

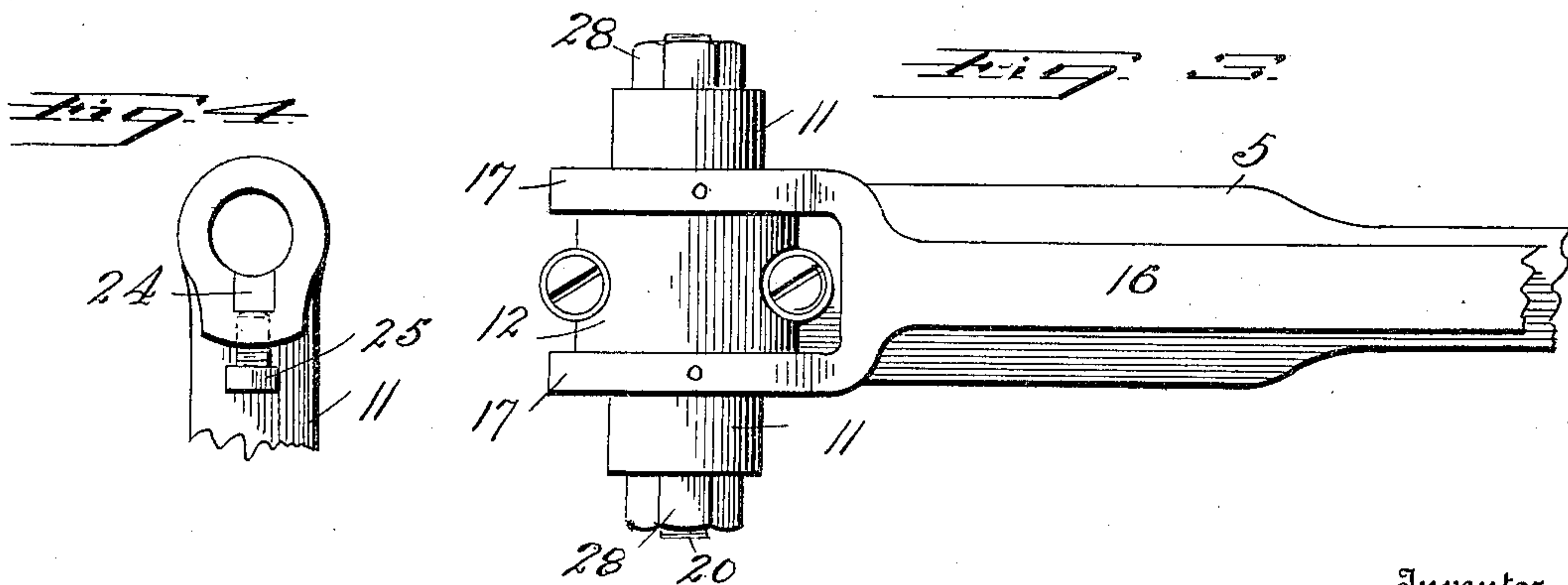
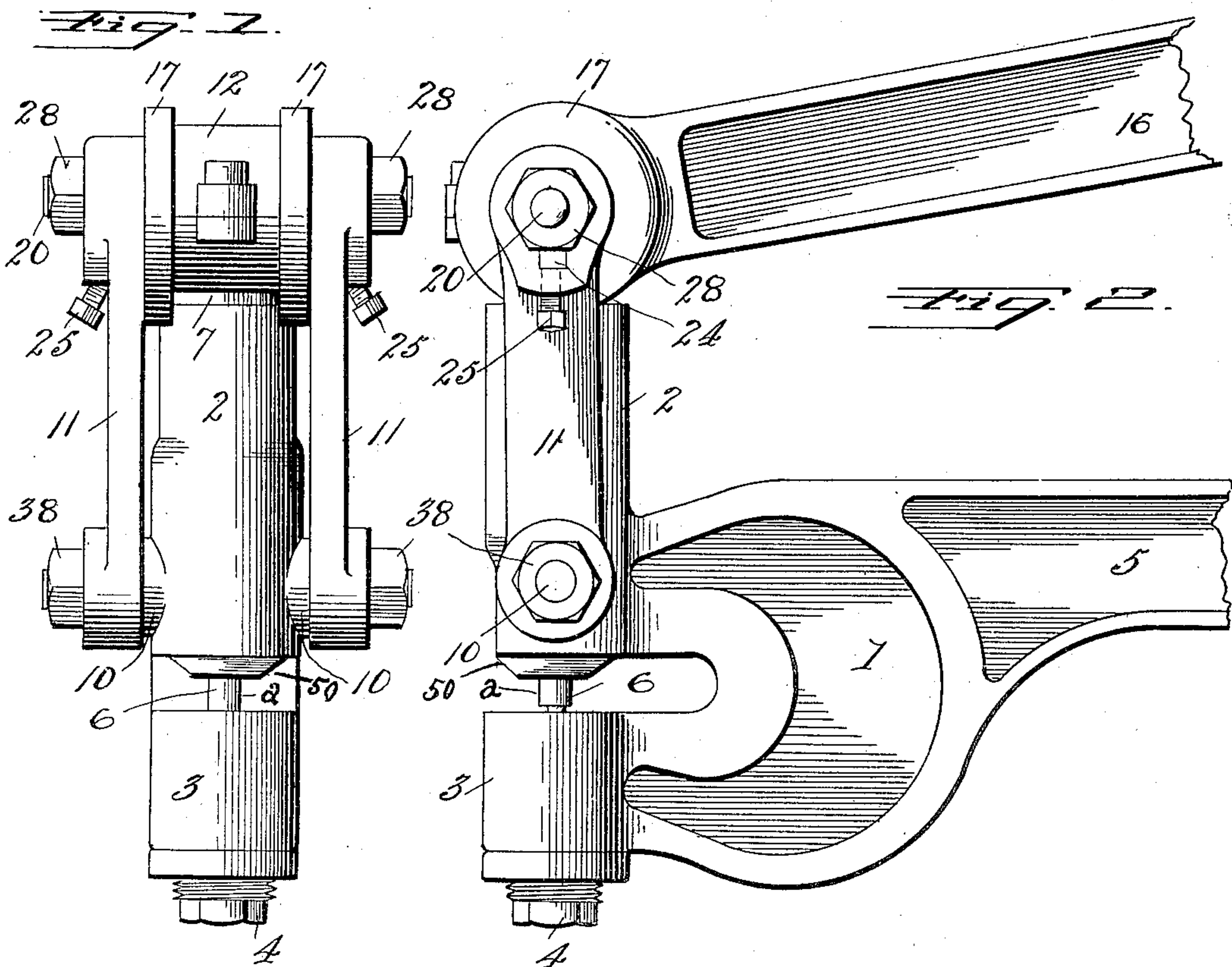
No. 828,650.

PATENTED AUG. 14, 1906.

R. HINCHLIFFE.
HAND OPERATED PUNCHING MACHINE.

APPLICATION FILED DEC. 18, 1905.

2 SHEETS—SHEET 1.



Witnesses
Chas. K. Davis
W. E. Brown

Inventor
R. Hinchliffe
By
W. A. Bartlett
His Attorney

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2 SHEETS—SHEET 2.

Fig. 5.

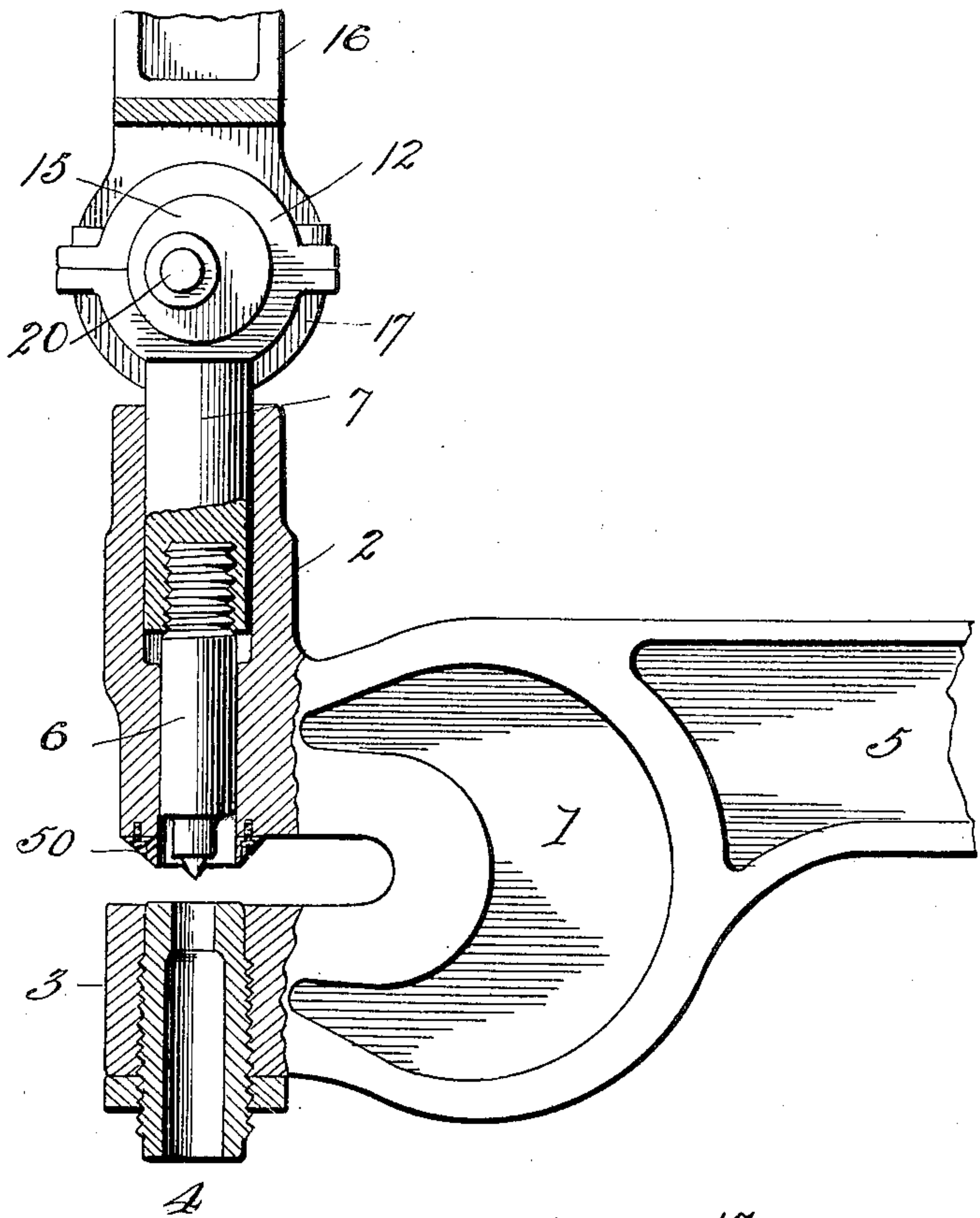


Fig. 7.

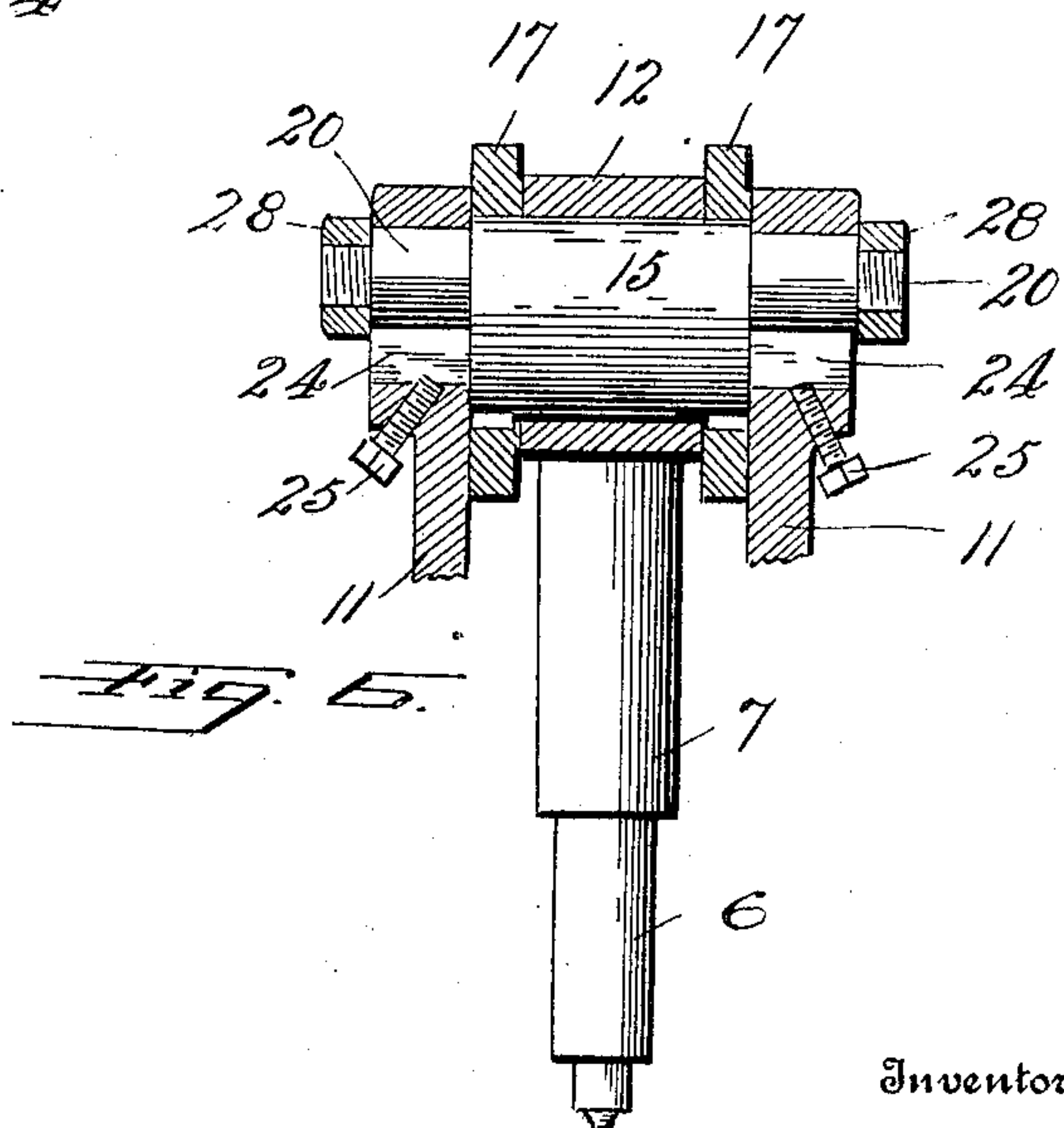
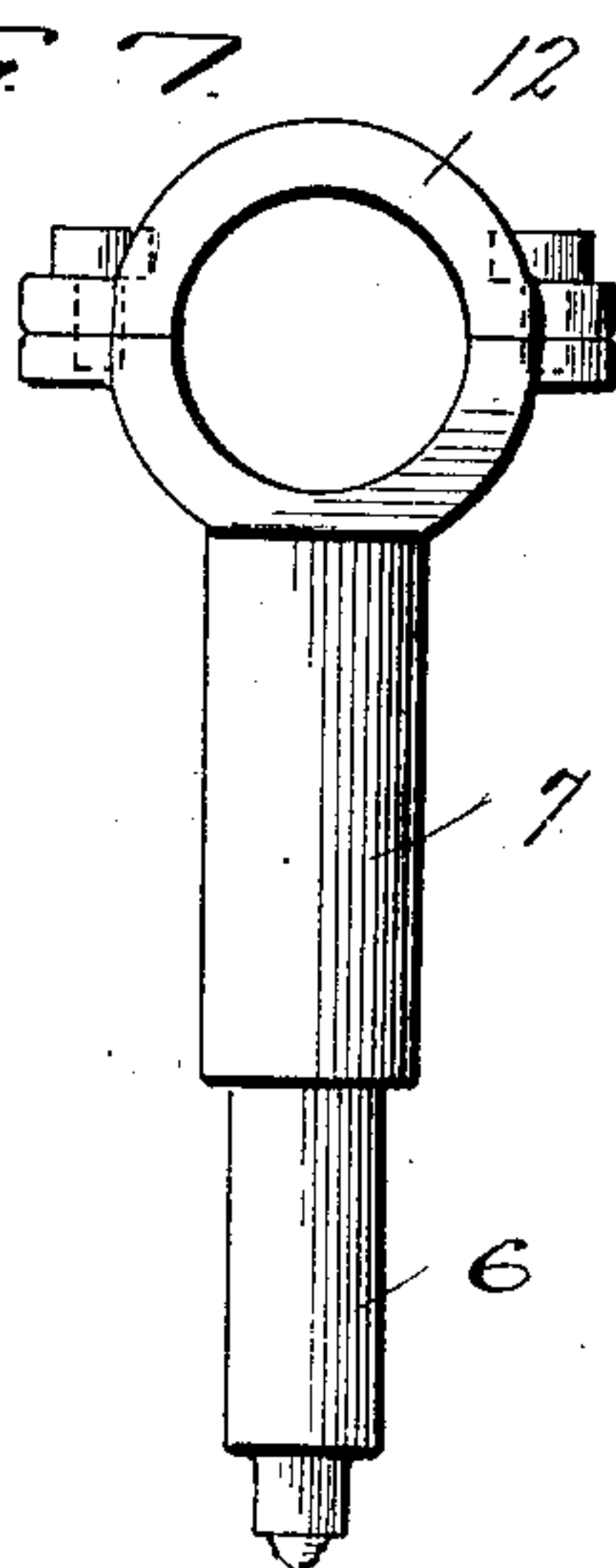


Fig. 6.

Witnesses

Chas. H. Davies.
Wm. L. Brown.

By

R. Hinchliffe
W. A. Bartlett

Inventor

Attorney

UNITED STATES PATENT OFFICE.

ROBERT HINCHLIFFE, OF CHICAGO, ILLINOIS.

HAND-OPERATED PUNCHING-MACHINE.

No. 828,650.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed December 18, 1905. Serial No. 292,377.

To all whom it may concern:

Be it known that I, ROBERT HINCHLIFFE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hand-Operated Punching-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to hand-operated punching-machines.

The object of the invention is to produce a punching-machine which will apply a very great power to the punch by reason of a peculiar arrangement of levers and eccentrics, and which can be used in various positions.

15 The invention consists in certain constructions and combinations of mechanical elements, substantially as hereinafter described and claimed.

Figure 1 is a front elevation of the operating parts of the machine. Fig. 2 is a broken side elevation of the same, the operating-lever being slightly raised. Fig. 3 is a top plan view of Fig. 2. Fig. 4 is a broken detail elevation of one of the links. Fig. 5 is a broken vertical section of the operating parts with lever thrown up. Fig. 6 is a cross-section through the eccentric connections, the eccentric itself and the punch and punch-holder being shown in elevation; and Fig. 7 is a side elevation of the punch, its holder, and the eccentric-strap.

25 The numeral 1 indicates the head of the machine-tool, which head has a cross-slot *a* between the upper and lower bearings, the upper bearing 2 being for the punch and its holder and the lower bearing or support 3 for the anvil 4. The head 1 may be extended to any desired length to form a holder 5. This holder should be of about the same length as the operating-lever 16. The head and anvil are old in their general features.

35 The upper bearing or socket 2 receives the punch 6 and the punch-holder 7, said holder and punch being adapted to rise and fall in the bearing or socket 2. The socket or bearing 2 has rigid link-supporting trunnions 10 extending from its sides. These trunnions 10 enter the lower ends of links 11, one trunnion and one link being at each side of the socket 2. The punch-holder 7 has a strap 12, which surrounds the eccentric, to be described. The strap 12 is preferably made in sections

held together by screws, as is common in mechanical constructions; but the holder and strap operate as one piece, and the punch and holder have merely a reciprocating movement in the socket 2. The eccentric has a central cylindrical portion 15, which portion passes through the strap 12 with a neat fit, as usual with an eccentric in its bearing. The hand-lever 16 is forked at its end, the arms 17 of the fork embracing the body 15 of the eccentric at each side of strap 12 and being firmly keyed or otherwise fastened to said eccentric, so that a swinging movement of the lever causes a partial rotation of the eccentric. Eccentric 15 has pins 20 projecting from its ends and in eccentric relation to the body 15. These pins 20 enter bearings in the upper ends of links 11. Wear-pieces 24, held by set-screws 25, may serve to hold the pins 20 firmly in their bearings, and nuts 28 on the ends of the pins 20 hold the links in position. Nuts 38 in similar manner hold the links 11 to trunnions 10.

40 From the above it should be understood that the links 11 are the only connections which hold the eccentric to the head of the machine. This they do by embracing the trunnions 10 on the socket 2 and the pins 20 on the eccentric 15. If, now, the eccentric is partially rotated by means of lever 16, the pins 20 must turn in the links 11 and these links must swing on trunnions 10; but as the swing is only in a small arc the travel of pins 20 will be very nearly in transverse direction relatively to the punch-holder. The eccentric 15 turning in strap 12 causes the strap, punch-holder, and punch to rise or fall just in proportion to the eccentricity of the body 15, as this body must move about the centers of pins 20, which pins 20 have the rotary and the swinging movement described. I have termed this movement of the punch a "movement from a suspended eccentric," as the eccentric itself has an independent movement relatively to the holder 2, as has been explained. The double eccentric movement has substantially the effect of a toggle-lever without its bulk and corresponding disadvantages.

45 By the construction described not only is the machine-tool easily made and easily assembled, but it is capable of developing immense power. The holder 5 being grasped by one hand and the lever 16 by the other

hand, the machine may be applied to a plate in almost any position, and by the operation of the hand-lever the punch is reciprocated.

The plate 50 is a stripper secured to the
5 socket 2.

What I claim is—

1. The combination, in a punching-machine, of a punching-head, a fixed trunnion thereon, a link pivoted to said trunnion, an
10 eccentric having a bearing in said link so as to rotate therein, and free to swing the link by such rotation, and a punch having strap connection to the eccentric, and reciprocating in the punching-head.

15 2. In a punching-machine, the punching-head having fixed trunnions thereon, links connecting said trunnions to projecting pins rigid with the eccentric, an eccentric passing through a strap on the punch-holder, and
20 means for rotating the eccentric, all combined.

3. In a hand punching-machine, the punching-head having a projecting holder, the punch-socket rigid with said punching-head,
25 trunnions projecting from said socket, a ro-

tatable eccentric having eccentric-pins projecting from its ends, links connecting said pins to the said trunnions, and a punch operatively connected to said eccentric and moving within said socket.

30 4. In a hand punching-machine, the combination with a socketed punch-head, of a punch reciprocating therein, an eccentric operatively connected to the punch, and pivoted links connecting said eccentric eccen- 35 trically to the punching-head.

5. The combination of the machine-head having a transverse slot, a rigid holder projecting from said head, a punch-socket on one side of said slot, an eccentric operatively con- 40 nected to said punch, a lever connected to the eccentric, and links eccentrically connected to the eccentric and pivoted to rigid supports on the machine-head.

In testimony whereof I affix my signature 45 in presence of two witnesses.

ROBERT HINCHLIFFE.

Witnesses:

HORAN F. HARDY,
HELEN F. CURRY.