

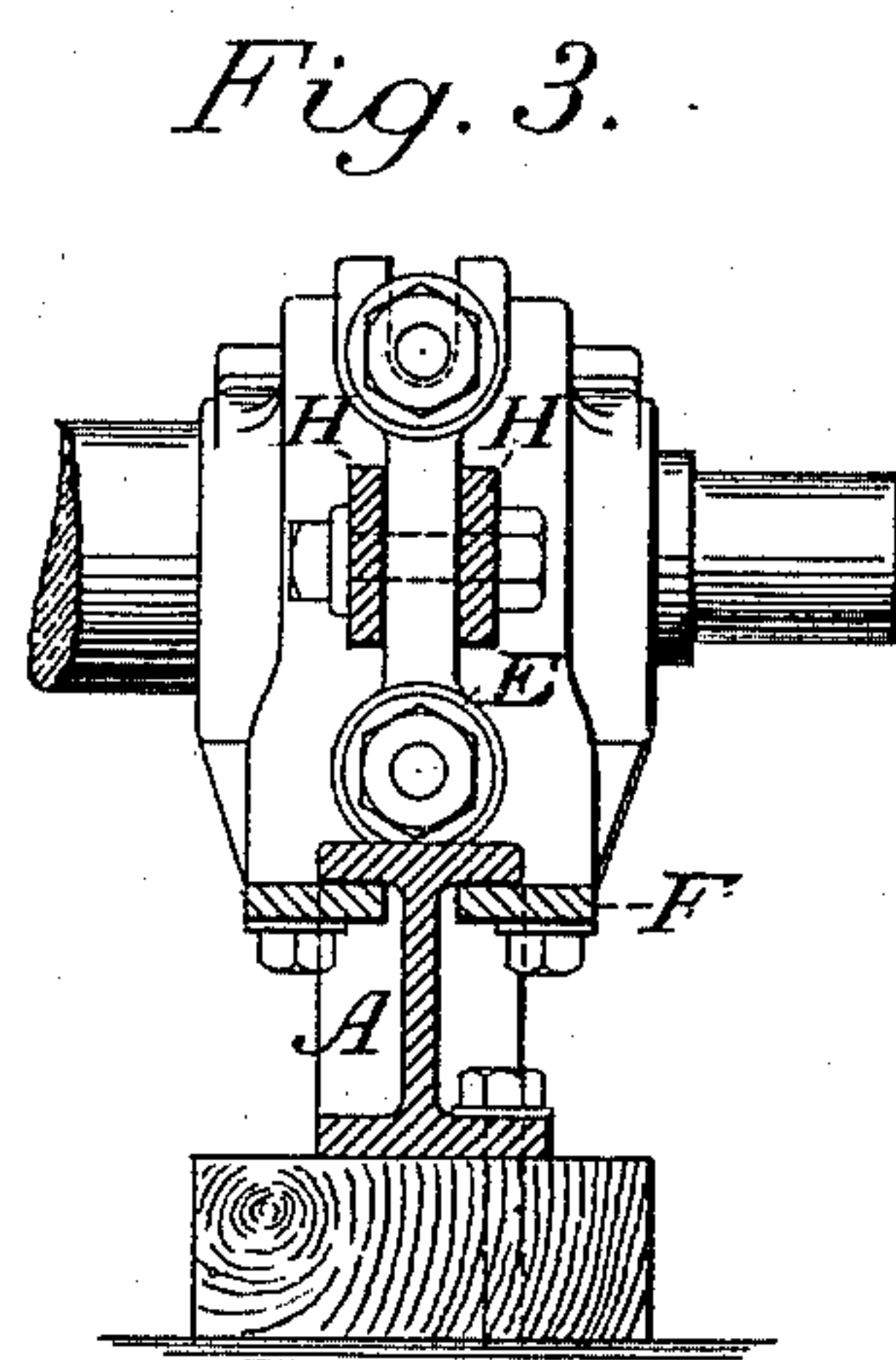
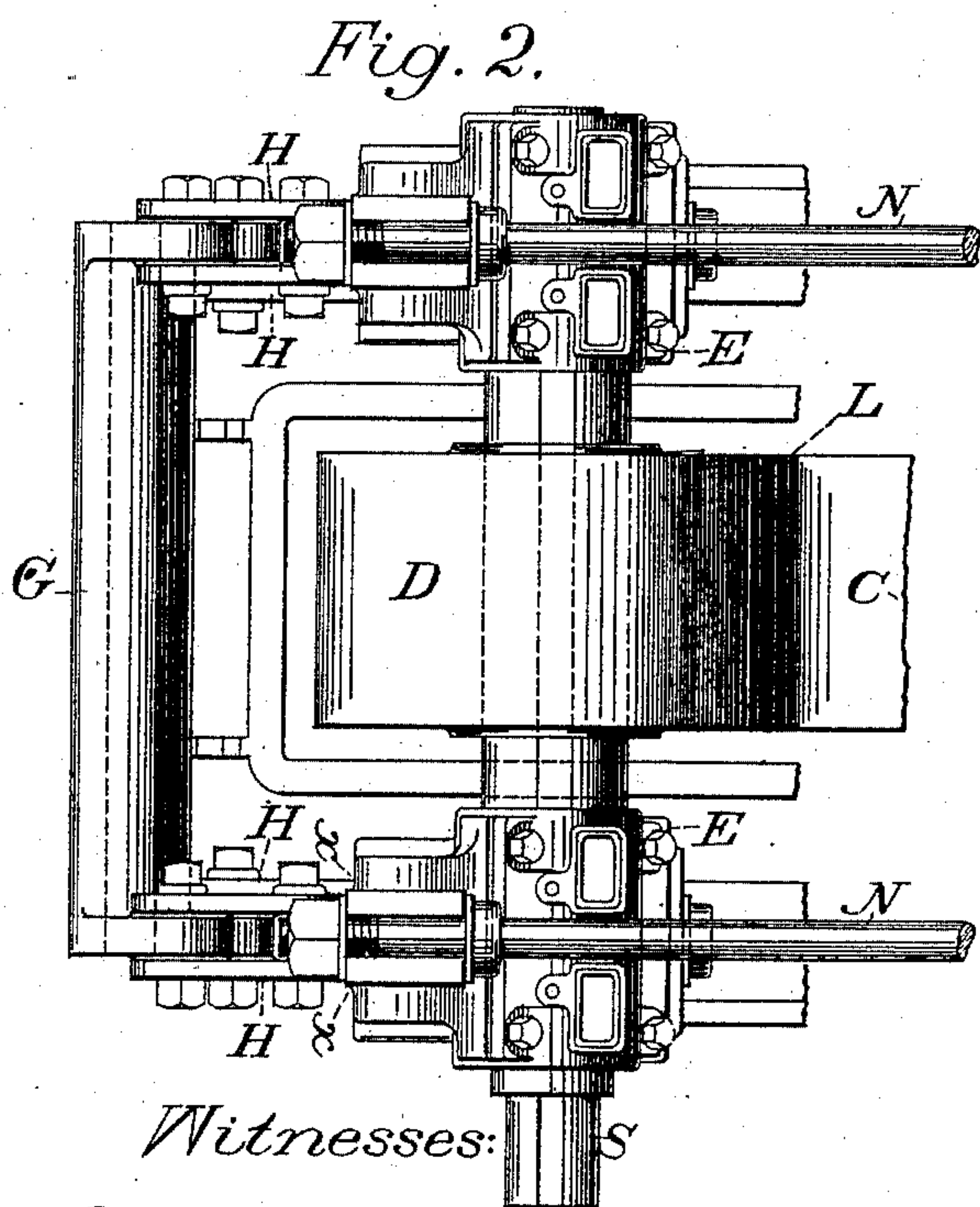
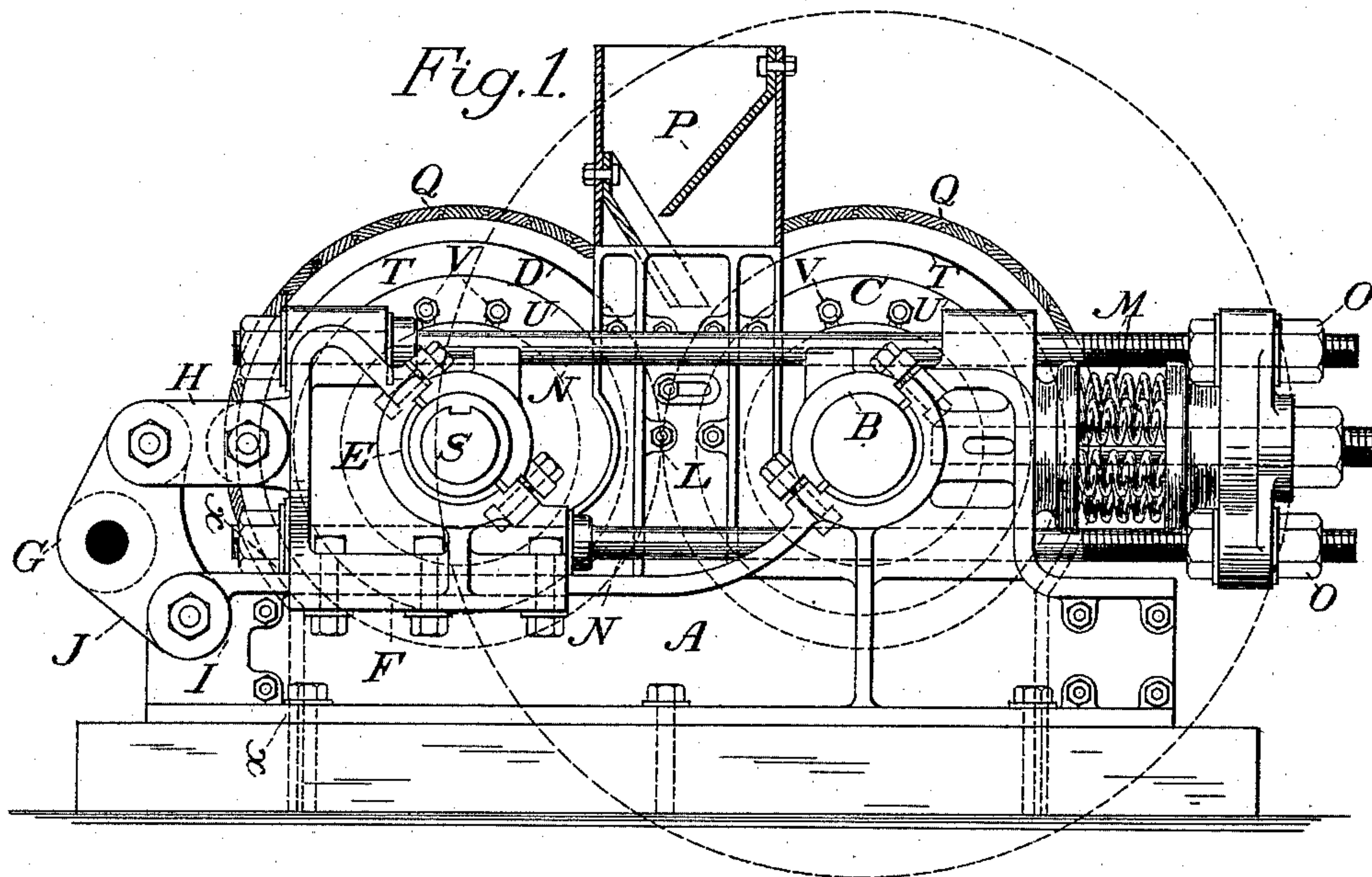
(No Model.)

2 Sheets—Sheet 1.

H. C. BEHR.  
CRUSHING ROLL.

No. 442,006.

Patented Dec. 2, 1890.



Witnesses: S

*C. A. Brandau.*  
*W. D. Bent Jr.*

Inventor:

*Hans C. Behr*  
*By his atty*  
*John Richards*

(No Model.)

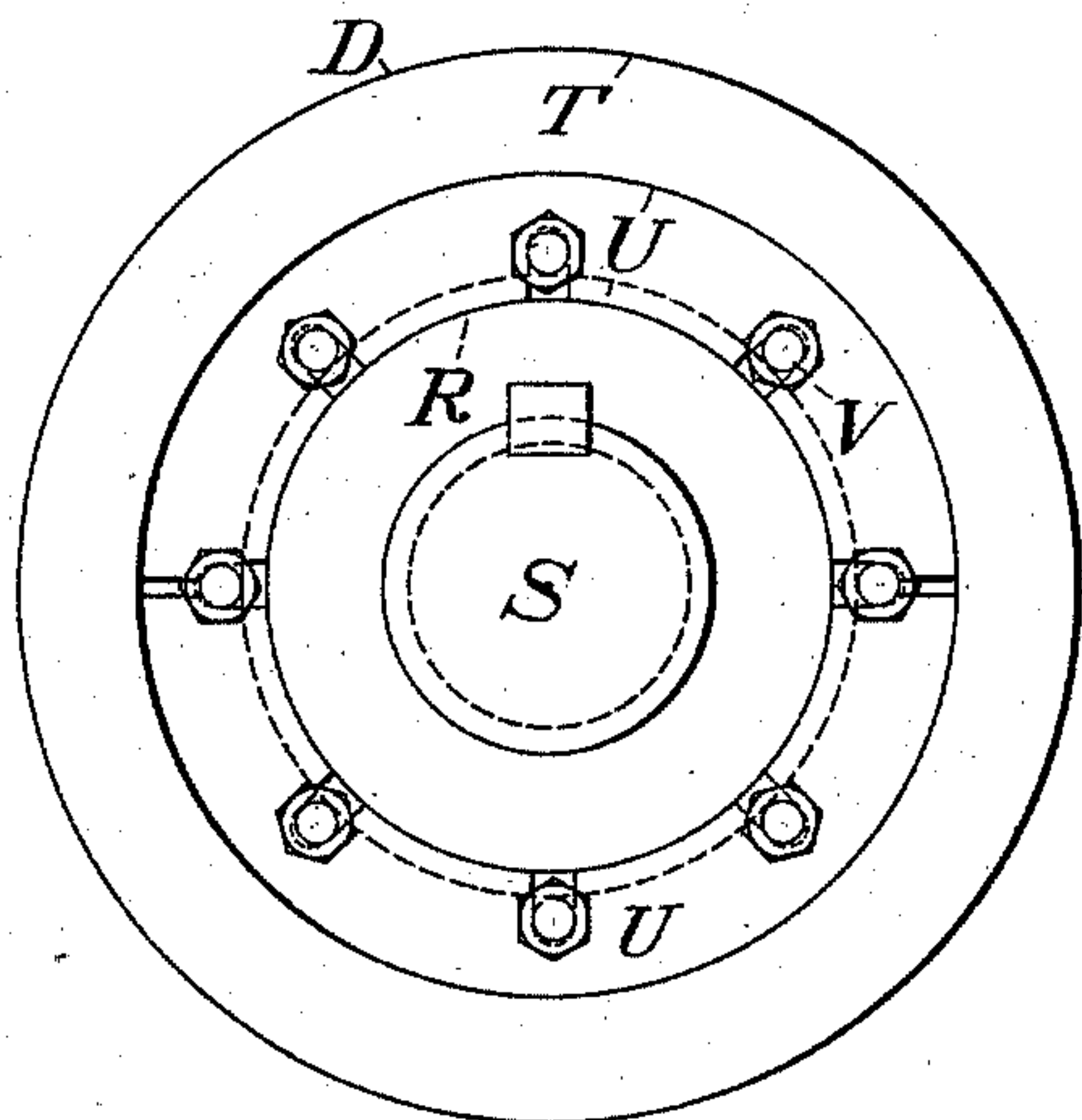
2 Sheets—Sheet 2.

H. C. BEHR.  
CRUSHING ROLL.

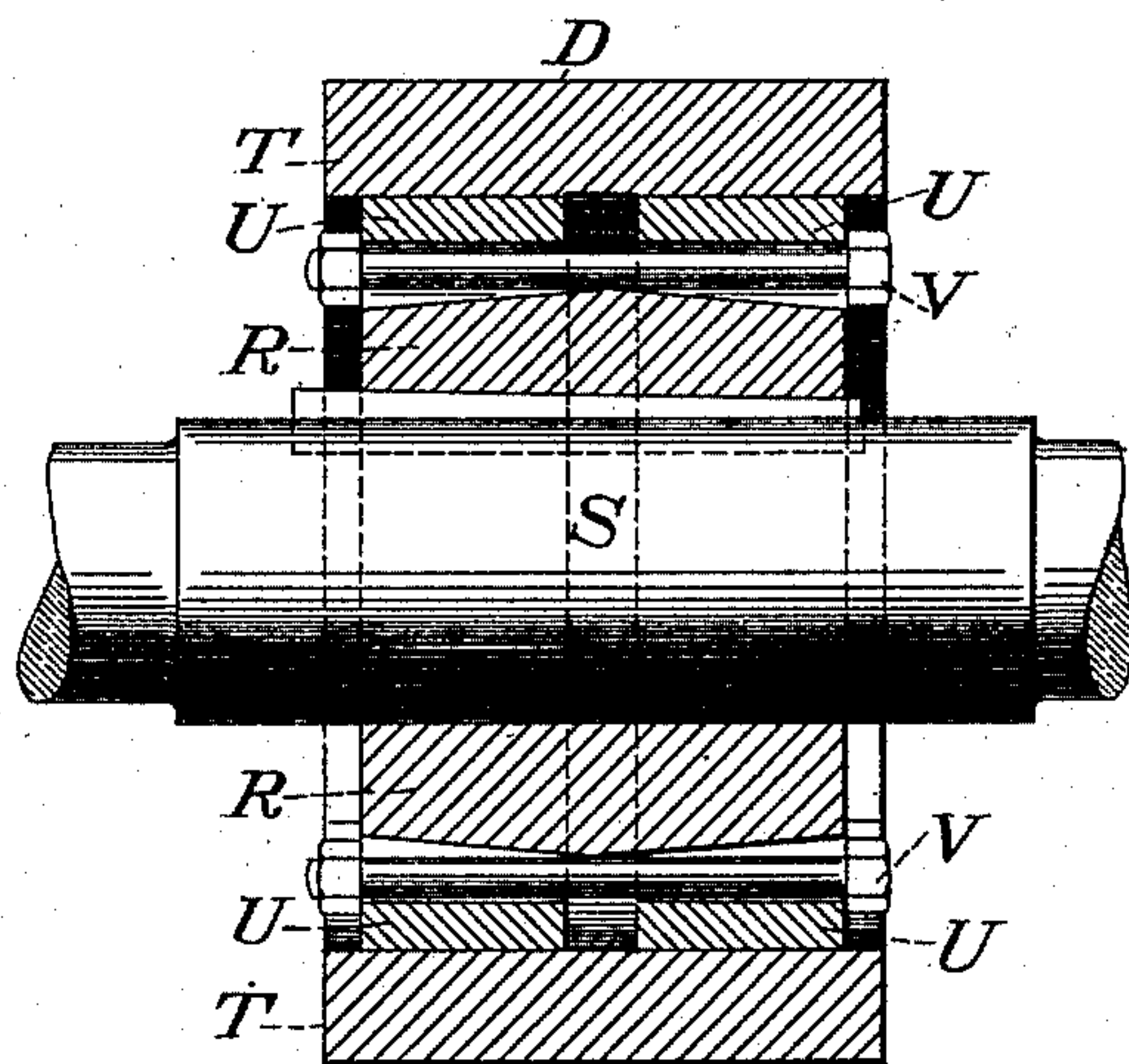
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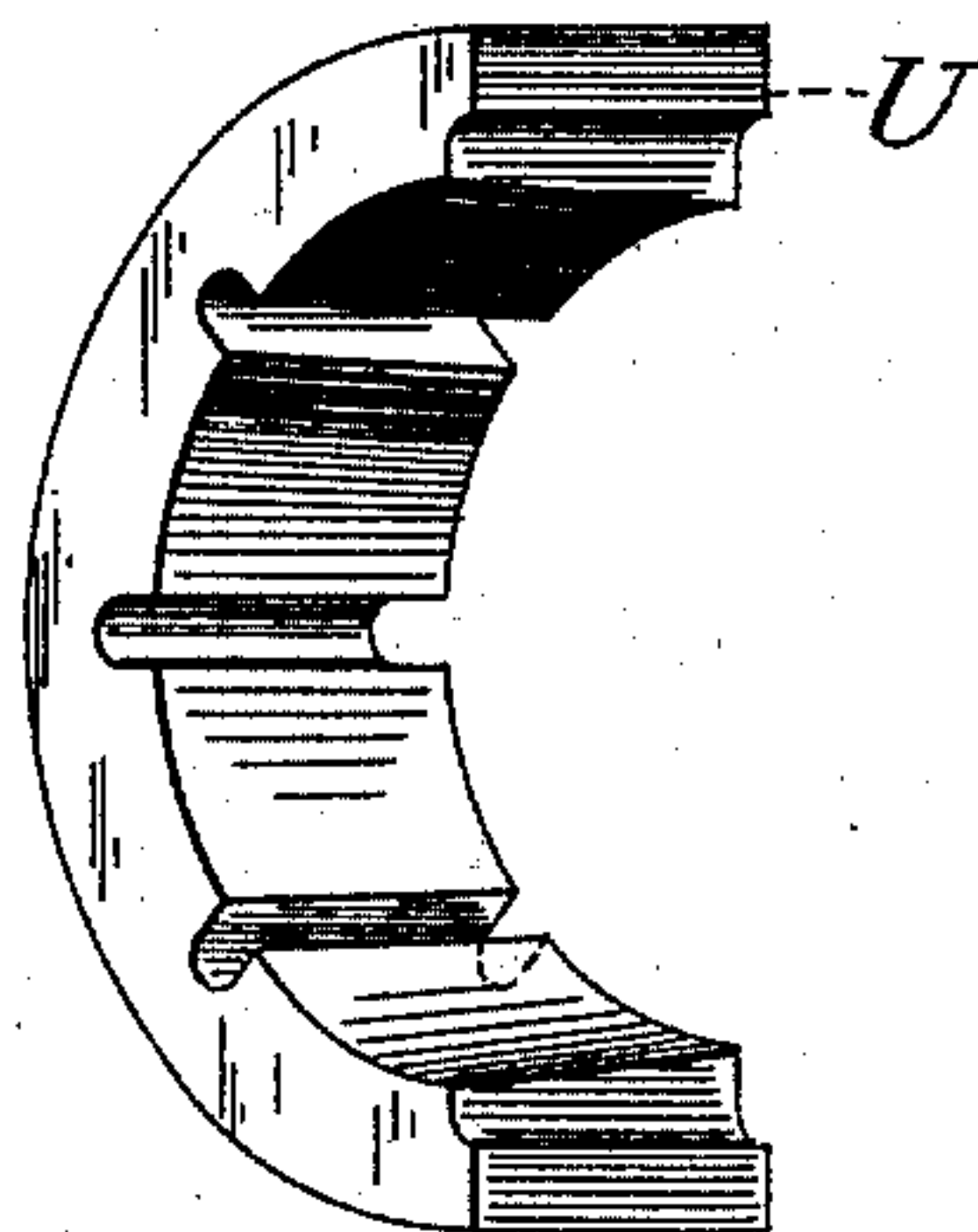
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

HANS C. BEHR, OF SAN FRANCISCO, CALIFORNIA.

## CRUSHING-ROLL.

SPECIFICATION forming part of Letters Patent No. 442,006, dated December 2, 1890.

Application filed June 25, 1890. Serial No. 356,646. (No model.)

*To all whom it may concern:*

Be it known that I, HANS C. BEHR, a citizen of the United States, residing at San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Crushing-Rolls; and I hereby declare the following to be a full, clear, and exact description of the same.

Reference being had to the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of one of my improved machines. Fig. 2 is a partial plan of the same, partly in section. Fig. 3 is a detail showing the manner of mounting the main bearings of the yielding rolls. Fig. 4 is an end view of one of the rolls, such as are employed in my machines. Fig. 5 is a longitudinal section through the same, and Fig. 6 is a detached view in perspective of one of the conical wedge-pieces employed for fastening the covering-rings on the rolls.

My invention relates to machines for crushing and pulverizing mineral or granular substances, especially ores, by means of pressing-rolls; and it consists in so mounting the yielding roll that it will move parallel to the non-yielding roll in a true plane horizontally, with its bearings directly attached and sliding on the main frame.

My invention further consists of equalizing mechanism applied to the yielding roll attached to but otherwise independent of the main bearings to maintain a parallel position of the yielding roll with respect to the fixed one when the position of the two are changed relatively.

My invention also includes the means for mounting and securing the cylinders forming the outer surface of such rolls so that they shall constitute a plain form parallel on their outer and inner surfaces, as will be hereinafter more fully explained.

Referring now to the drawings, similar letters of reference on the different figures indicate corresponding parts of my machine.

A is the main frame, on which is formed the fixed bearing B of the non-yielding roll C.

The adjustable or yielding roll D is supported in strong bearings E, mounted on the main frame by gibs, as shown at F, Fig. 3. These bearings E are free to slide within certain limits on the main frame A, but are kept

parallel to the fixed bearings B by means of the equalizing-bar G, which is connected by the links H to the bearings E, as shown, and is attached to the main frame at I by strong lugs J, as seen in Fig. 1, so that the movement of the bearings E have to be coincident and equal, keeping the crushing-faces at L parallel. The yielding roll is held to its work by strong springs M, Fig. 1, acting on the tension-rods N, which pass back and are firmly fixed in the bearing E on both sides, above and below the axes of the rolls, as shown in Figs. 1, 2, and 3. The tension or pressure of said springs is regulated by the screw-nuts O in the usual manner. The material to be crushed is fed in at the hopper P. The rolls are covered by a housing Q. Driving-power is applied to the roll C, and the rolls C and D are connected by wheels keyed on the shafts B and S in the usual manner.

Referring now to Figs. 4, 5, and 6, these show the rolls C and D of Figs. 1 and 2 in detail, consisting of a central solid section R, keyed on the axle, an outer cylinder or covering T, and two sets of wedge-rings U, held by the clamping-bolts V. The outer cylinder T, being subject to wear, is made separate, so as to be repaired or renewed, as occasion may require, and is fastened firmly by the wedging action of the tapering sections U. The periphery of the central member R is beveled to fit the interior of tapering sections U; but the outside of tapering sections U and the interior of outer cylinder or covering T are made parallel to the axes of the rolls and the surfaces at L, so that the outer cylinder or covering T is a plain annular piece easy to duplicate and construct.

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

1. As an improvement in crushing-rolls, the combination, with the main frame having the fixed bearings thereon and the stationary roll carried in said bearings, of the yielding roll, the bearings in which said roll is arranged, said bearings being free to slide within certain limits, and the equalizing-bar G, connected by links H to the bearings of the adjustable roll and connected to the main frame by lugs J, substantially as described.

2. As an improvement in crushing-rolls, the



combination of the stationary roll, the bearings E, gibbed to the main frame over ledges, as shown at F, the yielding roll D, supported in the bearings E, and the equalizing-bar G, connected by links H to the bearings E and by lugs J to the main frame, so that the movement of the bearings E may be coincident and equal, substantially as described.

3. The combination of the main frame having the fixed bearings thereon, the roll C, mounted in said fixed bearings, the bearings E, mounted on the main frame by gibs, so as to be free to slide within certain limits, the yielding roll D, supported in bearings E, the equalizing-bar G, connected by links H to the bearings E and by lugs J at I to the main frame, the tension-rods N, and the springs M, substantially as described.

4. As an improvement in crushing-rolls, the combination of the outer cylinder T, parallel on its outer and inner surfaces, the wedge-pieces U, parallel on the outer face to the axis of the roll and tapered on the inner face, the clamping-bolt V for holding the wedge-pieces, and the double-tapered center member R, all combined and operated substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

HANS C. BEHR.

Witnesses:

ALFRED A. ENQUIST,  
W. D. BENT, Jr.