

L. M. ATHA & E. H. MUMFORD.

JOLT RAMMING MACHINE.

APPLICATION FILED AUG. 6, 1910.

1,040,989.

Patented Oct. 15, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

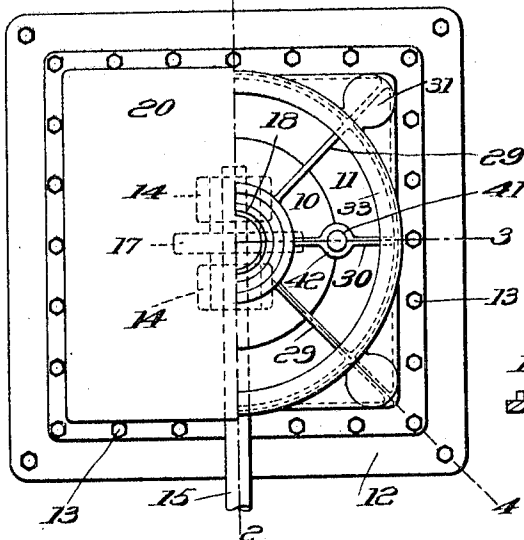


Fig. 2.

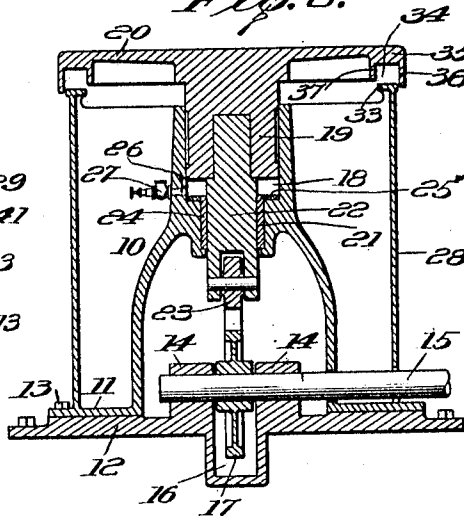


Fig. 3.

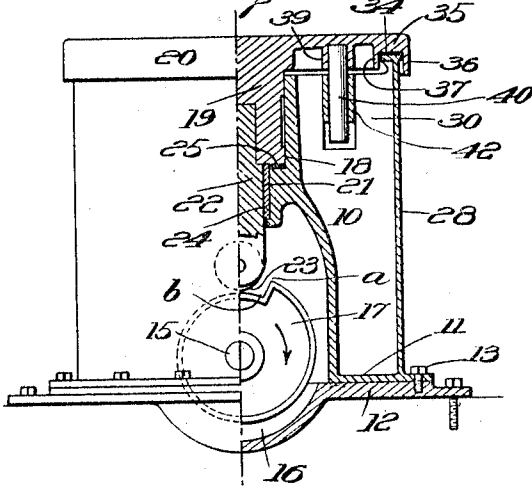
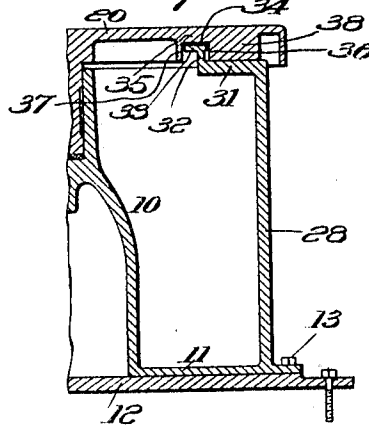


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

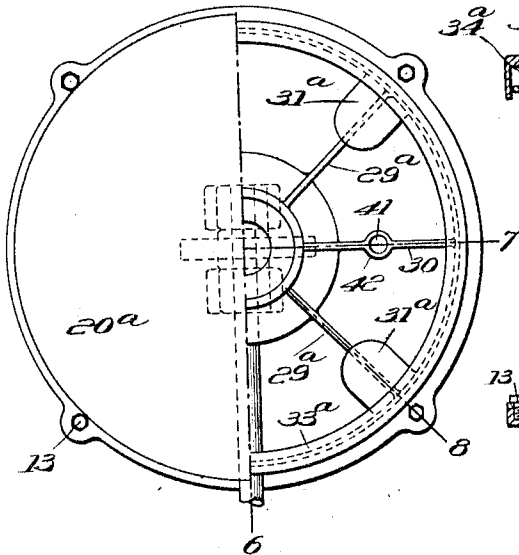


Fig. 6.

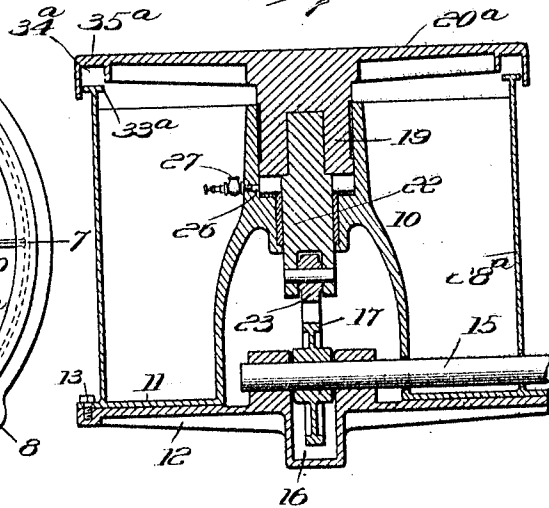


Fig. 7.

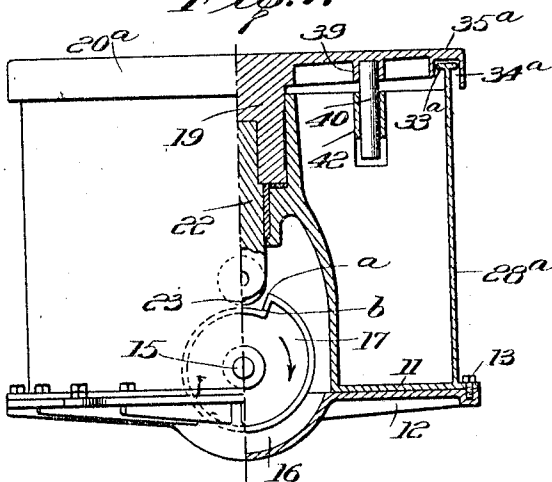
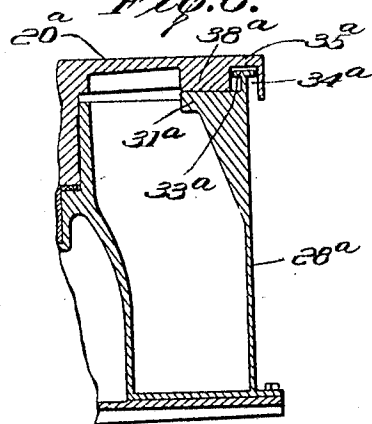


Fig. 8.



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UNITED STATES PATENT OFFICE.

LOUIS M. ATHA, OF NEWARK, AND EDGAR H. MUMFORD, OF PLAINFIELD, NEW JERSEY.

JOLT RAMMING-MACHINE.

1,040,989.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Application filed August 6, 1910. Serial No. 575,927.

To all whom it may concern:

Be it known that we, LOUIS M. ATHA and EDGAR H. MUMFORD, citizens of the United States, and residents of Newark, Essex county, and Plainfield, Union county, State of New Jersey, respectively, have invented certain new and useful Improvements in Jolt Ramming-Machines, of which the following is a specification.

This invention relates to improvements in jolt ramming machines and it is especially adapted to be used for forming sand molds. One of the objects of the invention is to construct such a machine provided with means for preventing the table from whipping and from rebounding and vibrating by impact when dropped. Other objects will appear from the hereinafter description.

Certain embodiments of the invention are hereinafter set forth and illustrated in the accompanying drawings. It is to be understood that changes may be made in the construction here illustrated and described, without departing from the spirit and scope of the invention.

Referring to the drawing in which the same reference character designates the same part in the several views:

Figure 1 is a plan view of a machine constructed for a square table. In this view one half of the top of the table is shown removed.

Fig. 2 is a section on line 2 of Fig. 1, showing the table in raised position.

Fig. 3 is a section on line 3 of Fig. 1, showing the table in lowered position.

Fig. 4 is a section of a part of the machine on line 4 of Fig. 1, showing a detail.

Fig. 5 is a plan view of a modified construction showing a machine built for a round table. In this view one half of the top of the table is shown removed.

Fig. 6 is a section on line 6 of Fig. 5, showing the table in raised position.

Fig. 7 is a section on line 7 of Fig. 5, showing the table in lowered position.

Fig. 8 is a section of a part of the machine on line 8 of Fig. 5, showing a detail.

The part marked 10 on the drawing represents the base of the machine which is provided with an outwardly extending flange 11 by which the base may be secured to a suitable bed 12 by bolts 13 passing through holes in the flange and into the bed. As one means for raising the table, the bed is provided with suitable bearings 14 for the inner end of the driving shaft 15, and with a

suitable recess 16 for a lifting cam 17 secured to the shaft between the bearings. The base is recessed at 18 to receive the hub 19 projecting from the under side of the table 20, which forms a plunger which operates in the recess. The base is also provided with an opening 21 through which passes the rod 22 secured to or forming a part of the plunger. This rod is slotted at its lower end to receive the roller 23 against which the lifting cam 17 operates. The opening 21 may be provided with a lining 24 to take up wear, and the bottom of the recess 18 may be provided with a pad or shock absorbing element 25. In the wall of the base of the machine forming the recess 18 is an opening 26 which is controlled preferably by a spring seated relief valve 27. The surface of the cam 17 is so shaped that when the highest point *a* thereof passes from under the roller 23 the table is permitted to fall. The lowest point *b* of the cam is so arranged that the roller will not come in contact with the same upon the dropping of the table. By this construction the life of the roller and cam will be materially prolonged and the shaft 15 will not be hammered out of alignment by the dropping of the table.

While we have shown a cam construction for raising and permitting the table to be dropped, it is to be understood that we do not confine ourselves to such construction, as air or other fluid operating lifting and dropping means may be used.

In the construction shown by Figs. 1 to 4, the table is square and a square wall 28 surrounds the base of the machine, and this wall preferably extends upwardly from the flange 11. The base and wall are connected by the webs 29 and 30, the web 29 extending to the corners of the wall and the web 30 extending to the middle thereof. The corners of the wall are provided at the top with inwardly projecting flanges 31 which may be termed pads or bearing surfaces, and extending upwardly from the wall and from the inner ends of said flanges is a ring 32 having on the upper rim thereof a flange 33 forming a tongue which enters the groove or channel 34 formed in the thickened circular under part 35 of the table directly over said ring. The outer wall 36 of the said groove or channel extends below the tongue 33 and acts as a guide to the tongue

and prevents dirt from getting on the tongue. The inner wall 37, if desired, may also be extended below the tongue. The corners of the table on its under side are thickened at 38 to form pads or bearing surfaces which contact with the corner pads 31.

In operation, the shaft 15 is rotated to turn the lifting cam 17 in the direction indicated by the arrow. The surface of the cam contacting with the roller 23 lifts the table until the highest point *a* of the cam moves from under the roller, whereupon the table drops by gravity. During the upward movement of the table air enters the recess 18 through the valve 27 and opening 26. During the downward movement of the table the said air is compressed and is forced out through said opening and through said valve. The rapidity with which the air enters and is forced out of the recess is governed by the valve 27. On the downward movement of the table the tongue 32 enters the groove 34 and the air therein is compressed, said tongue acting as a plunger in the channel or groove. The tongue and groove are so fitted that the air compressed will gradually escape from the groove upon the fall of the table, forming a dash. This compression of the air in the recess 18 and in the channel 33 forms a cushion which prevents the table from whipping and also prevents it or objects thereon from rebounding upon impact, and absorbs all vibration. The cushion at the bottom of the recess 18 also takes up jar, and the flanges or pads 31 assist in receiving shock when the table drops.

Figs. 5 to 8 inclusive show a modified construction. In this construction the table 20^a is circular and the base is surrounded by a circular wall 28^a. In this construction the upper part of the web 29^a next the wall is thickened to form pads or bearing surfaces 31^a and the under side of the table directly over said pads is also thickened to form pads 38^a. In this modified construction the under side of the table at its periphery is thickened to form a ring 35^a which is recessed to form the channel or groove 34^a into which the flange or tongue 33^a enters. In this construction the tongue 33^a is formed directly on the upper rim of the circular wall 28^a.

While the base and wall are shown integral and connected by webs and flanges, it is to be understood that these different elements may be formed in separate parts.

To prevent the rotation of the table and in order to keep it in perfect alinement during its movement, we provide on the under side thereof, a lug 39 in which is secured a pin 40, which pin moves freely in an opening 41 in a boss 42 formed on the web 30. The wall of the base of the machine through which the driving shaft 15 passes may be tightly packed and the chamber in which

the cam 17 and the rollers 23 are mounted and operated may be filled with oil so that these parts may run in oil.

We desire it to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

As many changes could be made in the above construction, and many apparently widely different embodiments of the invention could be made without departing from the scope thereof, we intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

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

1. In a device of the class described, a base having a recess therein, a table, a plunger connected to the table and moving in the recess, means for raising the table and permitting the same to drop, the wall of the recess having an opening therein and communicating with the recess to permit air under the plunger to escape upon the drop of the table.

2. In a device of the class described, a table, a support, one of said elements having a groove therein and the other provided with a corresponding tongue, and means for raising the table and permitting it to drop, the tongue entering the groove upon the drop of the table.

3. In a device of the class described, a table having a recess on the under side thereof, a corresponding tongue entering said recess, and means for raising the table and permitting it to drop the tongue entering the recess upon the drop of the table.

4. In a device of the class described, a base, a table mounted on the base, means for raising the table and permitting it to drop, said table having a groove on the under side thereof, and a tongue cooperating with said groove the tongue entering the groove upon the drop of the table.

5. In a device of the class described, a base, a table mounted on said base, a channel on the under side of the table, means for raising the table and permitting it to drop, a wall surrounding the base and having a flange on the upper side thereof, said flange entering the channel upon the drop of the table.

6. In a device of the class described, a base having a recess therein and an opening in the base communicating with said recess, a table having a plunger on the under side thereof moving in said recess, said table having a channel on the under side thereof,

a flange coöperating with said channel, and means for raising the table and permitting the same to drop, the flange entering the channel upon the drop of the table.

5 7. In a device of the class described, a base having a recess therein and an opening in the base communicating with said recess, a table having a plunger on the under side moving in said recess, said table having a channel on the under side thereof and a wall surrounding the base, a flange on the top of the wall which enters the channel upon the drop of the table, and means for raising the table and permitting the same to drop.

8. In a device of the class described, a base having a recess therein and an opening communicating with said recess, a valve controlling said opening, a table having a plunger on the under side and moving in said recess, said table having a channel or groove on the under side thereof, means for raising the table and permitting the same to drop, a wall surrounding the base, and a flange or tongue on the top of the wall which enters the groove upon the drop of the table.

9. In a device of the class described, a base having a recess therein and an opening communicating with said recess, a table, a plunger connected with the table and movable in said recess, the under side of the table being provided with a groove, means for raising the table and permitting the same to drop, a wall surrounding the base, webs extending from the base to the wall, and a tongue at the top of the wall adapted to enter the groove on the under side of the table.

10. In a device of the class described, a base having a recess therein and an opening communicating with said recess, a valve controlling said opening, a table, a plunger connected to the under side of the table and moving in said recess, the under side of the table being provided with an annular channel, a wall surrounding the base, webs ex-

tending from the base to the wall, pads connected to the wall, pads on the under side of the table co-acting with the first mentioned pads, and an annular flange or tongue at the top of the wall entering the annular channel when the table is permitted to drop.

11. In a device of the class described, a base having a recess therein and an opening communicating with said recess, a valve controlling said opening, a table, a plunger connected to the under side of the table and moving in said recess, the under side of the table being provided with an annular channel, a wall surrounding the base, webs extending from the base to the wall, flanges connected to said wall, lugs forming pads on the under side of the table co-acting with said flanges, an annular flange at the top of the wall adapted to enter the annular channel when the table is permitted to drop, a pin carried by the table, and a boss having an opening therein on one of the webs, the pin moving in said boss.

12. A jolt ramming machine comprising in combination, a table, a guide means, a casing within which said guide means operates, mechanical means for actuating said table and a pneumatic cushion for said guide means.

13. A jolt ramming machine comprising in combination, a table, a guide means, a casing within which said guide means operates, mechanical means for actuating said table, a pneumatic cushion for said guide means, and means for controlling said cushion.

In witness whereof we have hereunto set our hands at the city of New York, county of New York and State of New York, this fourth day of August, 1910.

LOUIS M. ATHA.

EDGAR H. MUMFORD.

In presence of—

AGNES C. O'CONNELL,

ISABEL R. RICHARDS.