

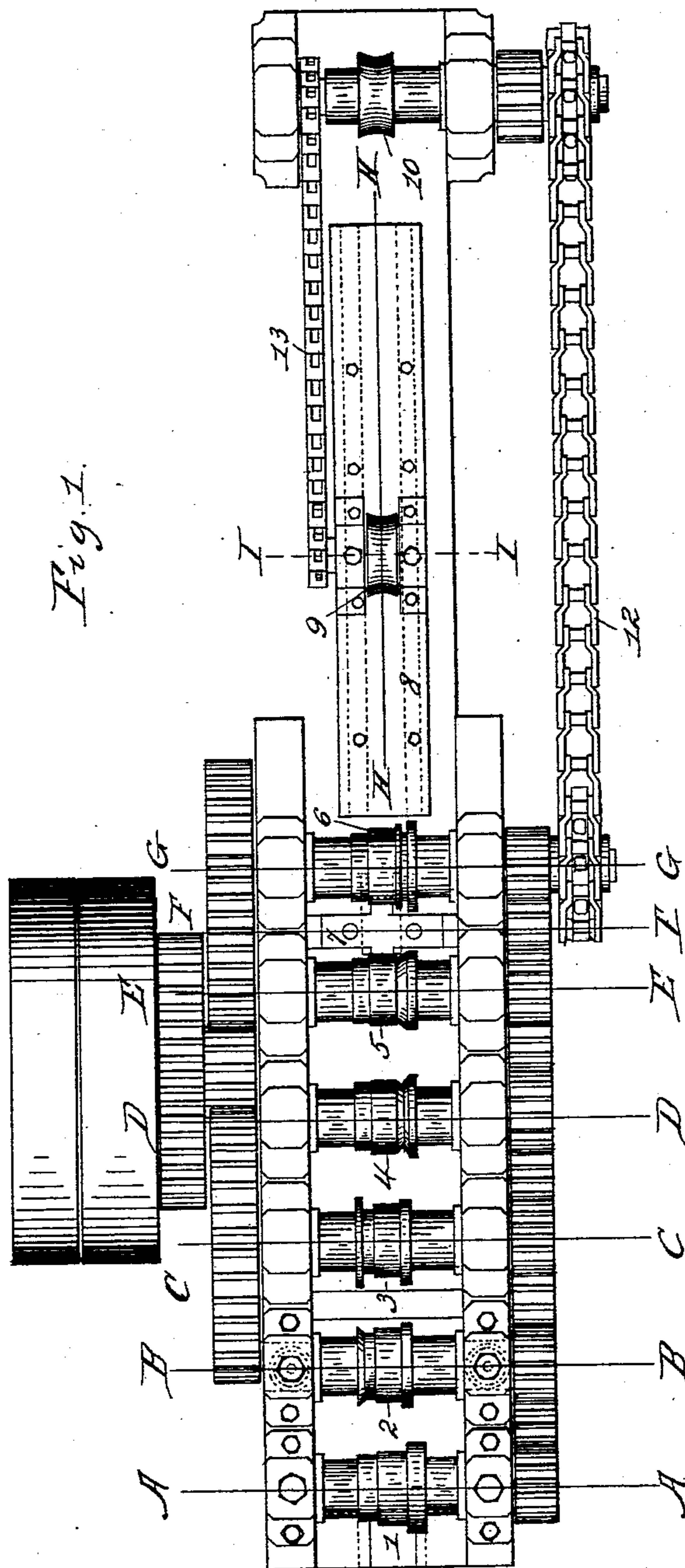
(No Model.)

4 Sheets—Sheet 1.

W. R. KINNEAR.
MACHINE FOR MAKING METALLIC SLATS.

No. 572,015.

Patented Nov. 24, 1896.



Witnesses

Grant Kinnear
Geo. W. Kinnear

Inventor

William R. Kinnear
By *his Attorneys*
Finckel & Finckel

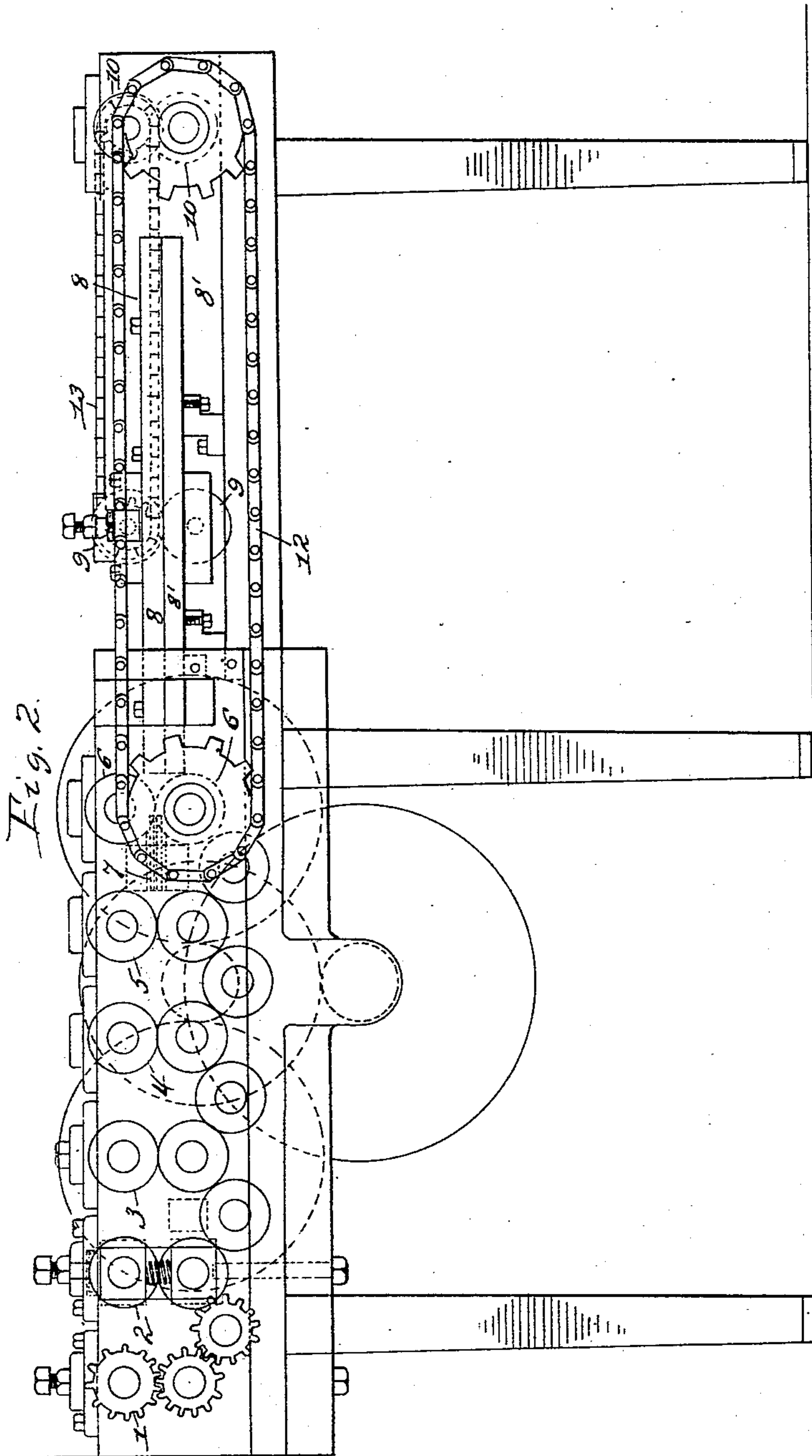
(No Model.)

4 Sheets—Sheet 2.

W. R. KINNEAR.
MACHINE FOR MAKING METALLIC SLATS.

No. 572,015.

Patented Nov. 24, 1896.



Witnesses
Grant Burroughs
Geo. W. Coppenhaver.

Inventor
William R. Kinnear,
By his Attorneys
Finckel & Finckel.

(No Model.)

4 Sheets—Sheet 3.

W. R. KINNEAR.
MACHINE FOR MAKING METALLIC SLATS.

No. 572,015.

Patented Nov. 24, 1896.

Fig. 3.

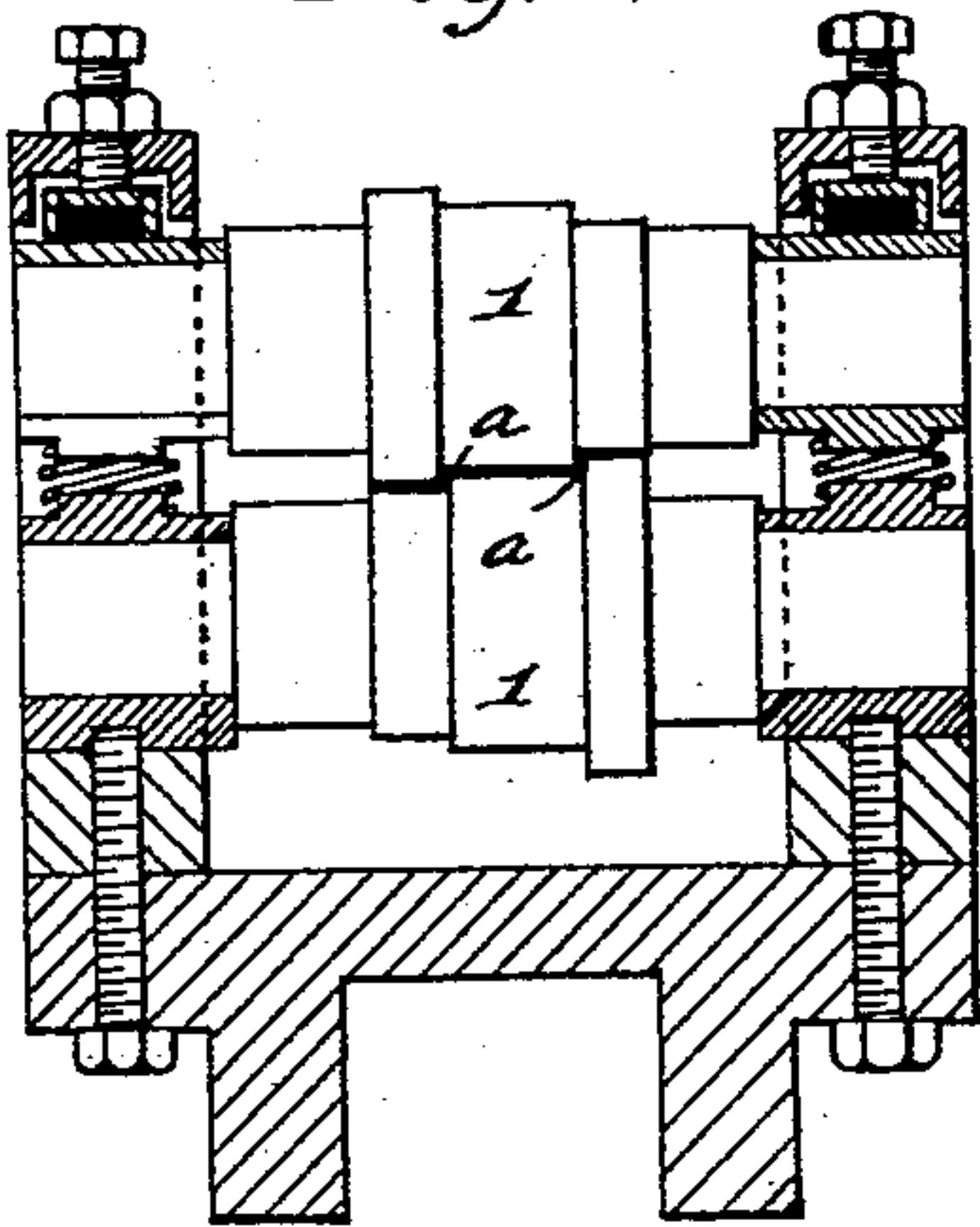


Fig. 6.

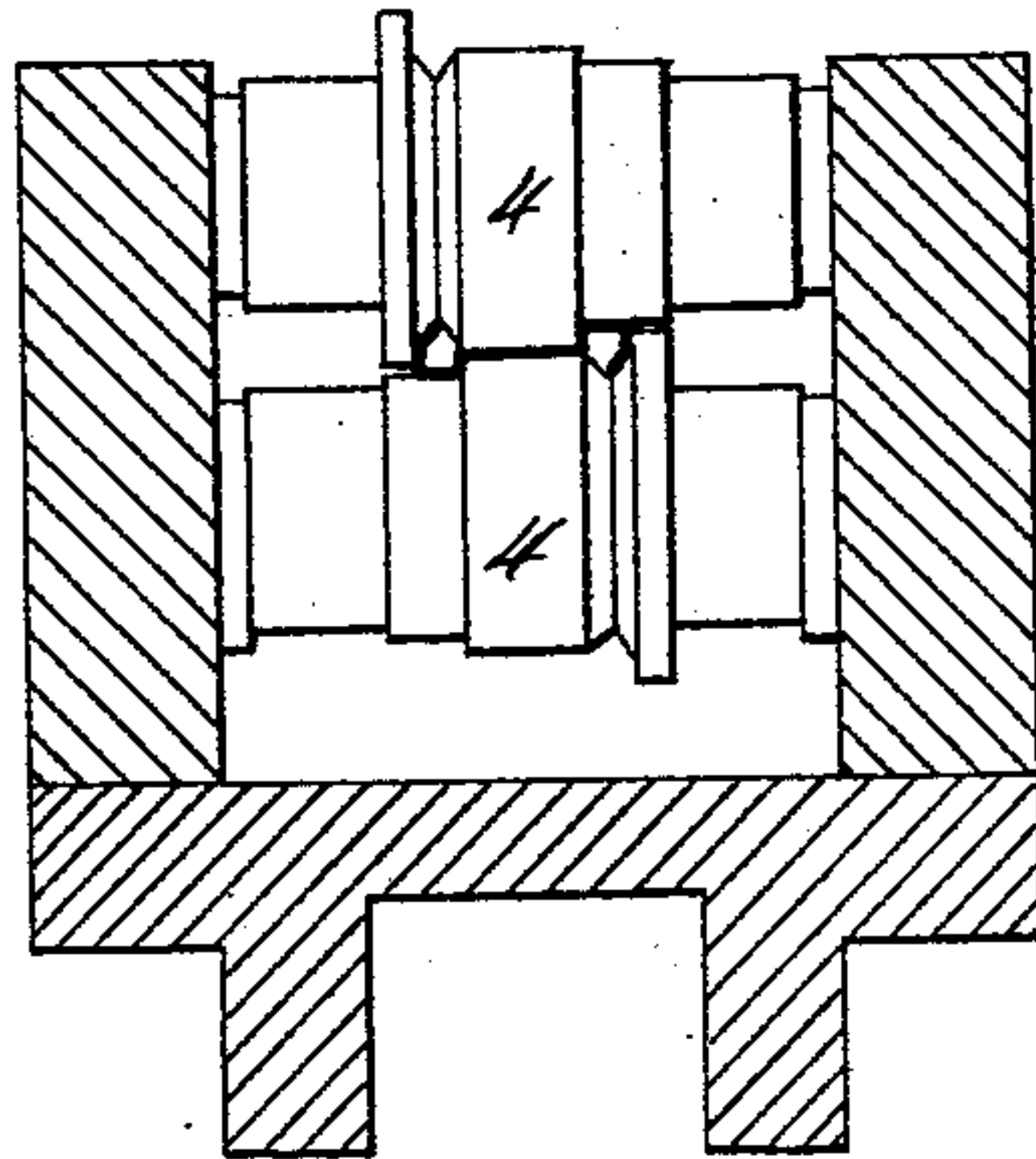


Fig. 4.

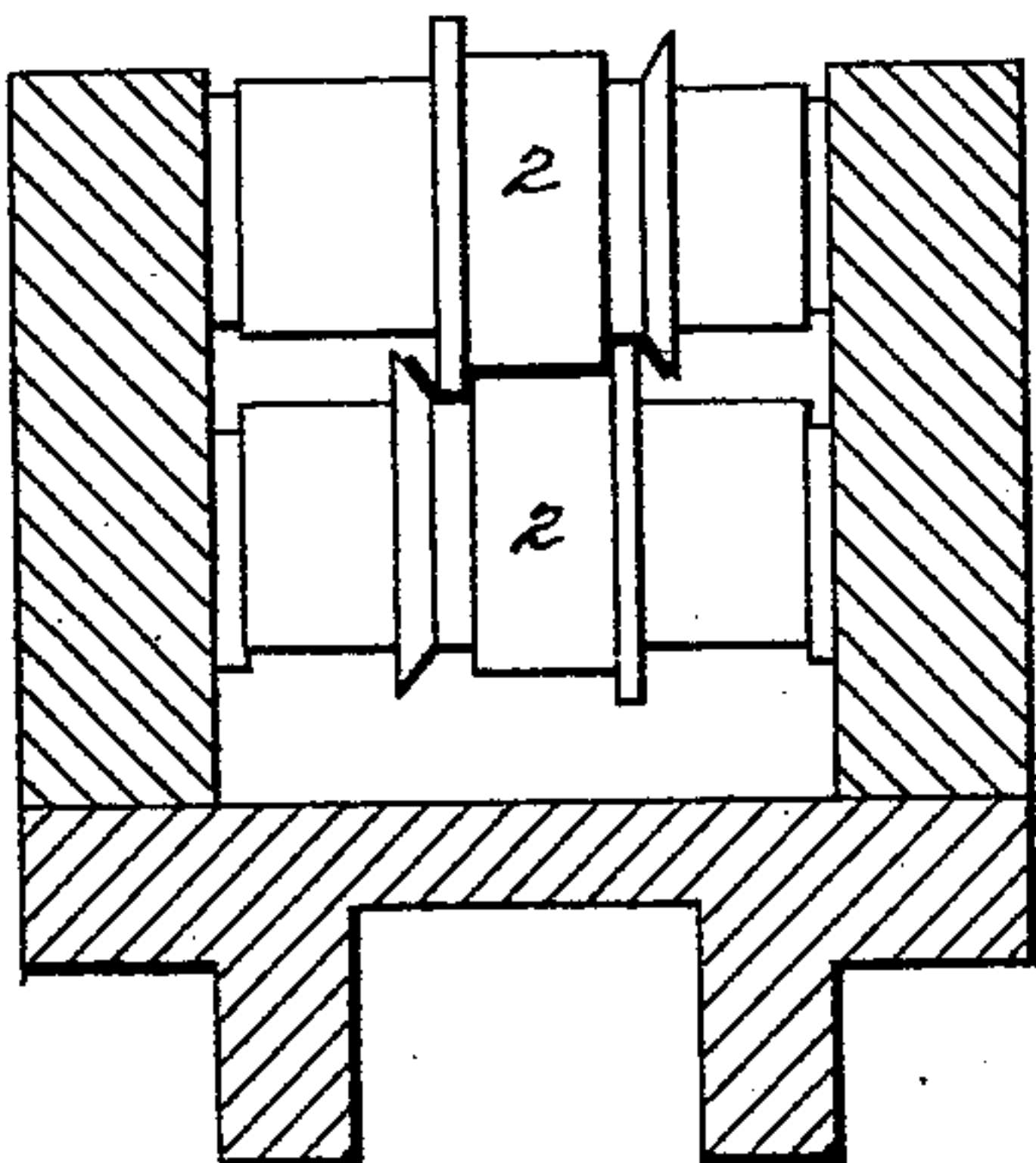


Fig. 7.

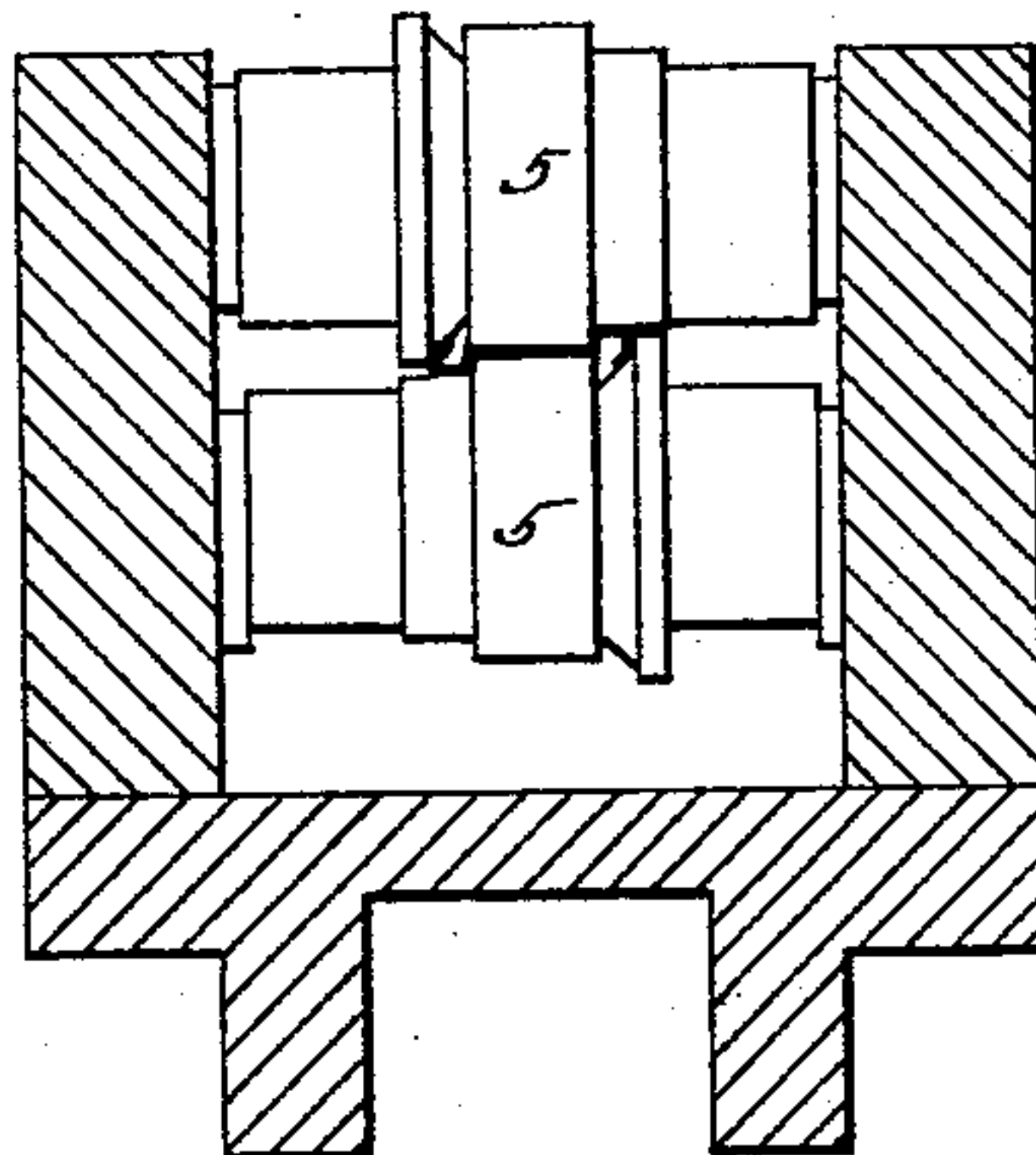


Fig. 5.

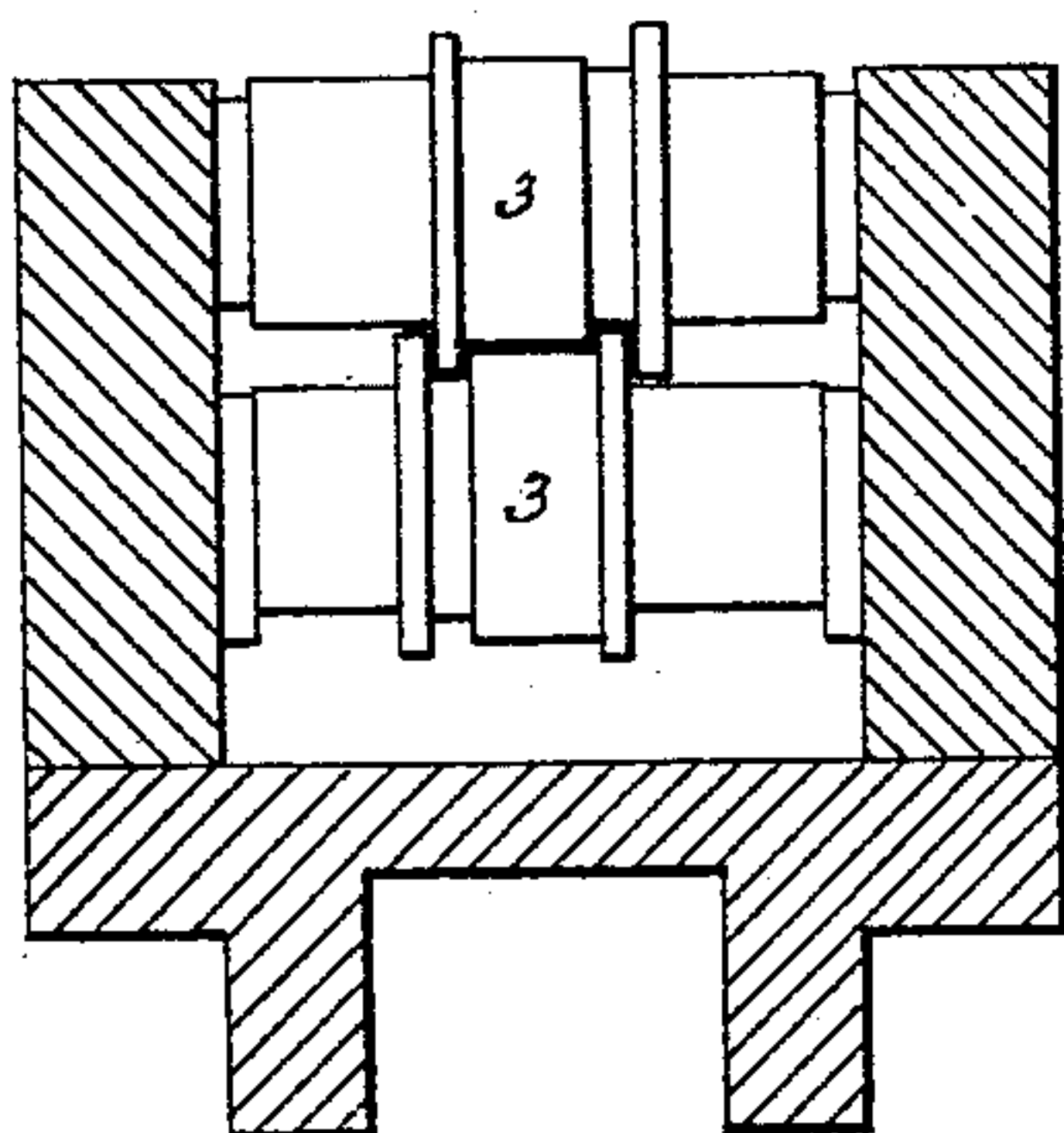
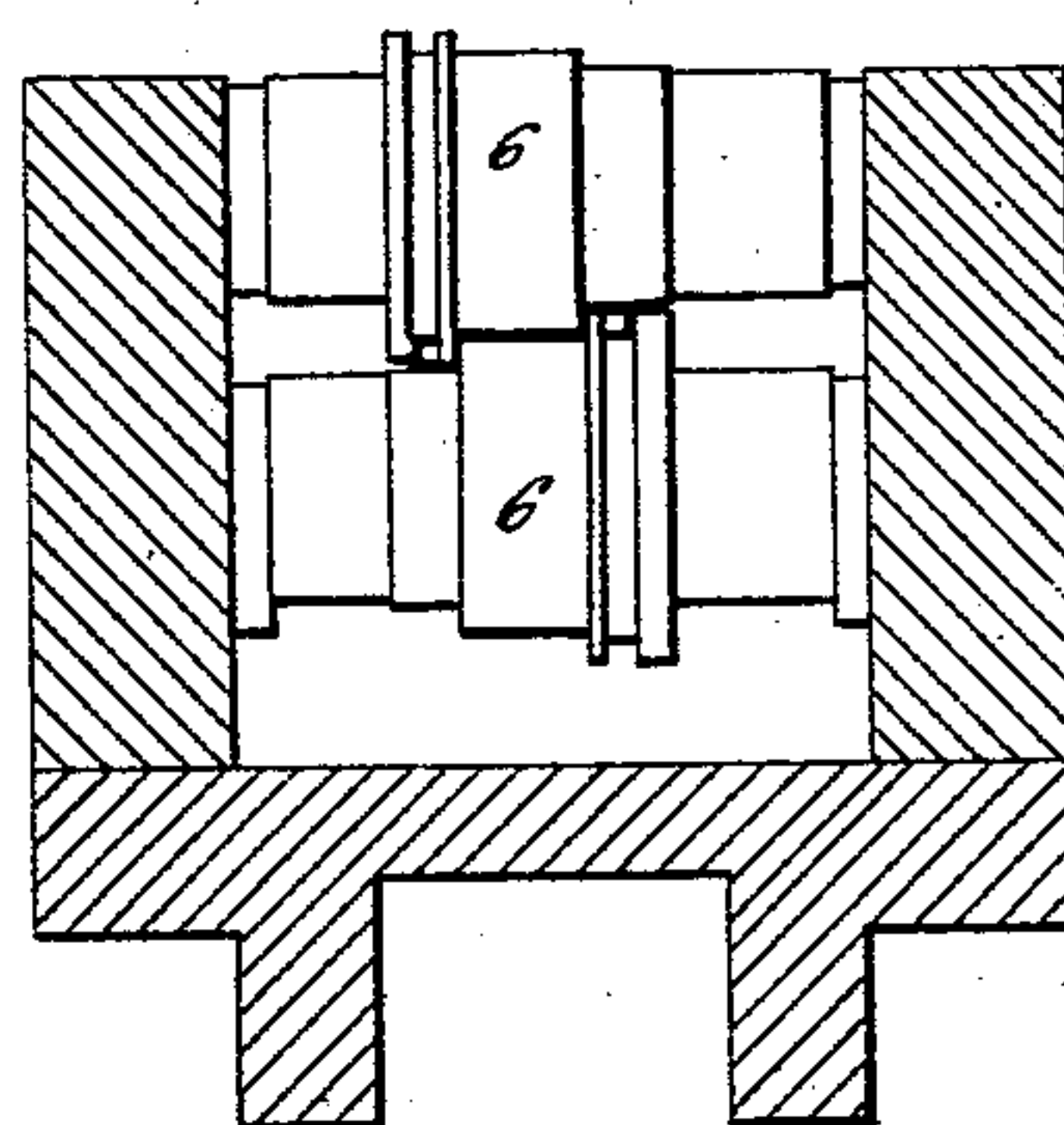


Fig. 8.



Witnesses
Frank B. Burroughs.
Geo. M. Copenhaver.

Inventor
William R. Kinnear,
By his Attorneys
Finckel & Finckel.

(No Model.)

4 Sheets—Sheet 4.

W. R. KINNEAR.
MACHINE FOR MAKING METALLIC SLATS.

No. 572,015.

Patented Nov. 24, 1896.

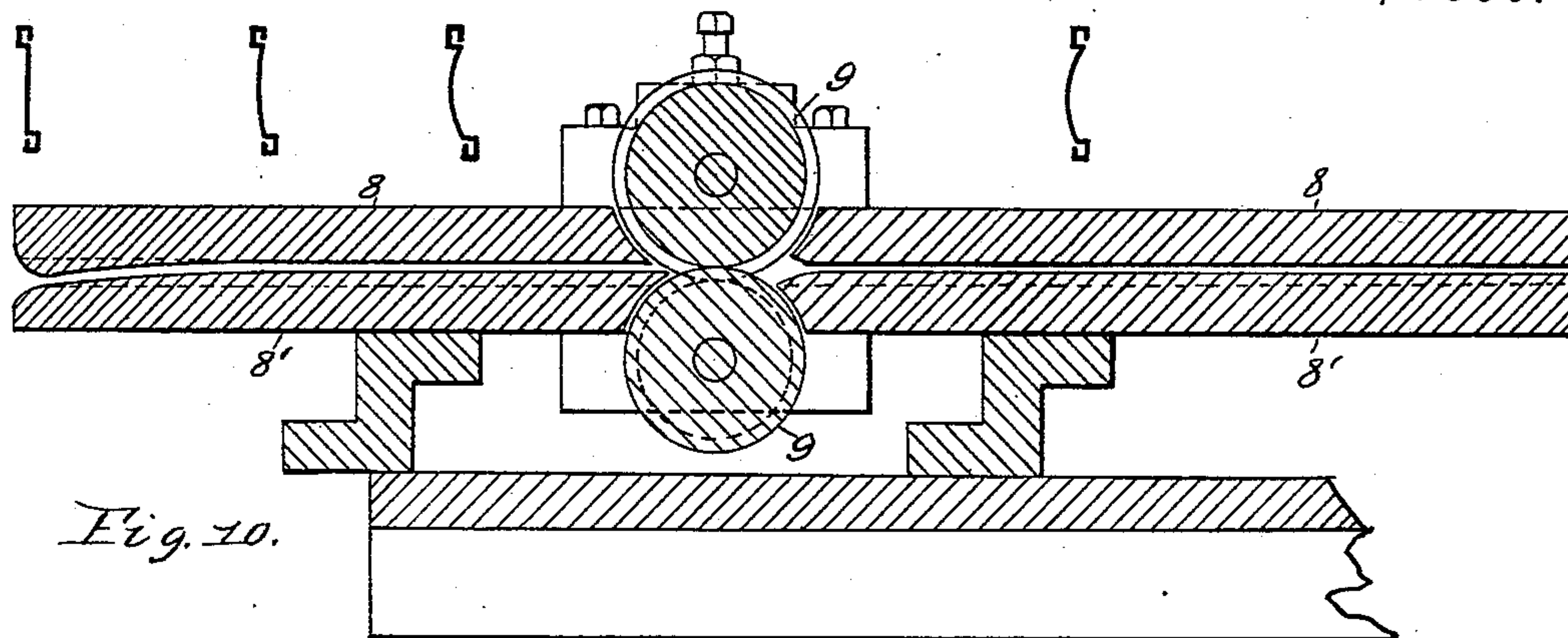


Fig. 10.

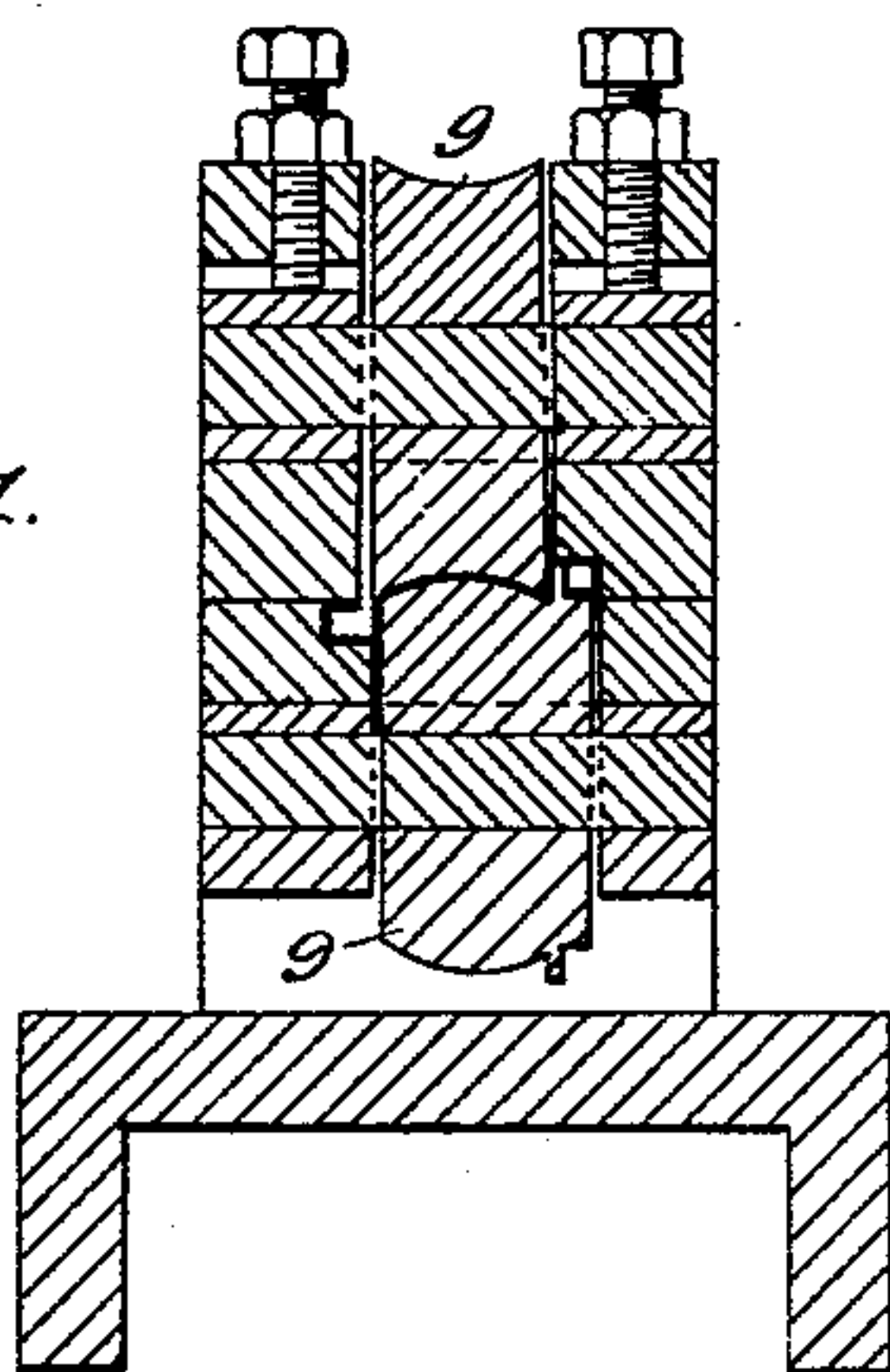


Fig. 11.

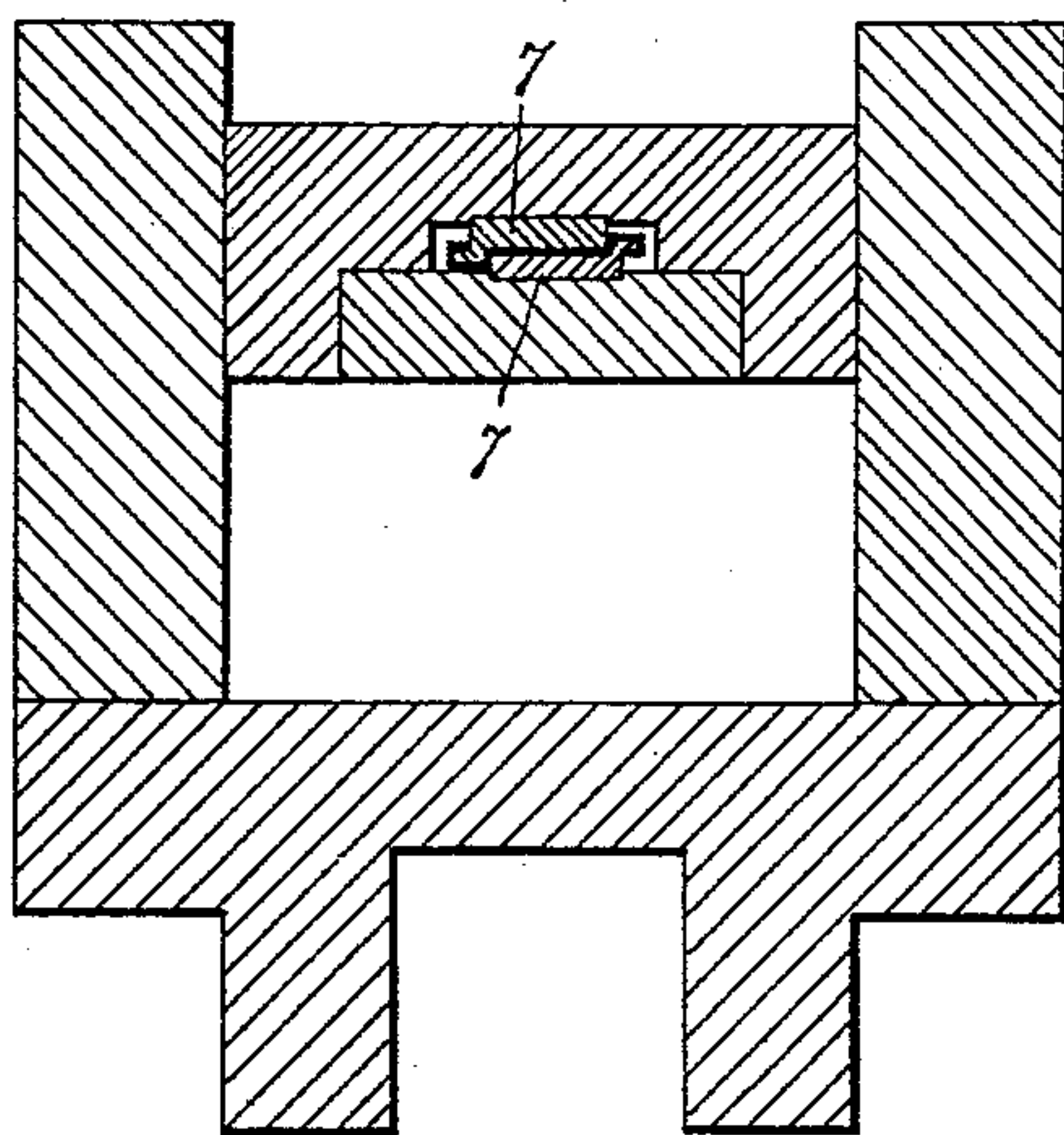


Fig. 9.

Witnesses

Grant Burroughs
Jas. M. Copenhaver.

Inventor

William R. Kinnear.
By his Attorneys
Finckel & Finckel.

UNITED STATES PATENT OFFICE.

WILLIAM R. KINNEAR, OF COLUMBUS, OHIO.

MACHINE FOR MAKING METALLIC SLATS.

SPECIFICATION forming part of Letters Patent No. 572,015, dated November 24, 1896.

Application filed June 8, 1896. Serial No. 594,755. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. KINNEAR, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Machines for Making Metallic Slats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The particular object of my invention is to provide a machine for making a metallic slat with similarly-formed but reversely-arranged grooves and shoulders on the opposite edges thereof, such slats being adapted to be interlocked by sliding them longitudinally together to form a curtain which may be rolled up on a roller.

My invention is embodied in a machine having a series of rolls of the improved construction herein shown and described to act in succession upon the slat-blank to give it the several bends by which the grooves are formed, and also having dies and rolls for hardening the metal and rendering permanent the perfected form of the slat.

In the annexed drawings, Figure 1 is a top plan view of the machine. Fig. 2 is a side elevation. Figs. 3, 4, 5, 6, 7, and 8 are views of rolls taken from the vertical planes A A, B B, C C, D D, E E, and G G of Fig. 1, respectively. Fig. 9 is a view taken on the vertical plane F F of Fig. 1. Fig. 10 is a sectional view taken on plane H H, Fig. 1, there being also shown above and as a part of this view cross-sections of a slat illustrating the changes of form imparted to the slat in its progress through the dies. Fig. 11 is a sectional view of the curving dies and rolls, taken on the plane I I, Fig. 1.

As the grooves to be formed on the edges of the slat are similar in form and size, with the openings thereto on reverse sides of the slat, the members of each pair of rolls will be the substantial counterparts of each other.

The first pair of rolls 1 are formed to bend in a blank slat or flat strip of metal the shoulders *a*, which stand substantially at right angles to the plane of the strip, but in opposite directions to each other. The second pair of the rolls 2 are constructed to bend up the

edges in opposite directions, so that the said edges stand substantially at an angle of forty-five degrees to the plane of the strip. The third pair 3 give a further bend to these edges, so that they stand at right angles to the plane of the strip. The fourth pair 4 give to the edges an initial bend inward, and the fifth pair 5 impart a further bend in the same direction. From this pair of rolls the grooves of the slat move onto steel cores 7, which are of the size and shape of the grooves. These cores are prolonged to extend between a pair of rolls 6, which are of proper form to press the metal about the cores and give the grooved edges their final and permanent form. From the rolls 6 the strip of metal or slat passes between two die-plates 8 8', which are on their adjacent faces correspondingly concaved and convexed to give a transverse curvature to the body of the slat. In order that the bending may not be too sudden, the curvature at beginning of the die is zero or very slight and increases until that of final form of the slat is attained. At this point is located a pair of rolls 9, which compress and harden the metal, making permanent the desired form of curve. The opening between the die-plates 8 8' beyond the rolls 9 is of the form and size of the finished slat, which freely passes thence to a pair of rolls 10, which last are for the purpose of drawing the finished slat from the machine.

If deemed necessary, a small die having a universal adjustment may be added to the machine beyond the rolls 10 to straighten out bends or twists in the slats which may have been formed therein in its passage through the machine in consequence of accidental inequalities in the thickness of the metal in the original blank.

The several pairs of rolls, as well as the dies, are all arranged so that their openings are in a straight line, and the series of rolls illustrated in Figs. 3, 4, 5, 6, 7, and 8 are mounted in the front part of the frame of the machine. The bearings of the upper rolls are preferably adjustably cushioned, as indicated in Fig. 3, so as to yield to inequalities in the metal, but at the same time so as to act with sufficient pressure upon the metal to effect the desired bending thereof. The members of the pairs of rolls illustrated in Figs. 3, 4, 5, 6, 7, and 8 are geared to each other,

and the several pairs are likewise geared together so that the motion of one is communicated to all the others.

Any suitable mechanism for the application of power to impart rotary motion to the rolls is provided, and the power is shown to be transmissible from the shaft of the lower roll 6 to the rolls 9 and 10 by means of sprocket wheels and chains 12 and 13, substantially as indicated in Figs. 1 and 2.

The cross-section of the slat as it is formed by the several rolls is indicated by the heavy dark lines between the rolls, and just above the longitudinal sectional view, Fig. 10, of the curving-dies 8 8' I have illustrated the appearance of the cross-section of the slat before, during, and after its passage through the dies.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine for making metallic slats of the kind herein described, a series of pairs of rolls 1, 2, 3, 4, 5, and 6 constructed to act in succession upon the edges of a strip of metal to bend the same to form a similar but reversely-arranged shoulder and groove upon each of the opposite edges of the slat, combined with cores 7 constructed to fit in the grooves of the slat and prolonged to extend between the rolls 6, substantially as shown and described.

2. In a machine for making metallic slats of the kind herein described, a series of pairs of rolls 1, 2, 3, 4, 5, and 6 constructed to act in succession upon the edges of a strip of metal to bend the same to form a similar but reversely-arranged shoulder and groove in each of the opposite edges of the strip, combined with die-plates 8, 8', and rolls 9 for imparting curvature to the slat between the shoulders, substantially as shown and described.

3. In a machine for making metallic slats of the kind herein described, a series of pairs of rolls 1, 2, 3, 4, 5, and 6 constructed to act in succession upon the edges of the strip of metal to bend the same to form a similar but reversely-arranged shoulder and groove on each of the opposite edges of the strip, combined with cores 7 constructed to fit in the grooves so formed and prolonged to extend between the rolls 6, and the die-plates 8, 8' and rolls 9 for imparting curvature to the slat between the shoulders, substantially as shown and described.

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

WILLIAM R. KINNEAR.

Witnesses:

R. H. KINNEAR,
E. F. SCOTT.