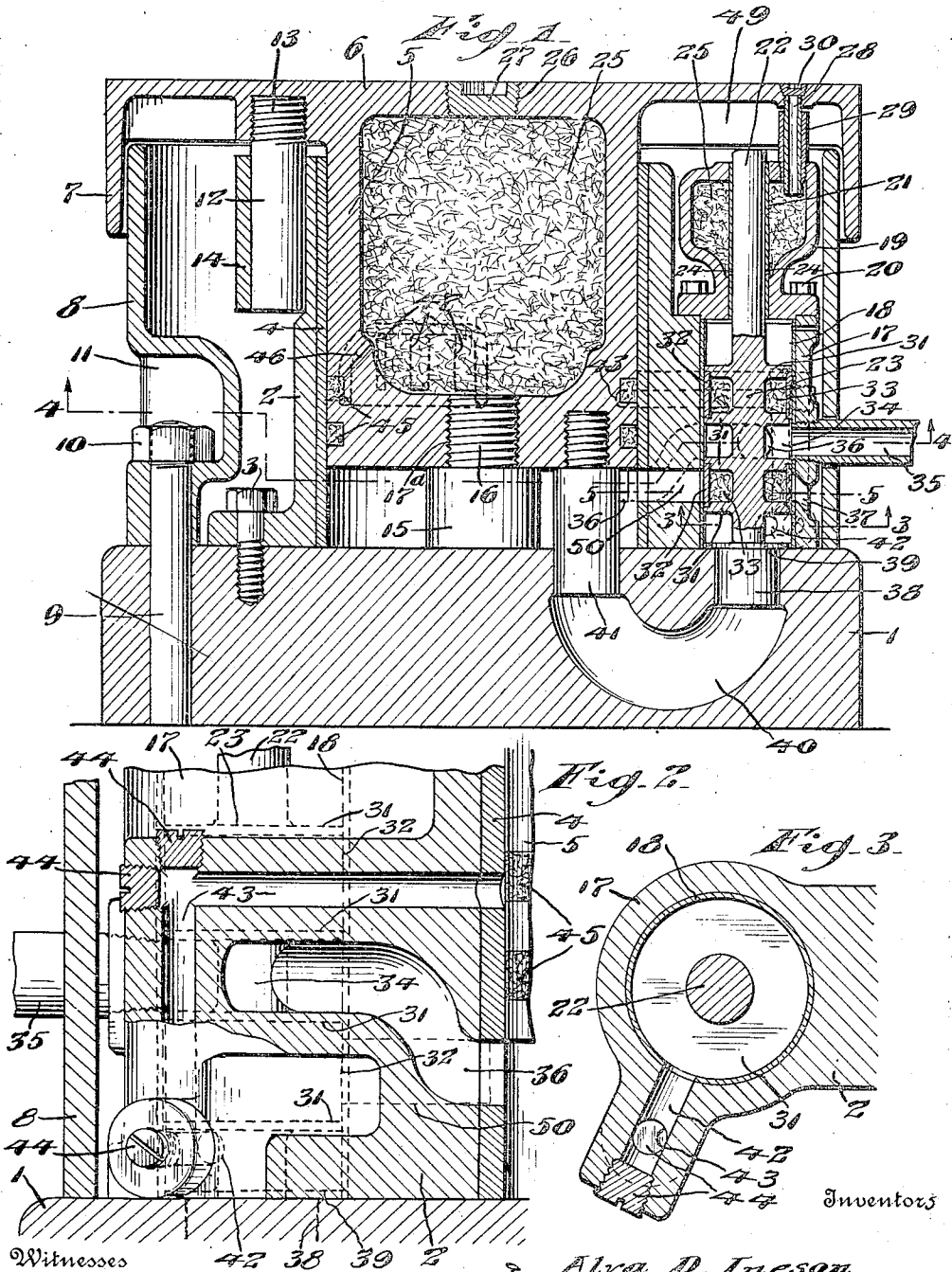


A. D. INESON & P. C. SMITH.
MOLDING MACHINE.
APPLICATION FILED MAR. 2, 1912.

1,051,999.

Patented Feb. 4, 1913.

2 SHEETS—SHEET 1.



Witnesses
Thos. Rosenbaum
R. V. Krenkel

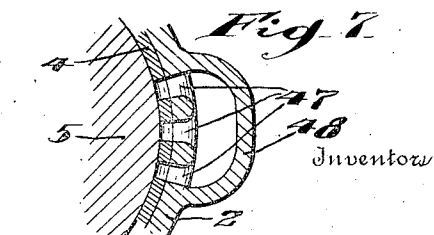
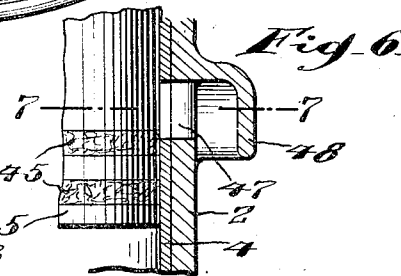
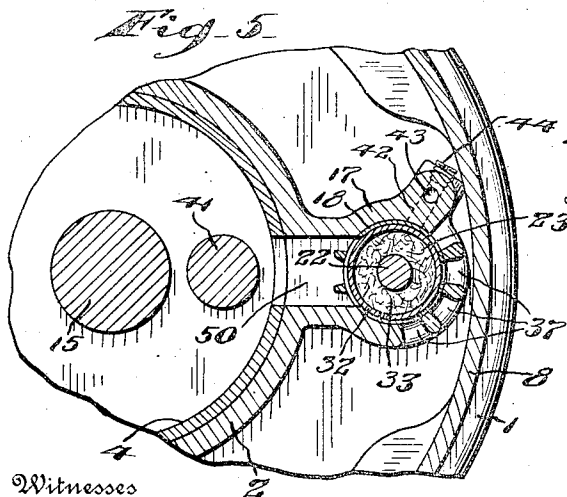
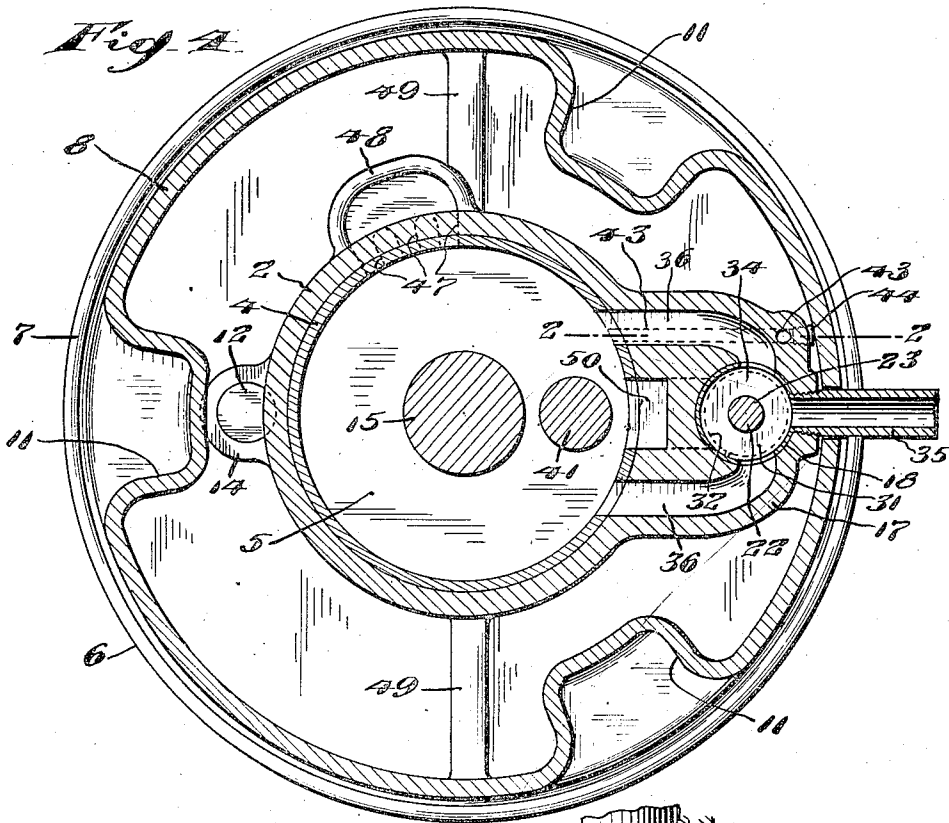
Alva D. Ineson
and Philip C. Smith,
Joshua R. D. Potts,
 Attorney

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2 SHEETS—SHEET 2.



Witnesses

Thos. Brewster
R. H. Krenkel

By

Alva D. Ineson
Philip C. Smith
Joshua R. Potts Attorney

UNITED STATES PATENT OFFICE.

ALVA D. INESON AND PHILIP C. SMITH, OF EASTON, PENNSYLVANIA.

MOLDING-MACHINE.

1,051,999.

Specification of Letters Patent.

Patented Feb. 4, 1913.

Application filed March 2, 1912. Serial No. 681,080.

To all whom it may concern:

Be it known that we, ALVA D. INESON and PHILIP C. SMITH, citizens of the United States, residing at Easton, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Molding-Machines, of which the following is a specification.

Our invention relates to improvements in molding machines, and more particularly to an improved machine which bumps or jars the mold and effectually rams green and dry sand molds and cores, the machine being operated entirely by compressed air dispensing with the necessity for any springs, levers, weights, clips, rods and the like which are common on machines of this type heretofore in use.

A further object is to provide an improved machine of this character which is self lubricating, maintaining all of the movable parts lubricated and free from sand and dirt which might interfere with the operation thereof.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1, is a view in vertical longitudinal section illustrating our improvements. Fig. 2, is a fragmentary view on an enlarged scale in vertical section taken on the line 2—2 of Fig. 4 and showing the parts in elevation to more clearly illustrate the arrangement of air ducts and ports. Fig. 3, is a fragmentary view in horizontal section on the line 3—3 of Fig. 1. Fig. 4, is a view in horizontal section on the line 4—4 of Fig. 1. Fig. 5, is a fragmentary view in horizontal section on the line 5—5 of Fig. 1. Fig. 6, is a fragmentary view partly in vertical section and partly in elevation illustrating the emergency exhaust, and Fig. 7, is a view in section on the line 7—7 of Fig. 6.

1, represents a relatively heavy metal base on which a cylinder 2 is secured by bolts 3. This cylinder 2 is provided with a removable bushing 4 in which a piston 5 is mounted to

move vertically, and is made integral with a table 6 adapted to support the mold or core. This table 6 is provided with an annular depending flange 7 which overlaps the upper end of a casing 8. This casing 8 is secured by bolts 9 and nuts 10 to the base 1, and said casing is recessed as shown at 11 to accommodate the bolts and nuts. A pin 12, having a screw-threaded upper end, is screwed into a threaded socket 13 in table 6, and this pin fits a sleeve 14 integral with casing 2, and guides the vertical movement of piston 5 and table 6, preventing any rotary movement. A bumping block 15 is provided with a screw-threaded shank 16 which screws into a threaded opening 17^a in the lower end of piston 5 at the center thereof, and this block 15 serves to limit the downward movement of the piston and the table, and sustains the shock of the fall of the piston when said block strikes the base 1 as will more fully hereinafter appear. The casing 2, at one side, is made with an integral valve chamber 17 which has a cylindrical bore receiving a bushing 18 which may be removed and replaced when worn.

On the upper end of the valve casing, a hollow dome 19 is secured by screws 20, and through this hollow dome 19, a bushing 21 projects, and acts as a guide for the upwardly projecting stem 22 of a valve 23. This bushing 21 is provided with relatively small openings 24 through which lubricant may pass from the dome to the valve stem and be communicated to the valve as is necessary. The hollow dome 19, as well as the hollow piston 5, are packed with mineral wool or other suitable material 25 which is saturated with lubricant and feeds the same to the movable parts.

The center of table 6 is provided with a threaded opening 26 for the reception of lubricant to the wool 25 in piston 5, and this opening is normally closed by a removable plug 27. The wool 25 in dome 19 is supplied with lubricant poured through telescoping tubes 28 and 29, the former is secured in a threaded opening in the table 6, normally closed by a removable plug 30 and the latter is screwed into a threaded opening in the top of dome 19, so that while the

table is permitted a vertical movement relative to the dome, the telescoping of these tubes always maintains a passage from the inlet to the dome, and the latter may be supplied with lubricant at any position of the table.

The valve 23 is made with four annular flanges 31, the upper and lower pair being connected by the split rings 32 and the space between the flanges of the upper and lower ports, and back of said rings 32 is filled by pieces of felt 33 which absorbs the lubricant and prevents any access of lubricant in the bottom of the valve chamber. When the valve is in its lower position, its annular port 34 which is provided between the upper and lower ports of flanges 31 registers with an inlet 35 for compressed air, and serves to connect said inlet with two ducts 36, both of which extend inwardly and downwardly and communicate with the cylinder 2 in the space below piston 5, so that the air which enters through these ducts will serve to elevate the piston.

The lower ring 32, when the valve is in the position above described, closes an outlet 50 and a circular series of outlets 37 in the valve chamber, and it will be noted that the lowermost flange is spaced above the bottom of the valve chamber, and that the lower end of the valve stem rests upon a vertically movable plunger 38 which has a flange 39 at its upper end, limiting its downward movement. This plunger 38 normally closes one end of a relatively large air passage 40, the other end of said passage being normally closed by a plug 41 which is screwed into the lower end of piston 5. One end of a passage 42 communicates with the valve chamber between the plunger 38 and the lowermost flange 31, and this passage extends through the wall of the valve chamber and the cylinder, and communicates with the cylinder at a point illustrated at 43 which is slightly above the normal movement of the piston, so that this passage will only be opened by the movement of the piston when the latter moves abnormally due to some defect in the operation of the valve. This passage is illustrated clearly in Fig. 2, and is formed at right angles by coring or boring, and the normal open ends of said borings or corings are closed by plugs 44.

The piston 5 is provided with packing rings 45 which are lubricated as is also the interior of the cylinder through the medium of a duct 46 which connects the interior of the hollow piston with the outer face thereof, and of course the invention is not limited to any particular number of these ducts.

In the wall of cylinder 2, at a point above the normal movement of the lower end of piston 5, a series of outlets 47 are provided, and are protected from the dirt and sand

by an integral hood 48 which is open at its lower end. These outlets 47 are normally closed by the piston and are open only in the event of failure of the valve to work properly, so as to prevent the table from being raised abnormally.

The operation of our improvements is as follows: Assuming the parts to be in the position shown in Fig. 1, the compressed air is entering inlet 35, and passing through port 34 and ducts 36 into the cylinder 2 below the piston 5, causing the latter to move upwardly. When the piston reaches a predetermined height, the plug 41 will be moved out of the passage 40, and the air below the piston will rush through this passage, causing the plunger 38 to elevate and move the valve 33 vertically. The lower band 32 will then close the inlet 35, and open the outlets 37, so that the air below the piston will rush out causing the piston and the table to fall. This downward movement is limited by block 15 striking base 1, which gives a jar or bump to the table and the mold or core thereon. At the same time, the downward movement of the table forces the valve downwardly to its former position, by reason of the fact that an integral web 49 on the under face of the table will strike the upper end of the valve stem 22, and force the valve downwardly. We provide a plurality of these webs 49 to strengthen the table, and one of them is positioned over the valve stem as above explained. If for any reason the plunger 38 should not move vertically to elevate the valve at the proper time, a continued upward movement of the piston 5 will open the end 43 of passage 42. The air will then rush through this passage into the lower end of the valve chamber, and cause the valve to elevate and operate as above described. If this is not effective, and the piston continues to rise, the lower end of the piston will open the outlets 47, so that the air will rush out through these outlets and the table will fall. The passages 42 and the outlets 47 are therefore emergency outlets for the compressed air, and they prevent the table from being accidentally elevated to too great a height. It will therefore be noted that our improved machine operated solely by the action of compressed air, the admission and exhaust of which being automatically controlled by the movement of the piston and the valve, so that a rapid series of bumps or jars are imparted to the table to effectually perform the work for which the machine is intended.

Various slight changes might be made in the general form and arrangement of parts described without departing from our invention, and hence we do not limit ourselves to the precise details set forth, but consider ourselves at liberty to make such changes

and alterations as fairly fall within the spirit and scope of the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A machine of the character described, comprising a base, a vertical cylinder on the base, a piston in the cylinder, a table on the upper end of the piston, a valve chamber, air inlet and exhaust ports connecting the valve chamber and the cylinder below the piston, a valve in said chamber, a block on the lower end of said piston constructed to strike the base and jar the table when the piston falls, and a casing secured to the base and projecting upwardly under the table, said base having a passage therein connecting the valve chamber with the cylinder, and a plunger secured to the piston and controlling the movement of air through said passage, substantially as described.

2. A machine of the character described, comprising a base, a vertical cylinder on the base, a piston in the cylinder, a table on the upper end of the piston, a valve chamber, air inlet and exhaust ports connecting the valve chamber and the cylinder below the piston, a valve in said chamber, a block on the lower end of said piston constructed to strike the base and jar the table when the piston falls, a casing secured to the base and projecting upwardly under the table, said base having a passage therein connecting the valve chamber with the cylinder, a plunger secured to the piston and controlling the movement of air through said passage, and said cylinder having emergency outlets closed by the piston in its normal movement and opened when said piston is elevated abnormally, substantially as described.

3. A machine of the character described, comprising a base, a vertical cylinder on the base, a piston in the cylinder, a table on the upper end of the piston, a valve chamber, air inlet and exhaust ports connecting the valve chamber and the cylinder below the piston, a valve in said chamber, a block on the lower end of said piston constructed to strike the base and jar the table when the piston falls, and a casing secured to the base and projecting upwardly under the table, said base having a passage therein connecting the valve chamber with the cylinder, and a plunger secured to the cylinder and controlling the movement of air through said passage, and said cylinder having emergency outlets closed by the piston in its normal movement and opened when said piston is elevated abnormally, substantially as described.

4. A machine of the character described, comprising a base, a vertical cylinder on the base, a piston in the cylinder, a table on the

upper end of the piston, a valve chamber, air inlet and exhaust ports connecting the valve chamber and the cylinder below the piston, a valve in said chamber controlled solely by the movement of the piston and the air, whereby the piston is caused to rise and to fall, said base having a passage therein connecting the valve chamber with the cylinder, a plunger secured to the piston and controlling the movement of air through said passage, a depending flange on said table, and a casing secured to the base inclosing said cylinder and valve chamber and projecting upwardly inside of the flange on the table, substantially as described.

5. A machine of the character described, comprising a base, a vertical cylinder on the base, a piston in the cylinder, a table on the upper end of the piston, a valve chamber, air inlet and exhaust ports connecting the valve chamber and the cylinder below the piston, a valve in said chamber controlled solely by the movement of the piston and the air, whereby the piston is caused to rise and to fall, and a block on the lower end of said piston constructed to strike the base and jar the table when the piston falls, said base having a passage therein connecting the valve chamber with the cylinder, a plunger secured to the piston and controlling the movement of air through said passage, a depending flange on said table, and a casing secured to the base inclosing said cylinder and valve chamber and projecting upwardly inside of the flange on the table, substantially as described.

6. A machine of the character described, comprising a base, a cylinder secured on the base, an integral sleeve on one side of said cylinder, a piston movable in the cylinder, a table on the piston, a pin secured in the table and movable in the guide sleeve, a valve chamber at one side of the casing, a vertically movable valve in said chamber controlling the flow of air to and from the cylinder below the piston, said piston constructed to be elevated by the action of air when the piston reaches a pre-determined height, and a stem on said valve struck by the table in its downward movement to close the exhaust and open the inlet to said cylinder, substantially as described.

7. A machine of the character described, comprising a base, a cylinder secured on the base, an integral sleeve on one side of said cylinder, a piston movable in the cylinder, a table on the piston, a pin secured in the table and movable in the guide sleeve, a valve chamber at one side of the casing, a vertically movable valve in said chamber controlling the flow of air to and from the cylinder below the piston, said piston constructed to be elevated by the action of air when the piston reaches a pre-determined

height, radial integral webs on the under
face of said table, and a stem on said valve
adapted to be struck by one of said webs in
the downward movement of the table to
5 move the valve in its lowermost position,
substantially as described.

In testimony whereof we have signed our

names to this specification in the presence
of two subscribing witnesses.

ALVA D. INESON.
PHILIP C. SMITH.

Witnesses:

G. M. WELLER,
JOHN F. CARNEY.