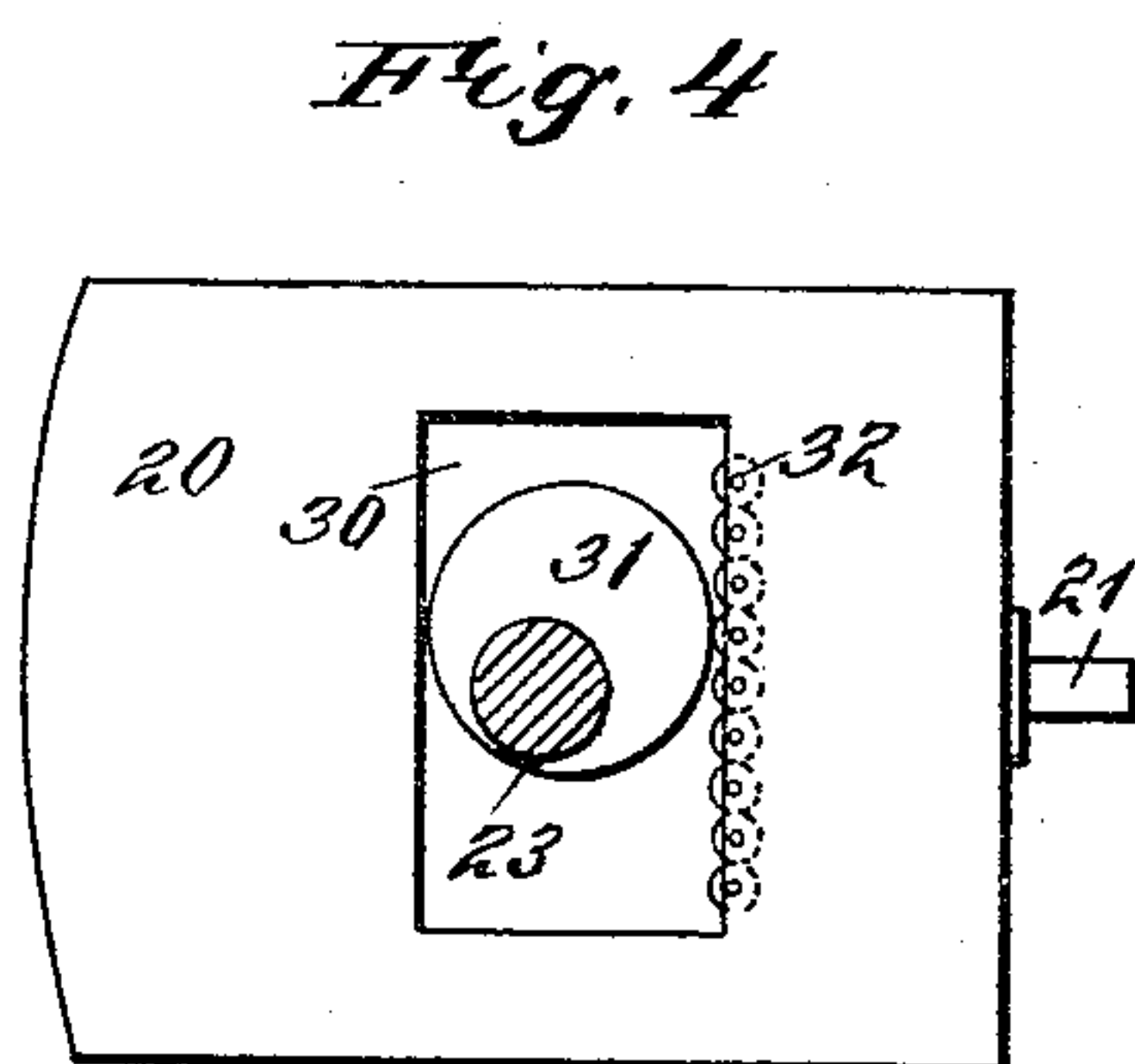
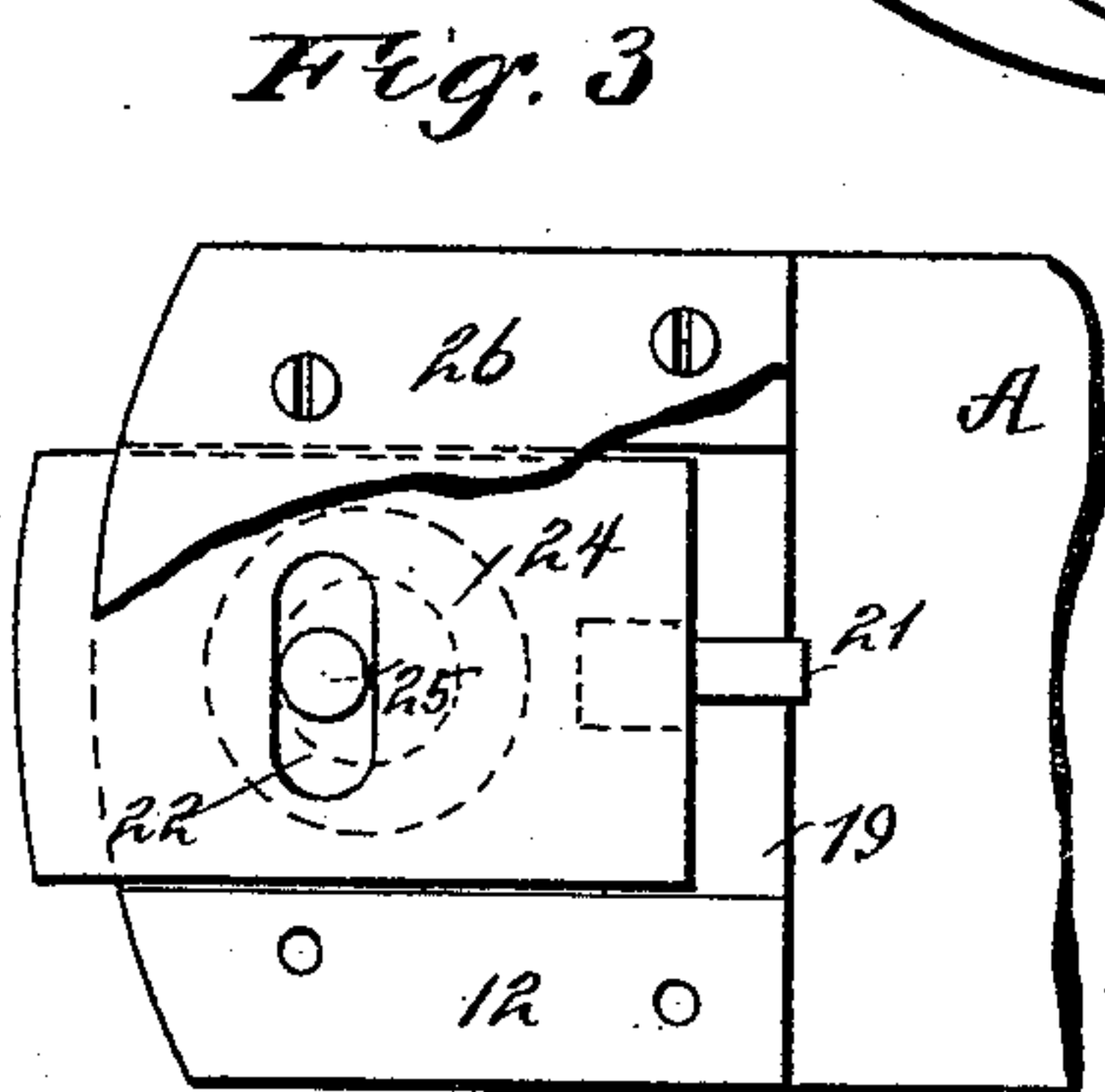
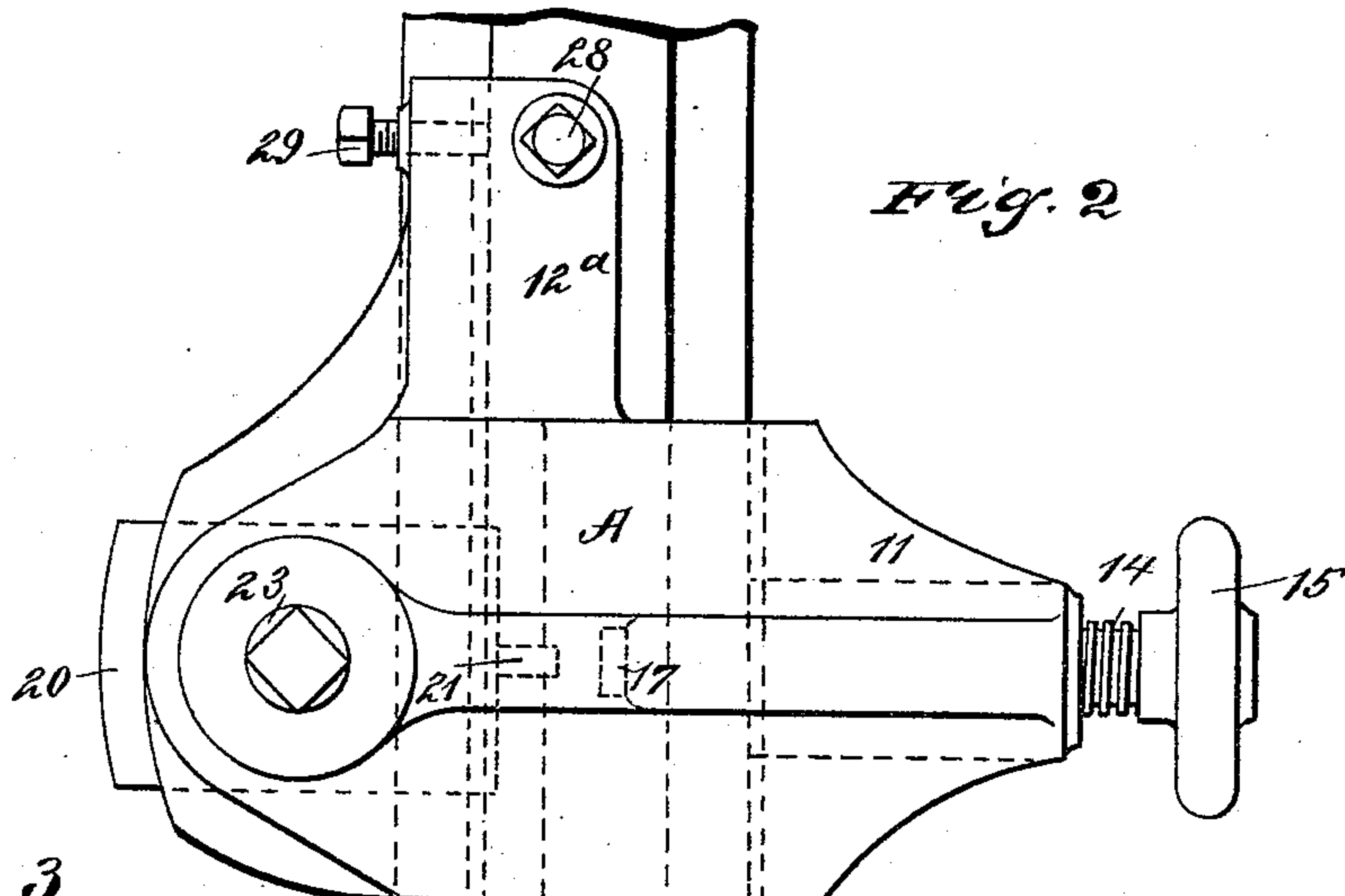
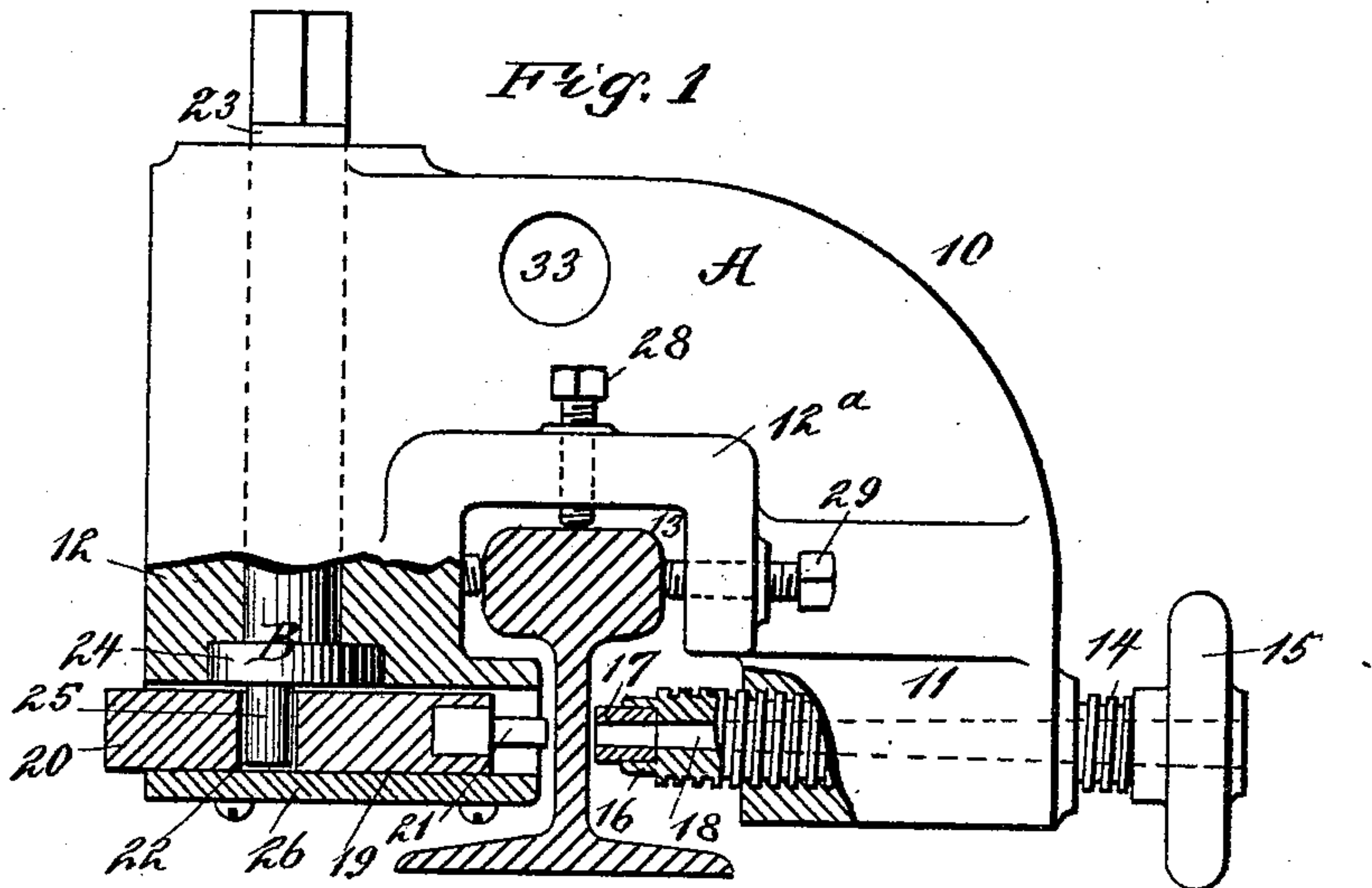


(No Model.)

E. B. CORNELL.  
PUNCH.

No. 500,534.

Patented June 27, 1893.



WITNESSES:

J. A. Berghman  
C. Sedgwick

INVENTOR

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ATTORNEYS.

# UNITED STATES PATENT OFFICE.

ELIJAH B. CORNELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF  
FOUR-FIFTHS TO SMITH HARPER, WILSON B. SOLLIDAY, AUGUSTUS  
H. R. GUILLEY, AND FRANCIS ASBURY, OF SAME PLACE.

## PUNCH.

SPECIFICATION forming part of Letters Patent No. 500,534, dated June 27, 1893.

Application filed October 27, 1892. Serial No. 450,138. (No model.)

*To all whom it may concern:*

Be it known that I, ELIJAH B. CORNELL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a  
5 new and useful Improvement in Punches, of which the following is a full, clear, and exact description.

My invention relates to a punch adapted especially for producing holes in the web of  
10 railway rails to receive fish plate bolts, and the object of the invention is to provide a punch capable of being readily transported from place to place and to move along a rail, and also to so construct a punch that by the  
15 movement of a single lever or its equivalent a hole may be made in the web.

It is a further object of the invention to provide a punch which will be durable, which may be expeditiously and conveniently manipulated without the punch moving from the  
20 object upon which it is to operate, and whereby the entire punch will be exceedingly light, so much so that the operator may readily carry it from place to place.

25 The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying  
30 drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the punch, 35 portions thereof being broken away to disclose a punching mechanism, and the punch is shown in position upon the rail, the latter being in vertical section. Fig. 2 is a plan view of the punch. Fig. 3 is a bottom plan view of  
40 a portion of the punch, a part of the head plate being broken away to disclose the punch head; and Fig. 4 is a detail view illustrating a slight modification in the construction of the punch.

45 The frame A of the punch consists of a body section 10, from the ends of which two arms 11 and 12, are projected in essentially parallel lines, a space 13, being formed between the inner ends of said arms, as best shown in  
50 Fig. 1. The arms 11 and 12 are preferably

vertically located and are placed at the front and rear portions of the body; and from the sides of the body horizontal arms 12<sup>a</sup> and 12<sup>b</sup>, angular in cross section are projected, the latter arms being adapted to be located over the  
55 top and one side of the head of the rail, extending longitudinally along the rail, as shown in Fig. 2, while the vertical arms are intended to extend downward, one at each side of the  
60 web of the rail.

In one of the vertical arms, the arm 11 for example, an opening is made extending from its outer to its inner end, and in this opening, the walls whereof are threaded, an adjusting  
65 screw 14, is inserted, and the outer end of this screw may be provided with a hand wheel 15, as illustrated, or the equivalent thereof; or the outer end of the screw may be shaped to receive a wrench, or equivalent tool, applied  
70 for the purpose of revolving the screw.

A socket 16, is produced in the inner extremity of the screw to receive a hollow die  
75 17, and the screw itself is provided with a longitudinal bore 18, forming an inner chamber, the said chamber being adapted to communicate with the opening in the die; the  
80 shape of the chamber is somewhat conical, the wider end being at the outer extremity of the screw, as is likewise best shown in Fig. 1.

In the opposite vertical arm 12 a slide-way 80 19, is made, and in the slide-way a head 20 has sliding movement to and from the opposite arm 11, or to and from the die 17. In this head, preferably at the central portion of its inner end, a punch 21, is secured in any suitable or approved manner. The head is also  
85 provided with a transverse slot 22, and this slot is adapted to receive the pin of a crank head B, formed upon the lower end of a shaft 23. The shaft 23, extends upward through  
90 the arm 12 and through the body A, beyond the upper edge of the body, and ordinarily the upper end of the shaft 23, is adapted to receive a lever, wrench, or the equivalent thereof, through the medium of which the  
95 shaft is revolved. The crank head B, comprises a disk 24, which is formed at the lower end of the shaft, and a pin 25, eccentrically located upon the disk, which pin enters the slot 22 in the punch head 20. The head is  
100



prevented from dropping out of the slide-way 19 by attaching a plate 26 to the bottom of the arm 12, which plate may be denominated a head plate; and the attachment is made  
5 through the medium of screws or the equivalents thereof in order that the plate may be removed when desirable.

Each horizontal arm 12<sup>a</sup> and 12<sup>b</sup> is provided in its upper surface, preferably near its outer  
10 extremity, with a set screw 28, adapted for engagement with the upper surface of the head of the rail when the punch is applied to the rail; and each horizontal arm is further provided in its pendent side section with a  
15 second set screw 29, which engages with the side face of the rail head, the side set screws of the two horizontal arms being placed upon reverse sides of the arms, as the pendent sections of the arms are adapted to extend down-  
20 ward in front of the opposite side faces of the rail, as shown in Fig. 2.

In Fig. 4 the punch head 20, is provided with quite a large rectangular opening 30, to receive a cam 31, located upon the shaft 23,  
25 and in order that friction shall be reduced to a minimum a series of friction rollers 32, is placed in the inner wall of the opening 30, and the cam contacts with these rollers while in the act of forcing the head inward in di-  
30 rection of the rail to be operated upon. The crank head B, however, is preferably used instead of the cam 31.

In the operation of the punch the head of the rail is introduced in the opening 13, be-  
35 tween the arms 11 and 12, as shown in Fig. 1, which causes the horizontal arms 12<sup>a</sup> and 12<sup>b</sup> to extend along the top of the rail, as shown in Fig. 2. The adjusting screws 28 and 29 in the horizontal arms are then manipulated to  
40 adjust the body in such manner as to bring the punch opposite the portion of the web in which the hole is to be drilled and to maintain the frame of the punch in rigid position upon the rail. The main adjusting screw 14  
45 is then manipulated in a manner to bring the die 17, to an engagement with one side of the web of the rail, whereupon by next giving the shaft 23 a partial revolution the crank head attached to the shaft will force the punch  
50 head in direction of the web of the rail and the punch through the web into the die 17. The metal taken from the rail will find its way out through the opening or chamber 18 in the main adjusting screw.

55 By means of a die constructed as above set forth rails, iron beams, braces, &c., may be punched upon the spot where they are to be used and in an expeditious and convenient

manner; furthermore, the device is so light that one person can readily carry it from 60 place to place and manipulate it, since a hand hole 33, is produced in the body of the punch, as shown in Fig. 1. Again a lever of any de-  
65 sired length may be fitted to the top of the shaft 23, thus enabling the punch to be used in places where there is but little room for its manipulation.

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

70 1. A hand implement for punching rails, bars, &c., consisting in an approximately  $\cap$ -shape frame A adapted to straddle the rail or bar and having pivoted in the lower ends of its depending arms respectively a transverse  
75 screw carrying the female die, and a transverse slide carrying the male die, a vertical shaft extending down through the frame and connected at its lower end with said slide to operate the same and transverse and vertical  
80 screws to engage the upper edge and opposite sides of the rail or bar to be punched, substantially as set forth.

85 2. A hand implement for punching rails, bars, &c., consisting in the approximately  $\cap$ -shape frame A adapted to straddle the rail or bar and formed with diagonally opposite an-  
90 gular extensions 12<sup>a</sup> 12<sup>b</sup> each provided with inwardly extending vertical and horizontal set screws 28, 29, to engage the upper edge and opposite sides of the rail or bar the trans-  
95 verse slide on the lower end of one arm of the frame and carrying the male die, the transverse screw in the other leg and carrying the female die, a vertical shaft extending down  
100 through the frame, connected at its lower end with the slide to operate it and fitted at its upper end to receive an operating lever, sub-  
stantially as set forth.

105 3. A hand implement for punching rails, bars, &c., consisting in the approximately  $\cap$ -shape frame A to straddle the rail or bar, a screw 14 extending inwardly through the  
110 lower end of one arm of the frame and provided at its inner end with a female die and at its outer end with an operating wheel or handle, the slide in the lower end of the op-  
posite arm and carrying the male die, a ver-  
tical shaft 23, extending down through the frame into operative connection with said  
slide, substantially as set forth.

ELIJAH B. CORNELL.

Witnesses:

SMITH HARPER,  
WM. WAGNER, Jr.