

(No Model.)

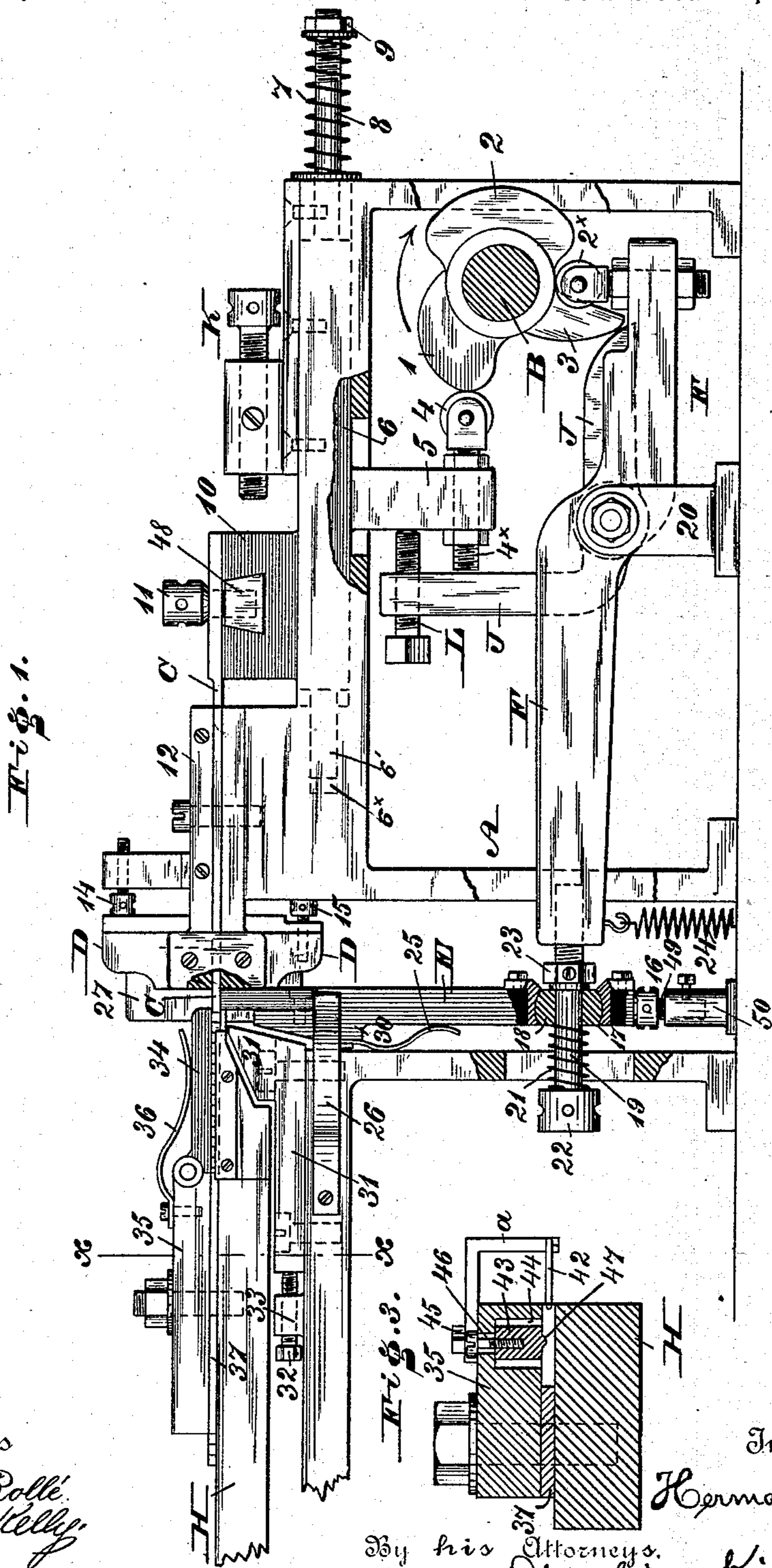
2 Sheets—Sheet 1.

H. POPP.

TYPE CASTING MACHINE.

No. 413,550.

Patented Oct. 22, 1889.



Witnesses

Theo. Rolle
James F. Kelly

By his Attorneys.

Diedersheim & Spitzer

Inventor

Hermann Popp

(No Model.)

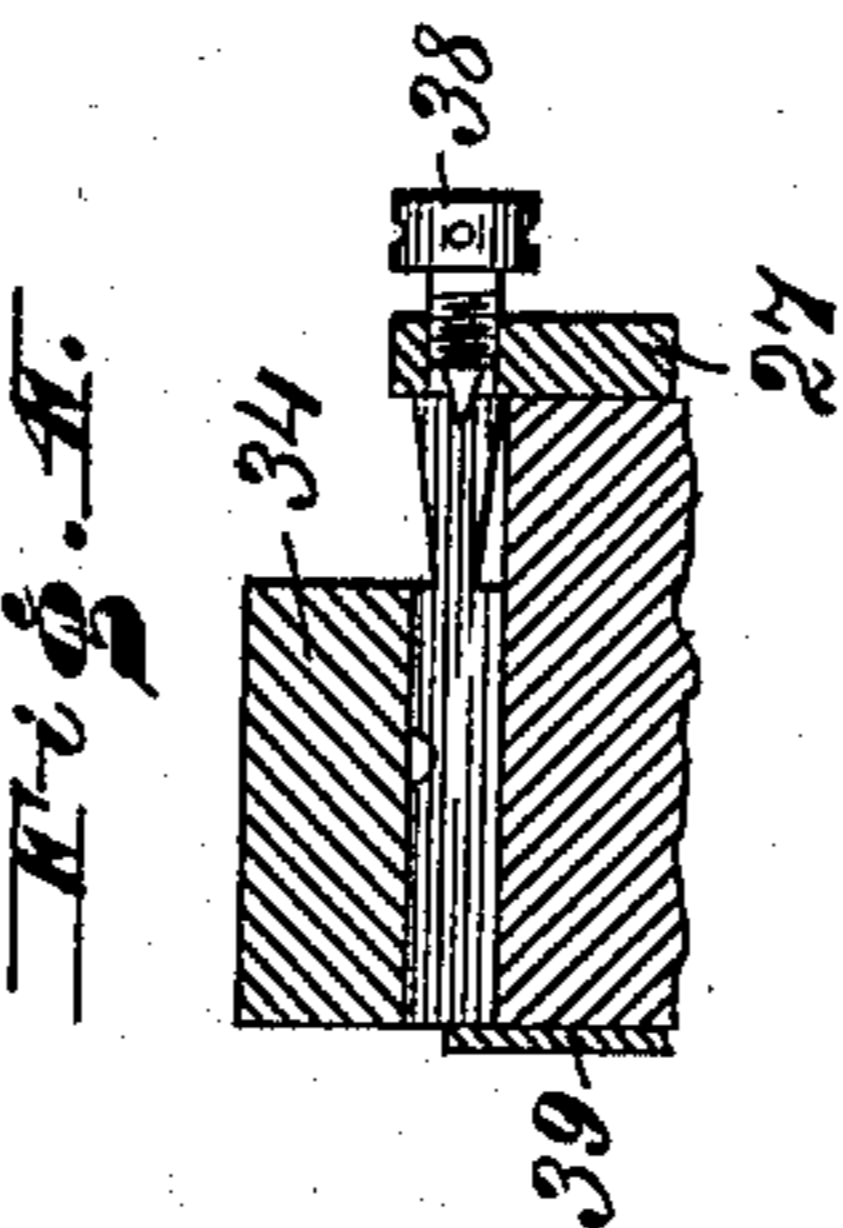
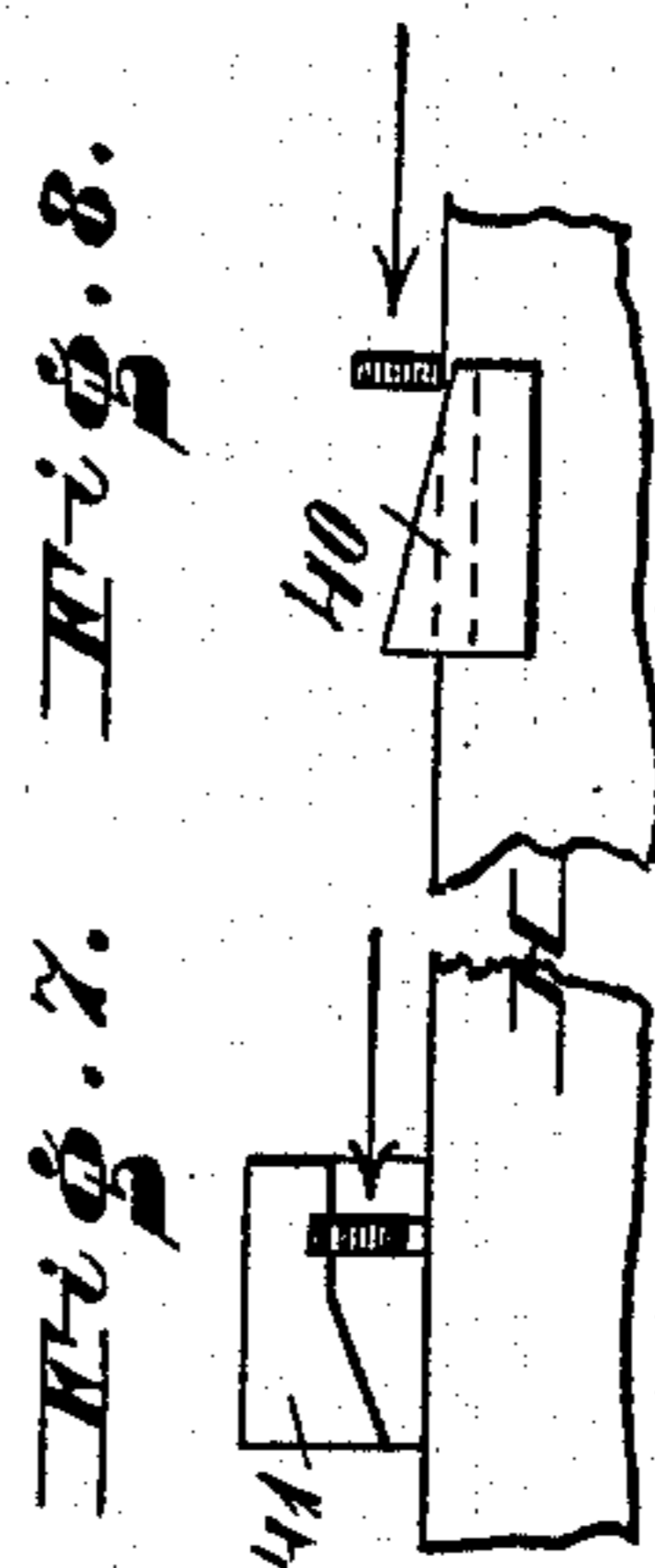
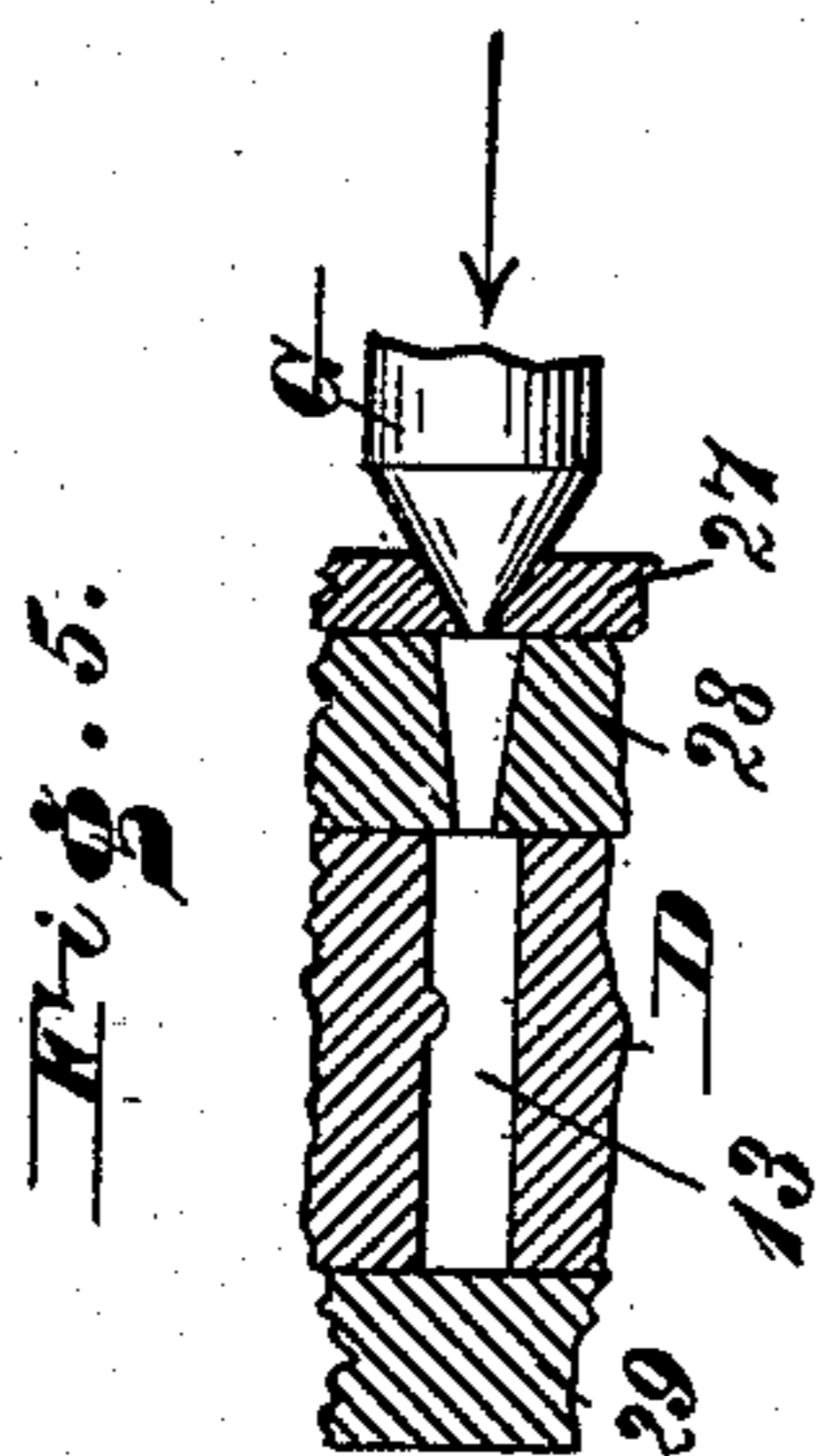
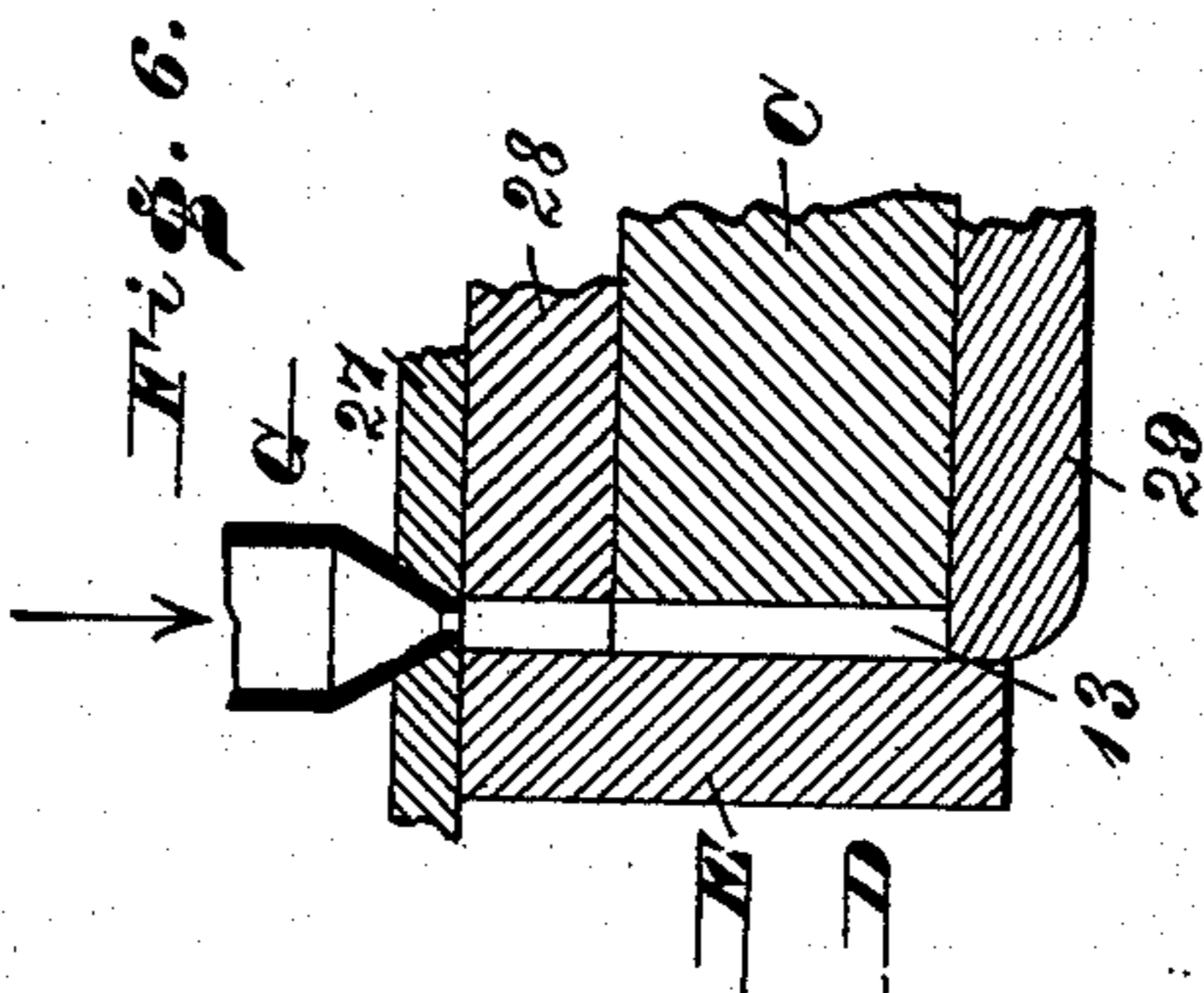
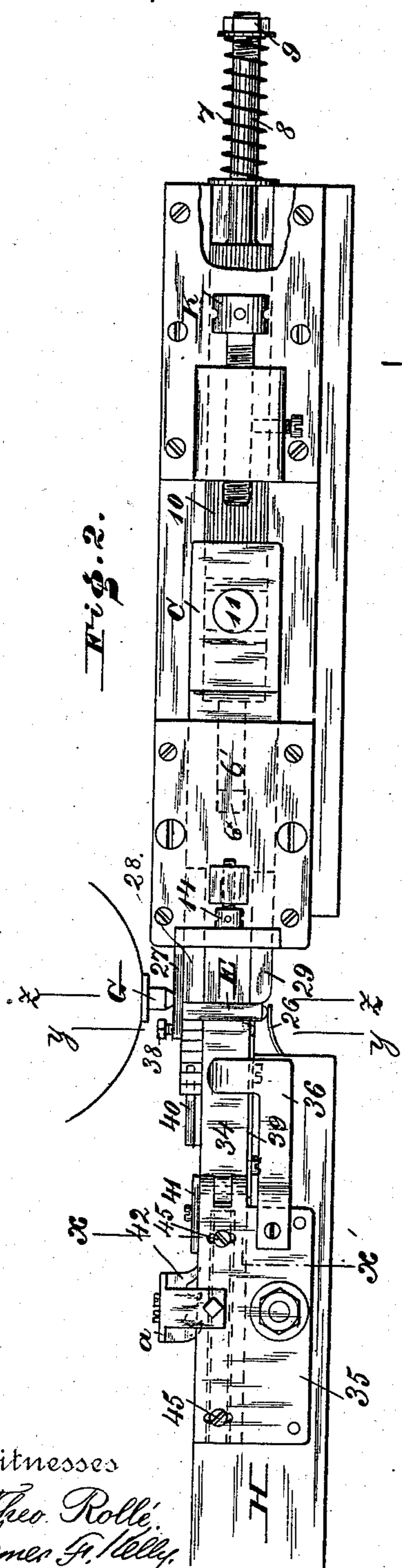
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UNITED STATES PATENT OFFICE.

HERMANN POPP, OF PHILADELPHIA, PENNSYLVANIA.

TYPE-CASTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 413,550, dated October 22, 1889.

Application filed December 29, 1888. Serial No. 295,111. (No model.)

To all whom it may concern:

Be it known that I, HERMANN POPP, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Type-Casting Machines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of improvements in type-casting machines, more particularly designed for quads and spaces, the distinctive feature of the same being hereinafter set forth and definitely claimed.

Figure 1 represents a partial side elevation and partial vertical section of a type-casting machine embodying my invention. Fig. 2 represents a top or plan view thereof. Fig. 3 represents a vertical section on lines *x x*, Figs. 1 and 2, on an enlarged scale. Figs. 4 and 5 represent vertical sections respectively on lines *y y* and *z z*, Fig. 2, on enlarged scales. Fig. 6 represents a horizontal section of the casting-chamber and intermediate parts on an enlarged scale. Figs. 7 and 8 represent side views of the means for cutting the jet from the type.

Similar letters and numerals of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates the frame of the machine, and B designates a shaft mounted thereon, and receiving power from any suitable source. To said shaft B are secured cams 1 2 3, the cam 1 being adapted to engage with a roller 4, which is connected with an arm 5, depending from a slide 6, the latter being sustained on the upper part of the frame A and arranged in horizontal position, it being seen that said slide is advanced or moved in one direction by the operation of the cam 1. The slide 6 is provided with a pin projection or arm 6', which enters a socket 6^x in the frame, said arm 6' serving as a guide for the slide. The return or opposite motion of the slide is occasioned by a spring 7, which encircles a rod 8 on the outer end of the slide and bears against the frame A and a nut or shoulder 9 on the rod, so that as the slide advances said spring is compressed, and when the cam 1 clears the roller 4 the spring becomes operative and exerts its pressure on the rod, as is evident. The slide car-

ries a head 10, to which is secured by the bolt 11 the plunger C, which passes horizontally through the bed 12 as a guide and into an opening between the upper and lower walls of the mold D. The bed 12 is secured to the top of the frame A, and the mold is composed of an upper and a lower section or wall, each of which is formed with or secured to said bed. The opening between the upper and lower walls of the mold forms a casting-chamber 13, having at one end the end of the slide when the same is in normal position, the walls of the sides and the other end of the chamber being formed as hereinafter described.

In order to steady the mold, I provide bolts or screws 14 15, one of which bears against the top of the same and a proper part of the bed 12, and the other is fitted to the bottom of the mold and bears against a proper part of the frame. From this construction it will be seen that the mold is formed of a block or piece of material with a channel therethrough, and that the same is secured to the frame by suitable means; and it will also be understood that one of the screws passes through the frame and engages one end of the mold, and the other passes through the mold and engages the frame, the screws serving to steady each end of the mold or distribute the strain on the mold evenly. On the side of the mold opposite to the plunger C is a slide E, which is guided in vertical direction in a proper part of the frame A, and which in normal position has its upper end coincident with the lower wall of the casting, the side of the slide E toward the mold forming, when the said slide is raised, the side of the said chamber 13 opposite to the plunger. The slide E has its lower end adapted to rest on a stop 16, and above said end is an opening 17, which receives a ball 18, through which freely passes a rod 19, projecting from the adjacent end of the lever F, which latter is mounted on a bracket or bearing-piece 20, it being seen that said lever and slide are connected by a ball-and-socket joint, as at 17 18. The end of the lever opposite to the slide E is adapted to be engaged by the cam 2, whereby when said latter is operated the slide is raised so that its upper end is caused to close the adjacent side of the casting-chamber. As the slide

rises, the ball 18 turns in its socket, and thus as the slide moves in right-lined direction binding of the same with the lever is prevented. On the end of the rod 19, opposite
 5 to the lever F, is a spring 21, which bears against the ball 18 and the head 22 of the said rod 19. The lever has the rod 19 connected with it, and said rod carries a nut 23, whereby the position of the ball with relation
 10 to slide E and rod 19 may be adjusted with precision. The return motion of the lever F is accomplished by means of a spring 24, which is connected with said lever and the base of the machine or floor of the apartment, where-
 15 by the slide E is lowered or returned to its normal position. Bearing against the back of the slide E is a spring 25, the tendency of which is to force said slide toward the mold D. Bearing against the side of said slide is
 20 a spring 26, which forces said slide toward the side plate 27.

G designates a nipple for feeding the molten metal to the casting-chamber, the same having its discharge end in the plate 27 and in
 25 communication with the throat-plate 28, the throat of said plate being in communication with the one end of the casting-chamber 13. The other end of said chamber is closed by the wall 29 of the mold.

30 On the back of the slide E is a projection 30; or there may be fastened a block having an inclined face, which, when said slide rises, rides on the inclined face of a block 31, secured to the frame A, so that said slide is
 35 forcibly pressed against the mold for tightly closing the casting-chamber. The block 31 may be adjusted by means of a screw 32, which is fitted in an ear 33 on the frame A and bears against said block.

40 H designates the table for receiving the type as cast after leaving the mold, the same being coincident with the bottom wall of the casting-chamber and top of the slide E when the latter is in normal position, it being seen
 45 that the plunger C is of such length that it may pass through the mold, move over the top of the slide, and fully reach the table in order to eject the quad, &c., as cast from the mold and direct it upon the table. Above the
 50 table is a plate 34, which is hinged to a plate 35, said plate being raised above the table, so that the type may pass under the same, the plate 34 being gently forced down by a spring 36, whereby the type are prevented from ris-
 55 ing or being moved with irregularity on the table. Between the plate 35 and the table H is a plate 37, which serves to keep said plate 35 separated from said table, forming a pas-
 60 sage for the quads, &c., said passage being adjustable by employing plates of different thicknesses. In the side plate 27 is a horizontal screw 38, which is parallel with the nipple G, and has its point in the path of the head of the jet of the type, as most clearly
 65 shown in Fig. 4, so as to penetrate said head while the same is still soft. By this provision the type is pressed against the opposite flange

or plate 39 and guided true as it advances on the table. Secured to the side of the table adjacent to the screw 38 are breaking-blocks
 70 40 and 41, the same having inclined faces in reversed directions, the incline of block 40 being on its upper face and that of block 41 being on its under side, (see Figs. 7 and 8,) so
 75 as to successively bend the jet in opposite directions as the type is pushed forward and comes in contact therewith, and thus break off the same from the body of the type. The
 jet first rides on the incline on block 40, whereby it (the jet) is bent upward, or from
 80 the table, and when it reaches the incline on the under side of the block 41 it is forced downward, or toward the table, so that, owing to the brittleness of the material, it is readily
 85 broken off. On the side of the table near the block 38 is a planer 42, for forming the groove or foot in the type as the latter advances on the table. Within the plate 35 is
 90 a block 43, which occupies a recess 44, considerably wider than said block, and is held by screws 45, which also occupy slots 46 in the top of said plate, whereby the block is
 laterally adjustable. The under face of said block is formed with a rib 47, which is
 95 raised above the table H, so that as the type passes along, the groove in the side of the same receives said rib, whereby the type is guided true. The block may be set so that
 the rib may enter a groove at a different point of the side of the type.

J designates a lever which is mounted on the bracket 20, and has one end adapted to be engaged by the cam 3 and the other end
 to come in contact with the arm 5, whereby, should the slide 6 or the plunger C stick or
 105 bind, said arm is pressed by the lever J, so that the slide is started, the spring 7 then causing the slide to complete its motion. The tension of the spring 7 is adjusted by the nut
 9 on the rod 8. When the slide completes its
 110 return motion, it strikes the screw K, so that said motion is completely stopped at the proper moment, it being seen that said screw provides an adjustment for the return motion
 of the slide. The arm 5 plays in a slot in
 115 the frame A and carries the roller 4, as has been stated, said roller being connected with the arm by means of a screw 4^x, whereby it may be adjusted in relation to the face of the
 cam 1. The upper end of the lever J is pro-
 120 vided with the screw L, which provides means for adjusting the distance between said end of the lever and the arm 5.

It will be seen that when the parts are in position, as shown in Fig. 1, the plunger C is
 125 advanced to full extent and the cam 1 is about to leave the roller 4, so that said plunger is caused to make its return motion, owing to the action of the spring 7. The slide E is in its lowest or normal position, and the cam 2
 130 is about to reach the roller 2^x on the lever F. As soon as the plunger completes its return motion the slide E is raised, whereby the opposite sides of the casting-chamber 13 are

closed by said plunger and slide. A sufficient quantity of molten metal is now injected into the mold through the nipple G, the same passing through the throat 28 into the casting-chamber 13, thus forming a quad or space. The cam 2 now leaves the roller 2^x, whereby the lever F, under action of the spring 24, causes the descent of the slide E, thus uncovering the side of the casting-chamber. The cam 1 then reaches the roller 4 and bears against the same, whereby the plunger is advanced and its forward or working end pushes the quad or space through the mold and ejects it therefrom upon the table H. The jet now comes in contact with the block 40, whereby it is bent upward, and then reaches the block 41, whereby it is bent downward, and thus broken off. The quad or space, guided by the block 43 and plate 37, now passes the planer 42, whereby the groove or foot is formed therein, after which the quad or space may be removed or directed elsewhere. In the head 10 is a dovetailed or wedge-shaped nut 48, which receives the screw 11, whereby provision is made for releasing the plunger C and afterward securing the same in position, said nut being laterally removable from said head. The screw K, in addition to acting as a stop for the slide, also admits of adjusting the return motion of said slide, it being evident that various parts of the machine may be removed and substituted by others of larger or smaller size. The extent of descent of the slide E may be adjusted by providing the stop 16 with a screw 49, which enters the socket 50, whereby said stop may be raised and lowered and the play of the slide adjusted, so that it may be nicely set at top in relation to the casting-chamber. The planer 42 enters the end of the passage between the plate 35 and table H, and is held in place by an arm a, which is secured to said plate, as will be seen in Fig. 3.

It is evident that by providing a proper matrix in a suitable part of the casting-chamber the machine is adapted for the production of type with letters, figures, &c.

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

1. In a type-casting machine, a frame with a slide working therein, said slide having a depending arm, a rotary shaft with cam, a head on said slide, a plunger secured to said head, a bed in which said plunger works, a mold with casting-chamber, and a vertical slide forming one side of said casting-chamber opposite the plunger, said parts being combined substantially as described.

2. A frame, a slide working in said frame and having an end rod and a depending arm, returning-spring on said rod, and a rotary shaft with a cam adapted to engage said arm, said parts being combined substantially as described.

3. A frame, a slide working in said frame and having a depending arm with a roller, a

rotary shaft with a cam adapted to engage said roller, a plunger adjustably secured to said slide, a bed in which said plunger works, a mold with a casting-chamber, a vertical slide adapted when raised to form one wall of the chamber and when lowered to have its top level with the bottom or floor of the casting-chamber, said parts being combined substantially as described.

4. In a type-casting machine, the combination of the vertical slide, the lever for operating the same, the universal joint between the lever and slide, the spring carried by a rod on the end of the lever and bearing against the universal joint, and the spring for restoring the said lever, substantially in the manner and for the purpose described.

5. In a type-casting machine, a slide with an adjustable plunger, a bed in which said plunger works, a mold with charging-chamber, a vertical slide forming the side of the chamber opposite the plunger, a receiving-table on the level of the charging-chamber, the said plunger working in the bed and through the charging-chamber, said parts being combined substantially as described.

6. In a type-casting machine, a slide with an adjustable plunger secured thereon and having a downwardly-projecting arm, a pivoted lever with an adjustable pin or stud adapted to engage said arm, and a rotary shaft with a cam adapted to engage said lever, said parts being combined substantially as described.

7. In a type-casting machine, the combination, with the plunger and means for operating the same, of the lever for engaging said plunger, and a cam for operating said lever, substantially in the manner and for the purpose described.

8. In a type-casting machine, a mold having a discharge-passage leading therefrom, in combination with a screw at one side of the mold having its point projecting therein, and a guide-plate at the opposite side of said mold, substantially as and for the purpose described.

9. In a type-casting machine, the herein-described means for breaking the jet, consisting of blocks having inclined faces arranged in opposite or reverse directions, substantially as described.

10. In a type-casting machine, a mold and a discharging-table, in combination with a slide having a flat top, which when the slide is in normal position is coincident with the bottom of the casting-chamber of said mold and top of said table, and when moved forms one side of said casting-chamber, substantially as described.

11. In a type-casting machine, the combination of the table H, a plunger, the separating-plate 37, the block 35 with recess 44, the block 43, secured in said recess and having the rib 47, substantially as and for the purpose set forth.

12. In a type-casting machine, the combi-

nation of the slide carrying a plunger, the cam for operating said slide, the spring for returning the slide, the stop for limiting and adjusting the movement of the slide, the lever for engaging the slide to prevent sticking of the same, and the cam for operating said lever, substantially as and for the purpose described.

13. In a type-casting machine, a slide with head having a wedge-shaped nut secured therein, and a plunger secured to said nut by a screw, said parts combined substantially as described.

14. In a type-casting machine, the slide having the head rising therefrom and the arm depending therefrom, the plunger connected to said head, and the cam and lever, with means, substantially as described, to operate the same against the depending arm of the slide, substantially in the manner and for the purpose described.

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Witnesses:

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