Nov. 20, 1923. 1,475,017

A. M. JONES

COMPRESSOR FOR MOLDING MACHINES

Filed Feb. 10, 1921

FIG. 1.

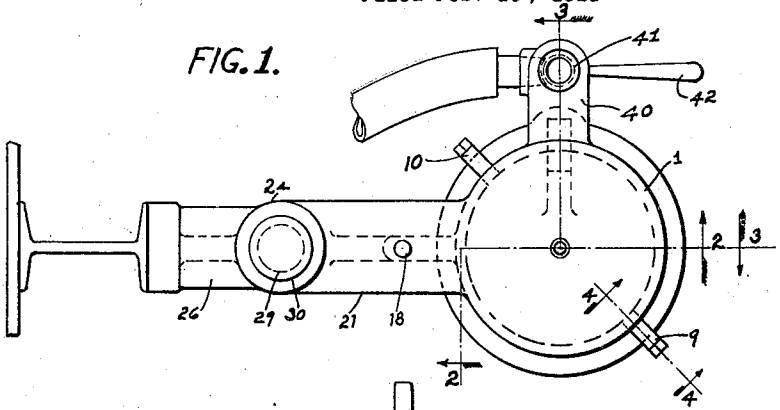


FIG. 2.

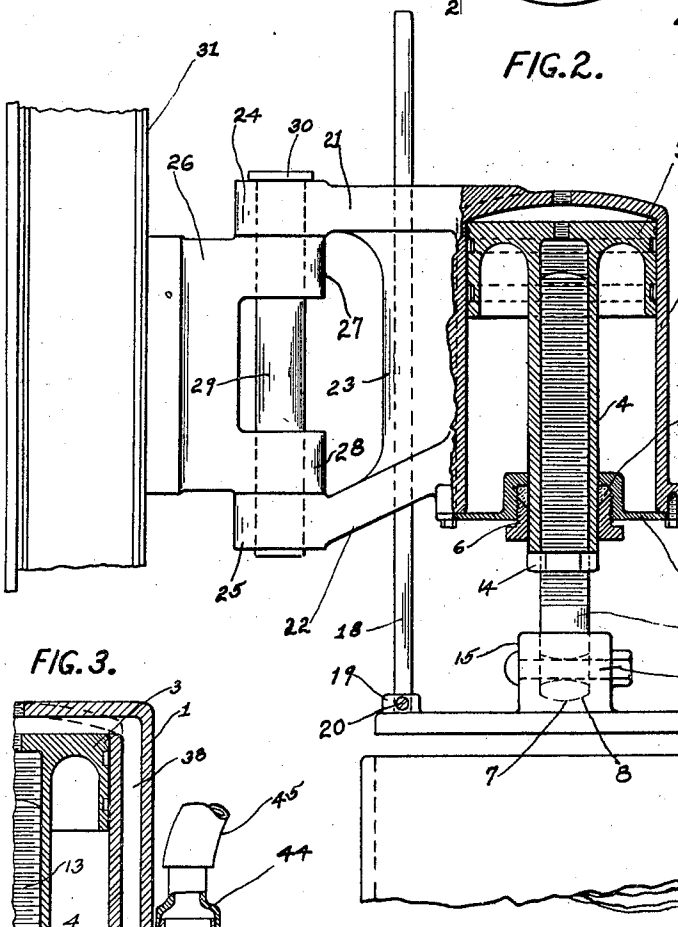


FIG. 4.

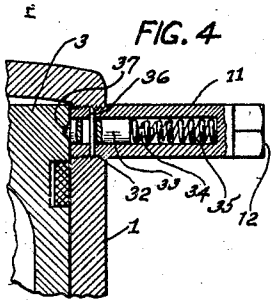


FIG. 3.

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UNITED STATES PATENT OFFICE.

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COMPRESSOR FOR MOLDING MACHINES.

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To all whom it may concern:

Be it known that I, ALFRED M. JONES, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Compressors for Molding Machines, of which the following is a specification.

This invention relates to compressors for molding machines.

Objects of this invention are to provide a power operated compressor for packing the sand into a relatively stationary mould supported below such packer, and to provide a packer which may be readily swung from above the mould laterally to a position so as to have the space above the mould unobstructed.

Further objects are to provide a packer which may be permanently secured in position but which is adjustable to accommodate variations in the height of either the mould or of the support for the mould; to provide means for preventing the bottom plate or platen from moving out of correct position; and to provide means for temporarily latching the packer in its retracted position.

Further objects are to provide a pneumatic packer for moulds which may be manually controlled; which may be moved from operative position; and which will be retained in retracted position independently of the supply of compressed air.

An embodiment of the invention is shown in the accompanying drawings, in which:

Fig. 1 is a plan view of a machine embodying the invention.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a partial section on the line 3—3 of Fig. 1.

Fig. 4 is a detail of one of the devices for temporarily holding the piston in elevated position.

The packer comprises a cylinder 1 to which a bottom cylinder head 2 is secured in any suitable manner. In this cylinder, is a piston 3 having an integral, hollow stem 4 which projects outwardly thru the bottom cylinder head. A packing 5 may be provided within a threaded recessed portion of the cylinder head 2, such packing being compressed by a gland nut 6 so as to provide the usual airtight joint between the piston and cylinder.

The piston rod is extensible so that the distance between the platen 16 and the piston 3 may be varied to accommodate variations in the height of either the mould or flask or of the supporting table. The stem 4 is hollow and internally threaded and receives a correspondingly threaded solid rod 13. This rod 13 is locked in adjusted position with reference to the stem 4 by means of a lock nut 14. The bottom portion of the rod 13 is rounded as indicated at 7 and fits a correspondingly rounded socket within the hub 15 of the platen 16. A bolt 17 passes thru the hub 15 and thru an opening 8 in the rod 13. It will be noted that the opening 8 is flared at its ends so that a jointed connection is provided between the rod 13 and the platen 16 allowing the platen to float and accommodate itself to varying angular relations between the piston rod and the plane of the flask. It is to be noted that when a great pressure is exerted upon the platen that the supporting mechanism for the cylinder will spring and allow a slight angular change to take place between the axis of the piston rod and the plane of the flask. The floating platen accommodates itself to these changes.

Means are provided for retaining the piston in its elevated position independently of the air pressure so that if, for any reason, the air pressure should fail the piston will still be retained in its elevated position. Figure 4 illustrates in detail one of the fastening devices for temporarily latching the piston in elevated position, these latches 9 and 10 being shown in Figure 1 in the position they occupy with respect to the cylinder. It may be found advantageous to apply one upon each side of the piston. The latch comprises a cylindrical member 11 which is closed at its outer end 12 and is threaded into the cylinder at 32. It carries a plunger 33 which has a reduced rear portion 34 to properly position a spring 35 such spring tending to press the plunger outwardly. The plunger is prevented from passing completely out of the cylindrical member 1 by means of a pin 36 which passes thru the cylindrical member and thru an elongated slot formed in the plunger. The outer end of the plunger is conical or beveled as indicated at 37 and cooperates with a corresponding groove formed in the upper portion of the piston. It will be seen that when the piston is in elevated position that the plungers snap into the groove and will

retain the piston independently of the air pressure.

The platen may comprise a flat plate corresponding in outline roughly to the inner area of the flask. It is provided with a substantially centrally positioned boss 15 previously described and with a rear boss 19. This rear boss is adapted to receive a rod 18 which by means of a screw 20 may be locked in position. The rod 18 passes upwardly thru a hole formed in the supporting framework and serves to prevent inadvertent rotation of the platen.

The cylinder 1 has formed integrally therewith a pair of rearwardly extending arms 21 and 22 which may conveniently be reenforced by a connecting web 23. These arms terminate in bearing or journal members 24 and 25. Between these journal members is positioned the rigidly mounted support 26 which is provided with corresponding bearings or journal members 27 and 28. A pin 29 pivotally connects the stationary and movable portions and is provided with an enlarged head 30 to prevent such pin from falling downwardly out of position. The bracket 26 may conveniently be carried upon an I-beam 31 which it is contemplated furnishing with the machine so that the I-beam may be bolted upon any suitable wall or other support and may be sold as a unitary part of the device.

The cylinder is provided with ports 38 and 39 leading from its upper and lower ends respectively into an outwardly projecting portion 40 formed integrally with the cylinder. This projecting portion carries a conical valve 41 which is rotated by means of the hand lever 42, such hand lever having shoulders cooperating with a projecting pin or stop 43 carried by the cylinder. The upper portion of the projecting part 40 is capped by means of a member 44 threaded on to a corresponding boss projecting upwardly from the laterally extending portion 40. This cap acts as a coupling member for a flexible hose 45 which furnishes the compressed air or other compressed fluid for operating the device. The valve is so formed that by the rotation of the handle 44 thru a fractional part of its path, air may be admitted either above or below the piston. A further rotation of the handle serves to cut the air off from both upper and lower parts of the cylinder. It is to be noted that the air pressure tends to seat the valve and thereby prevents leakage.

It will be seen that a power operated compressor for flasks or moulds has been provided, which is conveniently controlled by manual means, which may be quickly and readily operated to compress the sand in the mould. It will be noted that a relatively small cylinder supplied with the air at a reasonable pressure may exert a very great force upon the platen and at one stroke completely compress or pack the sand into place. It will also be seen that the entire device may be swung about the pivot pin 29 laterally out of the way of the mould so that the mould may be lifted directly upwardly and the space above such mould may remain unobstructed until it is again desired to use the device.

I claim:

1. In a compressor for moulds, the combination with a cylinder provided with a threaded aperture adjacent its upper end, of a piston provided with an annular groove adjacent its upper end, a hollow cylindrical member engaging the cylinder in said aperture, said member having one end closed and the other end open to said cylinder, a pin within said member provided with a conical end adapted to engage said annular groove, means for limiting the axial movement of said pin, and a spring disposed between said pin and the closed end of said member and adapted to actuate said pin outwardly of said member, whereby said piston will be automatically retained in its retracted position irrespective of the fluid supply.

2. In a compressor for moulds, the combination with a cylinder, of a piston having an integral hollow stem, a rod adjustably engaging said stem, means for locking said rod to said stem in any one of a plurality of positions, a platen carried by said rod, and means upon said cylinder adapted to engage said piston in its retracted position.

3. In a compressor for moulds, the combination with a cylinder, of a piston having an extensible rod provided with a rounded end and transverse hole adjacent said end, said hole having flared ends, a platen, a lug integral with said platen provided with a hole adapted to receive the rounded end of said rod, and a bolt transversely of said lug adapted to be received in the hole in said rod, whereby said platen may freely adjust itself angularly relative to said rod.

4. In a compressor for moulds, the combination with a cylinder, of a piston provided with an extensible rod, a platen carried by said rod, means securing said platen to said rod, said means being adapted to permit said platen to adjust itself angularly relative to the rod, a second rod pivotally secured to said platen and adapted to prevent rotation thereof.

5. In a compressor for moulds, the combination with a cylinder, of a piston, a platen carried by said piston, means adapted to permit said platen to adjust itself angularly relative to said piston, arms integral with said cylinder, a bracket, a pin adapted to pivotally secure said arms to said bracket, a rod slidably secured to said cylinder and pivotally engaging said platen, and means upon said cylinder adapted to retain the pis-

ton in retracted position independently of fluid or air pressure.

6. A compressor for a mould comprising a cylinder, a piston mounted therein, manual means for controlling the supply of a compressed fluid to said cylinder to thereby control the operation of said piston, a piston rod extending outwardly thru said cylinder carried by said piston, and a platen mounted for free angular adjustment relative to said piston rod and carried by said piston rod.

7. In a moulder's press, the combination with a bracket having relatively fixed and movable portions, of a reciprocable press plunger supported from the movable portion of said bracket, a motor supported from said movable bracket portion and operatively connected with said plunger, means for supplying power to said motor, and a controlling device for said power supplying means, said device being mounted for movement with said plunger and said motor in accordance with the movements of said movable bracket portion, whereby said device will always be accessible to an operator following the movements of said plunger, motor, and bracket portion.

ALFRED M. JONES.