

No. 785,374.

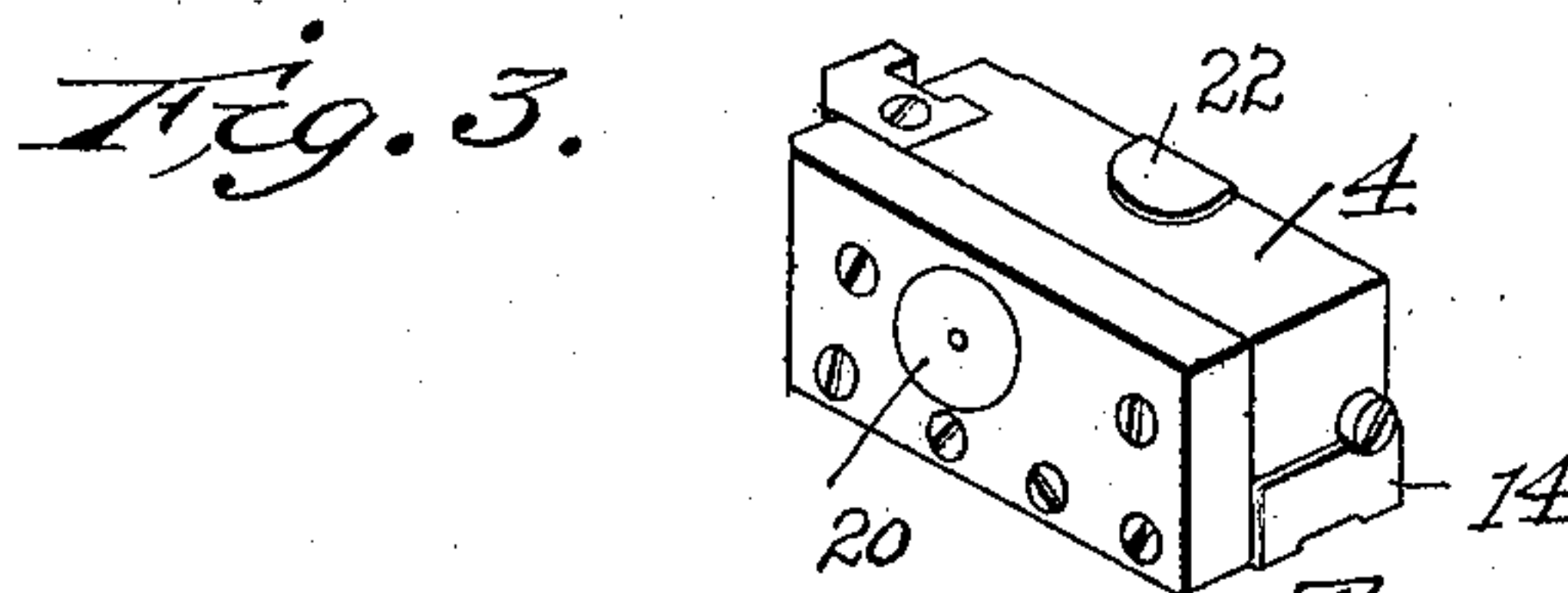
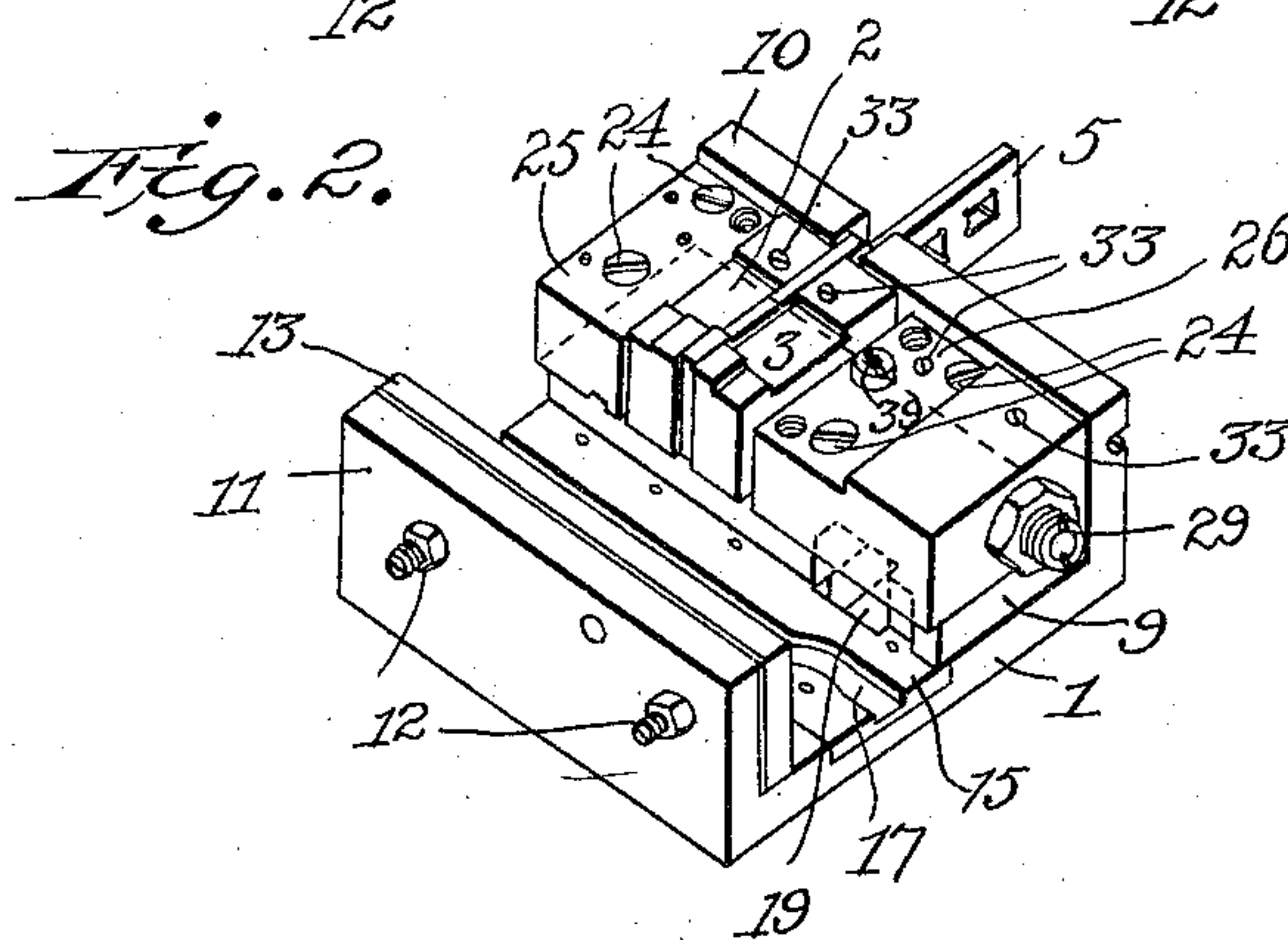
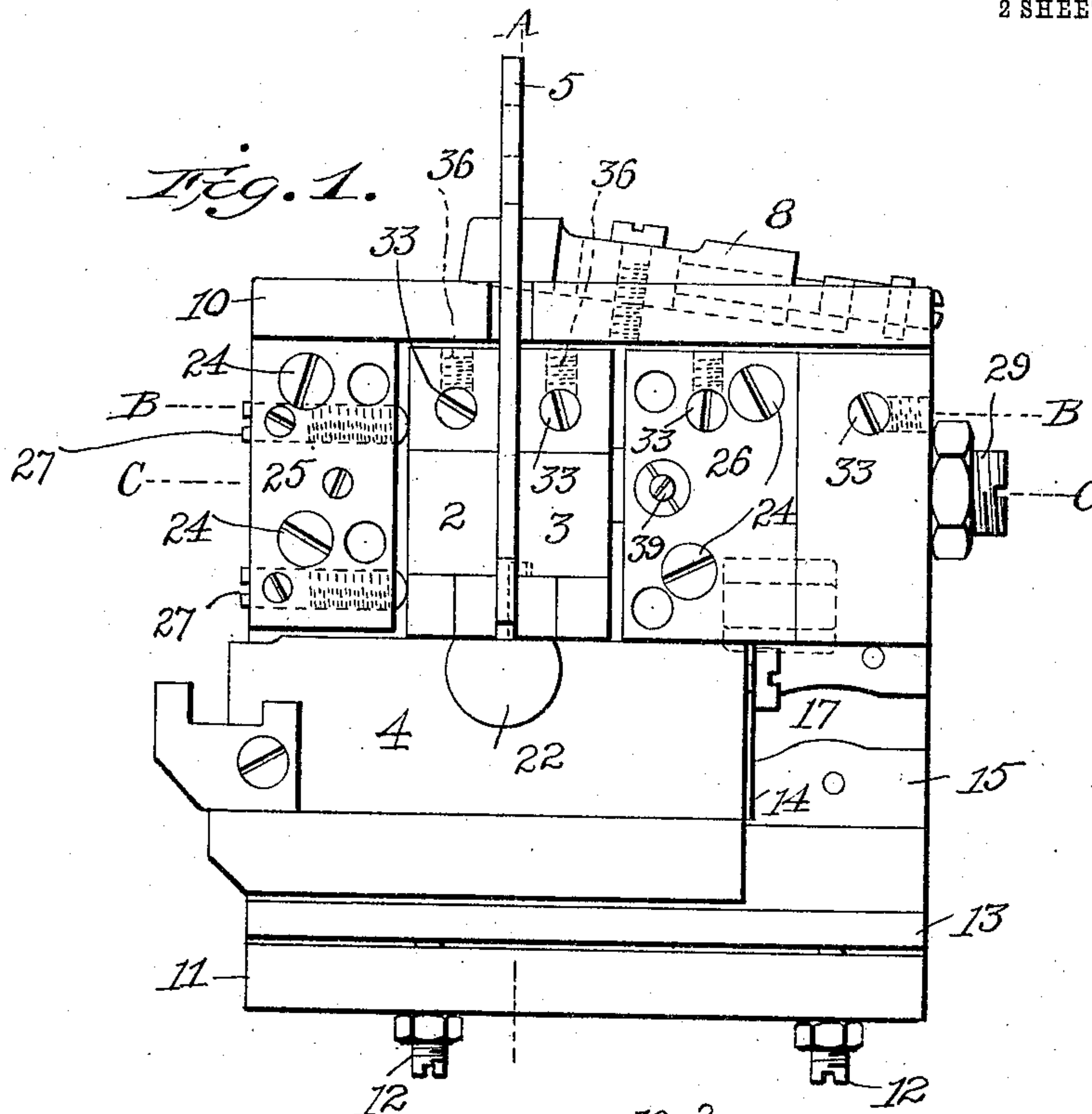
PATENTED MAR. 21, 1905.

F. H. PIERPONT.

TYPE MOLD.

APPLICATION FILED MAY 5, 1904.

2 SHEETS—SHEET 1.



Witnesses

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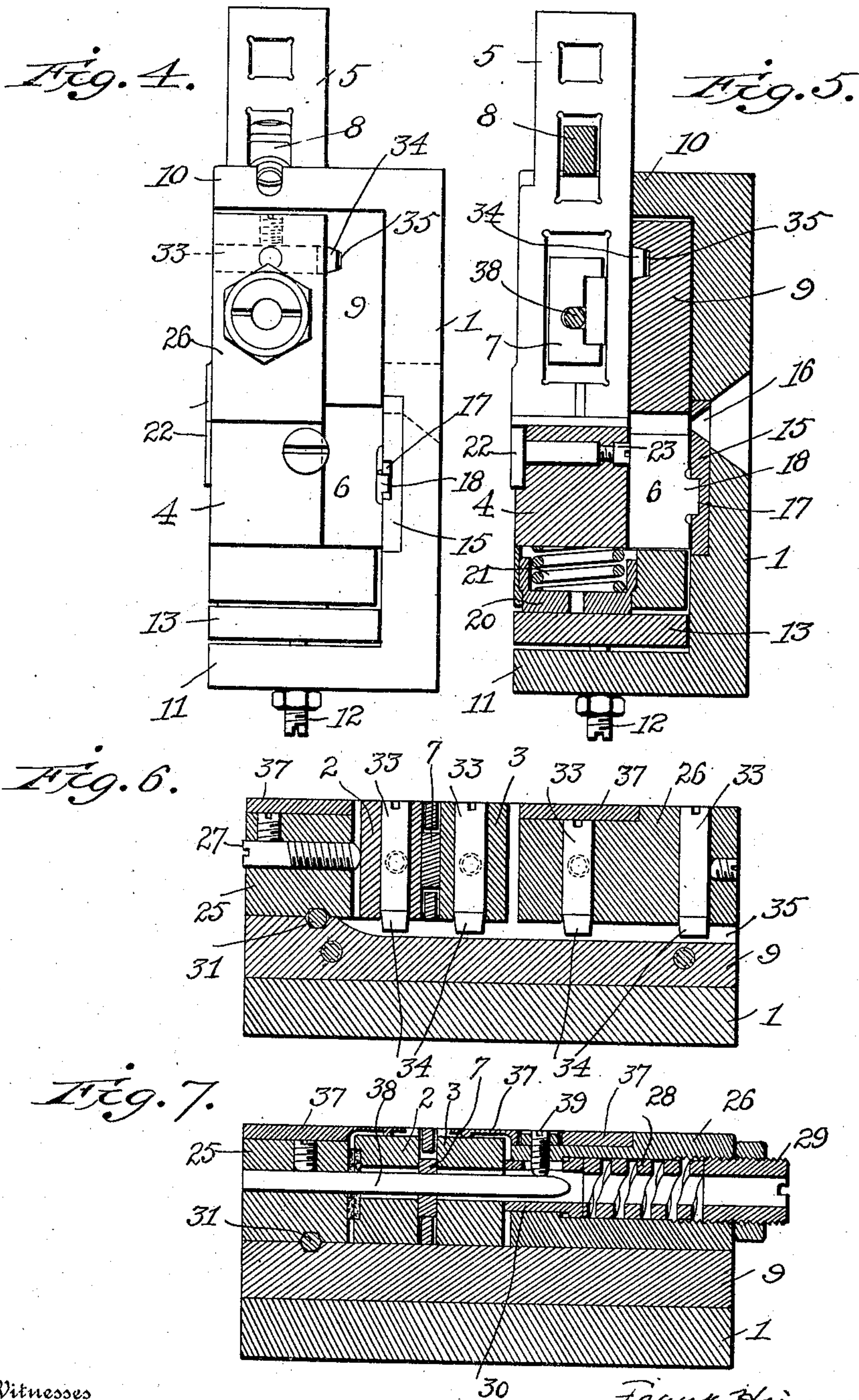
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# UNITED STATES PATENT OFFICE.

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## TYPE-MOLD.

SPECIFICATION forming part of Letters Patent No. 785,374, dated March 21, 1905.

Application filed May 5, 1904. Serial No. 206,530.

*To all whom it may concern:*

Be it known that I, FRANK HINMAN PIERPONT, a citizen of the United States, residing at Horley, in the county of Surrey, England, have invented certain new and useful Improvements in Type-Molds; 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 of reference marked thereon.

This invention relates to improvements in molds for type-casting machines, and has for its principal objects to preserve the parallelism of the walls of the mold-cavity under the varying conditions of adjustment and use, to prevent the distortion heretofore experienced as incident to wide variations of temperature or irregularities in the supporting-surface, and to render adjustment for different body sizes easy and certain.

To which end the invention consists in the construction, combinations, and arrangements of parts hereinafter fully described, the novel features being pointed out in the appended claims.

In the accompanying drawings, illustrating a preferred form of embodiment of said invention, Figure 1 is a top plan view of the mold. Fig. 2 is a view in perspective of the mold with cross-block removed. Fig. 3 is a similar view of the cross-block. Fig. 4 is an end view. Fig. 5 is a section on the line A A, Fig. 1. Fig. 6 is a section on the line B B, Fig. 1. Fig. 7 is a section on the line C C, Fig. 1.

The same numerals designate like parts in the several figures.

The improvements are illustrated in connection with and as applied to the mold of the monotype-casting machine, wherein 1 is the base or supporting frame; 2 and 3, the side blocks; 4, the cross-block; 5, the mold-blade; 6, the movable gate carried by the cross-block; 7, the gage-block interposed between the side blocks in a recess in the mold-blade, said block serving to gage one dimension of the mold-cavity, bring the opposing

faces of the side blocks into parallel relation, and form the top guide for holding the mold-blade down to position; 8, the adjustable mold-blade stop, and 9 the side-block support or water-base.

The side blocks are separately adjustable, both transversely and longitudinally of the mold-blade, to vary the set and center or position the mold-cavity relatively to the centering-point of the matrices. The mold-blade is shifted longitudinally by automatic means for varying one dimension of the mold-cavity to suit different characters of the same font or set, and the cross-block is reciprocated to alternately cover and uncover one side of the mold-cavity, so that after the cast is made the type may be ejected by a forward movement of the mold-blade.

By substituting mold-blades and gage-blocks of different dimensions the mold may be adapted for different sets of type.

As compared with prior molds of the same class the present differs from and is an improvement in the particulars hereinafter set forth, having for their objects to so arrange and apply the sustaining and adjusting devices for the side blocks and cross-block as to minimize the effect of temperature as a distorting and disturbing element. With these ends in view the base 1 is formed with a flat body portion and integral flanges or abutments 10 11, extending in parallel relation along opposite edges of the body. The rear abutment 10 is slotted for the passage of the mold-blade 5, and in the front abutment 11 are threaded two set-screws 12, whose ends engage seats in the front abutment plate or gib 13, forming the front guide for the cross-block in its movements across the ends of the side blocks, the latter in conjunction with the front edge of the water-base 9 serving as the rear guide for said cross-block.

The base of the cross-block is formed by two gate-blocks 14, slightly wider than the cross-block and projecting beyond one side thereof beneath the side blocks into engagement with the side-block support 9. The proximate ends of the gate-blocks are sepa-



rated to form a jet-opening; through which the metal is conducted from the nozzle-seat to the mold-cavity between the side blocks, one side of said jet-opening being formed by the end of the gate 6, the latter adapted to reciprocate between the gate-blocks to discharge the jet therefrom when the cross-block is reciprocated to cut off the jet and advance the latter opposite the discharge-opening in the cross-block support.

In the upper face of the base 1 is formed a groove for the reception of a plate 15, the latter containing the nozzle-seat 16 and a cam-groove 17 to receive a projection 18 on the jet-slide for reciprocating the latter as the cross-block is moved to cut off the jet and discharge the latter through an opening 19 in the base. The plate 15 is confined in position by screws entering from below the base 1, so they cannot readily become loose while the mold is in place upon the casting-machine.

Heretofore the cross-block 4 has made direct contact with the front abutment plate or gib 13, in consequence of which readjustments were frequently required to permit movement and prevent opening the joints between the cross-block and side blocks. This was due to the effect of heat, the several members expanding and contracting in different degrees. To overcome this, an elastic bearing has been interposed between the cross-block and its front guiding-surface, one which will accommodate itself to variations produced by changes in temperature and at the same time preserve the closeness of joint at the mold-cavity necessary to prevent the escape of metal and the formation of fins on the type-bodies. In the preferred construction this elastic bearing member is applied in the form of a shoe 20, supported in a recess in the cross-block, with its face projecting slightly beyond the latter to engage the front abutment plate or gib 13, a spring 21 being interposed between said shoe and the end of the recess to hold the shoe projected and permit it to yield in either direction. The shoe 20 is preferably located opposite the casting-point on the cross-block.

To adapt the cross-block for type of different height when used in connection with substitute side blocks and mold-blades, a hardened-steel block 22 is inserted opposite the casting-point; said block being closely fitted and held to place by a screw 23 or equivalent means applied to the stem thereof. This block 22, in conjunction with slightly-raised portions of the mold-blade and side blocks, forms the seat for the matrix when the latter is applied and clamped in position to close the end of the mold-cavity. By repeated applications of the matrices this seat becomes worn, so that a tight joint cannot be formed, and as the lapping of the surface cannot be permitted to any extent without thereby varying the height of the type produced it becomes necessary to replace the members upon which

said seat is formed. Heretofore it has been customary to replace the side blocks, mold-blade, and upper section of the cross-block; but by providing the latter with the detachable block 22 the same cross-block can be utilized in connection with different side blocks and mold-blades, and thus the expense of a new cross-block avoided.

The "water-base" 9, so called because it contains the water-channels (not shown) for reducing the temperature of the mold, is fastened, as usual, to the base 1, and to it are secured, as by screws 24, two end abutment-blocks 25 and 26, carrying the adjusting devices for the side blocks 2 and 3.

The adjusting devices for positioning side block 2 in a direction transverse to the mold-blade include two rigid supports carried by abutment-slide 25 in the form of adjusting-screws 27, while those for a similar adjustment of side block 3 include a yielding or spring-pressure device engaging side block 3 at a point intermediate screws 27 and comprising in the present instance a spring 28, located within a recess in abutment-block 26 between an adjusting-screw 29 and a movable shoe 30, the latter projecting beyond the abutment into engagement with the side block.

Owing to the connection established between side block 2 and its abutment-block 25, it is important that the latter should be accurately and firmly anchored to this supporting-base 9 in a manner to prevent twisting or distortion under variations of temperature, and this is accomplished by forming registering grooves in the proximate faces of the abutment-block 25 and its support parallel with the mold-blade and inserting therein an aligning key or bolt 31, upon which the parts are held by clamping-screws 32. Preferably the opening between the block and support is of hexagonal or other angular form, and after the parts are clamped in position by screws 32 the flat faces of the opening are lapped to gage with a circular lap to receive a hardened and lapped key 31, which bears uniformly upon the six seats thus provided.

It is to be noted that the cross-block does not contact with the abutment-block 25. Consequently expansion and contraction of the latter in a direction parallel with key 31 will not affect the mold-cavity or the movement of the cross-block.

The adjustment of side blocks 2 and 3 in a direction longitudinally of the mold-blade is accomplished through the medium of pins 33, bearing eccentrics 34, the latter fitted to a groove 35, formed in the water-base 9 and extending longitudinally thereof parallel with the cross-block. Each block is equipped with one of these pins 33, fitted to a bearing therein and provided with a holding device, such as set-screw 36. By this arrangement the adjustment or setting of the side blocks relatively to the cross-block may be effected with-



out interfering with lateral movements incident to adjustment or expansion. Similar adjusting devices in the form of eccentric-ended pins 33 are applied to the abutment-block 26, the holes for the clamping-screws being slightly enlarged in the direction of adjustment to permit movement.

Abutment-block 26 is set fractionally removed from the cross-block, the latter taking its side bearing on the ends of side blocks 2 and 3, which are made comparatively narrow to minimize the effect of distortion under the influence of temperature, both of the cross-block 4 and of the water-base 9.

To each abutment-block is secured a spring cover-plate 37, overlapping and bearing upon the top of its side block 2 or 3 to hold the latter down in place upon the supporting-block 9.

The adjustment of gage-block 7 into working contact with the mold-blade 4 is effected through the medium of a spring-pin 38, secured at one end to abutment-block 25 and passing through apertures in the side blocks 2 3, gage-block 7, and shoe 30 in abutment-block 26. This pin takes a bearing on the gage-block and its free end stands opposite a set-screw 39 in abutment-block 26, by means of which the pin is flexed and the gage-block seated upon the mold-blade. The end of the pin 38 is tapered, so that in reassembling the parts after adjustment it will pass the screw. Washers 40, of felt or similar material, are interposed between the side block 2 and its abutment-block 25.

By mounting the side blocks 2 and 3 and mold-blade 5, together with their positioning-devices, upon an integral block 9, without otherwise connecting them with the base 1, through which the major portion of the heat is transmitted, not only are said parts maintained at a more equable temperature, but the disturbances incident to differential rates of expansion are reduced to the minimum, and such as do occur tending to cramp or relieve the side bearings for the cross-block are rendered neutral by the action of the the elastic bearing interposed between the cross-block and its front abutment-plate.

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

1. A mold for type-machines such as described comprising a supporting frame or base provided with a nozzle-seat, a movable cross-block forming one wall of the mold-cavity, and two side blocks with an intermediate mold-blade forming the remaining side walls of said mold-cavity, said side blocks and mold-blade being attached to a side-block support fastened to the base and without other connection with the latter.

2. The combination, to form a type-mold such as described, of the following elements, to wit: a supporting frame or base provided

with a nozzle-seat; a cross-block movable in guides on said base; a side-block support detachably secured to said base; and side blocks and mold-blade mounted upon said side-block support independently of the base.

3. In a mold such as described provided with a base, a cross-block, a side-block support, side blocks and a mold-blade seated upon said support, and adjusting and retaining devices for said side blocks mounted upon said side-block support independently of the base.

4. The combination, to form a mold such as described, of the following elements, to wit: a base provided with a nozzle-seat and an abutment; a side-block support provided with abutments; a cross-block guided between the side-block support and the base-abutment; an elastic bearing interposed between the base-abutment and cross-block; a movable mold-blade guided upon the side-block support; two side blocks seated upon said support; a plurality of bearings carried by one side-block abutment; and an elastic bearing carried by the other side-block abutment.

5. In a type-mold such as described, the combination with the side blocks, gage, and mold-blade, of the side-block support carrying two abutments between which the side blocks are received, one of said abutments provided with a plurality of bearings and the other with a spring-actuated shoe.

6. In a type-mold such as described, the combination with the base, side blocks and interposed mold-blade and gage-block, of a side-block support independent of the base and provided with abutments embracing said side blocks, one abutment carrying a plurality of adjustable bearings and the other a spring-pressed shoe between which members the side blocks and mold-blade are located and take their bearings upon said support.

7. In a mold such as described the combination with the base, the side-block support and the side blocks and mold-blade mounted upon said support, of the gage-block interposed between the side blocks, two abutments detachably secured to said support, a plurality of rigid bearings carried by one of said abutments and a spring-actuated shoe carried by the other abutment, a spring-pin secured to one of said abutments passing through openings in the side blocks and gage and into the opposite abutment in position to be engaged by adjusting devices carried thereby.

8. In a type-mold such as described the combination with the reciprocating cross-block provided with a movable gate, of the grooved cam-plate seated in the base and provided with a nozzle-seat.

9. In a type-mold such as described the combination with the side blocks, mold-blade and gage-block, of the side-block abutments, the spring-pin secured to one of said abutments and extending through the side blocks and gage into the opposite abutment, and the set-



screw engaging the free end of said pin, for adjusting the gage-block upon the mold-blade.

10. In a mold such as described the combination with the side blocks adjustably mounted upon the side-block support, of the spring cover-plates engaging said blocks to retain them in position.

11. In a mold such as described the combination with the side blocks and the abutments carrying their adjusting devices all mounted upon an integral support or block, of the spring cover-plates, one for each side block, mounted upon the abutments and overlying their respective side blocks.

12. In a mold such as described the combination with the mold-blade, gage, side blocks, and side-block abutments, of the set-screws carried by one abutment for positioning one side block, and the spring-actuated shoe carried by the other abutment and operating upon its side block, to position the latter.

13. In a type-mold such as described the combination with the side blocks and their support of the eccentrics carried by said side blocks and engaging bearings in the support.

14. In a type-mold such as described the combination with laterally-adjustable side blocks seated upon an integral support, of means for effecting longitudinal adjustments of said blocks the same comprising a revoluble eccentric-pin carried by the block and engaging the support.

15. In a type-mold such as described, the

combination of the following elements, to wit: a base; side blocks with interposed mold-blade carried by an integral support detachably secured to the base; adjusting devices carried by said support for positioning the side blocks; a reciprocating cross-block supported upon the base and engaging the side blocks; and an elastic bearing intermediate the base and cross-block for holding the latter to position against the side blocks.

16. In a type-mold such as described the combination with the reciprocating cross-block, the side blocks and the mold-blade forming the side walls of the mold-cavity, of the side-block support provided with a groove parallel with the line of movement of the cross-block, and the eccentrics carried by the side blocks and engaging said groove.

17. In a type-mold such as described, the combination with the cross-block, side blocks and mold-blade, of the side-block support provided with means for positioning the side blocks in a direction parallel with the movement of the cross-block, said support being also provided with a groove parallel with the cross-block in which are engaged eccentrics carried by the side blocks for positioning the latter in a direction substantially parallel with the mold-blade.

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