

No. 622,953.

Patented Apr. 11, 1899.

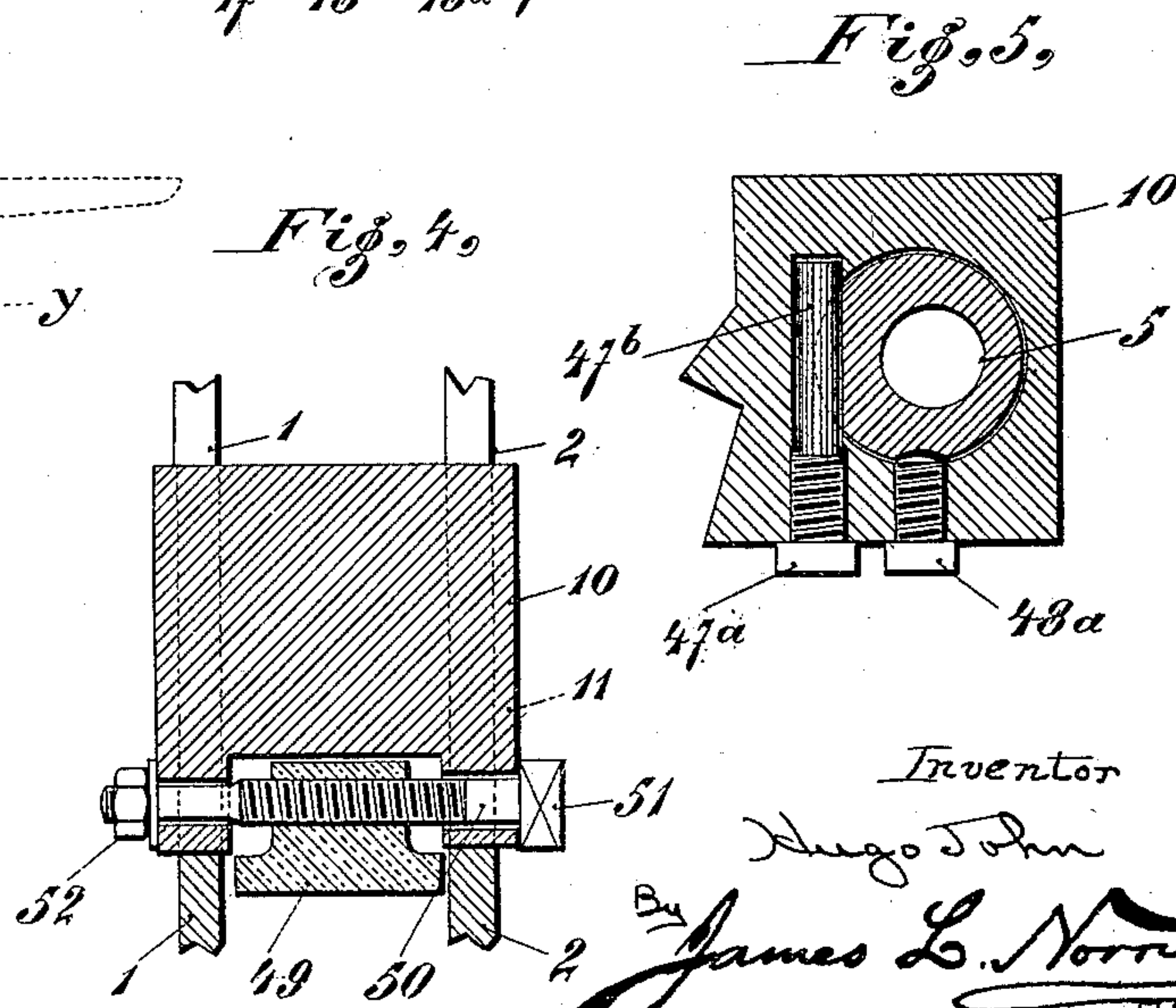
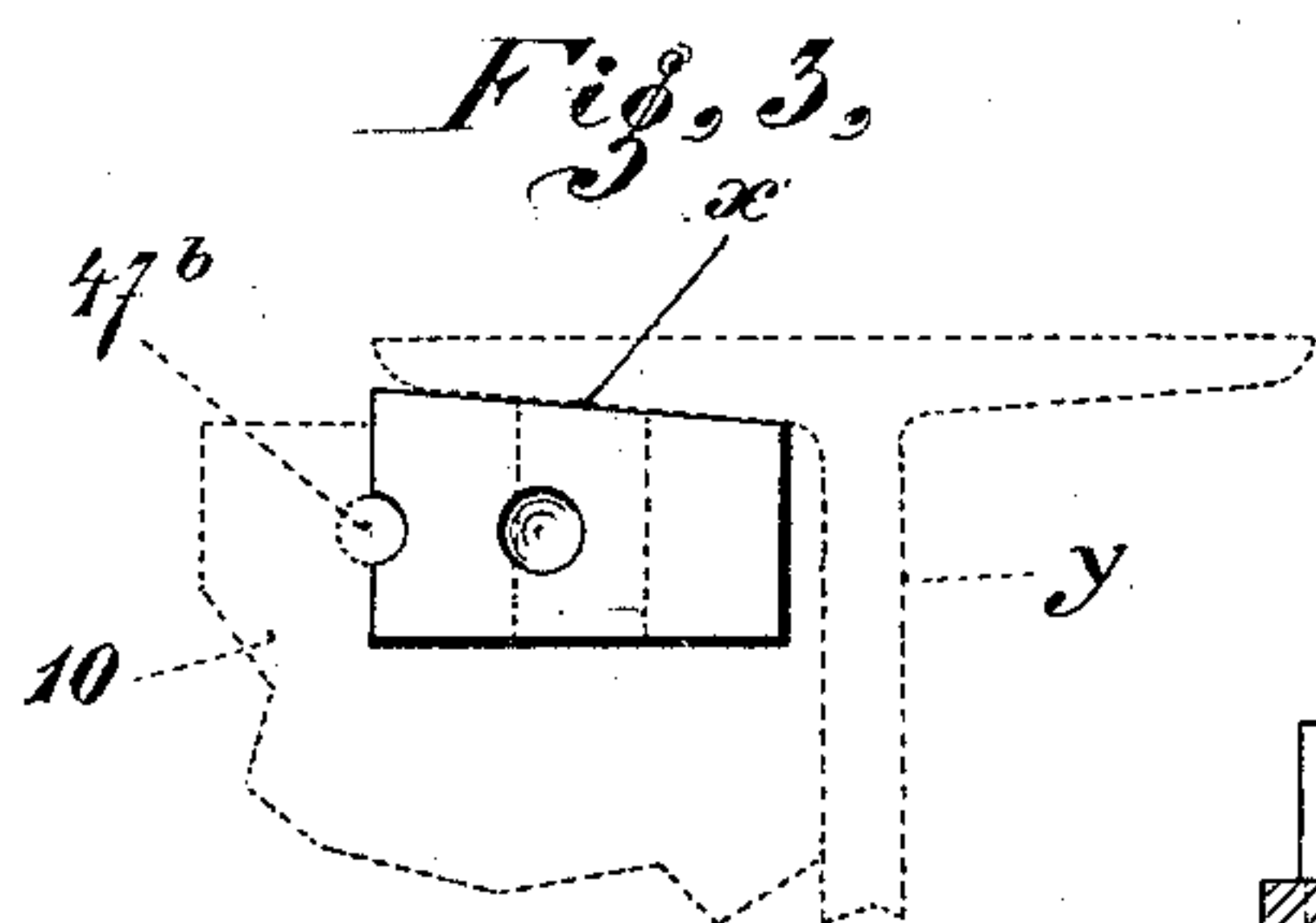
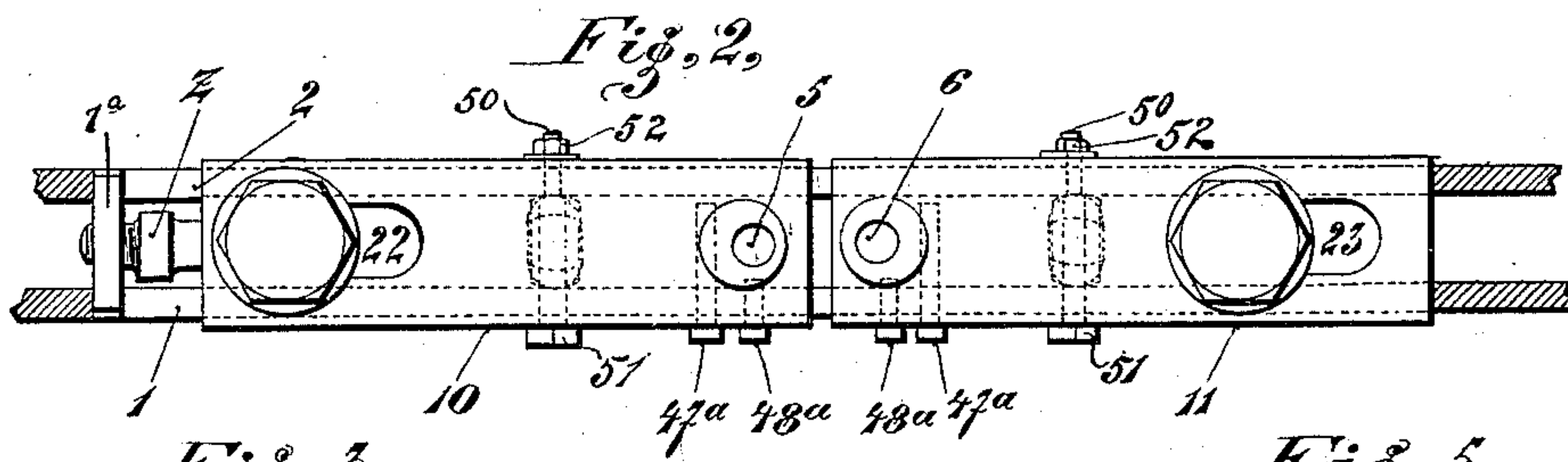
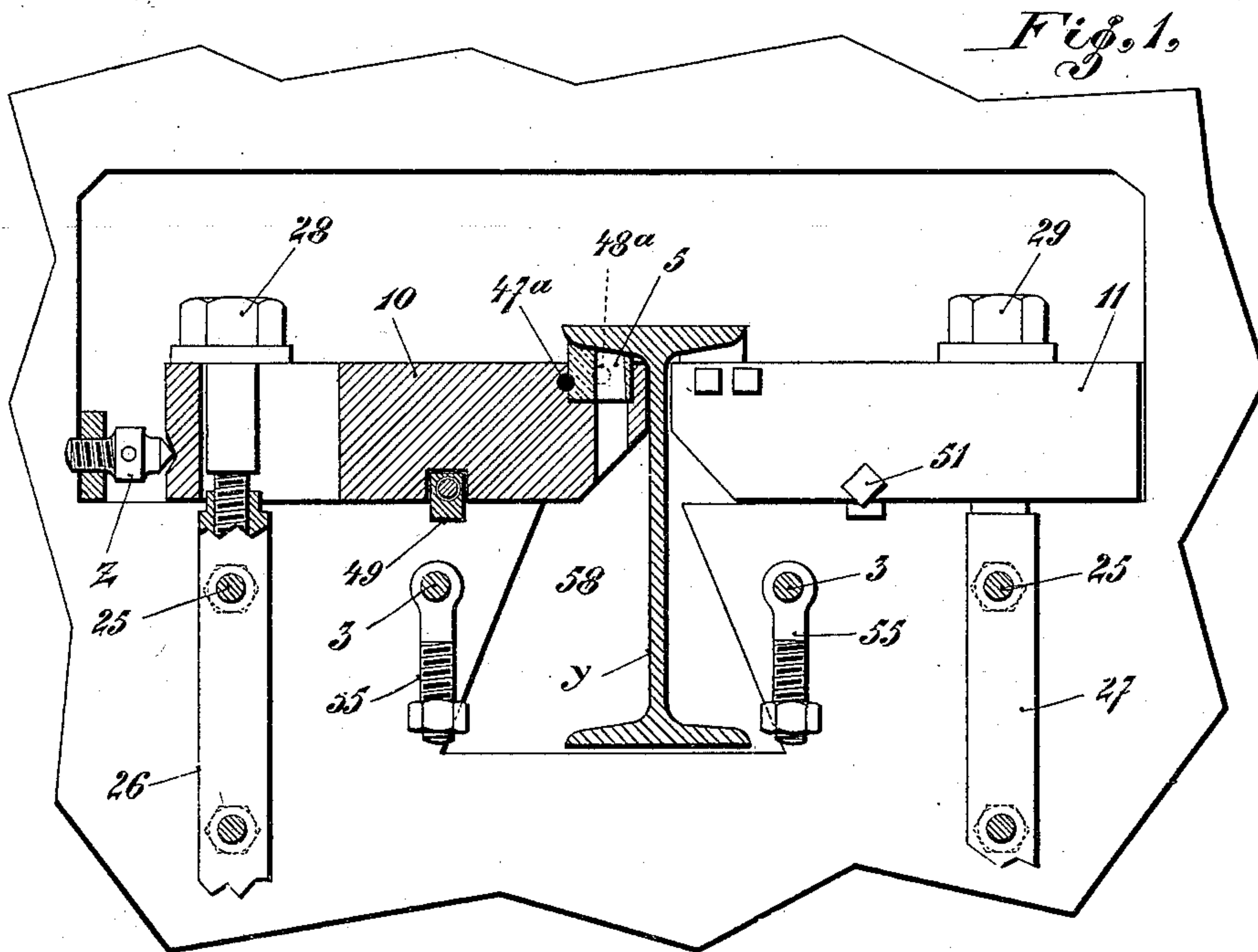
H. JOHN.

APPARATUS FOR PUNCHING HOLES IN GIRDERS, &c.

(Application filed July 20, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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Fig. 6,

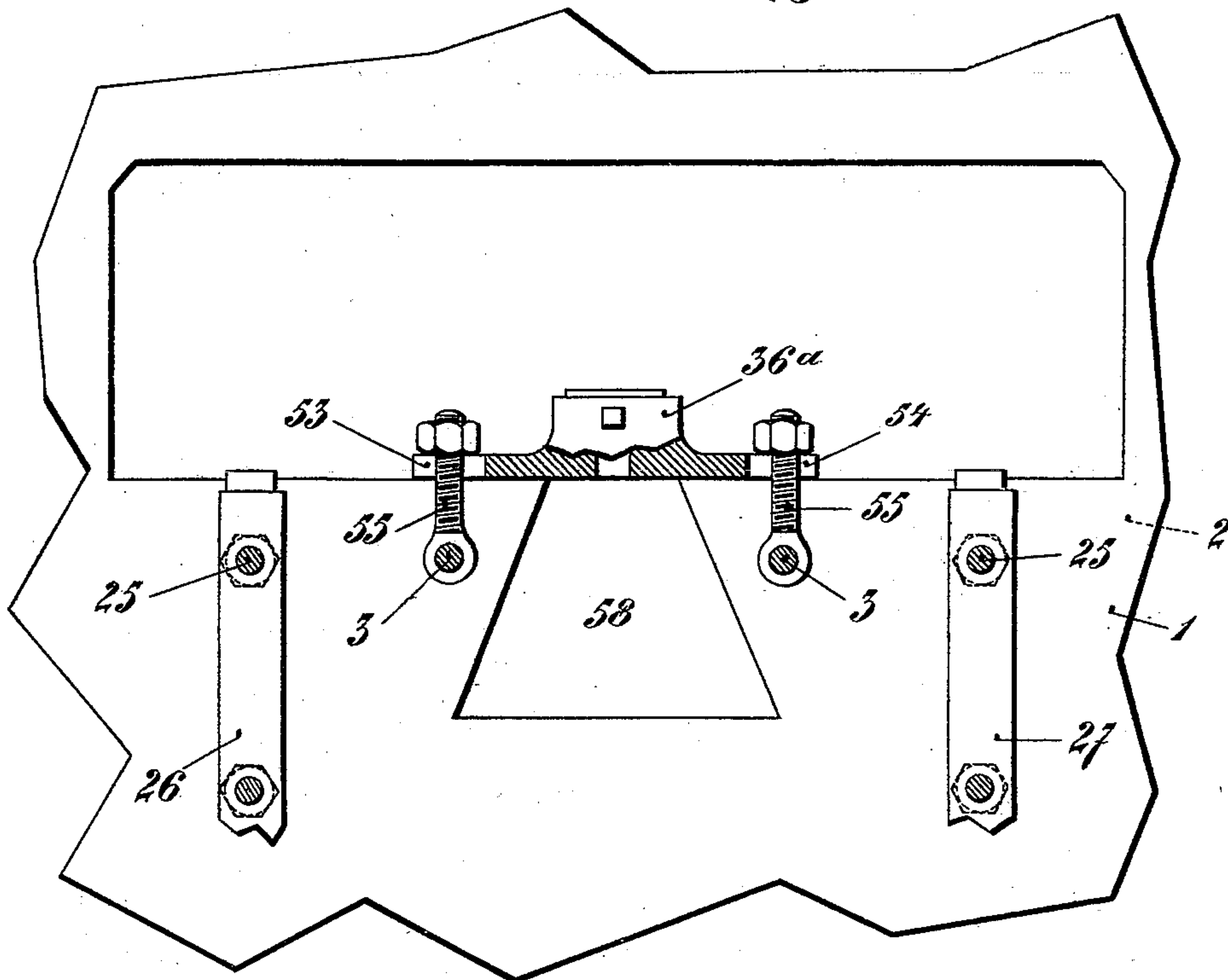
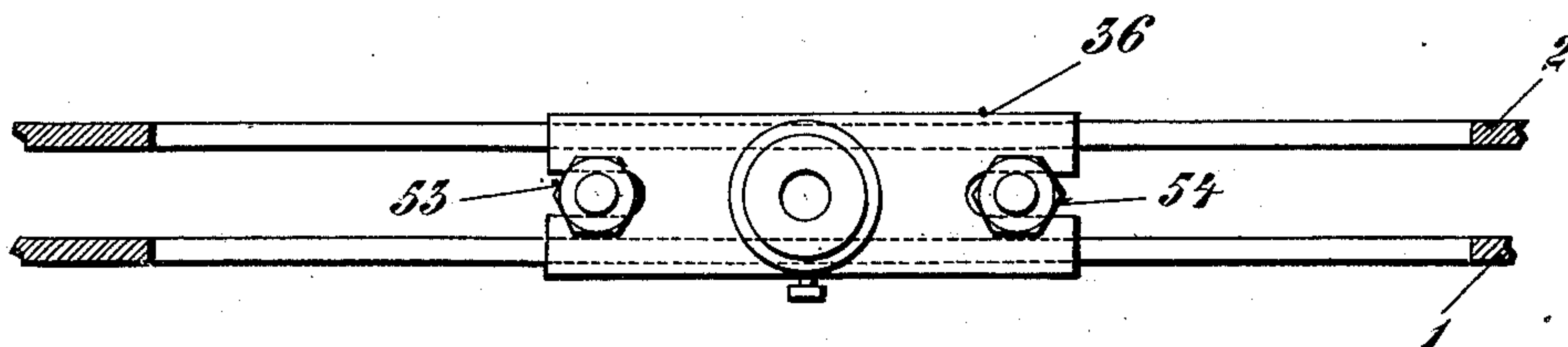


Fig. 7,



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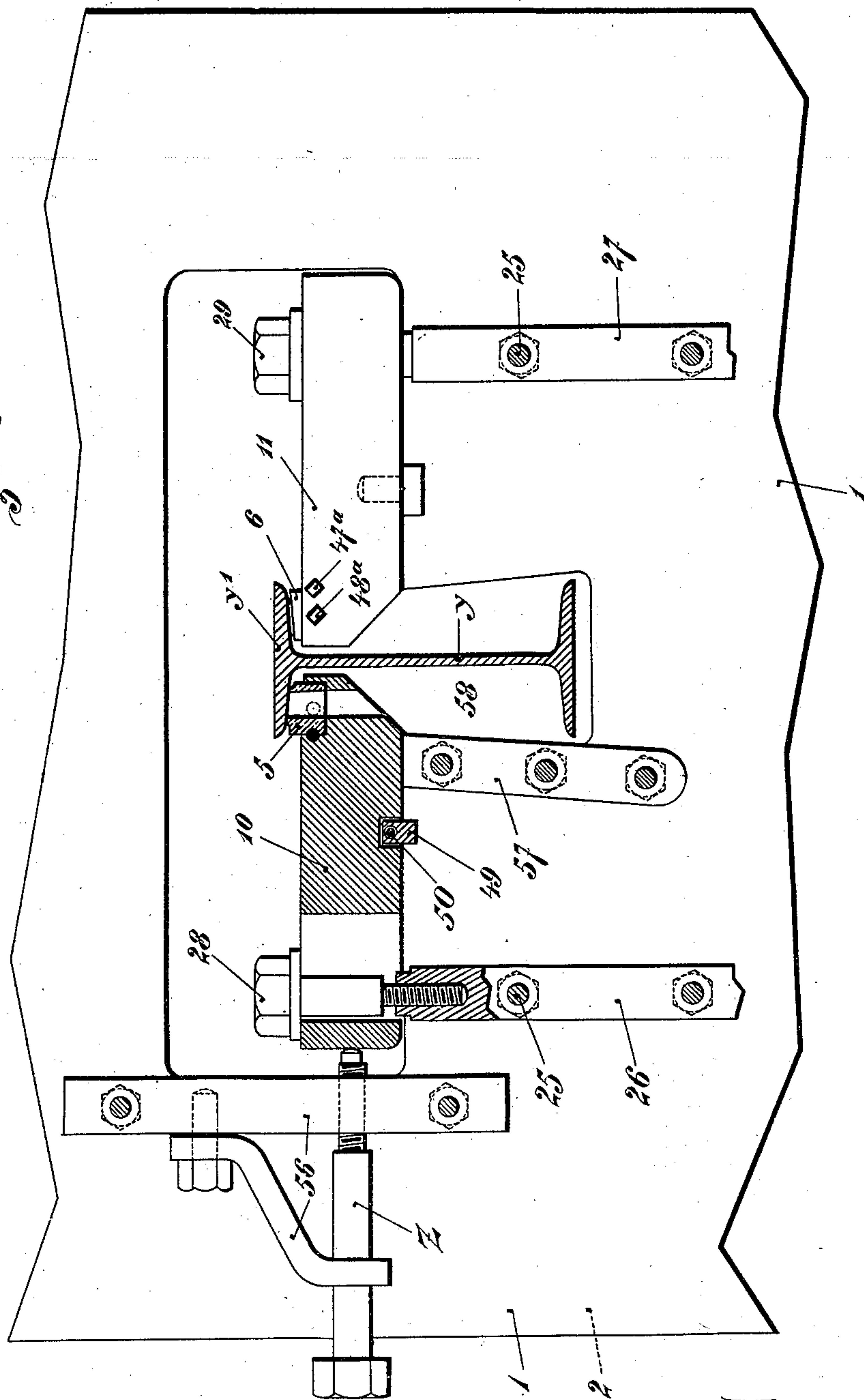
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

HUGO JOHN, OF ERFURT, GERMANY.

APPARATUS FOR PUNCHING HOLES IN GIRDERS, &c.

SPECIFICATION forming part of Letters Patent No. 622,953, dated April 11, 1899.

Application filed July 20, 1898. Serial No. 686,447. (No model.)

To all whom it may concern:

Be it known that I, HUGO JOHN, engineer, a subject of the King of Prussia, Emperor of Germany, residing at Erfurt, in the Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Apparatus for Use in Punching or Forming Holes in Girders and the Like, of which the following is a specification.

My invention relates to mechanism for punching girders and similar structures, my purpose being to provide simple and efficient means whereby both flanges of a girder may be adequately supported under the stress of a punch and the required openings punched in both of said flanges without having to turn the girder.

It is my object also to provide a mechanism of the character specified which may be furnished at a moderate cost, which can be easily and quickly applied to and removed from a girder or joist, and by which the two inner angles of the girder, which are inclosed by the web and the two flanges, shall be completely filled by the supporting-dies.

To enable others to understand and practice my said invention, I will proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1 is an elevation, partly in section, of an apparatus in which my invention is incorporated. Fig. 2 is a plan view of the same. Fig. 3 is a detail view of one of the dies, showing the construction by which it is held in proper relation to the girder. Fig. 4 is a vertical section taken in the plane of the axis of the bolt 50 in Figs. 1 and 2. Fig. 5 is a section taken through one of the dies, showing the means for fastening the same. Figs. 6, 7, and 8 are views showing modified constructions.

The reference-numerals 1 and 2 indicate the vertical walls of a frame on which the dies have support and adjustment. Between said walls are arranged spreaders 49, through which pass bolts 50. These bolts also pass through slides 10 and 11 and are secured thereon by bolt-heads 51 and nuts 52. By turning the bolt-head either of the slides may be moved relatively to the spreader 49 and adjusted laterally about the bolts 28 and 29,

which lie in slots 22 and 23 in said slides. They are held in the required position by a screw z , one end of which presses against a transverse piece 1^a , forming part of the frame, while the other end presses against the end of one of the slides.

The dies 5 and 6 are circular and are seated in the ends of the slides 10 and 11, being secured in position by pins 47^a , which are tapped into the slides and have plain cylindrical portions 47^b , that engage semicircular recesses in said dies. (Shown in Fig. 3.) A separate screw 48^a prevents the die from turning. Each die is provided with an opening which is eccentric to the circular body, as shown in Fig. 5, and the upper face x of each die is inclined at an angle that corresponds to the angle of the under surface of the flange y of the girder, Figs. 1 and 3, in which holes are to be punched.

In order to secure a large supporting-surface for the work y and prevent damage to the frame-plates 1 and 2 by the pressure of the punch, I provide the construction shown in Fig. 8. One of the slides, as 11, is in this instance stationary, and the opening 58, in which the work y is introduced, is narrower, as compared with that in Figs. 1 and 6, in order to give the slides 10 and 11 the largest supporting-surface possible, which is increased by a support or stay 57, inserted between the frame-plates 1 and 2 and serving to stiffen them to a considerable degree. In punching apparatus for making holes in small bars and which is provided with a wide opening 58 it will be desirable to make both the slides adjustable, so that the dies can be brought under both flanges of the girder, whereby both the latter can be punched without turning the girder. In large girders, however, this is impossible, and the girder must be turned when both flanges are to be punched. In this case as only one of the slides is adjustable the bolt z can be held and guided in a bearing 56, Fig. 8.

In making holes in the webs of T-joints or the like a slide 36^a , Figs. 6 and 7, is provided at both ends with open slots 53 and 54. The slide carries a cylindrical die and rests on the front faces of the frame-plates 1 and 2. The slide 36^a is secured in place by eyebolts 55, which turn on bolts 3, extending between the frame-plates 1 and 2. This arrangement

is shown in Figs. 6 and 7. The eyebolts enter the open ends of the slots 53 and 54 and receive nuts on their ends, which rise above the slotted ends of the slide 36^a.

5 Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

10 1. A mechanism for punching girders and the like, comprising cylindrical dies having faces inclined at an angle corresponding to the angle of the under surfaces of the flange of the girder, slides in which said dies have support, pins tapped into the slides and having plain portions to engage recesses in the
15 dies, set-screws to prevent the dies from turning, frame-plates supporting the slides and having interposed spreaders, and bolts lying in slots in the ends of the slides, substantially as described.

20 2. In a mechanism for punching girders, the combination with cylindrical dies of slides in the ends of which said dies have seats, the upper faces of the dies being inclined at an angle corresponding to that of the lower sur-
25 faces of the flanges of the girder, frame-plates having interposed spreaders and supporting

the slides, bolts rising between said plates and lying in slots in the ends of the slides, and means of adjustment whereby the dies are brought in place beneath the flanges to
30 be punched, the frame-plates being provided with openings for the introduction of the work, substantially as described.

3. In an apparatus for punching the flanges of girders, the combination with two frame-
35 plates of spreaders and bolts passing through the same, slides mounted on said frame-plates and engaged by the bolts passing through the spreaders, screw-bolts engaging the frame of the apparatus and lying in slots in the outer
40 ends of the slides, cylindrical dies seated in the inner ends of the slides, and a bolt having one end pressing against the frame and the other end against the outer end face of
45 one of the slides, substantially as described.

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

HUGO JOHN.

Witnesses:

ALFRED SCHUCHARDT,
ROBERT SCHLEGELMILCH.