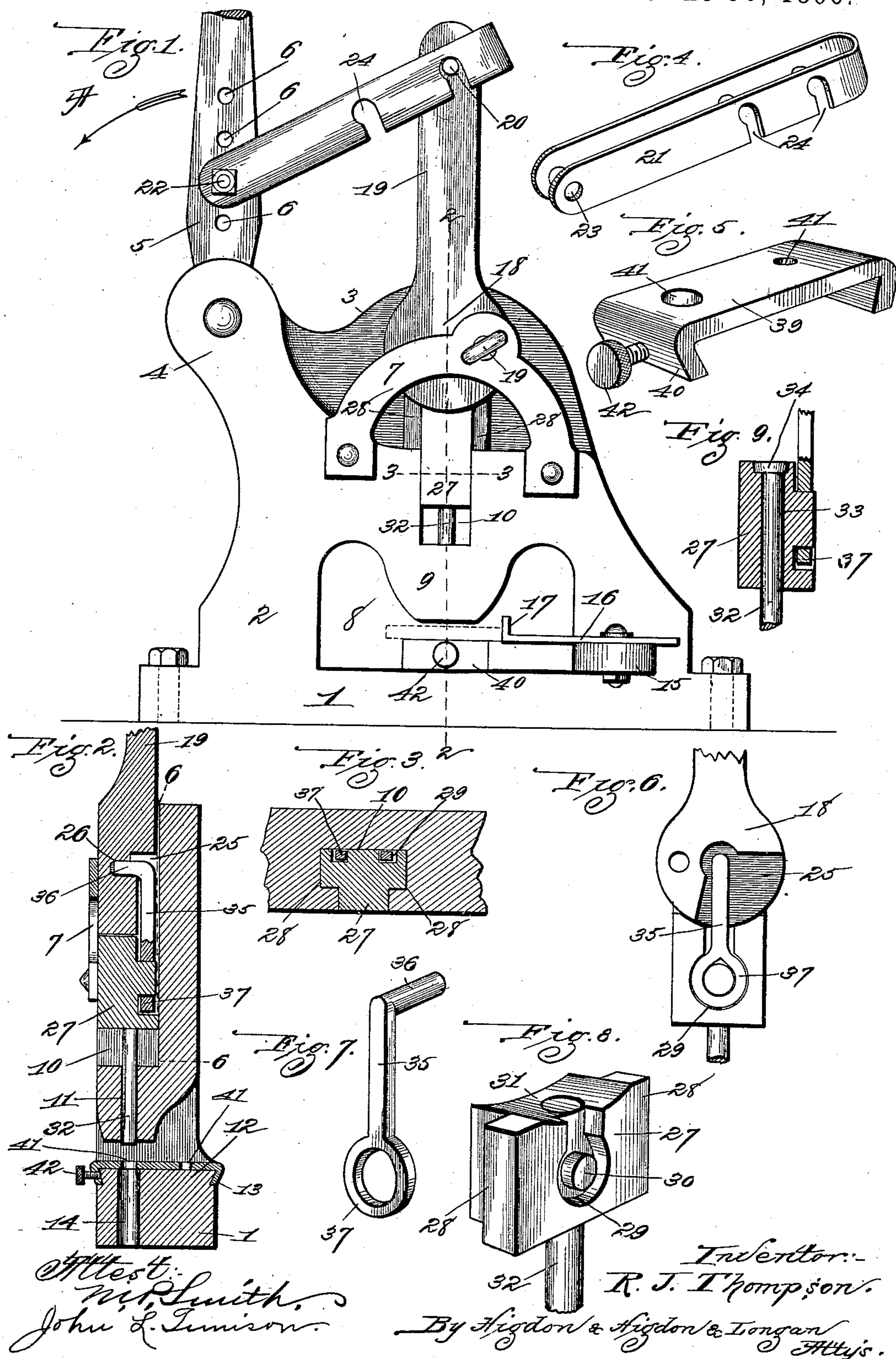


(No Model.)

R. J. THOMPSON.
PUNCH.

No. 563,098.

Patented June 30, 1896.



UNITED STATES PATENT OFFICE.

ROBERT JAMES THOMPSON, OF GRANDIN, MISSOURI.

PUNCH.

SPECIFICATION forming part of Letters Patent No. 563,098, dated June 30, 1896.

Application filed July 15, 1895. Serial No. 556,008. (No model.)

To all whom it may concern:

Be it known that I, ROBERT JAMES THOMPSON, of the city of Grandin, Carter county, State of Missouri, have invented certain new and useful Improvements in a Punch, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved punch; and it consists in the novel construction, combination, and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my improved punch. Fig. 2 is a vertical sectional view taken approximately on the indicated line 2 2 of Fig. 1. Fig. 3 is a transverse sectional view taken approximately on the indicated line 3 3 of Fig. 1. Fig. 4 is a view in perspective of a link of which I make use in carrying out my invention. Fig. 5 is a view in perspective of a die-plate such as I use in my improved punch. Fig. 6 is a rear elevation of an eccentric lever-head and a vertically-moving block of which I make use, said view being taken approximately on the indicated line 6 6 of Fig. 2. This vertically-moving block is the punch-head, and carries the punch. This view shows the upper part of the lever broken off and also shows the connection between the lever and the punch-head. Fig. 7 is a view in perspective of a link that connects the eccentric with the vertically-moving punch-head. Fig. 8 is a view in perspective of a vertically-moving punch-head. Fig. 9 is a vertical sectional view of a modified form of this vertically-moving punch-head.

Referring by numerals to the accompanying drawings, 1 indicates the base of my improved punch, from which extends upwardly a body portion 2, said body portion and base being preferably cast or formed integral. The upper end 3 of the body portion 2 is approximately only half as thick as the main portion of said body, and formed integral with the upper end of the body and extending laterally therefrom is a projection 4. To this projection 4 is fulcrumed the lower end of a handle or arm 5, in which is formed a series of apertures 6. A U-shaped frame 7 is bolted to the upper edge of the body portion 2, and extends upwardly therefrom parallel

with the portion 3 of said body 2. Formed in the body portion 2, above the base 1, is an opening 8, and a portion 9 depends from the body portion 2 above the opening 8. Formed in the body portion 2, above this depending portion and in front of the upper end 3, is a vertically-arranged aperture 10, the sides of which are rabbeted. A bore 11 extends from this aperture 10 vertically through the depending portion 9.

Extending upwardly from the base 1, at a point immediately beneath the depending portion 9, is a block 12, the front and rear faces of which are dovetailed, as indicated by 13. An aperture 14 is formed through this block 12 and base 1 at a point immediately below and in alinement with the bore 11.

Formed integral with and extending laterally from the lower portion of the body 2 and to one side of the opening 8 is a lug or projection 15, to which is bolted a horizontally-adjustable guide 16, having an upturned outer end 17.

18 indicates a circular block that is eccentrically pivoted upon a pin 19, that passes through the U-shaped frame 7 and through the portion 3 of the body 2. Formed integral with and extending upwardly from said block 18 is an arm 19, from the upper end of which project pins, such as 20. A link 21 has its ends pivoted to the arm 5 by a bolt 22, passing through one of the apertures 6 and through apertures 23, formed in the end of said link. Notches 24 are formed in the opposite end of this link 21, said notches 24 being of such size as that the pins 20 may be located therein.

Formed in the rear face of the circular block 18 is a recess 25, and in the center of said block 18 and extending toward the face thereof is an aperture 26.

27 indicates the punch-head, which is of rectangular shape, having projections 28 arranged to move vertically in the T-slot or plane or slot 10.

Formed in the rear face of this punch-head 27 is an annular groove 29, in the center of which is a pin 30, that is formed integral with the block 27. This annular groove 29 joins with a perpendicular groove which communicates with the top surface of the block 27, said top surface being concaved, as indicated

by 31, the curvature of said concaved upper face being identical with the curvature of the periphery of the block 18. Fixed to and depending from this punch-head 27 is a pin 5 32, that performs the function of a punch, and said pin passes through the vertical bore 11. In some instances a vertical aperture 33 is formed through the punch-head 27 and the pin 32 is provided with a head 34 and 10 passed through said aperture 33. By this construction different-sized pins may be used in my improved punch, Fig. 9.

35 indicates a link, the upper end 36 of which is turned at right angles to the body 15 portion, and said end 36 is arranged in the aperture 26 in the circular block 18. The body portion of the link 35 extends downwardly through the recess 25, and a ring 37 is formed integral with the lower end thereof, 20 said ring lying in the annular groove 29, formed in the rear face of the punch-head 27 and engaging around the pin 30 in the center of said annular groove. When the link 35 connects the punch-head 27 and the circular 25 block 18, the periphery of said block 18 rides directly upon the concaved upper face 31 of said punch-head 27.

39 indicates a die-plate having downwardly and inwardly bent ends 40, that normally en- 30 gage in the dovetailed ends 13 of the block 12. Formed in said plate 39, adjacent the ends thereof, are apertures 41, that are so located as that one of them will always be located directly over the bore 14 in the base 1 35 and immediately below the bore 11 through which the punch or pin 32 passes. A set-screw 42 passes horizontally through one of the downwardly-turned ends 40 and engages against the end of the block 12, thus holding 40 said die-plate 39 rigidly upon said block 12.

The operation is as follows: After the die-plate 39, having the proper aperture therein, is arranged upon the block 12 and the guide 16 set as desired, the work is laid directly 45 upon the die-plate 39, or as indicated by dotted lines in Fig. 1. The operator now grasps the upper end of the handle or arm 5 and moves the same in the direction of the arrow A, Fig. 1, and as the upper end of the 50 arm 19 is connected to said arm 5 by the link 21, said arm 19 will also be moved in the direction as indicated by the arrow. Owing to the manner in which the circular block or eccentric lever-head 18 is pivoted, it will, 55 with this movement, move eccentrically downward and necessarily engage upon the upper face 31 of the punch-head 27 and move said punch-head downwardly. The punch or pin 32, carried by said punch-head 27, will 60 move downwardly through the bore 11, engage upon the work, pass through the same and

through the aperture 41 in the die-plate 39 and into the bore 14 in the base 1. A reverse movement of the arm 5 brings the various parts into their normal positions, or as that 65 seen in Fig. 1.

The power applied to the arm 5 will be greatly increased, as it is communicated to the punch-head 27 and punch or pin 32, car- 70 ried thereby, owing to the system of leverage of which I make use. The end of the link 21 may be adjusted at different points on the arm 5 away from the point where said arm is pivoted, and the distance between said arm 5 and the upper end of the arm 19 may be 75 shortened or lengthened as desired.

A punch of my improved construction possesses superior advantages in point of simplicity, durability, and general efficiency, can be easily operated, is very compact, and is 80 inexpensive in manufacture.

I claim—

1. In an improved punch, a suitable frame- 85 work the same having a T-slot located and extending vertically therein, a punch-head arranged for vertical movement within said T-slot, said punch-head having a concaved upper face and carrying a removable punch or pin and having an annular groove inter- 90 secting a straight groove in its rear face, a lever-head eccentrically pivoted to the frame-work above the punch-head, a link fitting around the stud formed by the annular groove in the punch-head and extending upward in the straight groove connecting said lever- 95 head and the punch-head, an arm formed integral with and extending upwardly from said lever-head, an arm fulcrumed to the frame, and an adjustable link connecting said arm and the upper end of the arm formed integral 100 with the lever-head.

2. In an improved punch, a suitable frame- 105 work, a removable die-plate located within said framework, a punch-head arranged for vertical movement above said die-plate in a T-slot in said frame, said punch-head having an annular groove intersecting a straight groove in its rear face, a punch carried by said punch-head, a lever-head eccentrically pivoted above said punch-head in the frame- 110 work, a link fitting around the stud formed by the annular groove in the punch-head and extending upward in the straight groove connecting the punch-head with the lever-head, and means for operating the lever-head. 115

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

ROBERT JAMES THOMPSON.

Witnesses:

O. F. BABEL,

M. E. LEONARD.