

No. 863,719.

PATENTED AUG. 20, 1907.

H. JOHN.
METAL SHEARING MACHINE.
APPLICATION FILED FEB. 14, 1907.

2 SHEETS—SHEET 1.

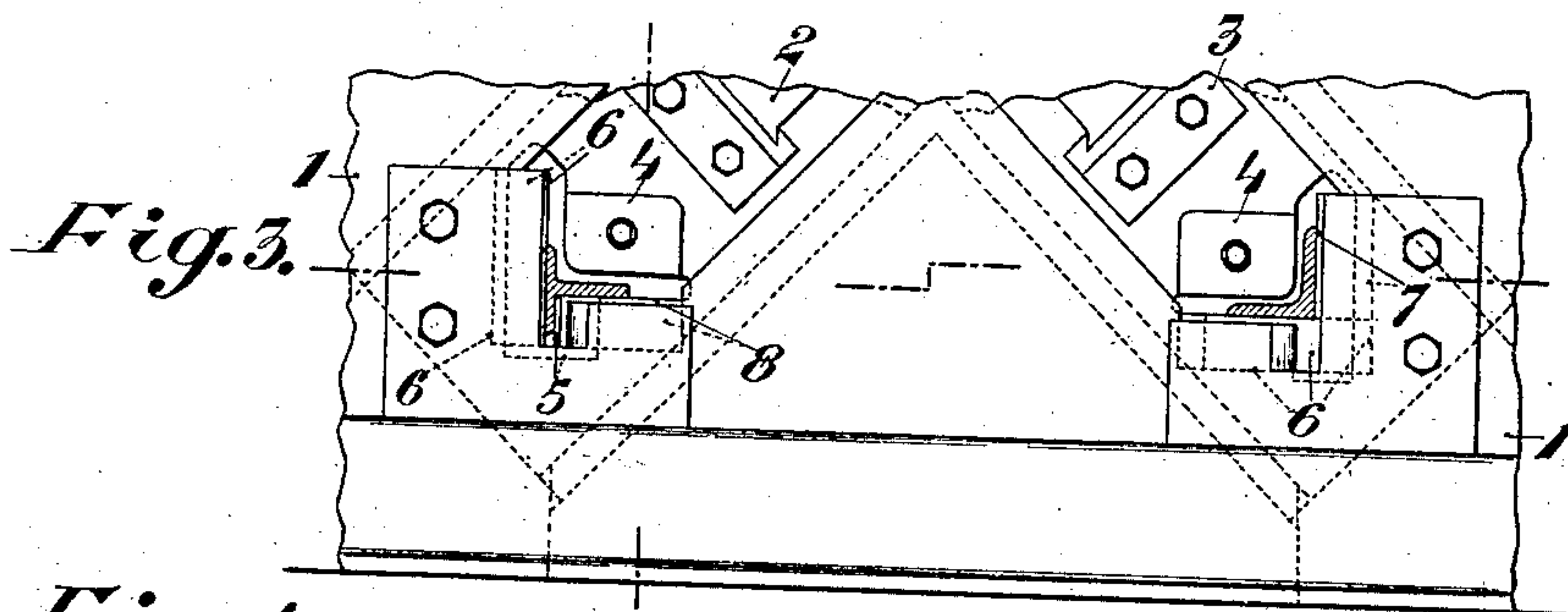
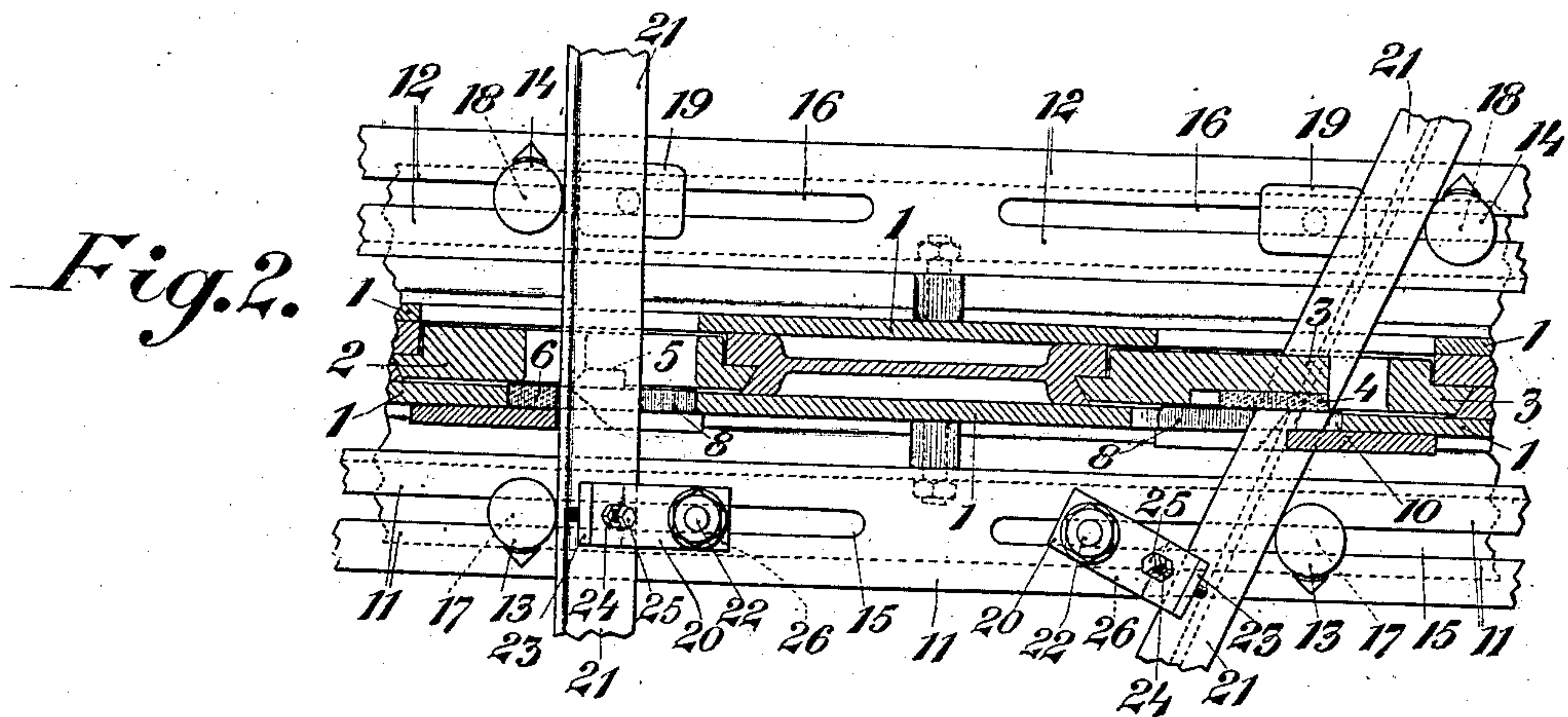
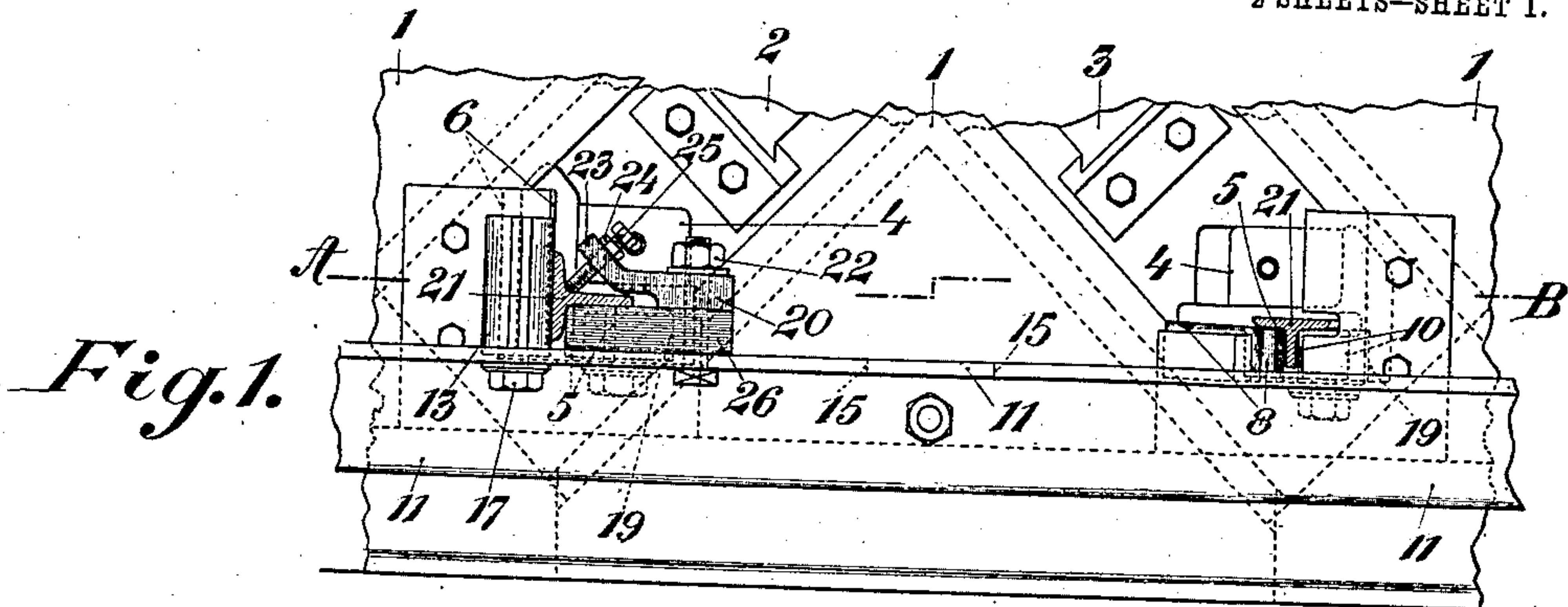
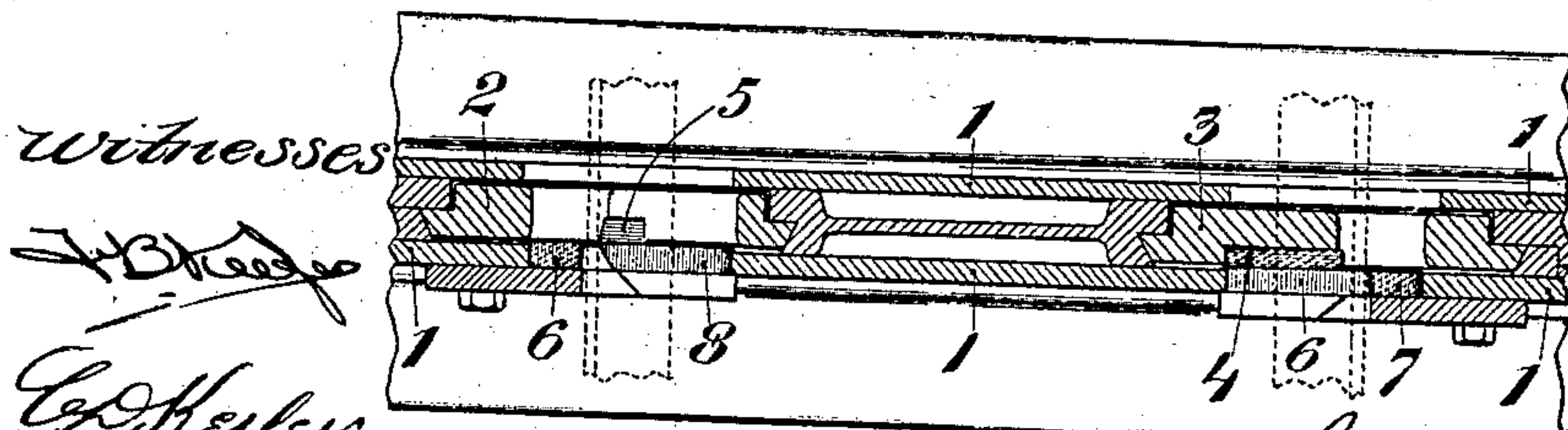


Fig. 4.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

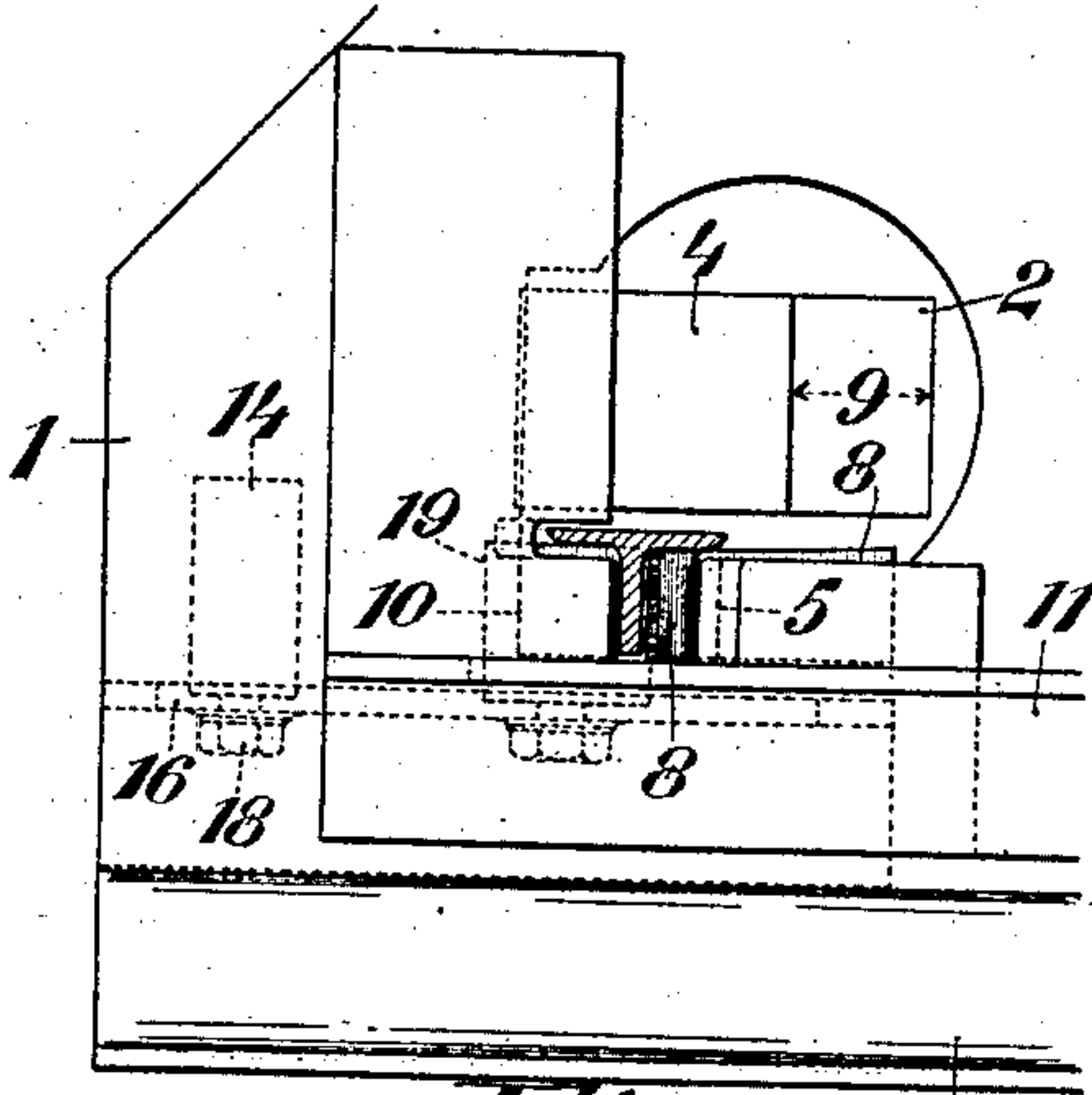
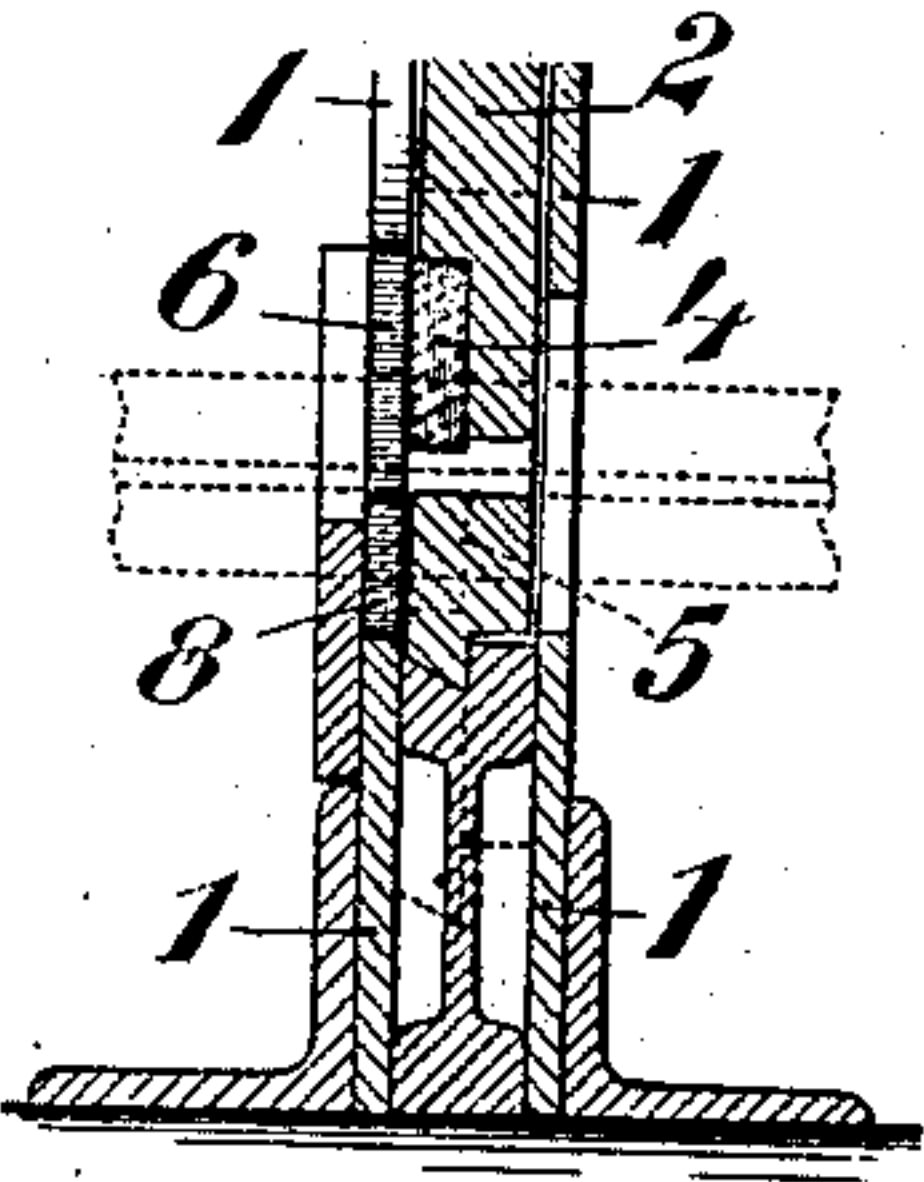


Fig. 9.

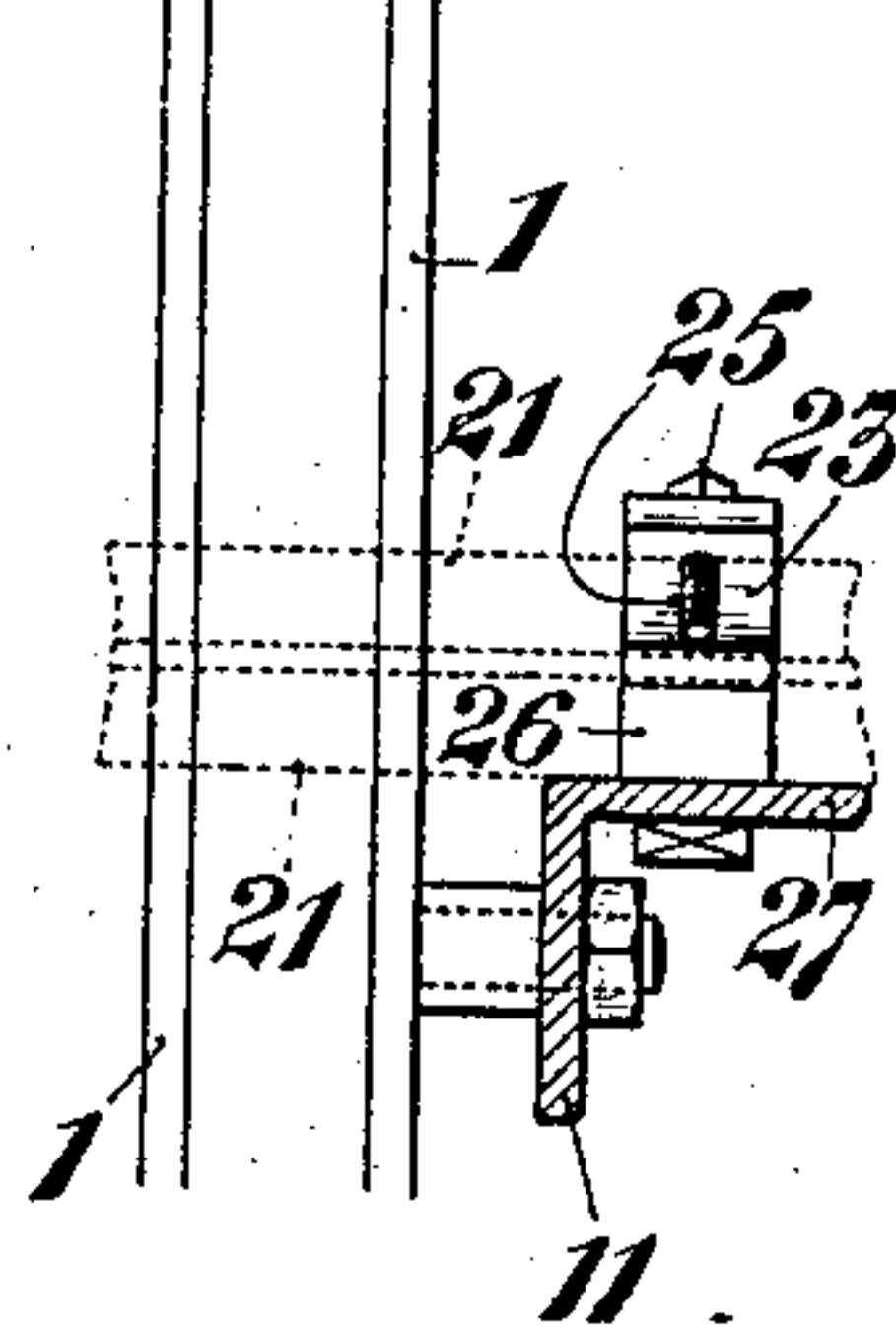


Fig. 7.

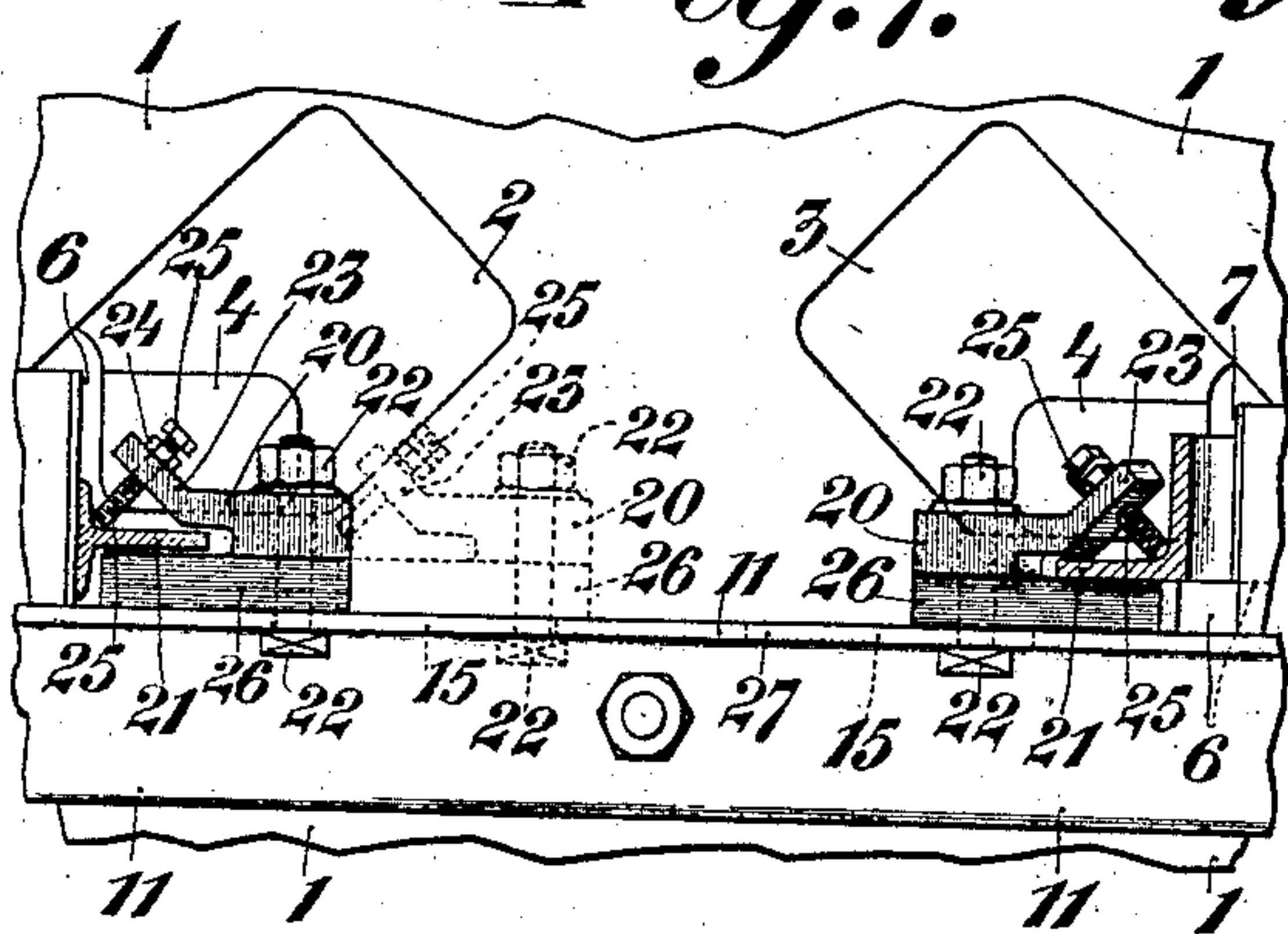


Fig. 10.

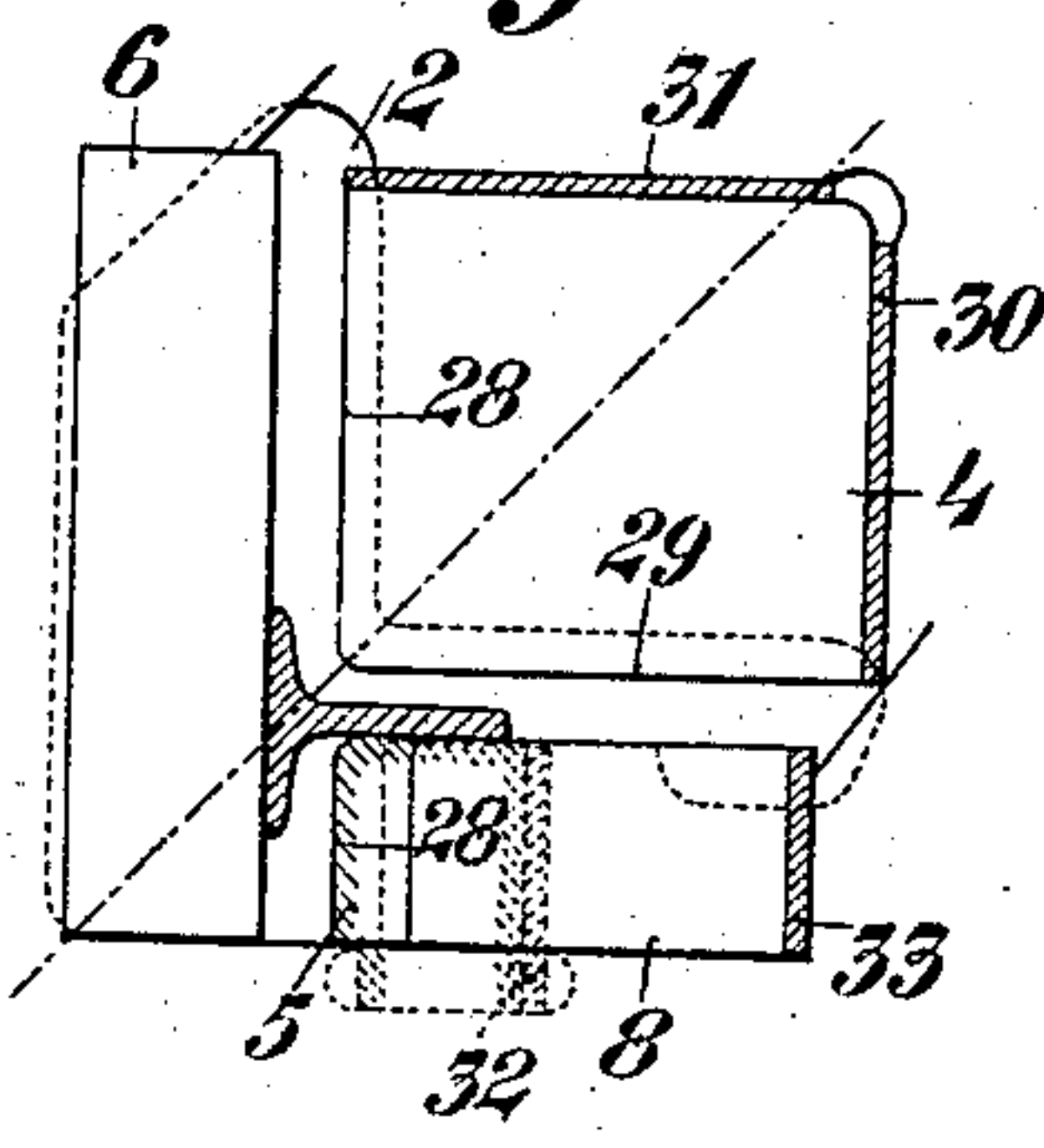


Fig. 8.

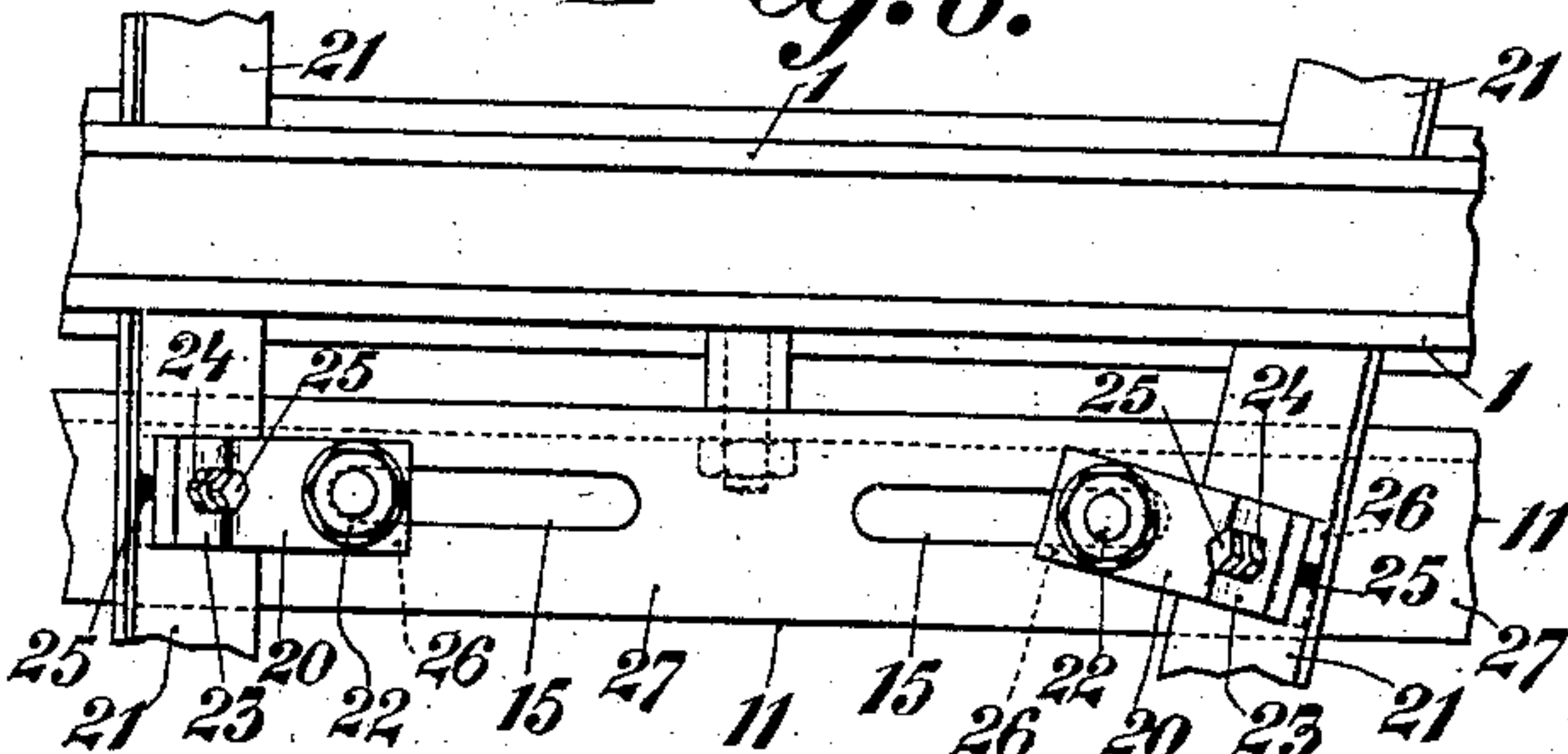


Fig. 11.

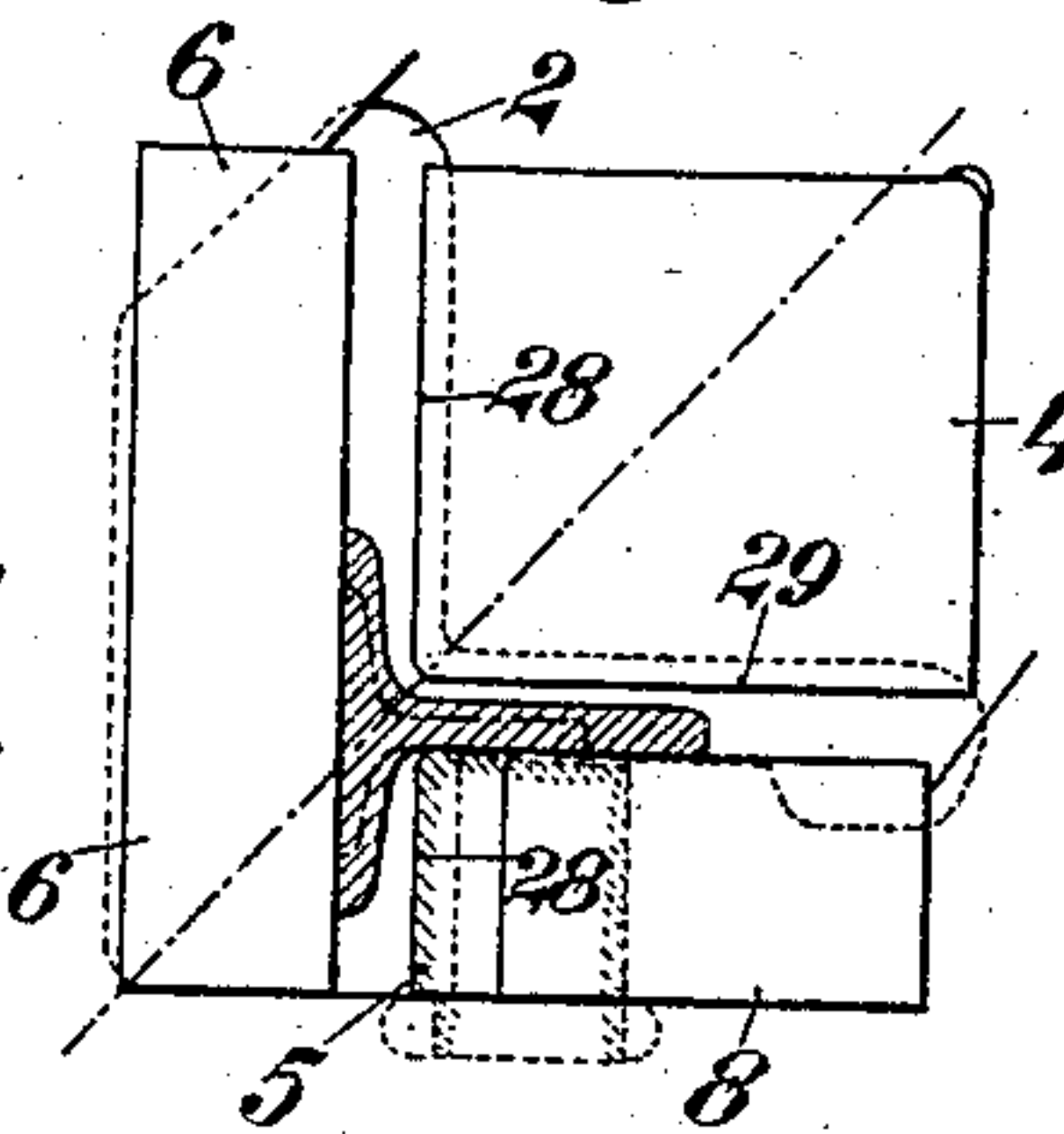


Fig. 12.

Witnesses:

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Inventor
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UNITED STATES PATENT OFFICE.

HUGO JOHN, OF ERFURT, GERMANY.

METAL-SHEARING MACHINE.

No. 868,719.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed February 14, 1907. Serial No. 357,378.

To all whom it may concern:

Be it known that I, HUGO JOHN, manufacturer, a subject of the King of Prussia, residing at Erfurt, Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Metal-Shearing Machines, of which the following is a specification.

My invention relates to shears with two oblique supports for cutting sectional iron, characterized by a peculiar group of fixed and interchangeable cutters being provided for cutting angle- and T-irons, and further by the machine being provided with stops, support blocks and holding-down devices for the purpose of exactly maintaining a straight or an inclined cutting angle.

An apparatus embodying the invention is illustrated in the accompanying drawing, in which

Figure 1 shows the general arrangement in elevation, Fig. 2 is a section on the line A—B of Fig. 1. Figs. 3, 4 and 5 show the cutter group with fixed and interchangeable cutters. Fig. 6 shows another arrangement of the cutter group for the purpose of cutting the flange in T-iron girders. Figs. 7, 8 and 9 show the holding-down devices, and Figs. 10, 11 and 12 a device for adjusting the cutters.

In the frame 1 of the machine are arranged two slide rests 2 and 3 obliquely guided at an angle of 45° and to each of them is secured an upper cutter 4. These upper cutters serve for all straight or oblique cutting as well for angle-iron as for T-irons. On the slide rest is also mounted a bottom cutter 5 which is used for cutting T-irons. Figs. 3 to 5 show a left hand slide rest 2, of which the cutter group cuts T-irons obliquely in the web, while the cutter group of the right hand slide rest 3 is arranged for cutting angle-irons. A long cutter 6 is provided which in cutting T-irons affords support to the flange of the T-iron, and is in a vertical position (Fig. 3 on the left hand side).

In cutting angle irons, the long cutter is utilized as the bottom cutter, for cutting the horizontal flange, and is accordingly mounted horizontally. The cutting of the vertical flange is effected by means of the lateral cutter 7 which stands on the cutter 6 (Fig. 3 on the right hand side). In cutting T-irons, when the long lateral cutter 6 is in vertical position, the short cutter 7 is done away with and replaced by a bottom cutter 8 in horizontal position. When, therefore, cutting T-irons, the two cutters 4 and 5 secured to the slide rest cut, together with the long cutter 6, the flange of the T-iron, while the cutter 4 with its horizontal edge in combination with the interchangeable cutter 8, cuts the web of the T-iron. In cutting angle-irons, for instance, with the right hand slide rest 3, the upper cutter 4 guided by the slide rest, and the interchangeable long cutter 6, cut the horizontal flange of the angle-iron, while the cutter 4, together with the interchangeable cutter 7, cuts the vertical flange. If, for instance, angle-iron is cut in the

left hand slide rest, the cutter 5 is not cutting, as the downwardly depending flange of the T-iron is, of course, non-existent in the angle-iron.

Fig. 6 shows another arrangement of the cutters for cutting T-irons with horizontally placed flange. The machine body 1 and the slide rest 2 are arranged accordingly. The slide-rest top cutter 4 is laterally adjustable to the extent 9, so that it can cut the whole flange of the T-iron. The slide rest cutter 5 is unchanged as also the bottom cutter 8. The cutter 6 is removed and replaced by a cutter 10. As the web of the T-iron is, in the present case, arranged at the point at which, in Fig. 3 on the left hand, is placed the bottom portion of the flange, the cutters 5 and 8 can be used without changing their construction and position. The support cutter 4, advanced to the extent 9, cuts, in combination with the cutters 10 and 8, the flange of the T-iron, while the slide rest bottom cutter 5, in cooperation with the cutter 10, cuts the web of the T-iron.

In order to maintain the same angle when repeatedly cutting in oblique direction, tables 11 and 12 (Fig. 2) are provided with two cylindrical blocks 13, 13 and 14, 14, forming stops, longitudinally adjustable, in slots 15, 15 and 16, 16, of the tables 11 and 12, in which they can be fixed by screws 17 and 18. Moreover, in each slot 16 is arranged a support block 19, of which the surface is flush with the upper edge of the cutter 8, and which serves to support one flange of the angle-iron or one half of the flange or the web of the T-iron.

The stop block 13 is used when the article to be cut is introduced from the front, and the block 14 is used when the article to be cut, has to be introduced from the back.

When the girder to be cut is introduced from the front, it must be held down. This is effected by means of holding-down devices shown in Figs. 7 to 9, and comprising an upper part 20 which is adjustable to suit the size of the angle to be cut, and can be turned on its fixing screw 22. Its free end 23 is bent upwards at an angle of 45° and carries a set screw 25 with lock nut 24, directed with its bottom end towards the work 21. This set screw presses in the corner of the work 21 to be cut, and holds it in position.

According as the work 21 is to be cut, straight, or at an angle, the upper part 20 of the holding-down device, is rotated about the clamping screw 22, and set. The set screw 25 is adjusted to suit the thickness of the girder to be cut.

Support for the girder is afforded by the bottom part 26 of the holding-down device, the surface of which is also (in the same way as the support block 19) flush with the upper edge of the cutter 8. The two support blocks 19 and 26 are necessary in order to obtain, above the table, space for the web or for the flange portion of the T-iron, projecting downwards.

The bottom part 26 of the holding-down device is held by the same clamping screw 22, as the upper part. The bottom part 26 may be fixed, together with the upper part 20, by means of the clamping screw 22, or separately by means of independent fastening devices.

When cutting T-irons, it is necessary to take care that the two cutting edges 28 should be in line and at the same distance from the material to be cut, as the cutting edge 29 (Figs. 10, 11 and 12). The smaller the distance of the said cutters from the T-iron, the neater will be the cut. The distance of the cutters is reduced by placing distance pieces 30 31 (Fig. 10) behind the slide rest cutters 4 so that the cutting devices come nearer to the cross-section of the girder. In the same way distance pieces may be placed behind the bottom cutter 5, this being done by means of the part 32. The bottom cutter 8 also should be equally moved towards the T-girder to be cut, and a distance piece 33 placed behind it. The object described, to bring the cutters nearer to the girder to be cut, can also be obtained by placing behind the cutter 6 a distance piece 34 (Fig. 12). The

distance pieces 30 of the cutters 4, 32 of the cutter 5, and 33 of the cutter 8, become then unnecessary.

What I claim is:

1. An apparatus of the class described, comprising a frame having a plurality of work receiving openings, obliquely guided slide rests having upper and lower cutters carried thereby, interchangeable lateral cutters mounted on the frame, means for adjustably connecting the cutters in position, and means for positioning the work in the frame.

2. An apparatus of the class described, comprising a frame having a plurality of work receiving openings, obliquely guided slide rests having upper and lower cutters carried thereby, interchangeable lateral cutters mounted on the frame, means for adjustably connecting the cutters in position, tables having slots arranged at opposite sides of the frame, supporting blocks adjustably mounted in the slots, and holding down devices having adjustable means also mounted in the slots.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HUGO JOHN.

Witnesses:

PAUL TEICHMANN,
ERNST EBERHARDT.