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MATRIX AND HOLDER THEREFOR.
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904,510.

Patented Nov. 24, 1908.

Fig. 1.

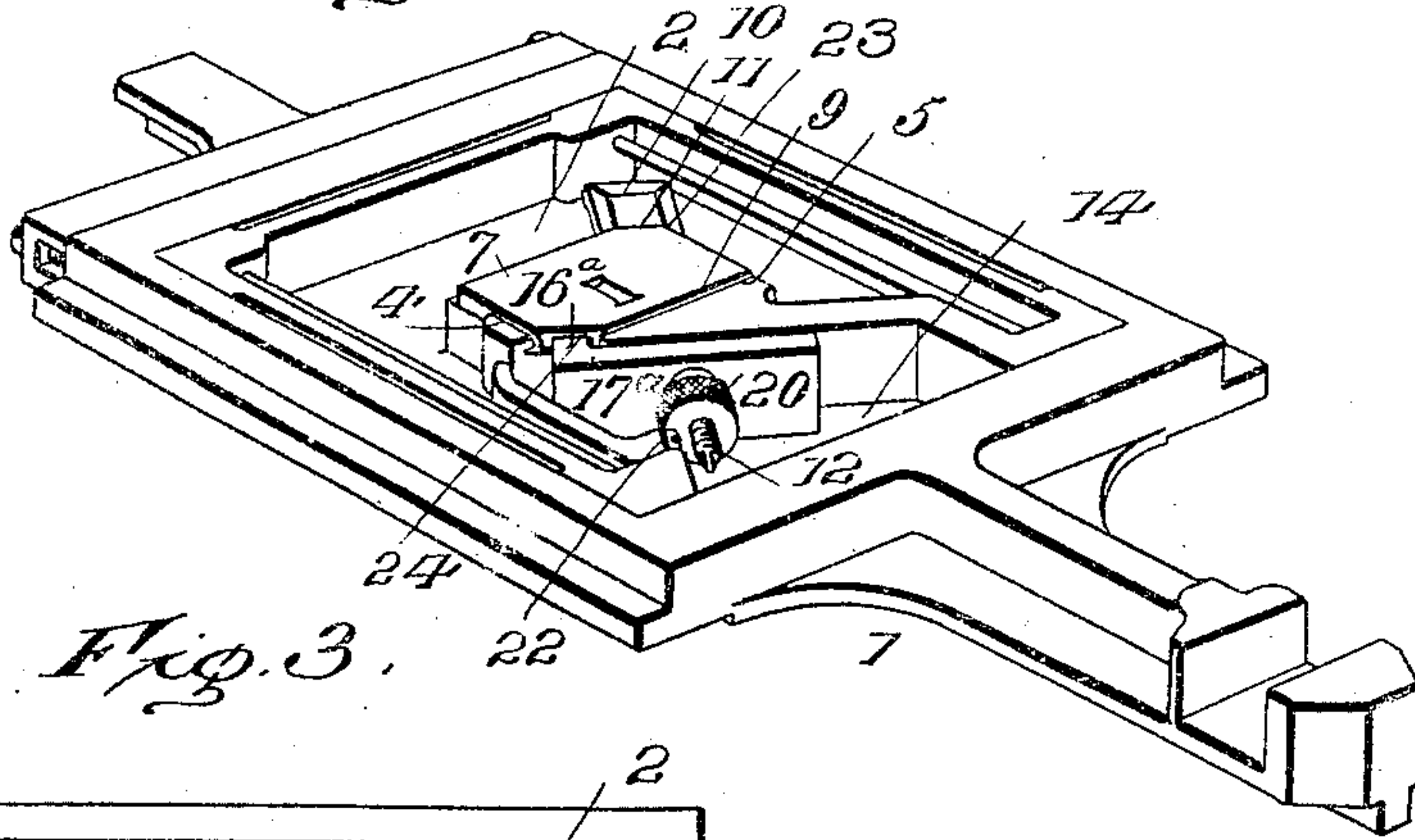


Fig. 3.

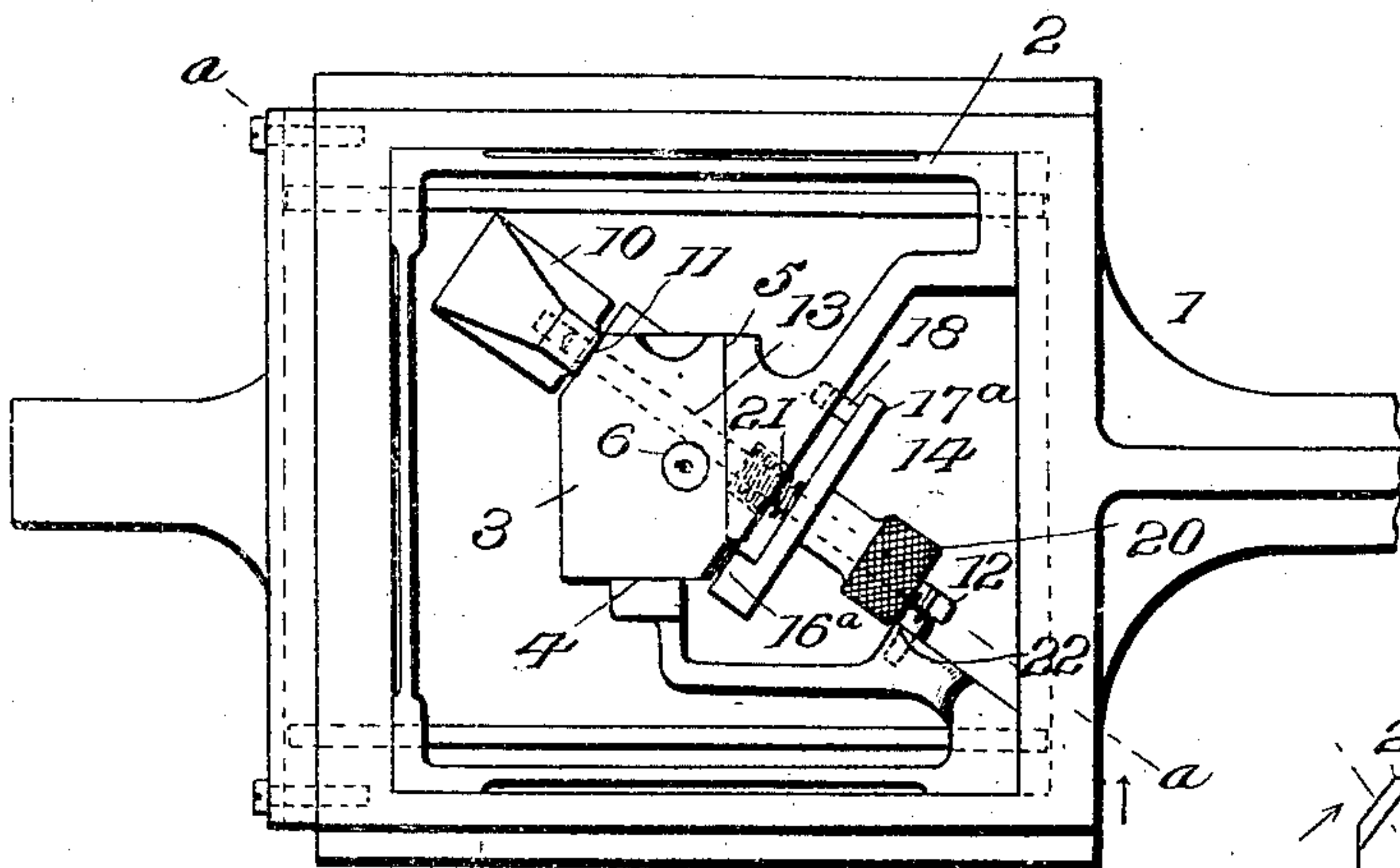


Fig. 2.

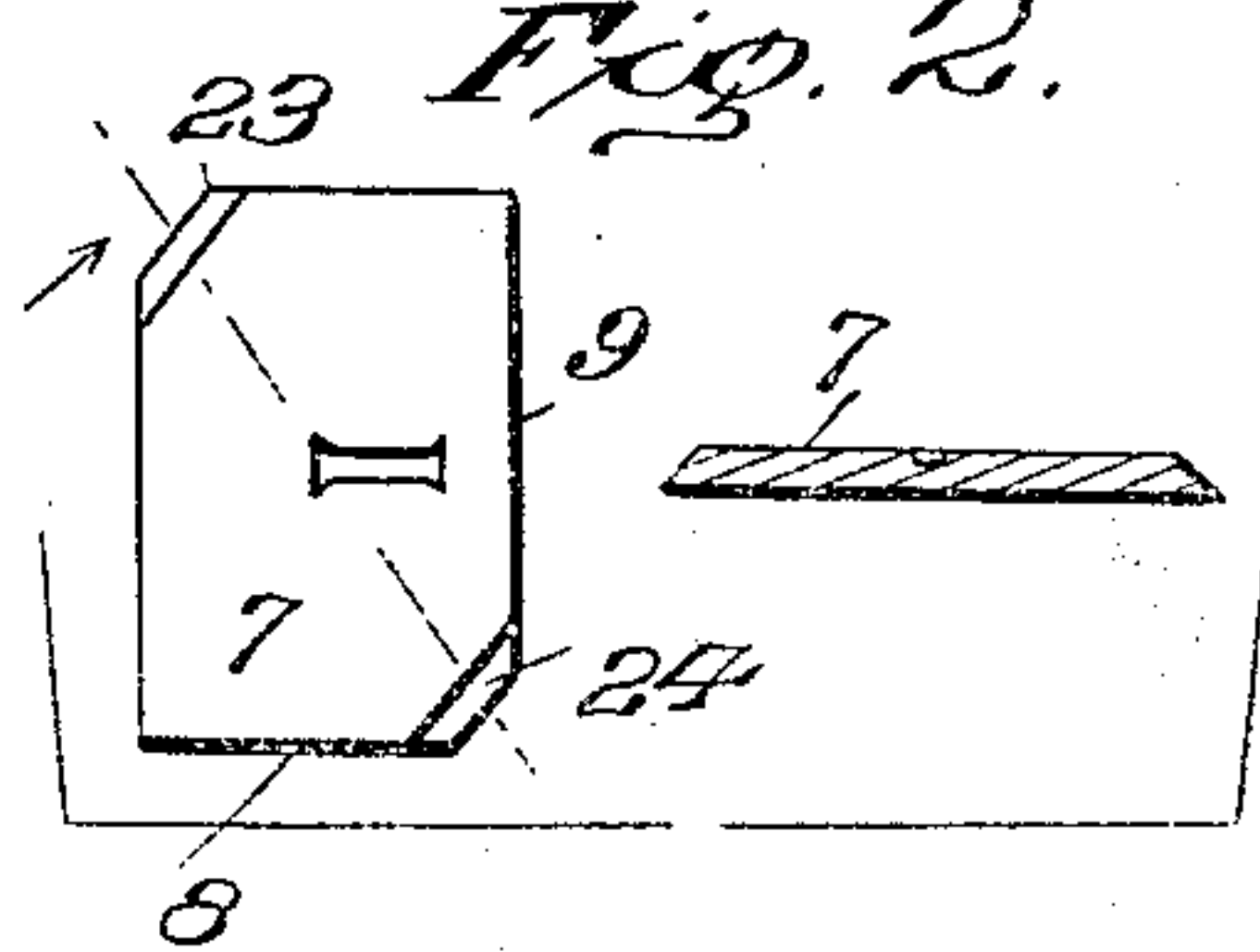


Fig. 5.



Fig. 4.

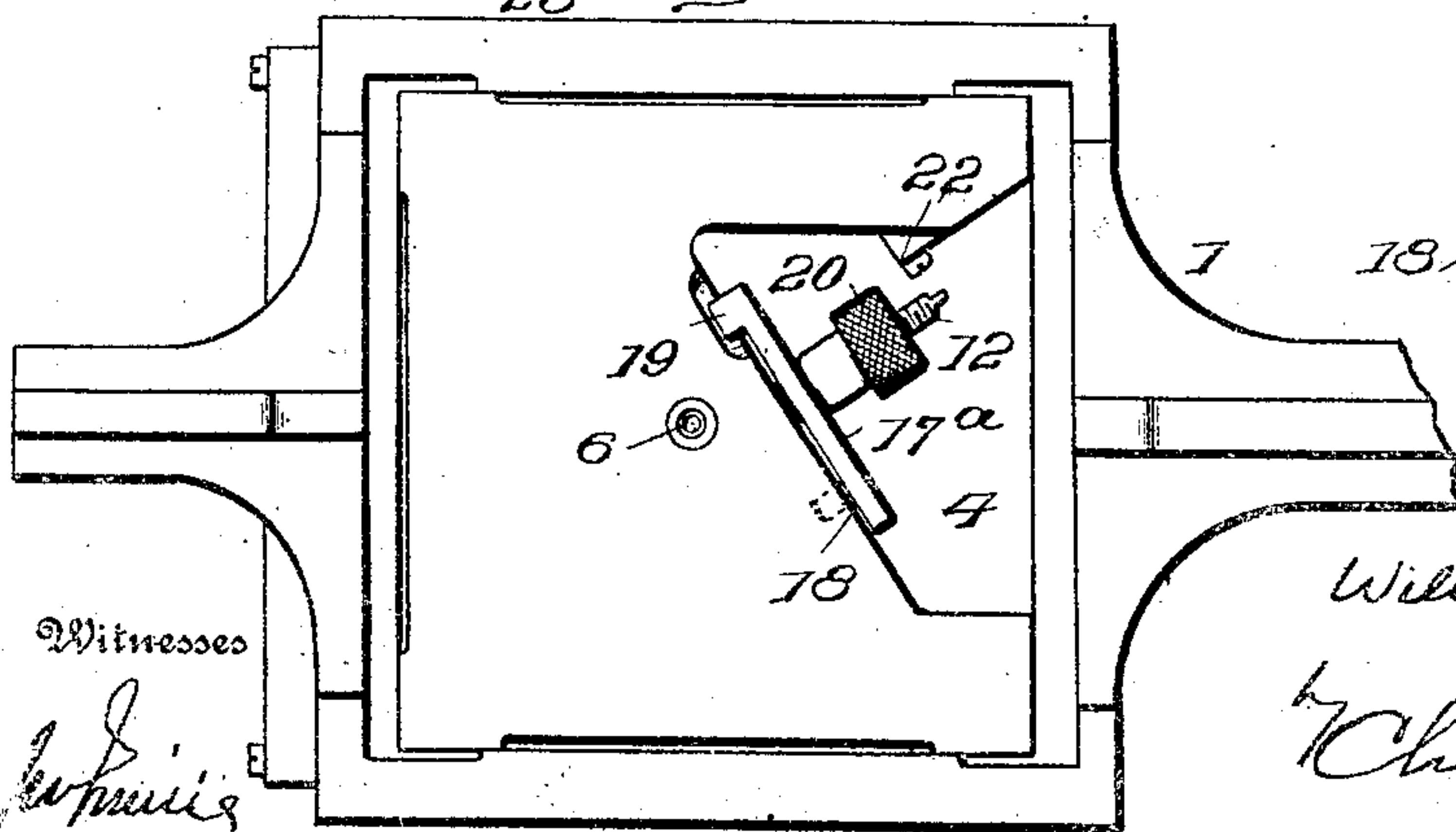
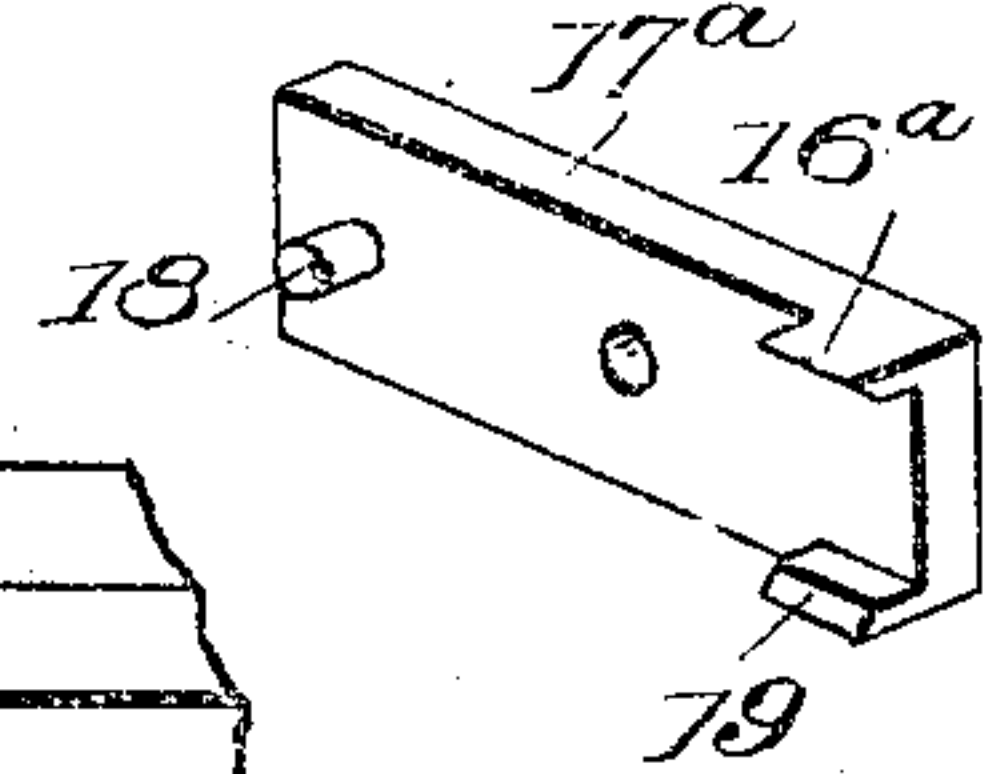


Fig. 6.



Witnesses

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MATRIX AND HOLDER THEREFOR.

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To all whom it may concern:

Be it known that I, WILLIAM ELMER CHALFANT, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented a certain new and useful Improvement in Matrix and Holder Therefor; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

This invention relates to means for detachably securing matrices and like articles in predetermined fixed position upon their holders or supports.

It is well known and understood that it is of the utmost importance the matrices employed in connection with type casting and like machines should be accurately adjusted and firmly held in order that they may be properly presented to the mold wherein the body of the type is cast, to the end that the character or part formed in the matrix may occupy a predetermined position or be justified with relation to the body portion of the type. With this end in view it has long been the practice to form the matrix cavity in a predetermined and fixed position relative to two of the edges of the matrix block or plate, said edges extending at right angles and constituting gaging surfaces for contacting with corresponding gaging surfaces on the holder, whereby the matrix cavity or the character contained therein is correctly justified relatively to said holder.

Various means have been devised for retaining the matrix with its gaging surfaces in contact with those of the holder as by the application of clamps or dogs opposite one or both gaging surfaces, one or more of said clamps being provided with beveled or overlapping surfaces serving to hold the matrix down upon its seat. With such appliances great care is required and much time consumed in insuring proper contact between the two sets of gaging surfaces; where a single clamp is employed the operator must hold the matrix against one gaging surface while applying the clamp to the other, and where two clamps are employed working at right angles, one opposite each gaging surface, unless both clamps are moved simultaneously and equally one is

liable to engage and seat in advance of the other and thus arrest the movement before the other gaging surfaces fully contact. Moreover, as it is not feasible for various practical reasons to form the gaging surfaces on the holder with beveled engaging portions, the matrix is liable to be displaced from its seat, being held down on one, or at most, two adjacent edges at right angles to each other.

The present invention has for its objects to facilitate the operations of inserting and removing the matrix to insure its correct positioning and to secure it against accidental displacement, to which ends it consists in a novel form of matrix and positioning and clamping devices therefor as hereinafter fully described, the novel features being pointed out in the appended claims.

In the accompanying drawings illustrating a preferred form of embodiment as applied to the die case of a type casting machine: Figure 1 is a perspective view of a die case with the matrix and holder applied thereto. Fig. 2 is a top view of the matrix, detached. Fig. 3 is a face view of the matrix holder with the jaws in their open or retracted position. Fig. 4 is a rear view of the matrix holder. Fig. 5 is a sectional view on the line *a-a*, Fig. 3. Fig. 6 is a perspective of the lever clamping jaw detached.

The same numerals designate like parts in the several figures.

The improvements are illustrated in connection with and as applied to the die case of a type casting machine after the manner disclosed in the application of Bancroft and Indahl, Serial No. 235,126, filed Dec. 1, 1904, whereof 1 designates the usual die-case frame and 2 the matrix block or carrier, the latter provided with a seat 3 and gaging surfaces 4, 5, for the matrix and a socket 6 for the reception of the centering pin by which the matrix is located relatively to the mold.

Gaging surfaces 4, 5, are preferably disposed at right angles in planes perpendicular to seat 3, and in a predetermined relation to socket 6, and the matrix 7 is furnished with corresponding gaging surfaces 8, 9, so that when the latter are in contact with the complementary surfaces 4, 5, and the centering pin is seated in its socket 6 the matrix cavity

will be presented in justified relation to the mold.

The present improvements have immediate relation to the means for effecting, insuring and maintaining the proper engagement of the gaging surfaces of the matrix with its holder.

Opposite the angle of intersection of gaging surfaces 4, 5, is located a jaw 10, provided with an overhanging or beveled engaging face 11, extending in a plane intersecting the planes of the gaging surfaces 4, 5, and forming the hypotenuse of a right angled triangle of which said surfaces 4 and 5 form the base and perpendicular. The jaw 10 is located at one corner of the elevated seat 3, and is secured to one end of a threaded rod 12 extending through an opening 13 in the block 2 beneath seat 3 and terminating within an opening or recess 14 in said block. Preferably jaw 10 is so mounted and guided as to permit slight angular displacement of its engaging face during the clamping movement, to which end the opening 13 is slightly larger than rod 12 at the end nearest the jaw and is enlarged beyond that point to permit a limited degree of lateral motion to the rod. The jaw 10 is also provided with a rib 15 on the underside at or near the rear edge for engagement with the face of block 2, and its forward or inner end is provided with a rib 16 adapted to enter a guideway 17 in block 2, to form a bearing for said jaw and resist vertical movement thereof as the beveled engaging face rides up the incline on the matrix to seat the latter. Disposed and working in opposition to jaw 10 is a second clamping jaw 16^a located in the angle at the intersection of the planes of gaging surfaces 4, 5. This jaw 16^a is beveled at its engaging edge and carried by a lever or plate 17^a provided at or near the opposite end with a pivot pin 18 whose pointed or rounded end is received in a socket formed in the wall of recess 14. At the same end and below or opposite jaw 16^a lever 17^a is provided with a beveled flange or projection 19 engaging a seat on block 2 so that when said lever is pressed towards the matrix projection 19 will operate to draw jaw 16^a to position and assist in holding the matrix down upon its seat.

Lever 17^a is perforated for the passage of rod 12 and the latter is provided with a thumb nut 20 adapted to engage said lever at a point intermediate jaw 16^a and pivot 18 so that the pressure exerted upon jaw 16^a by said nut will be less than its pull upon rod 12. Between lever 17^a and block 2 and preferably encircling rod 12, is interposed a spring 21, the latter operating to retract jaw 16^a and advance opposing jaw 10. If unrestrained spring 21 would operate to restrain jaw 10 normally in advanced position

requiring the application of pressure to release or insert a matrix to avoid which in the preferred embodiment illustrated a shoulder or seat 22 is arranged to intercept the outward movement of nut 20 so that when the latter is turned to separate the jaws and release the matrix, the nut being seated will operate to positively retract jaw 10, jaw 16^a having been first retracted by the action of spring 21.

One advantage of this arrangement is that it permits the operator to manipulate the device with one hand, leaving the other hand free for the removal or insertion of the matrix. The matrix 7 for use in connection with the improved holder is similar to those in common use with the single exception that the diagonally opposite corners or edges 23, 24, are cut or otherwise formed on lines intersecting the planes of the gaging faces 4, 5, and beveled to correspond with jaws 10 and 16^a.

In the preferred form illustrated the matrix is composed of a hexagonal plate of substantially uniform thickness, with opposite edges in parallel, two of said edges 8, 9, standing at right angles to form the gaging surfaces, and two beveled to form the gripping surfaces 23, 24, said last named edges lying in planes intersecting the planes of the gaging edges 8, 9. It is to be observed, however, that with the exception of the two gaging surfaces 8, 9, and the gripping surfaces 23, 24, the form of the matrix plate as a whole is of secondary importance inasmuch as said surfaces together with the back are the only ones involved in the gaging and holding operations, hence in so far as this feature is concerned the form of the plate in other respects is unimportant and may be varied to any extent so long as those gaging and gripping surfaces are retained. Nor is it required that the matrix plates for use in connection with the improved holder should all be of the same dimensions, it being sufficient that the angular relation of the two gaging surfaces be uniform and that the opposite gripping surfaces lie within the range of action of the gripping jaws, the latter compensating for variations in this dimension without interference with the gaging function.

In using the device the operator grasping one end of the frame 1 with the finger and thumb of the same hand turns nut 20 until both jaws 10, 16^a, are retracted as represented in Fig. 3. With the other hand he drops or places the matrix upon bed 3 with the cut away corners 23, 24, opposite jaws 10, 16^a, and then by reversing the motion of the thumb nut causes the advance of the jaws. During the first part of this operation nut 20 is retained upon its seat 22 and jaw 16^a in its retracted position by virtue of spring 21, while jaw 10 advances and by virtue of the

diagonal relation of its engaging face forces the matrix to slide upon its gaging face or faces 4, 5, towards the angle of intersection.

When the matrix seats on both of said gaging surfaces the further movement of jaw 10 is interrupted and jaw 16^a is advanced until its engaging face contacts with the matrix when a further movement of the thumb nut causes the two jaws to tightly clamp the matrix against its seat 3 without liability of disturbing the position of the matrix relative to its gaging surfaces 4, 5, owing to the fact that the pressure exerted by jaw 10 and acting to retain the matrix against said gaging surfaces is superior to that exerted by the opposing jaw 16^a and tending to displace the matrix; hence it follows that if for any cause the matrix should not be properly seated against both gaging surfaces 4, 5, at the time jaw 16^a engages therewith it will be forced to position prior to the final clamping upon its seat by the superior pressure exerted by jaw 10. Although desirable it is not essential that nut 20 should be provided with a sustaining seat 22, as in such event the jaw 10 could be forced back against the pressure of spring 21 for the insertion or removal of the matrix, as in either case the jaw 10 is advanced under the pressure of the spring until the opposing jaw 16^a is seated so as to furnish a rigid resistance to the traverse of nut 20.

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

1. A matrix holder provided with a seat, two gaging surfaces in fixed angular relation and a movable jaw whose engaging face extends in a plane intersecting the planes of both said gaging surfaces.

2. A holder for type and like matrices comprising a block provided with a matrix seat and gaging surfaces in fixed angular relation to each other, and a clamping jaw movable towards the angle of intersection of said gaging surfaces and provided with an engaging face extending in a plane intersecting the planes of both gaging surfaces.

3. A holder for type and like matrices comprising a block provided with a seat and two fixed gaging surfaces extending in intersecting planes; and a movable jaw provided with a beveled engaging face disposed in a plane intersecting the planes of said gaging surfaces.

4. A holder for type and like matrices including a block provided with a seat and two gaging surfaces on intersecting planes; and two opposing movable jaws, one located at the angle of intersection of the gaging surfaces and the other intermediate the planes of said gaging surfaces.

5. A holder for type and like matrices including a seat and two gaging surfaces at right angles and in fixed relation; and a

positioning and clamping jaw movable at an angle to both gaging surfaces with its engaging face in a plane intersecting the planes of both gaging surfaces.

6. A holder for type and like matrices provided with a seat, two gaging surfaces extending in intersecting planes; a clamping jaw movable at an angle to both gaging surfaces with its engaging face in a plane intersecting the planes of both gaging surfaces, and an opposing clamping jaw occupying the angle at the intersection of the planes of said gaging surfaces.

7. A holder for type and like matrices including the following elements in combination, to wit; a support or block provided with a matrix seat and adjacent gaging surfaces, the latter extending in intersecting planes and opposing clamping jaws disposed at an angle to said gaging surfaces.

8. A holder for type and like matrices including the following elements, in combination, to wit; a support or block provided with a matrix seat and adjacent gaging surfaces, the latter lying in intersecting planes; and opposing clamping jaws disposed and moving at an angle to said gaging surfaces and provided with beveled or overhanging clamping members.

9. A holder for type and like matrices provided with opposing clamping jaws and actuating devices common to both jaws and adapted to advance said jaws under relatively different degrees of pressure.

10. A holder for type and like matrices including the following elements, to wit; a matrix seat; two gaging surfaces located in intersecting planes in predetermined relation and adjacent to said seat; two opposed clamping jaws with their engaging faces in planes intersecting those of the gaging surfaces; and actuating devices for said jaws adapted to exert relatively different degrees of pressure upon said jaws.

11. In a holder for type and like matrices the combination of the following elements, to wit; a block or support provided with a matrix seat and gaging surfaces extending in transverse planes; a jaw movable at an angle to said gaging surfaces and provided with a beveled engaging surface extending in a plane intersecting said gaging surfaces, and a matrix engaging the seat and provided on adjacent edges with gaging surfaces and cut away at the diagonally opposite corner to receive said movable jaw.

12. In a holder for type and like matrices the combination of the following elements, to wit; a supporting block provided with a matrix seat and adjacent gaging surfaces the latter in intersecting planes; opposing clamping jaws movable at an angle to said gaging surfaces and provided with engaging surfaces lying in planes intersecting said gaging surfaces; and a matrix provided

with two gaging surfaces in intersecting planes and having diagonally opposite corners removed to receive the jaws.

13. In a holder for type and like matrices provided with a seat and adjacent gaging surfaces, and in combination therewith, a pair of opposed clamping jaws having their engaging faces in diagonal relation to said gaging surfaces, and an actuating mechanism including a rod coupled with one jaw, a lever carrying the other jaw, and a nut threaded on said rod and engaging said lever intermediate its fulcrum and jaw.

14. In a holder for type and like matrices provided with a matrix seat, gaging surfaces and diagonally disposed and oppositely movable jaws and in combination therewith actuating devices for said jaws including a rod coupled with one jaw, a lever carrying the other jaw, a retracting spring for said lever and a nut carried by the rod and engaging said lever at a point intermediate its jaw and fulcrum.

15. In a holder for type and like matrices such as described and in combination with the opposing clamping jaws an actuating mechanism adapted to exert relatively different degrees of pressure on said jaws the same comprising a lever carrying one jaw, a rod attached directly to the other jaw and a nut threaded on said rod and engaging said lever intermediate its jaw and fulcrum.

16. In a holder for type and like matrices provided with a seat gaging surfaces and diagonally disposed opposing clamping jaws and in combination therewith an actuating mechanism for said jaws including a lever carrying one jaw, a rod attached to the other jaw and provided with a nut engaging said lever intermediate its jaw and fulcrum, a spring engaging said lever to retract the latter and advance the rod and a limiting stop for said nut.

17. A holder for type and like matrices including a block or support provided with a seat and gaging surfaces and in combination therewith a diagonally disposed adjusting and clamping jaw attached to a guiding rod and provided with a bearing rib on its under

surface an overhanging beveled engaging surface and a guiding projection the latter engaging a seat in the block beneath said engaging surface.

18. A holder for type and like matrices including a block or support provided with a seat and gaging surfaces and in combination therewith two opposed clamping jaws in diagonal relation to said gaging surfaces and each provided with overhanging beveled engaging surfaces, one of said jaws being attached to a lever provided with an inclined surface engaging a bearing on the block beneath said jaw.

19. A matrix for type and like machines consisting of a block or plate bearing the figure and having two gaging surfaces in transverse planes and a beveled clamping surface diagonally opposite said gaging surfaces in a plane intersecting both of the latter.

20. A matrix for type and like machines consisting of a plate or block bearing the figure and provided with two gaging edges in transverse planes, and two opposite clamping edges in planes intersecting said gaging surfaces.

21. A matrix for type and like machines consisting of a plate or block bearing the figure and provided with two gaging edges in transverse planes and two inclined clamping edges in planes intersecting those of said gaging surfaces.

22. A matrix for type and like machines consisting of a hexagonal plate or block each edge whereof is in parallel with an opposite edge and bearing the impress of the character on its face.

23. A matrix for type and like machines comprising a plate or block of hexagonal form each edge whereof is in parallel with an opposite edge two of said opposite edges being beveled and the character impression located on the face of said plate or block.

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Witnesses:

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