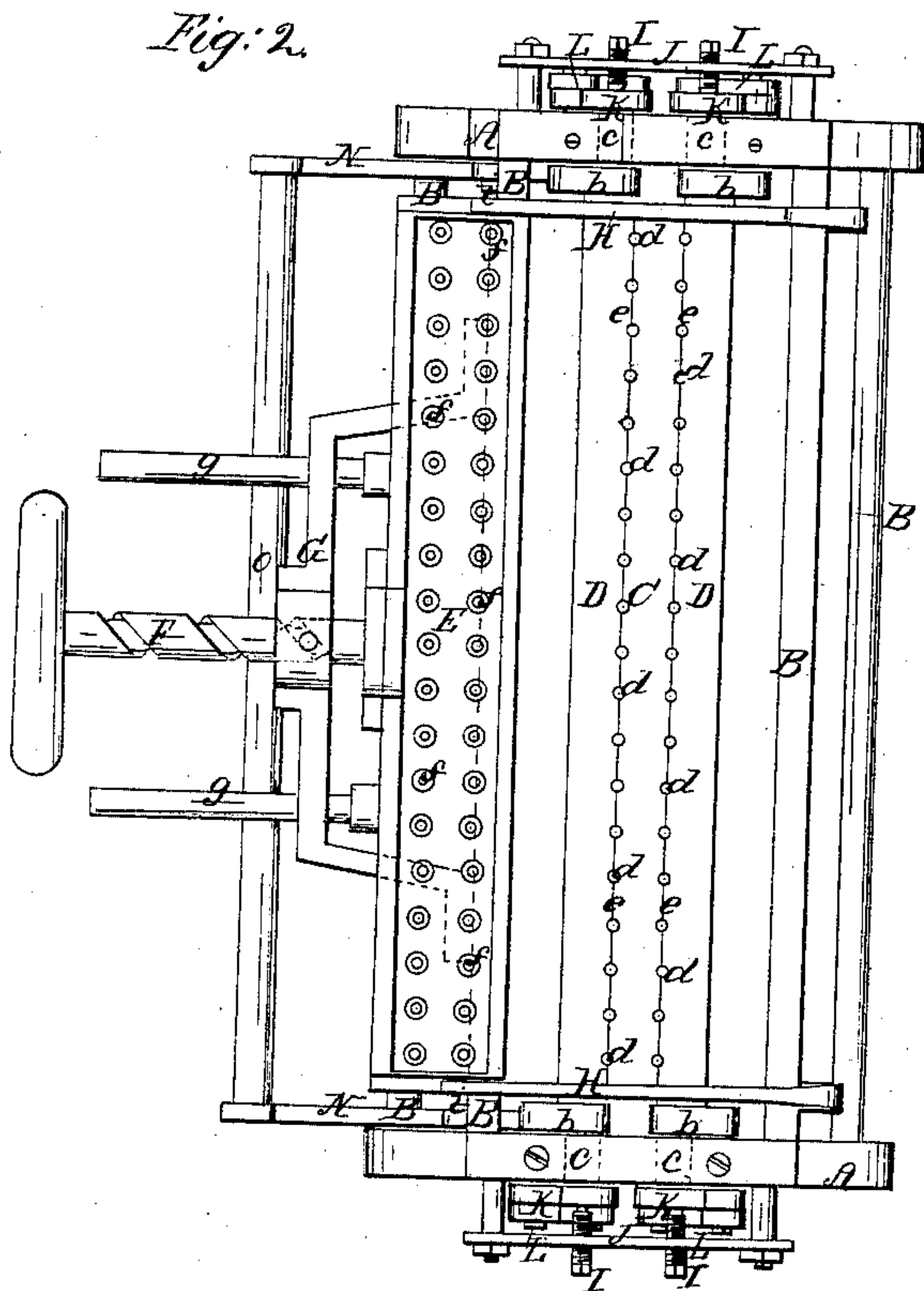
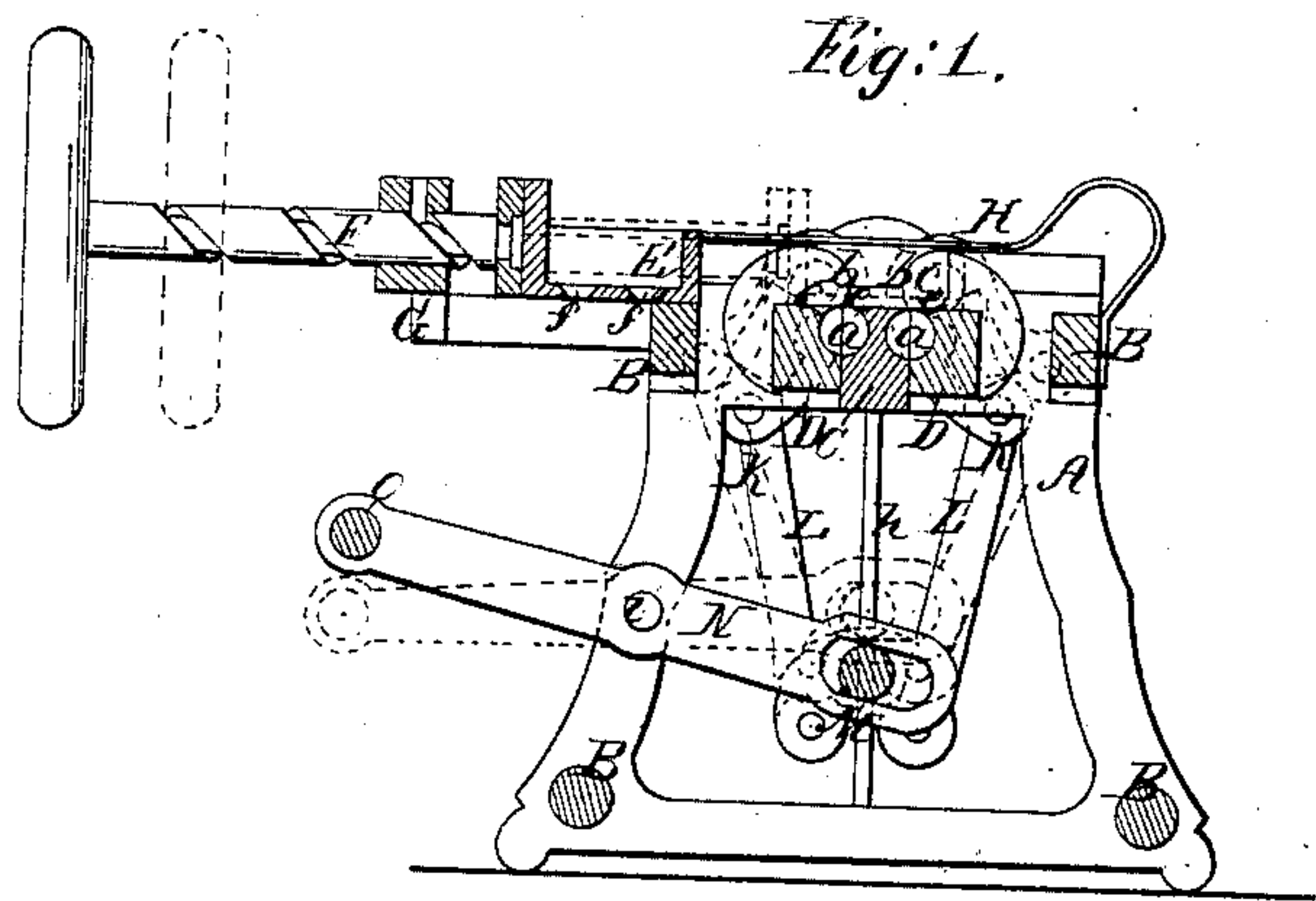


J. A. Knight,
Casting Bullets.

No. 21,505.

Patented Sep. 14, 1858.



UNITED STATES PATENT OFFICE.

JOHN ARIS KNIGHT, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN BULLET-MACHINES.

Specification forming part of Letters Patent No. 21,505, dated September 14, 1858.

To all whom it may concern:

Be it known that I, JOHN ARIS KNIGHT, of the city of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and Improved Machine for Casting Bullets; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a transverse vertical section of the machine. Fig. 2 is a plan of the same.

Similar letters of reference indicate like parts in both figures.

This improved machine is composed of one or more stationary and one or more swinging mold-bars, arranged in pairs and containing the halves of a number of molds, combined with a sliding pouring trough or plate, which constitutes at the same time a series of cutters, and with proper mechanism for operating the said swinging bar or bars and pouring trough or plate.

My invention consists in a certain arrangement of the centers of motion of the swinging mold-bars whereby, as they swing away from the stationary mold-bars to open the molds after the casting operation, the bullets are caused to be detached from both the stationary and movable halves of their respective molds.

It also consists in the arrangement of the swinging mold-bars to swing between center-screws so applied as to provide for their adjustment longitudinally in relation to their corresponding stationary bars.

To enable others to make and use my invention, I will proceed to describe its construction and operation.

A A are two upright standards, which, with the horizontal bars B B, connecting them, constitute the framing of the machine.

C is a stationary mold-bar extending horizontally from one to the other of the standards A A. The opposite vertical sides contain a series of cavities, which constitute the halves of two sets of molds, *a a*, each set consisting of any number according to the length of said bar.

D D are the swinging mold-bars, arranged one on each side of the stationary mold-bar C, and each containing a series of cavities corre-

sponding with those in one side of said stationary bar and constituting the corresponding halves of a set of molds. These bars are made with eccentric-plates *b b* at their ends, and to these eccentric-plates are attached journals C C, which are fitted to bearings in the standards A A. The journals C C are arranged above the swinging mold-bars and eccentrically to the edges *e e*, formed by the junction of the side and top faces of the said bars, or out of range with the planes of the side faces of said bars, in such a manner (illustrated in Fig. 1) that as the said bars move away from the stationary one to open the molds their side faces, in which the half-molds constitute depressions, do not move directly from the corresponding faces of the stationary mold-bar, as they would if the centers of the journals were in planes corresponding with the planes of the faces of the movable bars, as has heretofore been the case when swinging mold-bars have been used; but they move downward or across the corresponding faces of the stationary mold-bar, as shown in Fig. 1 by the red outlines, which represents the molds in the act of opening, by which means each half of a mold in opening tends to drag the bullet that has been cast in it toward the top or bottom of the other half, and thus the bullet is loosened from each half, and is sure to drop out.

IIII are four center-screws, one for each end of each swinging mold-bar, and working in female screws cut in two stationary plates, J J, which are secured one to each standard A A, said screws being arranged exactly opposite to and in line with the centers of the journals *c c* of the two swinging mold-bars D D, and serving to adjust the said bars longitudinally, to make the halves of the molds contained in said bars register with corresponding halves contained in the stationary bar. Each swinging mold-bar D has an arm, K, attached to each of its journals outside of the standards A A, and the two arms, K K, at each end of the machine, are connected by two rods, L L, with a horizontal bar, M, which extends the whole length of the machine, and which is fitted to two vertical guides, *h h*, at each end. This bar passes through a slot in each of two levers, N N, which work vertically on fulcrums *i i*, secured in the standards A A, and which

are connected by a bar, O. By depressing the bar O the molds are opened, and by raising it they are closed.

E is the pouring trough or plate, in or upon which the lead is poured to fill the molds, such plate having a flat bottom, and being arranged to slide horizontally over one of the upper bars, B B, and the top of the stationary and swinging mold-bars, and so that its flat bottom fits closely to the tops of said mold-bars when the molds are closed, and their several upper surfaces form a continuous plane surface, as shown in black outline in Fig. 1.

H H are springs for holding down said trough in place. The said trough or plate has a number of holes *ff* in its bottom, corresponding with the number of molds in the double set of mold-bars, and corresponding in position with the mouths *dd* of the molds; and said holes *ff* are made of funnel shape, and with sharp edges at the bottom, which are capable of cutting off the sprues from the bullets after casting. The said trough or plate has attached to it a horizontal screw, F, which works through a stationary nut in a bracket, G, secured to the framing, and which serves to move the trough to the position above the mold-bars, (represented in red outline in Fig. 1,) to receive the lead and conduct it into the molds, and to draw it off to the position shown in black outline in both figures, to permit the mold to be opened; and said trough has attached to it guide-rods *gg*, which work through holes in said bracket. The act of drawing off the mold plate or trough from the molds cuts

off the sprues formed in the holes *ff* by pouring the lead into the molds.

The manipulation in operating the machine is as follows: The bar O is pulled up to close the molds, and the pouring trough or plate E then moved over the molds in readiness for the pouring, which is done in the ordinary way. When the lead has "set" in the molds, the trough or plate E is drawn off to cut off the sprues from the bullets, and leave the swinging mold-bars D D free to be moved away from the stationary one, C, to discharge the bullets in the manner already described.

I do not claim the combination of the stationary and swinging mold-bars; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Arranging the movable mold-bars so that in opening the molds they move not only away from the stationary mold-bar, but to some extent in a direction transverse to the said stationary bars, as set forth, and illustrated in Fig. 1, to produce the dragging action herein described, for the purpose of loosening the bullets from both parts of the molds.

2. Arranging the said swinging mold-bars between center-screws I I, applied in such manner as to provide for their adjustment longitudinally, to obtain a perfect registration of the two halves of the several molds.

JOHN ARIS KNIGHT.

Witnesses:

J. M. BUCKLE,
MICH. HUGHES.