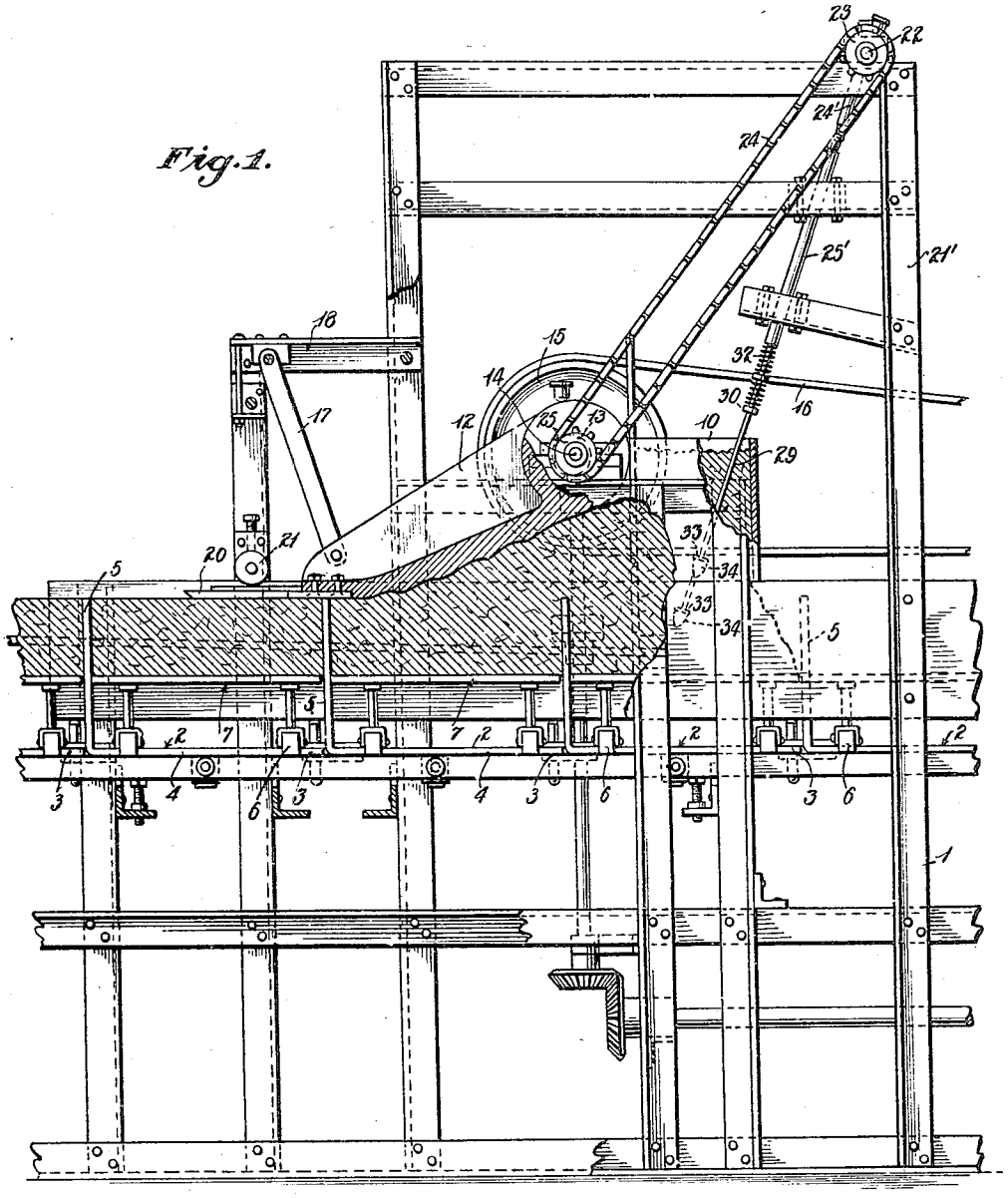
Oct. 16, 1928. 1,688,205

J. M. PHILLIPS ET AL

MOLDING APPARATUS

Filed May 8, 1926 3 Sheets-Sheet 1

Fig. 1.



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J. M. PHILLIPS ET AL

MOLDING APPARATUS

Filed May 8, 1926 3 Sheets-Sheet 2

Fig. 2.

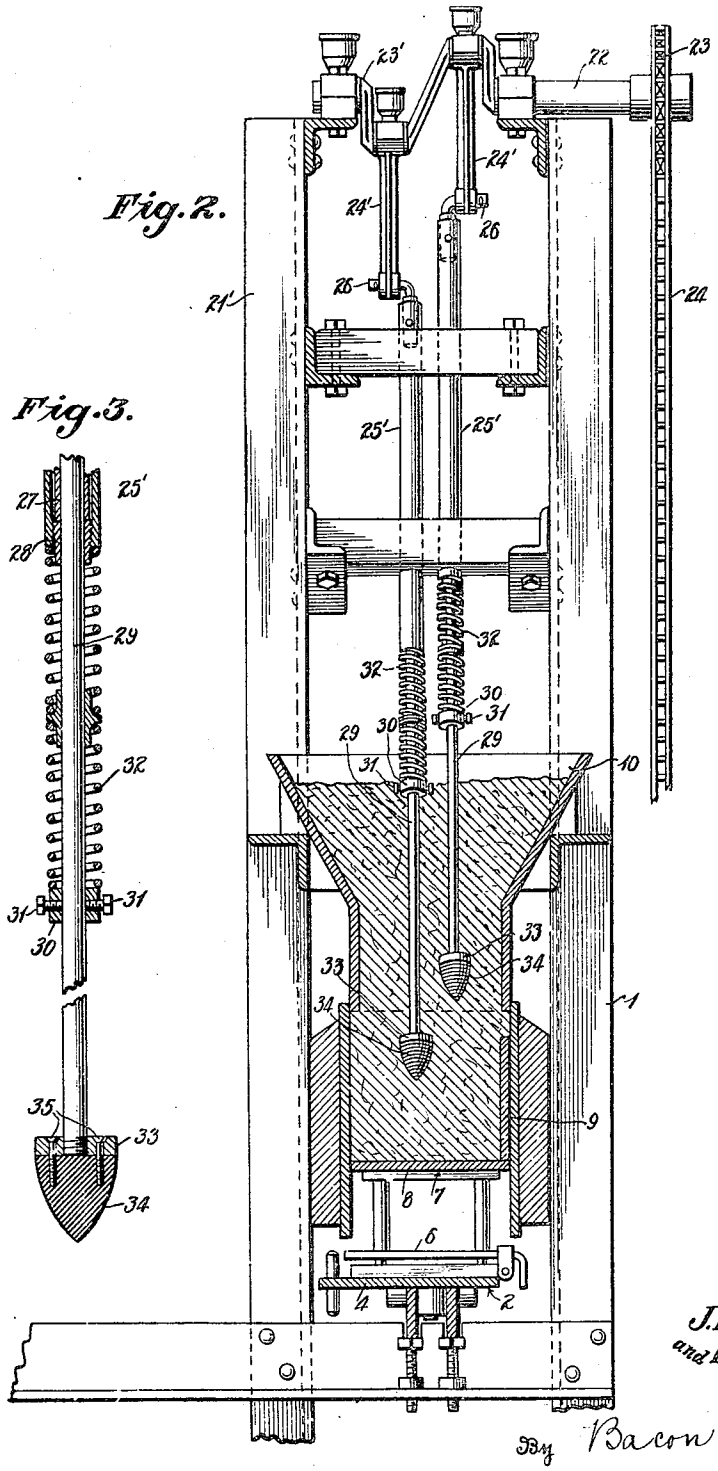


Fig. 3.

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Filed May 8, 1926 3 Sheets-Sheet 3

Fig. 4.

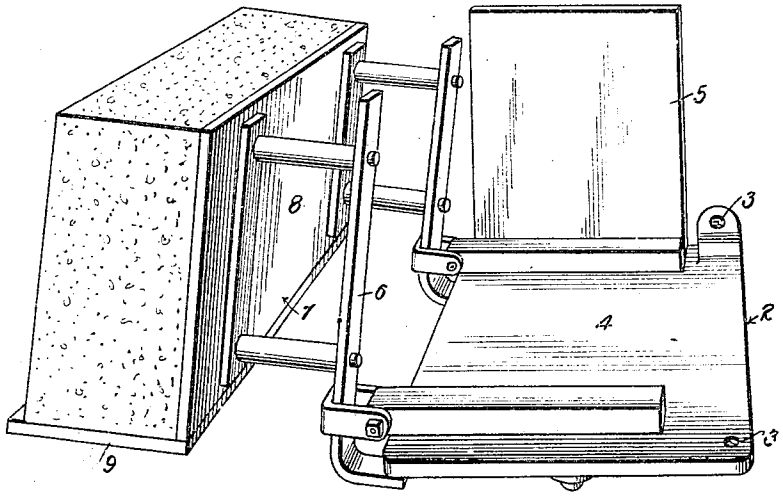


Fig. 6.

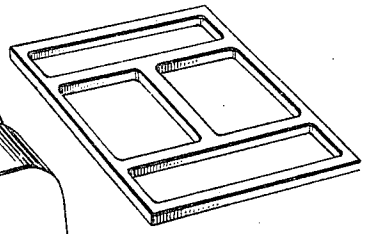


Fig. 5.

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UNITED STATES PATENT OFFICE.

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MOLDING APPARATUS.

Application filed May 8, 1926. Serial No. 107,712

The invention relates to improvements in feeding or tamping devices for use in connection with concrete block or tile making machines.

It is an object of the invention to provide a feeding or tamping mechanism operating in conjunction with a block making machine of the broad type illustrated in our Patent No. 1,578,467 to insure the feeding of the material from which the block or tile is to be formed in such a manner that the product is substantially free of voids.

The invention among its other objects, aims to provide a machine in which the feeding or tamping devices constantly engage the material that is being deposited on the tile or block mold so that each mold receives a thoroughly tamped charge, the result being that the products produced by the machine are firm and largely free of crevices or voids. In accordance with this invention the tampers or feeding devices are so constructed that the tile forming molds with the material thereon may freely pass such devices without liability of injury to either the molds or the tamping elements.

In the accompanying drawings Figure 1 illustrates a vertical longitudinal section through a portion of the molding machine disclosing the feeding and tamping devices for the molds.

Figure 2 is a detail view of these tamping devices with the operating mechanism therefor; and,

Fig. 3 is a detail view of one of the tampers, and Figs. 4 and 5 are views of the mold blocks.

The present invention relates to improvements in the machine disclosed in our Patent No. 1,578,467. These improvements consist essentially in the provision of auxiliary tamping means for tamping the material from which the block or tile is made on the moving mold so that the resulting product is a firm and solid one. Recourse should therefore be had to the said Patent No. 1,578,467 in considering this invention. With this in mind, the general molding mechanism forming the subject matter of the application aforesaid will not be again fully described, but only that portion thereof as is necessary to show the complete construction and operation of the auxiliary tamping devices and the tile mold which they may be used with forming the subject matter of this invention.

Referring now more specifically to the drawings, the numeral 1 designates the frame elements of the molding machine. These elements are the same as disclosed in my copending application. On said frame elements a series of molding tables or bases 2 are mounted which are pivotally connected at the points 3, and travel as an endless conveyor around the frame member. These tables may each embody a mold base 4 having a side board 5, suitable supporting elements 6 upon which there is mounted a mold table 7 having a bottom 8 and a side 9, the same receiving the plastic material fed into the hopper 10 disposed above the path of travel of said molding tables. The material fed into this hopper is by reason of the main tamping element 12 pressed on the endless carrying tables 7 in the manner as described in my copending application. This tamping member 12 is reciprocated by an eccentric 13 driven off of a shaft 14 which carries a drive wheel 15 rotated by a belt 16 leading from any suitable source of power. The forward end of the tamper is connected with a link 17 pivotally suspended from the frame 18. This tamper is also at its forward end pivotally connected with a shearing plate 20 riding under a presser roll 21. All of this mechanism is disclosed in detail in the patent we have referred to. The material tamped or packed on the mold tables is carried to a distant part of the machine and there the table 7 is lifted to discharge the formed block after which it is lowered and again passes under this tamping mechanism.

In lieu of a table or mold for producing a block we may, if desirable, employ a tile mold. In such an instance the tile mold is mounted on the mold base 4^a, which base is composed of sections, each carrying a tile mold. Each section also supports the table 5^a which is pivotally connected with the mold base 4^a. This table in turn carries the solid cores 6^a, 7^a, 8^a and 9^a, for making the desired holes in the tile. With this structure the tile after being formed on the mold is removed by the lifting of the table 5^a, in substantially the same manner as a block is moved by the lifting of the table 7. In lieu of a lifting table, however, we may provide a pallet, shown in detail in Figure 6, upon which the tile is formed, which pallet when lifted raises the tile from the mold base.

Regardless of the type of mold being used the main tamper 12 with its auxiliary parts is constantly reciprocated and auxiliary tamping or feeding means is employed to assist this tamping device in the performance of its operations. A frame structure 21′ extends above the main tamp 12 of the machine. This frame at its upper end carries a shaft 22. A sprocket wheel 23 is mounted on this shaft receiving the chain 24 which passes around the sprocket 25 on the shaft 14. The operation of the shaft 14 therefore in turn operates the shaft 22. This shaft 22 is formed with a crank shaft extension 23′, the cranks thereof receiving the connecting rods 24′. Each rod at its lower end is connected to a hollow steel tube 25′ by a connecting angle 26 through the medium of rivets or the like. The lower end of each tube receives a steel tube 27 retained in position by a threaded cap 28. This steel tube and cap receive a piston shaft 29 that is adapted to telescope with the steel tube. Each piston shaft also receives an adjustable collar 30 maintained in different positions of adjustment by a set screw 31. Interposed between the lower end of the steel tube 25 and the collar is a coil spring 32, the tension of which may be adjusted by an adjustment of the collar 30. This spring yieldably retains the piston shaft in position. The lower end of each piston shaft receives a detachable tamper 33 having a head of rubber or other resilient material 34 united thereto by fastening screws 35.

It will be apparent that as the shaft 22 is rotated the crank arm thereon constantly reciprocates these auxiliary tamping devices. The yieldable heads of the tamping devices extend down well within the material of the hopper 10 of the machine. As they reciprocate they serve to constantly pack the material in the molds, then passing beneath the hopper, so that no crevices or voids are left in the tamped products that are to be carried forward by the molds. The tampers are furthermore resiliently mounted due to the springs 29 so that they will yield in the face of any abnormal strains thereby preventing any parts of the apparatus from being injured by such tampers. The rubber tamping tips and the feeding springs allow any of the parts of the molds to pass under them without injury to either. The tension under which these tampers work may, as before stated, be varied depending upon the adjustment of the spring.

In the operation of this device the principal tamping or packing of the material on the moving mold sections occurs by reason of the main tamper 12 and its associated parts. We have discovered, however, that by the use of these independently operated auxiliary tampers or feeders, the plastic material being placed in each mold block can be most thoroughly and compactly tamped thereon so that this material has no voids or crevices of an appreciable size. This means that the resulting block or tile is one that is free of voids and therefore of a durable and lasting nature. It will furthermore be understood that these auxiliary tamping elements, while primarily intended for use in connection with molding machines of the character disclosed in our patent aforesaid, may be used with other types of machines for the molding of blocks, tiles, etc.

Having thus described our invention, what we claim is:

1. In a molding machine, the combination with molding devices, of a main surface tamping device for tamping material thereon, an auxiliary internal tamping device coacting with said material for substantially eliminating voids in the tamped material on said molding devices.

2. In a tamping machine, the combination with a mold, means for feeding material to the mold, a main surface tamping device, means for supporting material to be applied to the mold and to be engaged by said surface tamping device, and a plurality of auxiliary internal tamping devices coacting with said material for the purpose described.

3. In a tamping machine, the combination with a mold, a main tamping device, means for supporting material to be applied to the mold and to be engaged by said tamping device, auxiliary tamping devices coacting internally with said material, said auxiliary tamping devices embodying reciprocating elements having tamping surfaces disposed in said material, and a longitudinally yieldable actuating member interposed between said surfaces and the operating devices for said elements.

4. In a molding machine, the combination with a series of connected molds, means for feeding material to the molds, of tamping means for tamping material on said molds, and auxiliary means entering said material and penetrating the same to a point substantially below its surface for tamping the material applied to each mold to eliminate voids therein.

5. In a molding machine, the combination with a series of connected molds, of tamping means for tamping material on said molds, auxiliary devices coacting with the material applied to each mold for tamping the same to eliminate voids in the molded material, said auxiliary devices comprising a series of axially yieldable reciprocating plungers, and means operable with the main tamping device for actuating said plungers.

6. A tamping device of the character described, comprising a stem, a removable tamping head constructed of resilient material connected with said stem.

7. In a molding machine, the combination

with molding devices, means for tamping material fed thereto, a movable auxiliary tamping means entering such material before it has been subjected to its main tamping action and capable of extending downwardly into the material to a point substantially below the surface thereof, for the purpose described.

8. In a molding machine, the combination with molding devices, means for feeding material to the molding devices, and reciprocating tamping devices cooperating internally with said material for substantially eliminating voids therein.

9. In a molding machine, the combination with a series of connected molds, of means for feeding material to the molds, tamping means for tamping the material on said molds and auxiliary means entering said material and penetrating the same to a point substantially below its surface, said auxiliary means comprising members of generally conical form for tamping the material to eliminate voids therein.

10. In a molding device, the combination with a mold, of means for feeding material thereto, surface tamping means and auxiliary tamping means of substantially tapered form penetrating beneath the surface of said material for internally tamping the same and eliminating voids therein.

11. In a molding machine, the combination with a surface tamping device, of an internal tamping device of tapered form.

12. In a molding machine, the combination with a surface tamping device, of an auxiliary internal tamping device comprising a reciprocating member having a tapered tamping element secured to an end thereof.

13. In a molding machine, the combination with molding devices, of a main tamping device for tamping material thereon, and yieldable auxiliary reciprocating tamping devices coacting with said material for substantially eliminating voids in the tamped material on said molded devices.

In testimony whereof we affix our signatures.

JAMES M. PHILLIPS.
HENRY D. PHILLIPS.