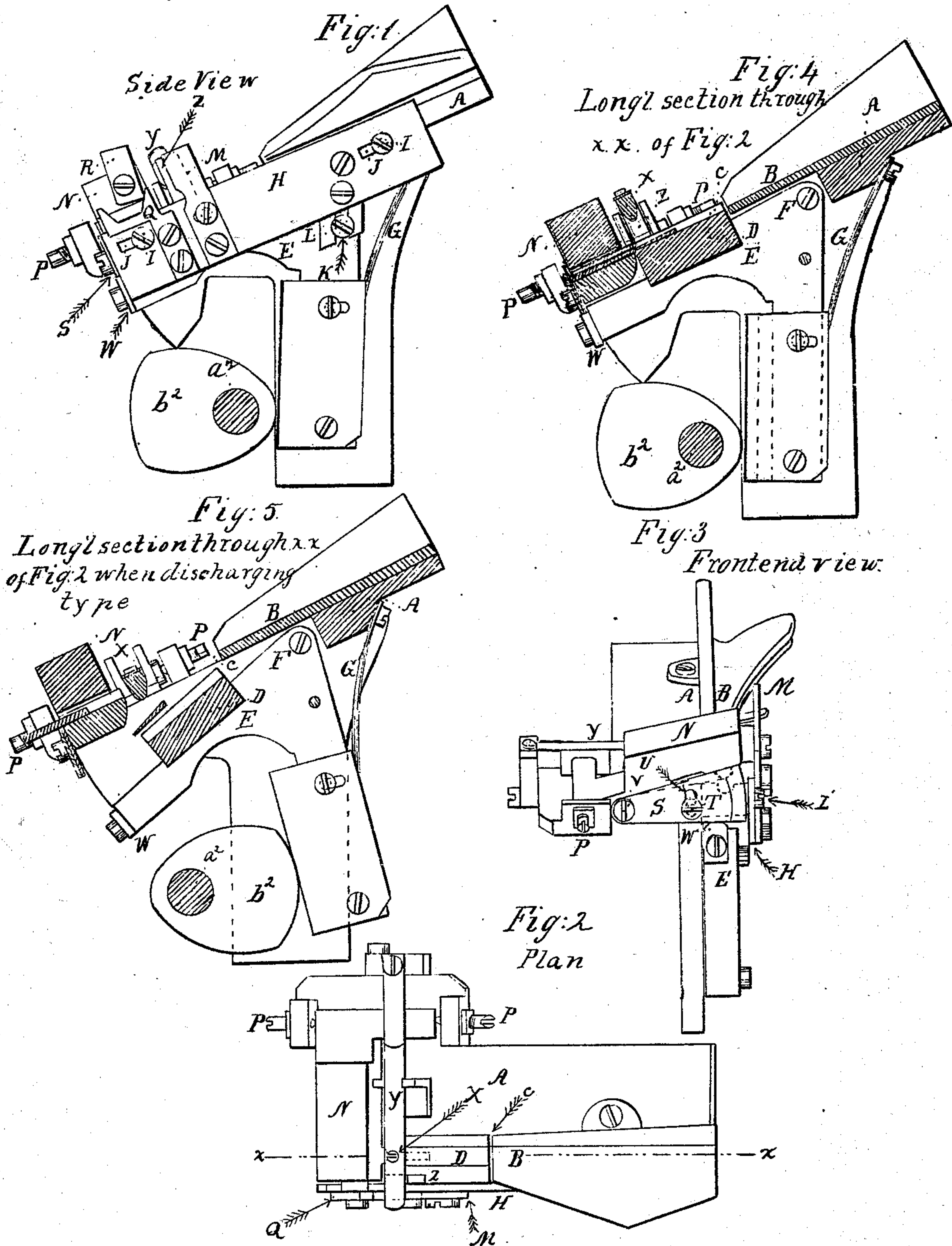


*D. Bruce.*  
*Type Mach.*

*N<sup>o</sup> 80,448.*

*Patented Jul. 28, 1868.*



*Witnesses*  
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# United States Patent Office.

DAVID BRUCE, OF BROOKLYN, NEW YORK.

*Letters Patent No. 80,448, dated July 28, 1868.*

## IMPROVEMENT IN TYPE-MACHINES.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, DAVID BRUCE, of Brooklyn, King's county, and State of New York, have invented certain new and useful improvements in mechanism for breaking off the jet or stem of metal adhering to the ends of printers' types when first cast; and I do hereby declare that the following is a full description of the same.

The nature of my invention consists—

First, in combining, with a right-angled lever attached to the stock or frame of the apparatus by a centre-pin, an adjustable block or plug, to fill the discharging-port in the inclined gutter, to make a continuous gutter for the descent of the type down it, previous to the breaking the jet thereof.

Second, in combining, with the right-angled lever aforesaid, an adjusting-plate, for supporting and tripping the hammer for breaking off the jet of metal attached to the end of the type.

Third, in combining, with the aforesaid adjusting-plate, a U-shaped cam or guide-ways for operating a type-holder weight during the operation of breaking off the jet of metal, and releasing the type from the gutter, after its jet has been broken off, that it may be discharged from the apparatus.

Fourth, in combining, with the aforesaid adjustable plate, and stock or frame of the apparatus, an adjustable compound spring, for closing the end of the gutter, to prevent the type from escaping therefrom till its jet is broken off, and at the same time prevent the type from rebounding in the gutter, by absorbing the force it acquired in its descent therein.

Fifth, in combining, with the stock or frame of the apparatus, a type-holder weight, for holding the type firmly in the gutter while the stem or jet attached to the end of the type is being broken off.

Sixth, in combining, with the stock or frame of the apparatus and the right-angled lever, a reacting spring-hammer, for breaking off the jet or stem of metal adhering to the end of the type.

But to describe my invention more particularly, I will refer to the accompanying drawings, forming a part of this specification, the same letters of reference, wherever they occur, referring to like parts.

Figure 1 is a side view of the apparatus.

Figure 2 is a plan view of the apparatus.

Figure 3 is a front end view of the apparatus.

Figure 4 is a longitudinal cut-section of the apparatus through the line *x x*, fig. 2.

Figure 5 is a longitudinal cut-section of the apparatus through the line *x x*, fig. 2, showing the same as it appears when discharging the type therefrom.

Letter A is the stock or frame of the apparatus, and by means of which it is attached to a type-casting machine.

In the upper surface of the stock is formed a gutter, B, having a downward inclination of about thirty degrees, more or less, as may be deemed necessary, to cause the type to descend freely down it.

About the length of an ordinary printers' type from the lower end of the gutter, is formed a square hole, C, through which, when the plug D, attached to a right-angled lever, E, working on a centre-pin, F, is drawn back therefrom, the stem of the type is discharged. It will be obvious, therefore, that when the plug is in the discharging-port C, it makes a continuous gutter for the descent of the type, but when withdrawn therefrom, a broken gutter, and thus accomplishes the object of an instantaneous discharge of the stem from the apparatus, when broken off from the end of the type, while the type is discharged from the end of the gutter.

For the purpose of keeping the plug D in the gutter, a reacting spring, G, is attached to the stock A, in such a position as to act against the pendent leg of the right-angled lever E, and thus keep the gutter continuous at all times, except when opened, by a suitable cam-motion, to discharge the stem of metal therefrom.

Letter H is a sliding adjusting-plate, secured to the face of the stock A by means of set-screws I, working in oblong slots J, through the said plate, and is vibrated by means of a pin, K, in the face of the pendent leg of the right-angled lever, working in an oblique-grooved plate, L, or guide-ways, attached to the lower edge of the movable plate. The object of this vibratory plate is, first, to hold up or support a spring-hammer till the



type is properly in place in the gutter, and then trip the hammer, by the withdrawal of the tapis M, secured to the upper edge of the said plate, from the end of the hammer-spring; and second, for operating a movable jaw, N, secured to the upper surface of the stock A, by centre-pins P, by means of a bifurcated or U-shaped cam, Q, attached to the upper edge of the said sliding plate, and acting on a tapis, R, on the end of the movable jaw. The object of this movable jaw is to hold the type steadily in the gutter while the stem is being broken off, and is graduated, in its downward and upward motions, by the bifurcated cam, for the purpose of guarding against any damage being done to the type, as would be likely to occur if the jaw were let down suddenly upon it.

Letter S is a compound spring, secured to the end of the socket A by a centre-pin, V, and having an oblong transverse slot, U, through them, so as to admit of a vibratory motion on a set-screw, T, to open and close the end of the gutter B by means of a tapis, W, secured to the end of the horizontal leg of the right-angled lever E. The object of this compound spring is to prevent the type from escaping from the gutter till the stem is broken therefrom, and second, to act as an absorbent of the momentum acquired by the type in its descent down the gutter, and thus prevent all rebound in it, and tendency to displacement under the action of the hammer X. This hammer is secured to the lower side of springs Y, attached to the upper surface of the stock A by a set-screw, and is elevated by means of a stud, Z, on the horizontal arm of the right-angled lever E, till the tapis M, on the sliding plate H, comes under the end of the spring, to hold the hammer up while the type is being adjusted in the gutter.

Letter  $a^2$  is a propelling-shaft, and  $b^2$  is a cam-wheel attached thereto for operating the apparatus.

These parts properly form part of the mechanism of a type-casting machine, to which the apparatus hereinbefore described will be attached, so as to receive the type as fast as cast, and break off the jet or stem of metal adhering thereto, by a continuous consecutive operation.

Having now described my invention, I will proceed to set forth what I claim, and desire to secure by Letters Patent of the United States.

1. I claim, in combination with the right-angled lever E, the plug D, substantially as described, and for the purposes hereinbefore set forth.

2. I also claim the sliding adjusting-plate H and tapis M, in combination with the right-angled lever E, substantially as described, and for the purposes hereinbefore set forth.

3. I also claim, in combination with the said sliding adjusting-plate, the bifurcated cam Q, substantially as hereinbefore described, and for the purposes set forth.

4. I also claim the combination of the movable jaw N with the inclined gutter B, substantially as hereinbefore described, and for the purposes set forth.

5. I also claim the combination of the compound spring S, with the inclined gutter B, for the purposes hereinbefore set forth, and made and operating substantially as described.

6. I also claim the combination of the spring or trip-hammer X, with the inclined gutter and right-angled lever, substantially as hereinbefore described.

DAVID BRUCE.

Witnesses.

B. IRVING,

C. L. BARRITT.