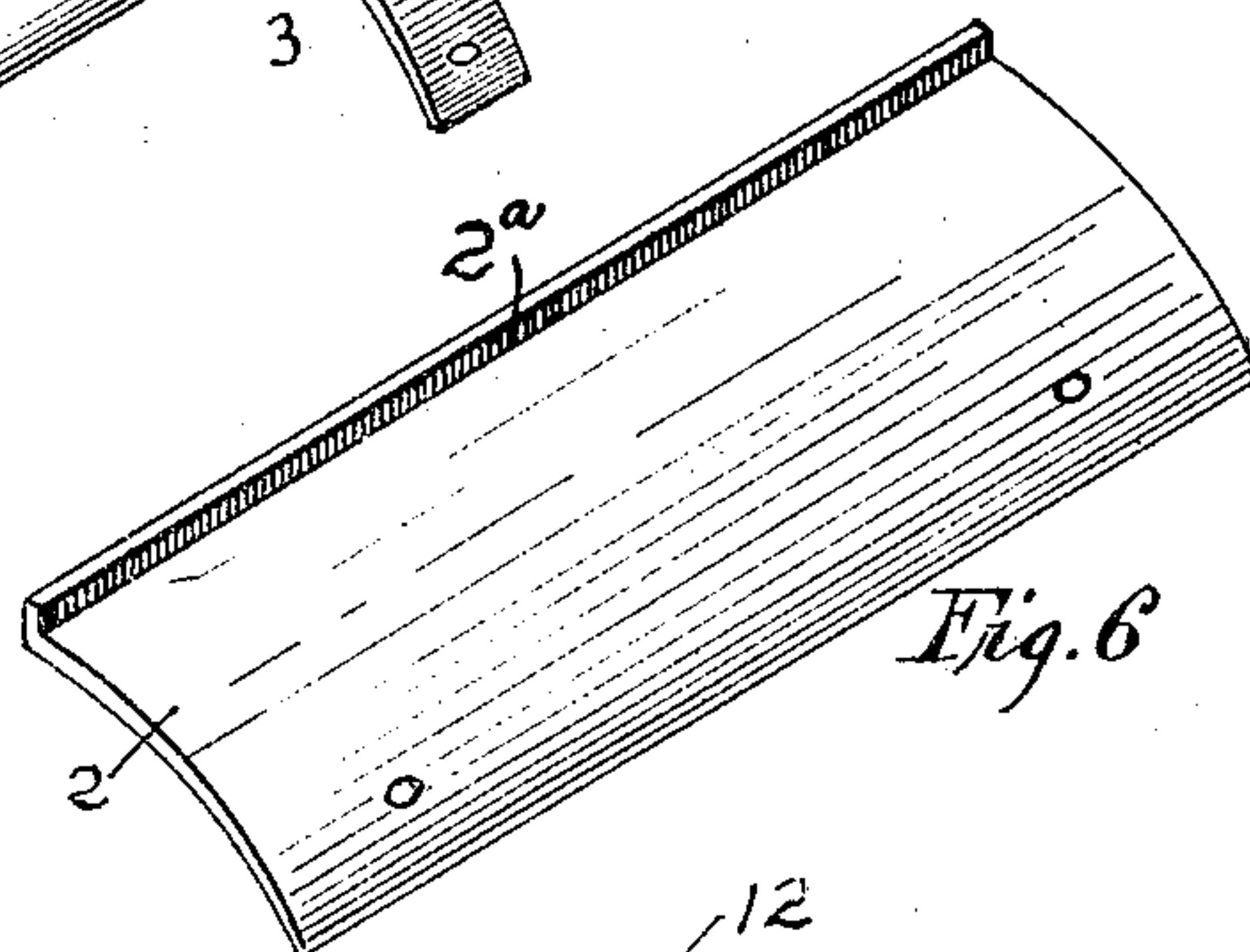


Fig. 6

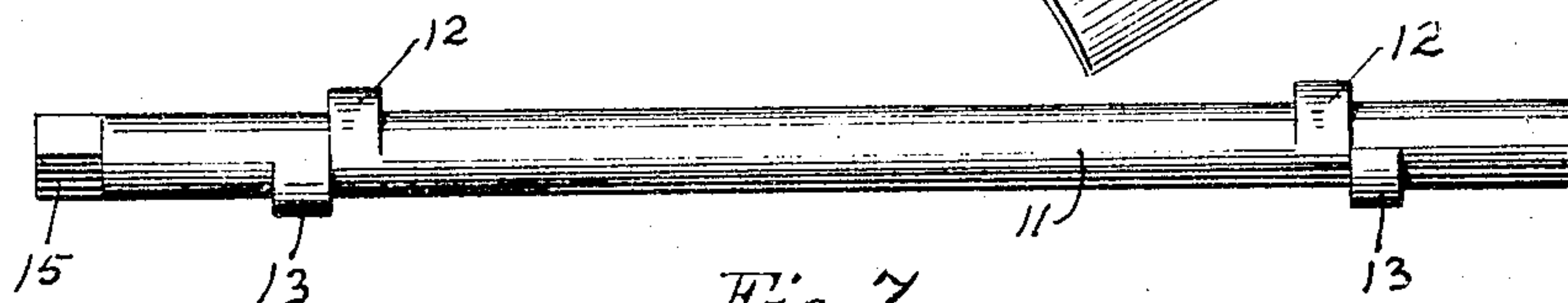


Fig. 7

Witnesses

John F. Cavanagh
E. J. Ogden

Inventor

Alexander Bevan

By

Howard E. Barlow
Attorney

UNITED STATES PATENT OFFICE.

ALEXANDER BEVAN, OF PROVIDENCE, RHODE ISLAND.

GRINDING AND POLISHING ROLL.

938,547.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed November 25, 1907. Serial No. 403,653.

To all whom it may concern:

Be it known that I, ALEXANDER BEVAN, residing at the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Grinding and Polishing Rolls, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in abrasive or polishing rolls in which sandpaper, or other abrasive or polishing material applied to the surface of said rolls is employed to accomplish the ends sought.

The improvements claimed have particular reference to the manner of securing and retaining the abrasive material in position on the revolving roll, the object being to hold the same smooth and firm on the roll, take up any slack due to stretching or other cause and admit of ready removal and replacement of worn-out material.

To this end the device consists specifically of means for clamping one end of the abrasive or polishing material firmly on the inside of the cylindrical shell, while the other end of said material is clamped by a movable jaw adapted to stretch the same and automatically take up any slack, and at the same time maintain a practically continuous supporting surface for the covering, by making the external outline of said jaw and the cylindrical slot in which it moves of corresponding irregularity.

The arrangement and operation of the parts to effect these ends will be readily understood by reference to the following drawings and specification, in which similar characters designate similar parts in all the views.

In the accompanying drawings: Figure 1— is a plan view of the roll showing the notched or indented outline of the slot through the roll shell, and also the corresponding shape of the jaw that moves in said slot. Fig. 2— is a perspective view showing the tension jaw and spring clamp mounted on the main shaft, together with the operating cams and actuating springs. Fig. 3— is a sectional end view of a portion of the roll showing the clamping mechanism in its open position. Fig. 4— is a sectional end view of a portion of the roll showing the clamping mechanism in its closed or operating position. Fig. 5— is a detail view of the spring clamps in perspective also showing its operating cams. Fig. 6— is another form of

a spring clamping member. Fig. 7— is a detail of the cam shaft which operates the jaw and its spring clamp.

Rigidly mounted on the shaft S are the cylinder heads H, H; these heads being tightly fitted within the ends of the cylindrical shell or roll C, around which the surfacing material is wrapped and secured. This cylinder is provided with a slot 1 extending from head to head, the outline of which may be irregular in contour, preferably including a plurality of notches or indentations 16—16 at the rear edge of the slot, the front edge being preferably a straight line. The ends of the abrasive or polishing material are passed through this slot to the retaining clamps within.

The spring clamp 2 may consist of a contact bar 2^a extending along on the underside of one edge of the slot, said bar being secured to spring arms 18—18 which project back and are attached at their outer ends to the body of the roll, the tension of the springs being adapted to normally hold the jaws in their open position. The said clamp is closed or forced into its biting position by the action of the cams 3—3 mounted on the shaft 19, through the movement of the handle 4 to the position shown at the right of Fig. 4, where said handle is retained by being sprung over the point of the pin 5, or by any other suitable means. A modified form of spring clamp is shown in Fig. 6.

The tension jaw 7 is rotatably mounted on the shaft S (from which it is supported) by means of the bearings 8 and arms 6. The outer surface of this jaw is turned to coincide with the surface of the cylinder, while its edges are provided with projections 17—17 to register with the indented outline of the correspondingly indented slot 1 within whose limits its motions take place. This indented outline of the slot and jaw prevents the occurrence of a continuous break in the supporting surface for the covering in the rear of the jaw, when the jaw moves forward to take up the slack of said covering. Should such a continuous break be produced by the forward movement of the jaw the effect would be to cause a "flat place" in the working surface, thus resulting in "pounding" and hence in reduced efficiency. The inner ends of the spring clamp 9 are secured to the bearings 8, the upper edge of this clamp being adapted to normally bite one end of the surfacing ma-

material against the underside of the tension jaw. At 10—10 are coiled springs, one end of each being attached to the bearings 8—8, and the other end to the shaft S, or other fixed point, in such manner as to carry the jaw 7 forward to take up the slack of the surfacing material. The rod 11, is provided with bearings in the cylinder heads, and carries one or more sets of cam projections 12 and 13 which may be operated to first move the jaw 7 to its open position and then by further movement force the spring clamp 9 away from said jaw to release the end of the material. The ends of the rods 11 are squared at 15 to receive a key, wrench, or the like, or otherwise adapted to be forcibly turned to move the cams for the purposes specified. A counterbalance for the clamping mechanism is represented at 14.

The operation of the device will now be readily understood. With the parts in open position, as shown in Fig. 3, one end of the abrasive or polishing material is inserted through the slot 1 between the spring clamp 2 and the inner surface of the cylindrical shell. The handle 4 is then moved to the right and locked by being sprung over the pin 5, thereby causing the cam 3 to force said clamp upward against the end of the material and thus hold the same securely. The material is then wrapped around the cylinder and its opposite end passed between the face of the movable jaw 7 and the spring clamp 9. The rod 11 is now turned to the left, moving the cam projection 12 out of contact with the spring clamp 9 and allowing said clamp to press the end of the material against the inner face of the opposite jaw to firmly bite and hold the same securely. As the rod 11 is turned still farther to the left the cam projection 13 is moved away from contact with the jaw 7, thus allowing the said jaw to exert a tension on the sheet of material to take up any slack therein through the tension of the coiled spring 10 which acts upon it. The parts will now appear in the position shown in Fig. 4.

To remove the material the rod 11 is first turned to the right, causing the cam projection 13 to first force the tension jaw 7 leftward into open position, when a further movement of rod 11 in the same direction will cause the cam projection 12 to force the spring clamp 9 to the right, thus releasing the end of the material.

The amount of stretch of the surfacing material will depend upon the diameter of the roll, and the width of the slot 1 is gaged so that the movable jaw 7 when released practically closes the gap between the folds of the surfacing material, where it is passed between the opposing jaws to the clamps within. By this construction the working surface of the roll is made practically continuous, and hence vibrations of the roll or

work, due to the break usually found in such surfaces, are effectually obviated.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:

1. In a surfacing roll the combination of a cylinder having in its periphery a longitudinal slot laterally indented, a movable jaw corresponding in superficial outline with said slot and having its external surface flush with the surface of the cylinder, whereby a continuous bearing surface is provided when the jaw is moved forward, and means for causing said jaw to automatically take up any slack in the roll covering.

2. In a polishing roll, the combination of a cylinder having in its periphery a longitudinal slot laterally indented, a tension jaw corresponding in its external outline with, and movable within, said slot, said jaw having its outer surface flush with the surface of said cylinder, a spring clamp normally cooperating with said jaw to bite one end of the roll covering, and means for causing said jaw to automatically stretch said covering.

3. In a surfacing roll, the combination of an axially mounted tension jaw, a spring clamp normally cooperating with said jaw to take up slack in the roll covering, conjoined means whereby the said jaw may be forced back to its inoperative position and the said spring clamp may be forced away from the said tension jaw to release the covering.

4. A surfacing roll provided with a covering, a pivotally mounted tension jaw, a spring clamp adapted to normally cooperate with said jaw to bite one end of said covering and automatically take up the slack of the same, conjoined means for separating said jaw and clamp, said conjoined means being adapted to release the said spring clamp to allow the same to bite one end of the said covering, and then by a further movement of said means to release the said tension jaw and allow the same to take up the slack in the covering.

5. In a surfacing roll provided with a covering, a cylinder having a laterally indented slot in its shell, a tension jaw having its outer surface movable in the periphery of said cylinder and shaped externally to match said slot, whereby a continuous break in the support for said covering is prevented when said jaw is moved forward, means adjacent to said slot for clamping one end of the roll covering within said cylinder, spring actuated means for clamping the other end of said covering securely to the under face of said tension jaw, and axially disposed spiral springs for causing said jaw to automatically take up the slack and close the break in said covering.

6. A surfacing roll provided with a detachable covering, a pivotally mounted spring-actuated jaw, a spring-actuated biting clamp adapted to cooperate with the said jaw to secure said covering, combined means for forcing said jaw and clamp into open position and retaining them therein, combined means whereby the said spring clamp may first be released to bite one end of the said covering and the said spring-actuated jaw may subsequently be released to move forward with the said clamp to take up the slack in the covering.

7. A surfacing roll provided with a detachable covering, a pivotally mounted spring actuated jaw, a spring-actuated biting clamp adapted to cooperate with said jaw to secure said covering, conjoined cams for moving said jaw and clamp into open position and retaining them therein, means whereby the movement of said cams will first release the said spring clamp to bite one end of the said covering and subsequently release the said spring-actuated jaw to move forward with the said clamp to take up the slack in the covering.

8. In a covered surfacing roll, the combination of a cylinder provided with a slot of irregular shape through its periphery, a pivotally mounted spring actuated jaw adapted to work in said slot, the outer surface of said jaw being flush with the surface of said

cylinder, a spring actuated clamp adapted to cooperate with said jaw to bite one end of said covering and automatically take up the slack of the same, means for separating said jaw and clamp, means for releasing the said spring clamp to first bite one end of said covering, said means being also adapted to subsequently release the said jaw and allow the same to move forward to take up the slack in the covering.

9. In a covered surfacing roll, the combination of a cylinder provided with a slot of irregular outline in its periphery, a pivotally mounted spring-actuated jaw adapted to work in said slot, the outer surface of said jaw being flush with the surface of said cylinder, a spring-actuated biting clamp adapted to cooperate with said jaw to engage said covering, conjoined cams for separating said jaw and clamp, means whereby one of said cams may first be caused to release said spring clamp to bite one end of said covering, and a second cam may subsequently be caused to release the said jaw to allow the same to move forward and take up the slack in the covering.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER BEVAN.

Witnesses:

HOWARD E. BARLOW,
E. I. OGDEN.