

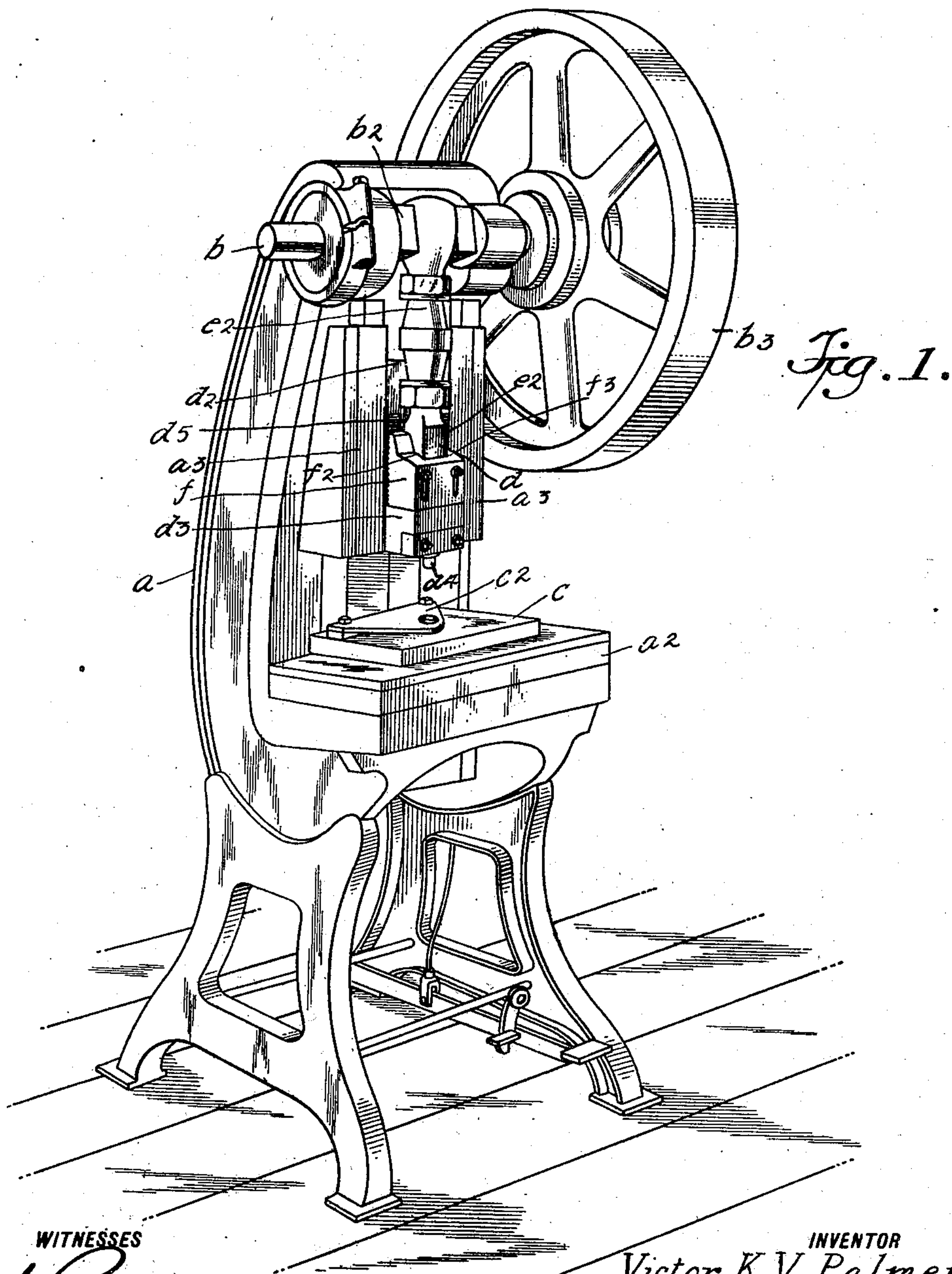
No. 891,435.

V. K. V. PALMER.
POWER PRESS.

PATENTED JUNE 23, 1908.

APPLICATION FILED FEB. 26, 1907.

3 SHEETS—SHEET 1.



WITNESSES

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C. E. Mulreany

BY

INVENTOR

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3 SHEETS—SHEET 2.

Fig. 2.

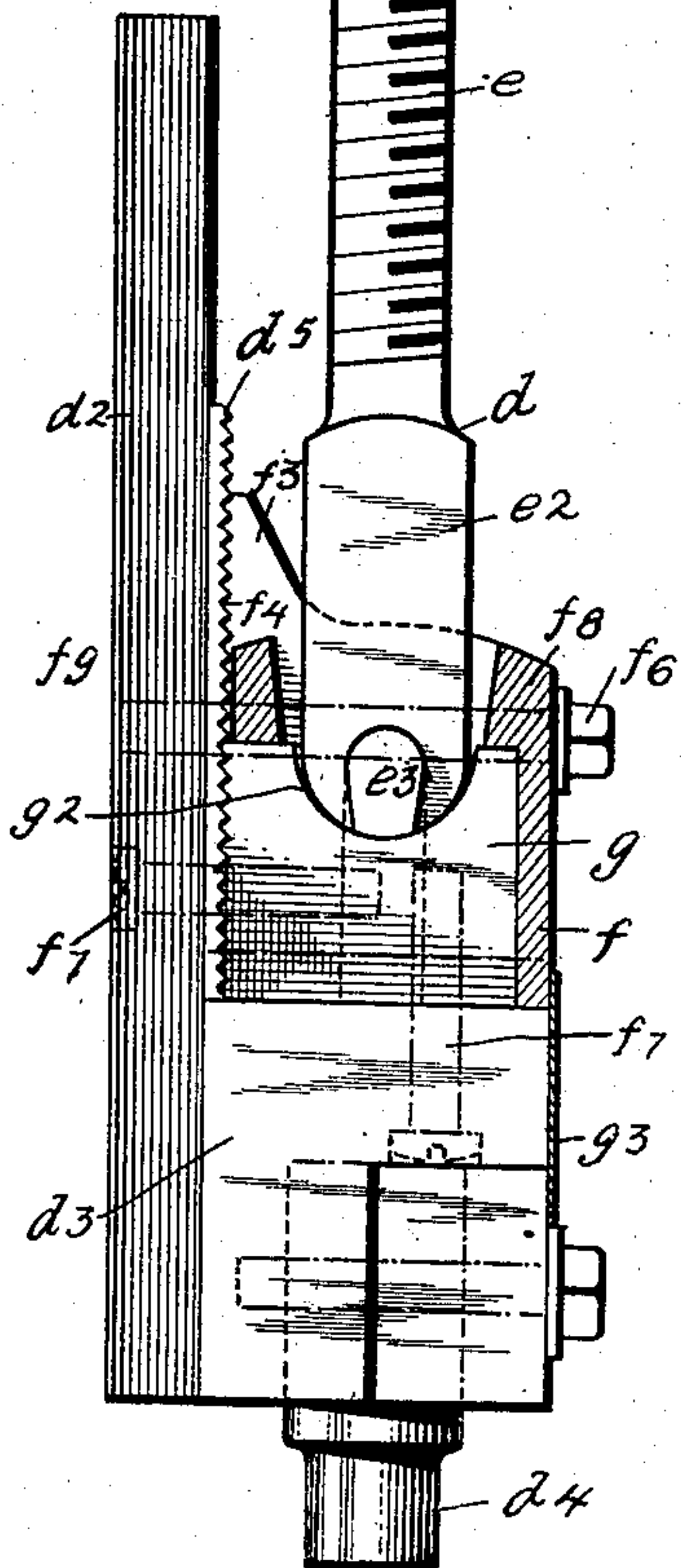


Fig. 4.

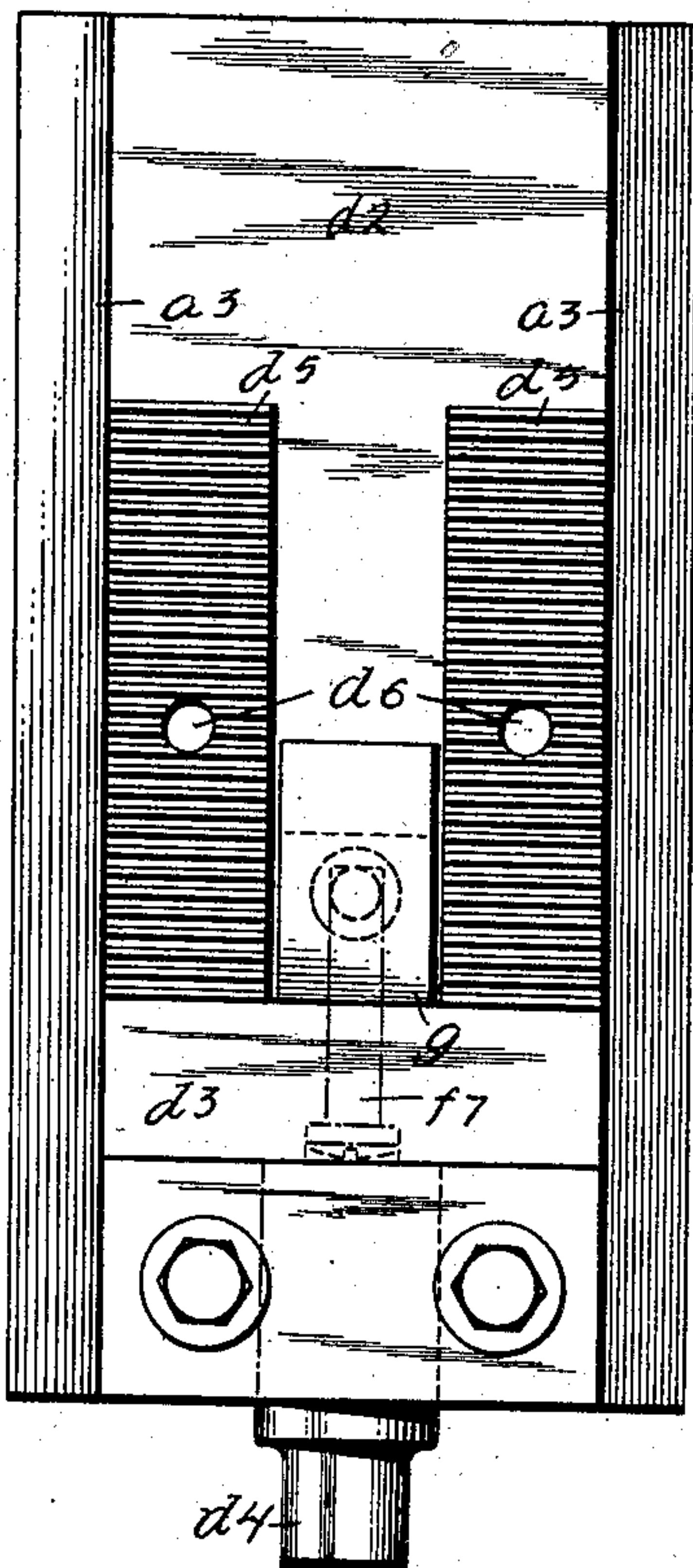


Fig. 3.

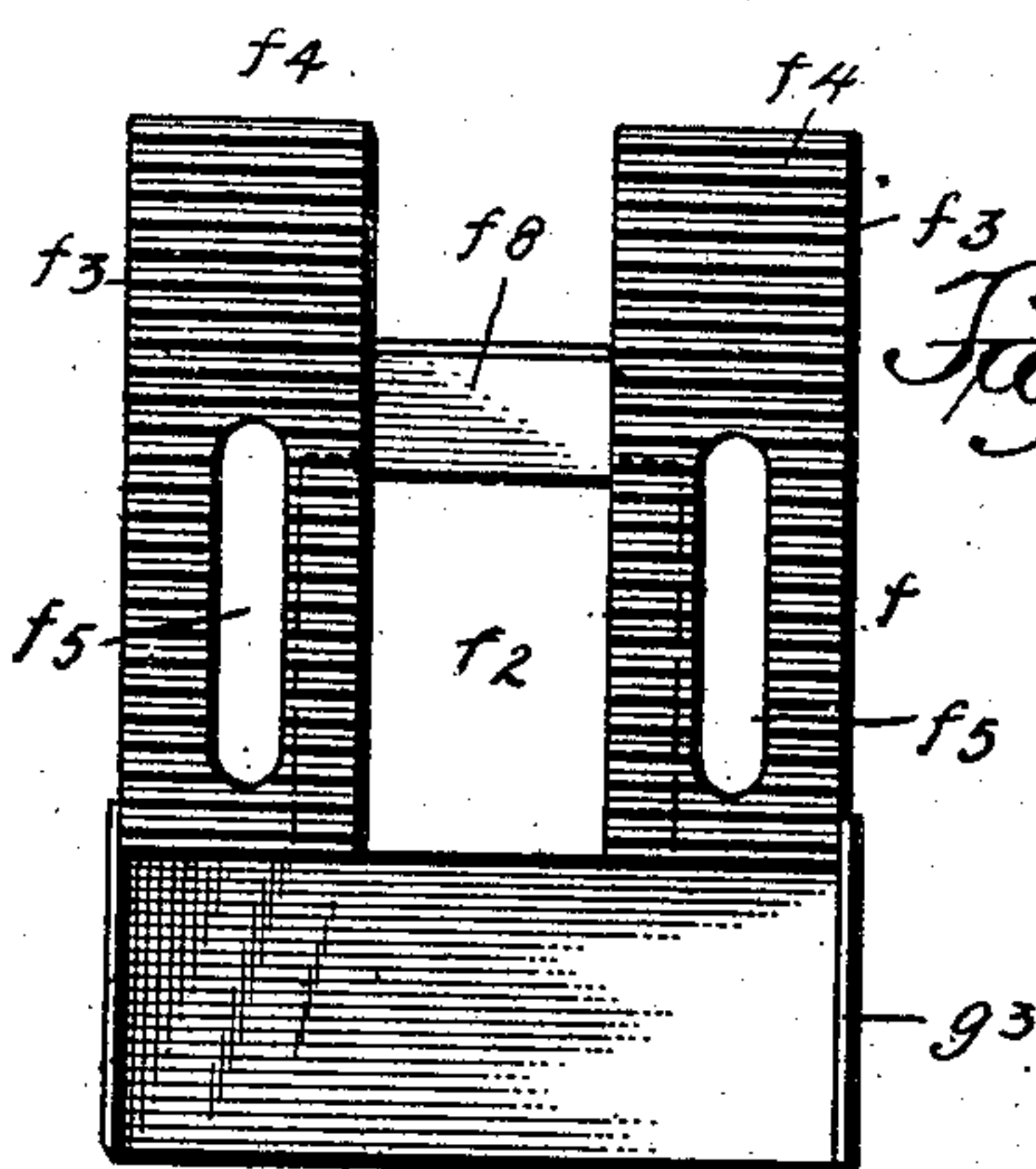
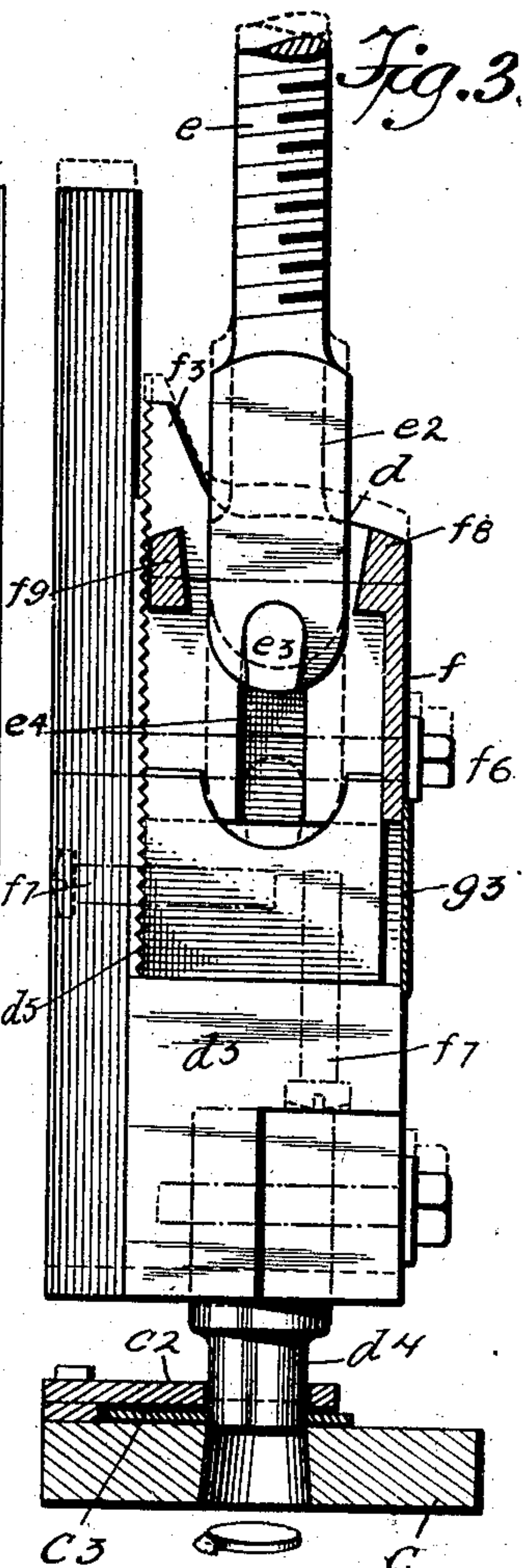


Fig. 5.

Fig. 7.

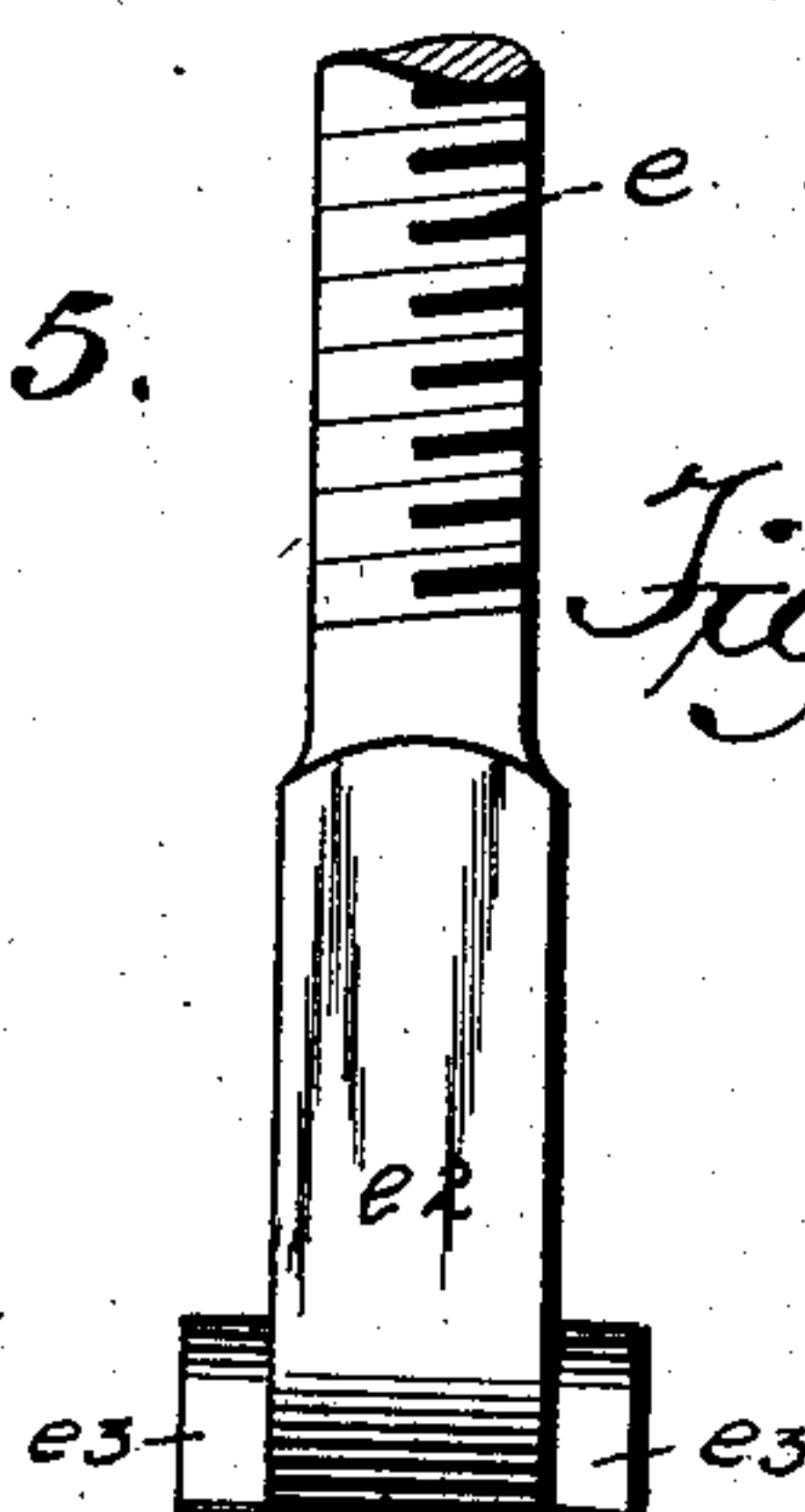
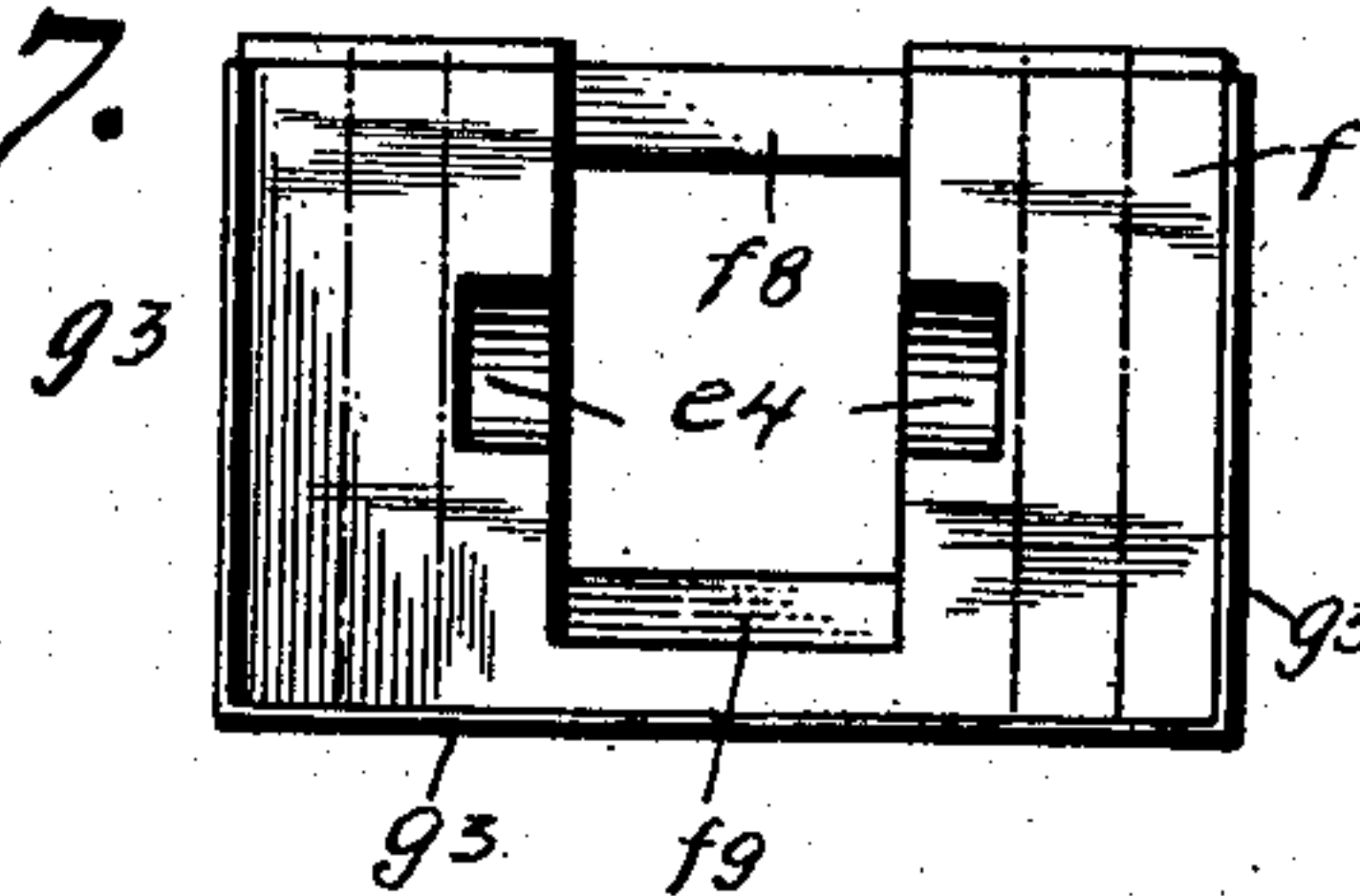


Fig. 6.



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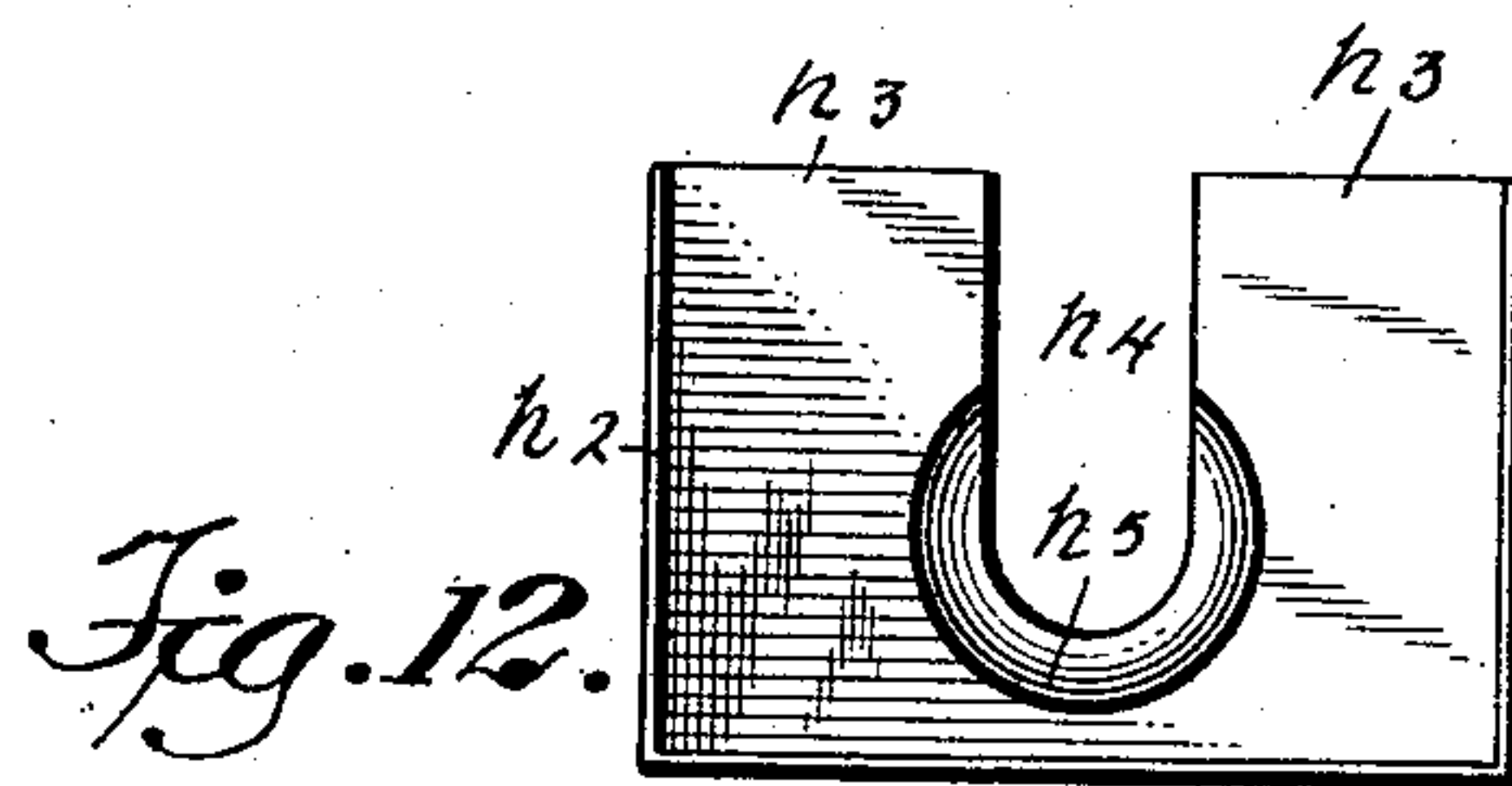
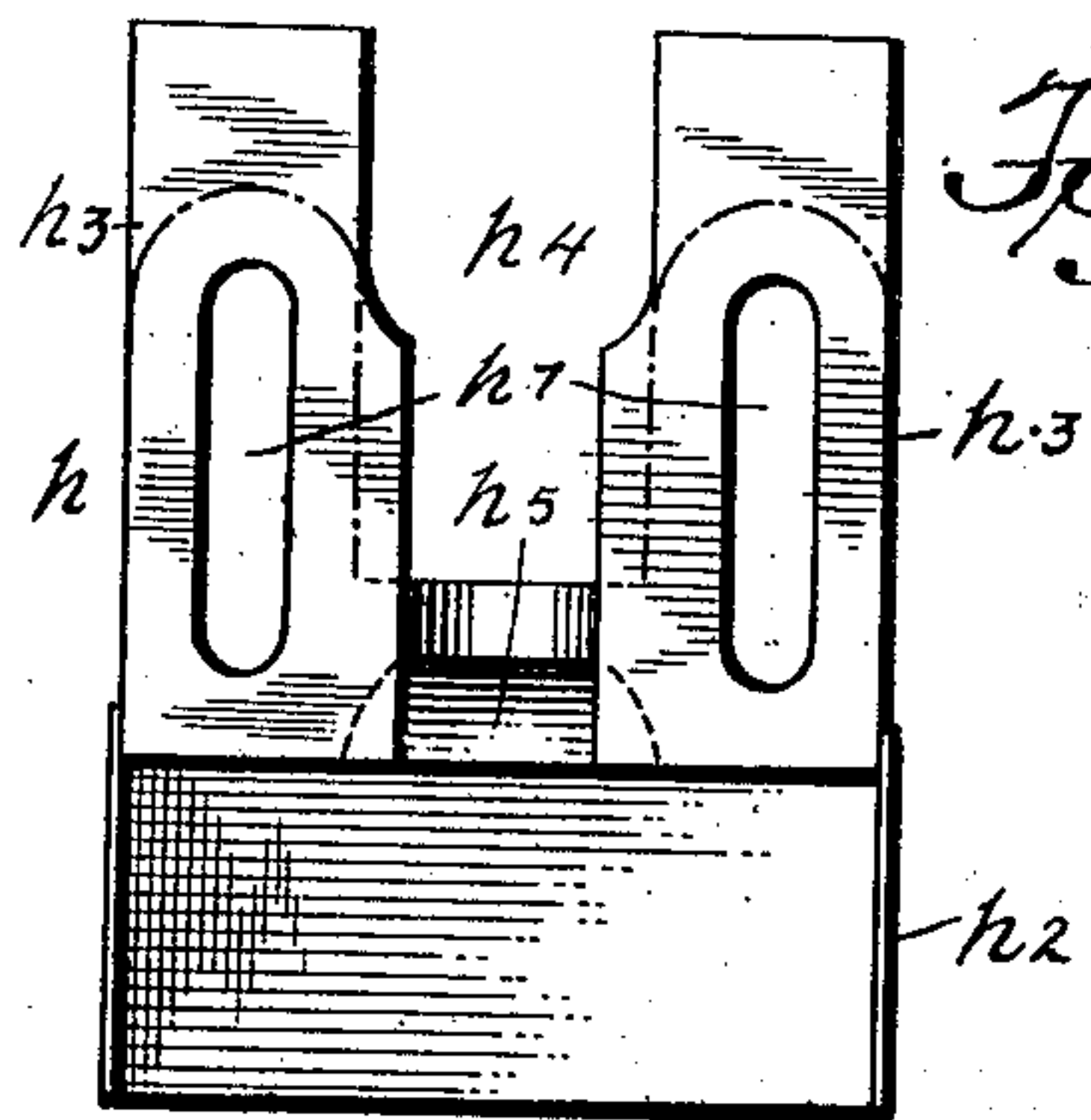
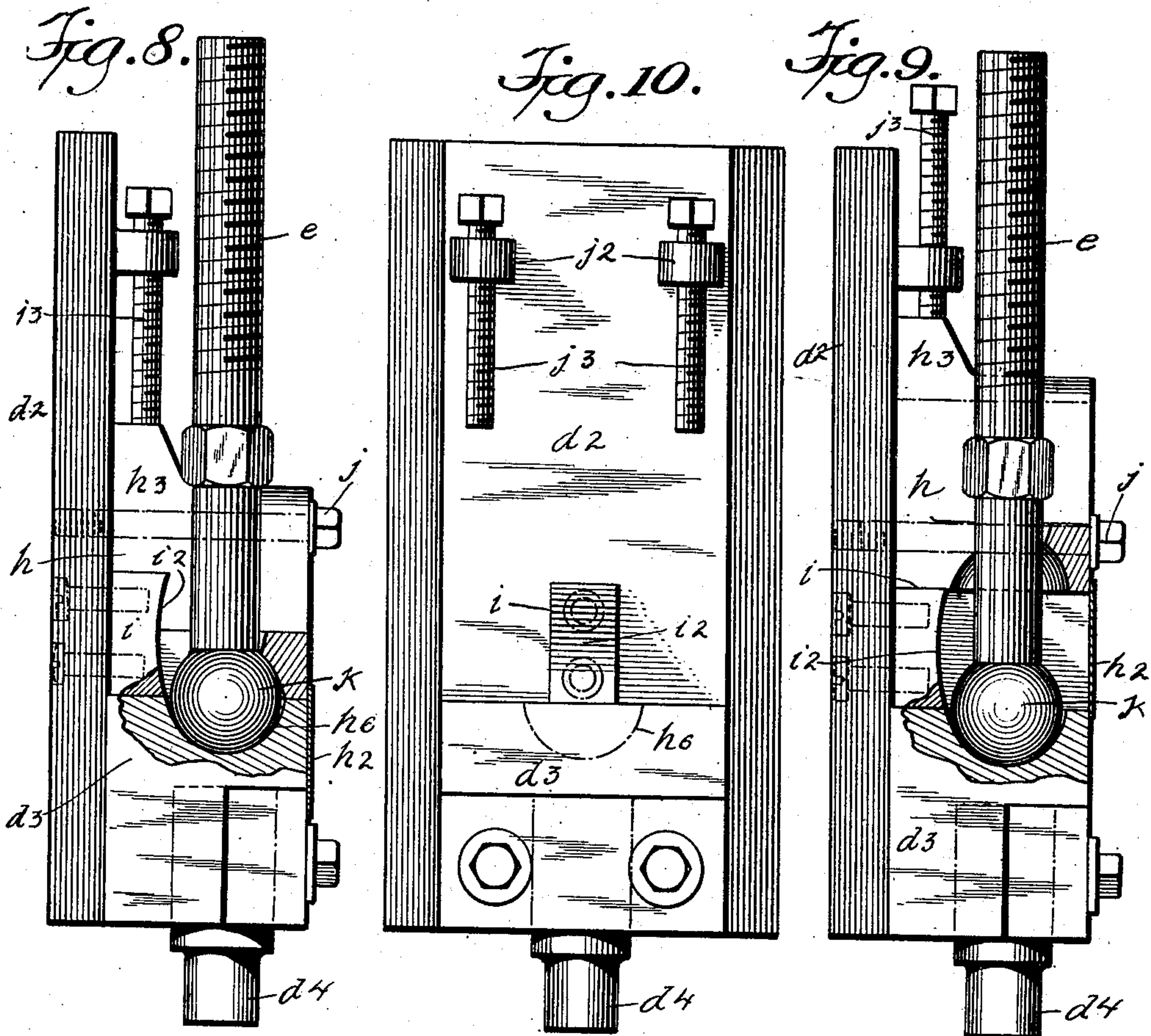
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3 SHEETS—SHEET 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

VIKTOR K. V. PALMER, OF BROOKLYN, NEW YORK.

POWER-PRESS.

No. 891,435.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed February 25, 1907. Serial No. 359,169.

To all whom it may concern:

Be it known that I, VIKTOR K. V. PALMER, a subject of the King of Sweden, and residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Power-Presses, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to power presses adapted for cutting, forming, perforating, punching, pressing and otherwise treating all kinds of sheet metal, pasteboard, paper, celluloid, leather and other sheet materials; and the object thereof is to improve a power press of this class in such manner as to secure greater safety in the operation thereof and reduce the danger to operators of such press. In power presses of this class as usually constructed the plunger and crank are connected in such manner that the plunger has a vertical movement equal to the greatest throw of the crank and as a result the punch which is connected with the plunger is raised so high above the "stripper" that the operator frequently passes his hand beneath the plunger and is seriously injured, if not crippled for life; and one of the objects of my invention is to provide means whereby the vertical movement of the plunger will be limited to such an extent that the danger of inserting the hands or fingers beneath the same or between the punch and the stripper will be almost if not entirely overcome, the movement of the plunger being just sufficient to strip the material or workpiece off of the punch; a further object being to provide an improvement in presses of the class specified whereby the vertical movement of the plunger, or the extent thereof may be regulated at will; and with these and other objects in view the invention consists in a press of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a perspective view of an ordinary power press provided with my improvement; Fig. 2 a sectional side view of a plunger which constitutes the subject matter of this invention; Fig. 3 a view similar to Fig. 2 but

showing the parts in a different position and showing a die, a stripper connected therewith and a workpiece in position; Fig. 4 a front view of the back plate of the plunger with the adjustable parts detached; Fig. 5 a back view of the adjusting part of the plunger; Fig. 6 a bottom view of the part shown in Fig. 5; Fig. 7 a lower end view of the crank rod by which the plunger is operated; Fig. 8 a view similar to Fig. 2 but showing a modification; Fig. 9 a view similar to Fig. 8 but showing the parts in a different position; Fig. 10 a view similar to Fig. 4 of the back plate of the plunger shown in Figs. 8 and 9; Fig. 11 a front view of the adjusting part of the plunger shown in Figs. 8 and 9; and, Fig. 12 a bottom plan view thereof.

In the drawing forming part of this specification, I have shown at *a*, in Fig. 1, an ordinary power press of the class specified, and to which my improvement is applied, and this power press is provided in the top portion thereof with a transverse crank shaft *b* provided centrally with a crank *b*² and at one end with a drive wheel *b*³. The framework of the press is also provided with a bed plate *a*² on which, in practice, the die *c* is placed and said die is provided with the usual stripper *c*² between which and the die *c*, the workpiece *c*³ shown in Fig. 3 is placed.

The framework of the press is provided below the crank shaft with vertically arranged keepers *a*³ in which the plunger *d* is movable, and said plunger *d* is connected with the crank *b*² of the crank shaft *b* by means of a rod *e* shown in Figs. 2, 3, 7, 8 and 9, said rod being provided with suitable means *e*² as shown in Fig. 1 by which it is connected with the crank *b*² of the crank shaft in the usual manner.

In constructing the plunger *d* as shown in Figs. 2 to 7 inclusive, I provide a back plate *d*² movable in the keepers *a*³ and provided at its lower end with a cross head *d*³ in the bottom of which the punch *d*⁴ is secured in the usual manner. The back plate *d*² of the plunger is provided with parallel vertically arranged racks *d*⁵, or plates having transverse teeth, and in connection with the back plate *d*², I employ a vertically movable and adjustable block *f* adapted in one position to rest on the cross head *d*³, and the block *f* is provided centrally with a vertically arranged opening *f*² forming side portions *f*³, the back surfaces of which are provided with transverse teeth *f*⁴ adapted to engage the racks *d*⁵,

and said side portions of the block f are provided with vertically arranged slots f^5 through which are passed bolts f^6 which are also passed through apertures d^6 in the back plate d^2 and by means of which the block f may be secured to and vertically adjusted on the back plate to any desired point.

Secured to the top surface of the head d^3 and to the plate d^2 by means of bolts or screws f^7 , and ranging forwardly and backwardly of said head, and centrally thereof, is a block g which is adapted to enter the vertically arranged opening f^2 in the central part of the vertically adjustable block f , and on which said block f is free to move in the adjustment thereof, and said block g is provided in the top thereof with a semi-circular recess g^2 . The vertically arranged opening f^2 in the vertically adjustable block f is provided at the top of the body portion of said block and at the front and back sides thereof with transverse members f^8 and f^9 , and the opposite side walls of the opening f^2 are provided with vertically arranged grooves.

The rod e , by means of which the plunger is connected with the crank shaft, is provided at its lower end with an enlarged portion or head member e^2 at the bottom of the opposite sides of which are laterally directed lugs or projections e^3 adapted to move in vertically arranged grooves e^4 , in the opposite side walls of the vertical opening f^2 in the adjustable block f and the upper ends of the grooves e^2 which open downwardly through the bottom of the block f terminate just below the transverse members f^8 and f^9 at the front and back of the top portion of said block and between which the lower end or head portion e^2 of the rod e is freely movable.

With this construction, it will be seen that the block f may be secured to the back plate d^2 of the plunger at different points, or said block may be adjusted on said back plate by means of the bolts f^6 and may be tightly secured to said back plate at an desired point of adjustment. In Fig. 2, the block f is secured to the back plate in its lowest position, or in other words in such position that it rests on the head d^3 of the back plate, and in this position of the parts the rod e will give the plunger its greatest possible vertical movement; but if said block f be adjusted into the position shown in Fig. 3, the lugs or projections e^3 at the lower end of the head of the rod e will move vertically in the grooves e^4 in the opposite sides of the block f during the greatest throw or movement of the crank shaft, and the vertical movement of the plunger will be very limited, said movement being only sufficient to raise the punch d^4 far enough to clear it of the work piece c^3 . When the block f is secured to the back plate d^2 at any point above the head d^3 of said back plate, the rod e moves through a portion of the throw of the crank without moving the

plunger at all, and in this operation the lugs or projections e^3 at the lower end of the rod e move freely in the grooves e^4 in the opposite side portions of the block f , and it will be understood that the block f may be so adjusted on the back plate d^2 , as to regulate to any desired extent the vertical movement of the plunger of which said block f forms a part and with which the punch d^4 is connected, and it will also be understood that the downward force of the plunger, or the force applied in the downward movement of the plunger, is occasioned by the lower end or head portion of the rod e striking on the top of the block g , and when said block f is in its lowest position there is no vertical movement of the rod e independent of the plunger. I also prefer to connect with the bottom of the block g an apron g^3 which extends around the opposite sides and the front of said block, and which is designed to keep dust and dirt from collecting on, or around, the block g and in the groove g^2 in the top thereof, and in the interior parts of the block f , and this apron g^3 may be secured to the block f or to the head d^3 of the back plate d^2 in any desired manner and so as to always close the space between the head d^3 and the block f , in any desired adjustment of said block.

In the modification shown in Figs. 8 to 12 inclusive, I employ a block h which takes the place of the block f , and which is provided with an apron h^2 similar to the apron g^3 . The block h comprises side members h^3 separated by a vertical space h^4 which is preferably narrower at the bottom than at the top as shown in Fig. 11, and in the bottom of said block is a semi-spherical cavity h^5 and a corresponding semi-spherical cavity h^6 is formed in the top of the cross head d^3 of the back plate d^2 , and the vertical space h^4 between the side members h^3 of the block h communicates with the cavity h^5 at the back of said cavity. In this form of construction, a block i is secured to the back plate d^2 centrally thereof, directly over the cross head d^3 and the front face of which is concave as shown at i^2 . The side portions h^3 of the block h are also provided with vertically arranged slots h^7 and bolts j are passed therethrough and through the back plate d^2 , and the front top portion of the back plate d^2 is provided with forwardly directed lugs j^2 , and screws j^3 are passed downwardly through said lugs and adapted to bear on the tops of the side portions h^3 of the block h , and by means of this construction the block h may be vertically adjusted on the back plate d^2 in a manner similar to that of the adjustment of the block f on said back plate in the construction shown in Figs. 2 to 7. In this form of construction, the rod e is provided at its lower end with a spherical head k , and when the block h is in its lowest position as shown in Fig. 8, the cavities h^5 and h^6 in the bottom of said block

and the cross head d^3 form a spherical socket or recess in which the head k of the rod e fits.

In Fig. 9, the block h is shown in an adjusted position, or above the position shown in Fig. 8, and the bottom of said block is separated from the cross head d^3 , and it will be understood that the operation of this form of construction will be exactly the same as that of the construction shown in Figs. 2 to 7 inclusive. The position of the block h on the back plate d^2 of the plunger determining the extent of the vertical movement of the plunger in the operation of the press, and in both forms of construction, it will be observed that when the block h is adjusted to any position above the cross head d^3 of the back plate d^2 the plunger will remain stationary during a portion of the vertical movement if the rod e , and in both forms of construction the power necessary to drive the punch d^4 through the work-piece c^3 is applied by the lower end of the rod e , or the head of said rod at the lower end thereof, exerted on the cross head d^3 .

By means of my improvement the extent of the vertical movement of the plunger above the stripper c^2 may be regulated in such manner that the punch d^4 will be raised just high enough to clear the work-piece c^3 and to enable said punch to do the work required by it on the work-piece, and in this way the danger of the workman being injured by the insertion of his hand or fingers between the stripper c^2 and the punch, or even between the die c and the punch may be almost, if not entirely, obviated.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A power press provided with a crank shaft and a vertically movable plunger connected with said shaft, said plunger comprising a vertically movable back member provided at the bottom thereof with a cross head with which a punch is connected, a block adjustably connected with the back member, and a rod connected with the crank of the crank shaft and with said vertically adjustable block, said rod being adapted to move independently of said block.

2. A power press provided with a crank shaft and a vertically movable plunger connected with said shaft, said plunger comprising a vertically movable back member provided at the bottom thereof with a cross head with which a punch is connected, a block adjustably connected with the back member, a rod connected with the crank of the crank shaft and with said vertically adjustable block, said rod being adapted to move independently of said block, and means whereby said rod at the bottom of its movement will bear on said cross head.

3. A power press provided with the usual crank shaft and a vertically movable plunger, said plunger comprising a back member provided at its lower end with a cross head and a vertically adjustable member mounted over said cross head, and a rod connected with the crank shaft and with said vertically adjustable member and adapted during a part of the revolution of the crank shaft to move independently of said vertically adjustable member and at the lower limit of its movement to force said plunger downwardly.

4. A single acting power press provided with a crank shaft, a crank rod connected therewith, and a vertically movable plunger the connection of the crank rod with the plunger being a loose and movable connection whereby the extent of the vertical movement of the plunger is less than the throw of the crank shaft.

5. A power press of the class described provided with a crank shaft, a crank rod connected therewith, a plunger suspended from the crank rod, and means for adjusting the extent of the vertical movement of the plunger and for holding the plunger stationary during a part of the rotation of the crank shaft.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 21st day of February 1907.

VIKTOR K. V. PALMER.

Witnesses:

C. E. MULREANY,

A. WORDEN GIBBS.