(No Model.)

H. TABOR.

METAL FOUNDING MACHINE.

No. 347,447. Patented Aug. 17, 1886.

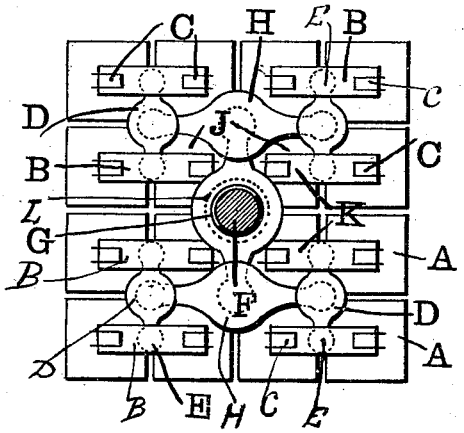

Fig. 2.

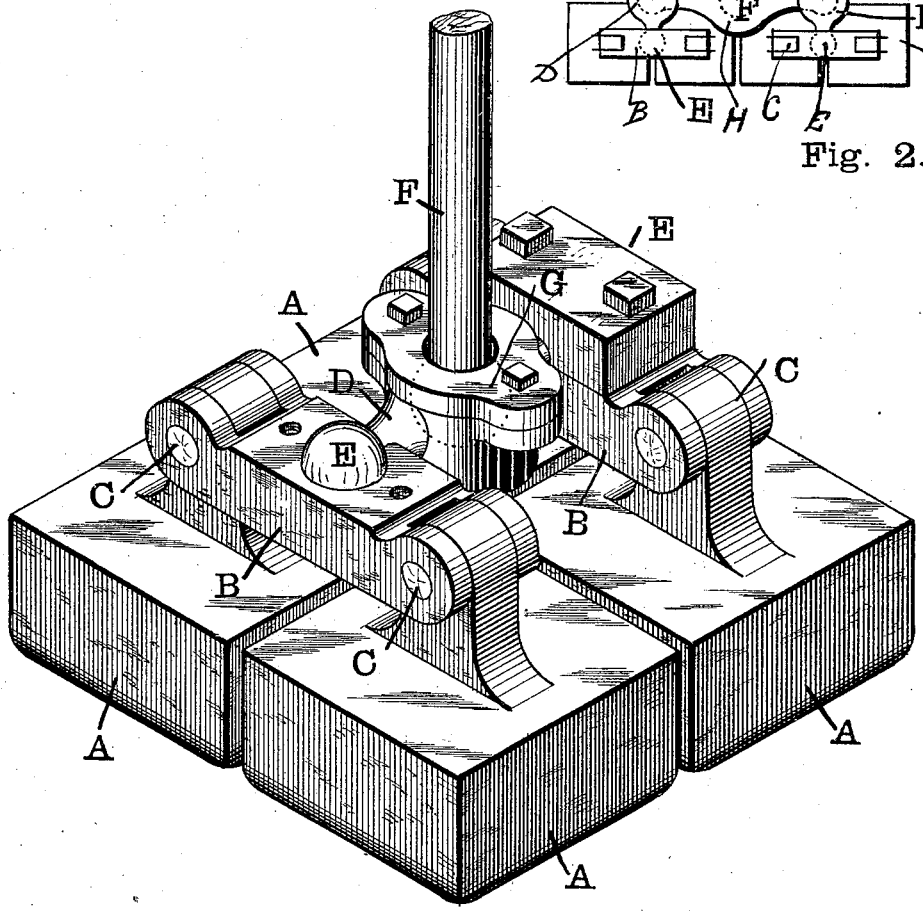

Fig. 1.

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HARRIS TABOR, OF NEW YORK, N. Y., ASSIGNOR TO THE TABOR MANUFACTURING COMPANY, OF SAME PLACE.

METAL-FOUNDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 347,447, dated August 17, 1886.

Application filed April 8, 1886. Serial No. 198,298. (No model.)

To all whom it may concern:

Be it known that I, HARRIS TABOR, of New York, New York county, New York, have invented certain new and useful Improvements in Metal-Founding Machines, of which the following is a specification.

In view of other improvements made by me in metal-founding machines, I designate this specification as pertaining to "Case B."

This invention pertains to improvements in that class of machines which are employed by the metal-founder in ramming and compacting the sand in his flasks.

The invention relates to improvements in the rammers or pressers of such machines, regardless of the mechanism by which such rammers are actuated.

My improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a rammer or presser illustrative of my improvements, the rammer being shown in this view as composed of four articulated independent ramming-blocks; and Fig. 2, a plan of a rammer shown as composed of sixteen articulated independent ramming-blocks, the marginal rammers of the group being arranged to exert a superior ramming-pressure upon the sand upon which they act.

In the drawings, referring for the present exclusively to Fig. 1, A indicates four ramming-blocks disposed in a group, with their lower faces arranged in substantially a single plane; B, levers articulated to and connecting the blocks in pairs, there being one of these levers for each pair of blocks employed; C, the joints of articulation by which the blocks attach to the ends of these levers, these joints being formed in the example of journal-pins engaging the ends of the levers and lugs rising from the tops of the ramming-blocks; D, a lever having its ends articulately attached to the levers B at, in the present example, points midway between the ends of the levers; E, the joints of articulation by which the ends of the lever D attach to the levers B, those joints being formed in the example by means of spheres upon the ends of the lever D, engaging spherical sockets in the levers B; F, a ramrod articulately attached at a mid-point in the length of the lever D; G, a ball-and-socket joint serving as the joint of attachment and articulation between the ramrod and the lever D.

The ramrod F is intended to be reciprocated by any of the mechanisms usually employed in metal-founding machines for actuating the rammer and pressing the same downward upon the sand in the flask. Ordinary metal-founding machines generally comprise a flask-supporting table, a rammer-head of some kind, mechanism for elevating and depressing the rammer-head, and a ramrod connecting the rammer-head with such mechanism. In such machines, when my improvements are embodied in them, the group of ramming-blocks A form the rammer-head, and the operation is conducted as usual—that is, after the flask full of sand is properly placed under the rammer-head the rammer-head is forced down upon the sand by means of the actuating mechanism, whatever such actuating mechanism may be.

It will be obvious from the construction shown and described in connection with Fig. 1 that when downward pressure is exerted upon the ramrod the group of blocks will be pushed downward with equal force, and will remain in a common plane, if the resistance offered to the sand beneath the blocks be equal under all of the blocks; but if one of the blocks meets with a superior resistance that block will lag behind the other blocks of the group, and that each of the blocks of the group is thus at liberty to take a position in an independent plane while exerting an equal downward pressure upon the same. I am thus enabled, in exerting a downward pressure upon a single ramrod, to effect a substantially-uniform ramming of the body of the sand presenting inequalities of resistance due to varying depths of sand, or to inequalities in pattern-surface. The dimensions of the group of blocks may be such as to substantially conform to the size of the flask in hand, and the entire group may be removed from the ramrod and groups of other size substituted.

I have thus far only referred to Fig. 1 of the drawings, in which the rammer is composed of but four blocks. The principle of construc-

tion may, however, be carried to an unlimited extent, so far as the number of blocks in the group is concerned. Thus in Fig. 2 I show a group of sixteen blocks. In this group the blocks are united articulately in pairs by the levers B, and the pairs are again articulately united by the levers D. These levers are again united by levers H, embodying the same principle of construction and operation as the lever D, and the levers H are connected in pairs by the lever L, constructed and operating upon the same principle, and at the center of this last lever the ramrod F is articulately attached. It will thus be seen that any number of blocks may be actuated by a single ramrod, and exert a substantially-uniform pressure upon the body of sand beneath them, and at the same time permit the blocks to accommodate themselves to inequalities of sand and of pattern-surface.

I have found by experience with sand-ramming machinery that the walls of the flask offer considerable resistance to the downward movement of the sand which is contiguous to these walls, and I have found it highly advantageous to provide for meeting this increased resistance by means which will exert a superior ramming-power upon the sand which is near the walls of the flask. In a group of four blocks all the blocks are of course marginal blocks—as, for instance, in Fig. 2 there are four inner blocks, J, surrounded by the other blocks, which form the marginal blocks of the group. The parts as shown in Fig. 2 are so arranged as to endow the marginal blocks of the group with a ramming-power superior to that of the inner blocks, J. This is effected by lengthening the inner ends of such of the levers B as engage the inner blocks. Thus in Fig. 2, K indicates the inner ends of such of the levers B as engage the inner blocks, J. It will be observed that the inner ends of these levers are of greater length than the outer ends, whereby the blocks attached to the inner ends are susceptible of yielding upwardly more readily than the blocks attached to the outer ends. Following out this principle of construction, I am enabled to endow any particular block or blocks of the group with a ramming-power either superior or inferior to the ramming-power of the other blocks of the group.

In the illustration I show the separate blocks as having equal ramming-area; but in practice I may vary the facial areas of some of the blocks of the group and employ such unequal-sized blocks in connection either with equal or unequal levers.

Having thus described my invention and explained the principle thereof and the best manner in which I contemplate applying that principle, I now proceed to distinctly point out and claim the new and original features.

I claim as my invention—

1. In metal-founding machines, a rammer composed of a group of blocks, in combination with levers articulately attached to and uniting the blocks in pairs, a lever articulately attached to and uniting such first-mentioned levers, and a ramrod arranged, substantially as set forth, to transmit pressure to said last-mentioned lever.

2. In metal-founding machines, a rammer composed of a group of marginal and interior blocks, in combination with levers articulately attached to and uniting the blocks in pairs, the ends of such levers which attach to the inner blocks of the groups being of greater length than the ends which attach to the marginal blocks of the groups, levers articulately attached to and uniting said first-mentioned levers in pairs, and a ramrod arranged, substantially as set forth, to transmit pressure to said last-mentioned levers.

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