No. 827,127. PATENTED JULY 31, 1906.

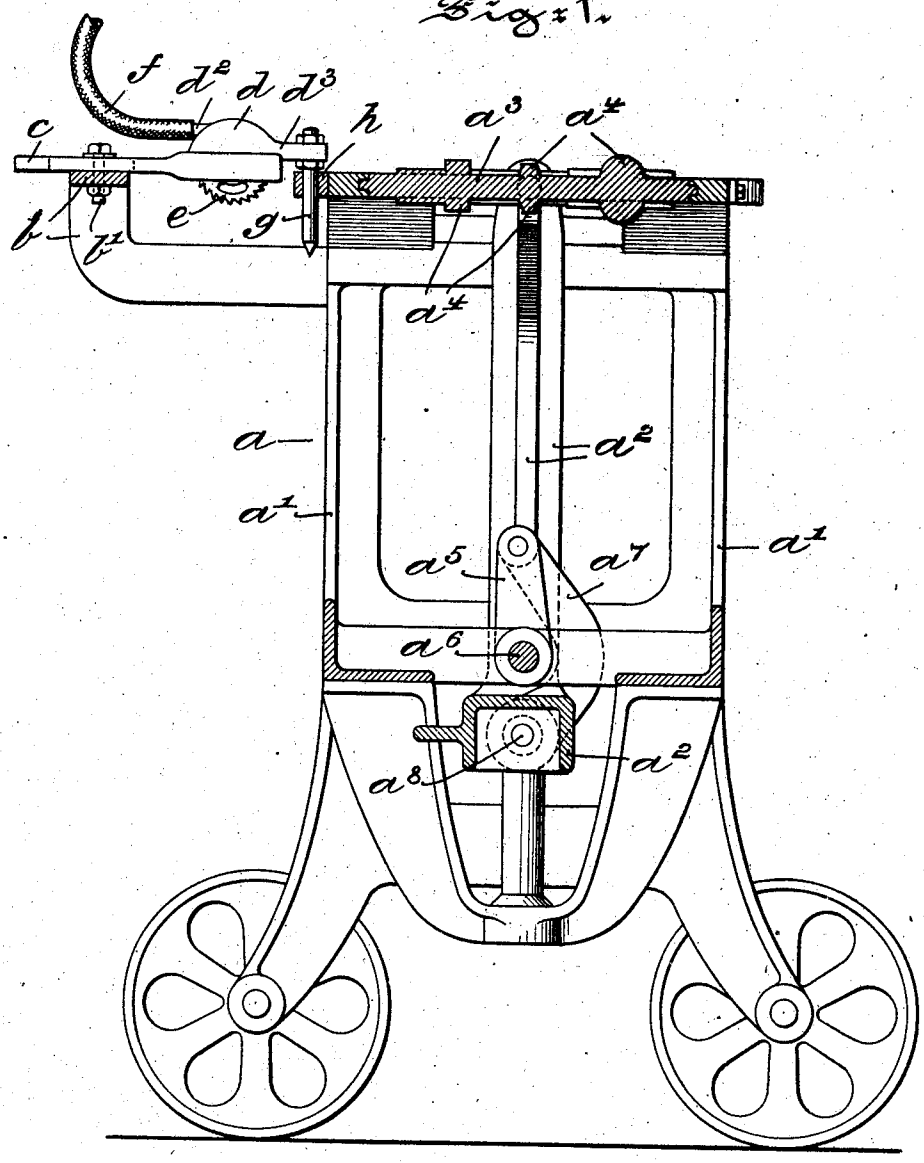
E. E. WAITE.

VIBRATOR FOR MOLDING MACHINES.

APPLICATION FILED OCT. 11, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

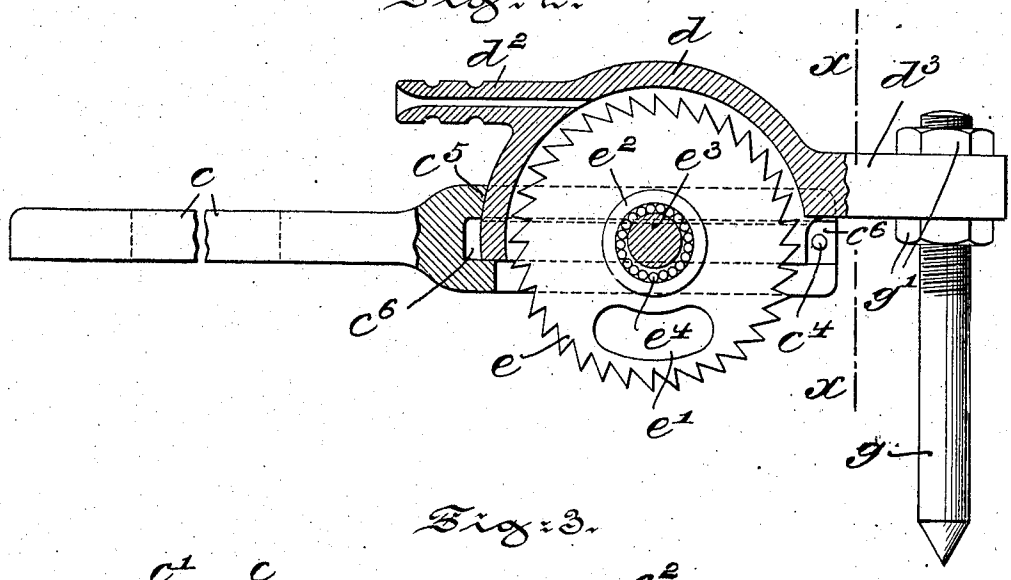


Fig. 3.

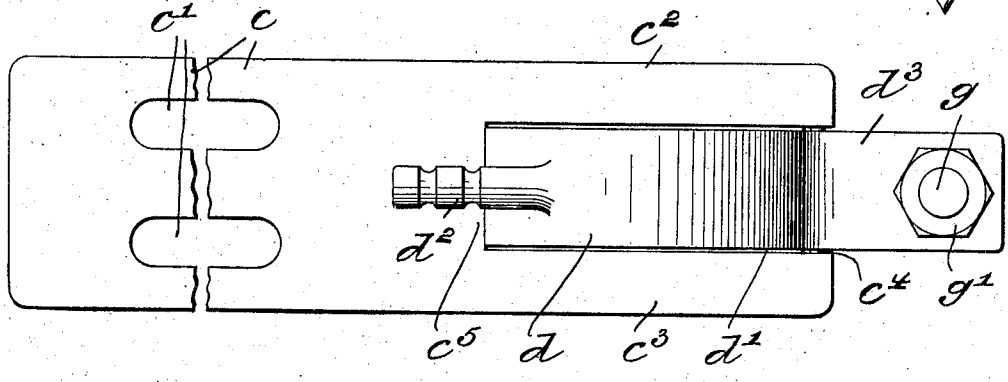
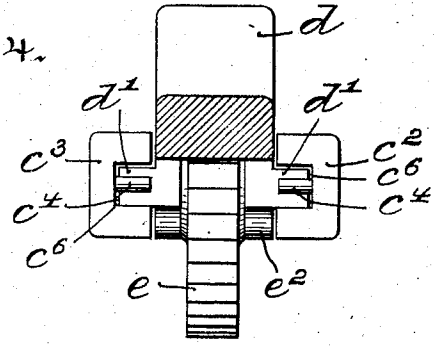


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWIN E. WAITE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MARY E. WAITE, OF WORCESTER, MASSACHUSETTS.

VIBRATOR FOR MOLDING-MACHINES.

No. 827,127. Specification of Letters Patent. Patented July 31, 1906.

Application filed October 11, 1905. Serial No. 282,240.

To all whom it may concern:

Be it known that I, EDWIN E. WAITE, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Vibrators for Molding-Machines, of which the following is a specification.

My invention has relation to vibrators for molding-machines, and in such connection it relates more particularly to the construction and arrangement of the vibrator to vibrate a pattern-plate during the withdrawing of the pattern carried by the plate from the sand of the mold.

The principal objects of my invention are, first, to provide the vibrator with means which permit of the connection and disconnection of the vibrator with the pattern-plate of a molding-machine in which the plate is raised and lowered; second, to so arrange the connecting means of the vibrator with the pattern-plate that the time of engagement of the vibrator with the plate can be extended and shortened at will; third, to provide the vibrator with a movable housing or hood which receives the vibration of rotatable means arranged therein to directly impart the same to the pattern-plate and which hood by partially surrounding the vibrating means permits of a ready discharge of a motive fluid therefrom; fourth, to provide the holder of the vibrator with means to limit the movements of the housing of the vibrator therein and to permit of the ready withdrawal of the housing and vibrating means therefrom, and, fifth, to arrange the holder of the vibrator adjustable, so as to permit of the engagement of the vibrator with pattern-plates of varying sizes.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a vertical sectional view of a molding-machine and illustrating in side elevation the vibrator in engagement with the movable pattern-plate of the machine, a holder carrying the vibrator, and means connecting the holder with the machine embodying main features of my invention. Fig. 2 is a detail view, enlarged, illustrating a toothed wheel rotatably arranged in a housing or hood sliding in the holder and partially surrounding the wheel, an inlet for a motive fluid, and an extension formed integral with said housing, and means adjustably secured to the extension of the housing adapted to be brought into and out of engagement with the pattern-plate of the machine. Fig. 3 is a top or plan view of Fig. 2, and Fig. 4 is a sectional view taken on the line $x\,x$ of Fig. 2 and illustrating in front elevation the means for slidably securing the hood or housing carrying the toothed wheel in the holder and the means for limiting the movement of the housing in one direction.

Referring to the drawings with reference to Fig. 1 of the same, a represents a molding-machine, such as is described and claimed in an application filed by me under date of June 20, 1905, Serial No. 266,161, consisting of a standard a', in which is slidably arranged a frame a^2, carrying a pattern-plate a^3. From each side of the plate a^3 projects a portion of a pattern or a gate of patterns a^4, and in order to bring each portion of the pattern into an operative position the pattern-plate a^3 is raised and lowered by means of crank-arms a^5, secured to a shaft a^6, to which are pivotally connected curved links a^7, engaging bolts a^8 of the frame a^2. By the turning of the shaft a by a hand-lever (not shown) the pattern-plate a^3 is raised and lowered by the crank-arm a^5 and links a^7 and turned during its upward movement by mechanism not shown. As shown in Fig. 1, to the standard a' of the molding-machine is secured a bracket b, which serves as a support for a holder c, secured to the bracket b by bolts b', passing through slots c' of the holder c, to render the holder c adjustable on the bracket b. The holder c is slotted, so as to form two extensions c^2 and c^3, each of which is provided with a groove c^6. These grooves serve as guideways for a hood or housing d, which by means of flanges d', engaging the grooves c^6, is loosely connected therewith and has a range of movement therein. Within the hood d is arranged in the present instance a toothed wheel e, which by means of an opening e' is made lighter in one portion thereof. A shaft e^3, passing through the wheel e and terminating in the flanges d' of the hood d, supports the wheel e therein, and between the hub por-

tion e^2 of the wheel e and the shaft e^3 is preferably arranged a roller-bearing e^4 to reduce the friction between the wheel and shaft. The hood d at its upper end is provided with a tubular extension d^2, to which a flexible hose f may be attached, which connects the hood d with a suitable source of supply of compressed air or other motive fluid. (Not shown.) When compressed air enters the hood d through the tubular extension d^2, the same is conducted against the toothed periphery of the wheel e and sets the same in rapid rotation. The air after having acted upon a comparatively short portion of the periphery of the wheel e is then discharged from the hood d at a point preferably above the central axis of the shaft e^3, and thus by the quick discharge of the air a back pressure of the same, which tends to retard the rotation of the wheel e, is completely overcome. Owing to the uneven distribution of the weight of the wheel e, the same will vibrate when set in rotation, which vibrations by means of the shaft e^3 are transmitted to the hood d. To the hood is thus imparted a reciprocating movement within the holder, which by means of an extension d^3 is transmitted to a bolt g, engaging a bracket h, secured to the pattern-plate a^3, as shown in Fig. 1. The pattern-plate is thus shaken or vibrated, and the upper portion of the pattern a^4, from which a mold has been made, is sufficiently loosened from the sand of the mold to permit of the removal of the mold from the pattern-plate a^3. However, the shaking of the pattern-plate a^3 takes place during the lowering of the same by the actuation of the shaft a^6, crank-arms a^5, and links a^7 by means of a hand-lever, (not shown,) which lever also controls a valve (not shown) permitting the entrance of compressed air into the hood d. The pattern-plate a^3 during its descent remains only for a certain time in engagement with the hood d, which length of time is determined by the length of the bolt g. As soon as this bolt is brought out of engagement with the bracket h of the pattern-plate a^3 the transmission of vibration to the plate by the hood d ceases, at which time a valve (not shown) controlling the entrance of compressed air into the hose f and hood d is closed by means not shown. In order to increase or decrease the time in which the vibrations are transmitted to the pattern-plate a^3, the bolt g is removably secured in the extension d^3 of the hood d and can be replaced by a shorter or longer bolt g, which is locked to the extension by nuts g', as shown in Figs. 1, 2, and 3. Thus the period of time in which the pattern-plate a^3 is shaken can be readily determined. As shown in Figs. 2, 3, and 4, each of the extensions c^2 and c^3 of the holder c is provided with a bolt c^4, which limits the range of movement of the hood d by engaging the flanges d' thereof. By the removal of these bolts c^4 the hood d and its wheel e can be readily disengaged from the holder c and replaced by another larger hood and wheel, if required. The movement of the hood d toward the slots c' of the holder c is preferably limited by a portion c^5 thereof, against which the hood d abuts, as shown in Fig. 2. However, the arrangement of the hood or housing d, its wheel e, and the holder c is such that the vibrations of the wheel are transmitted to the hood d, which by being loosely mounted in the holder c and permitted to reciprocate therein transmits the vibrations directly to the pattern-plate a^3. Thus a loss in force of the vibrations is obviated by preventing the same from being transmitted to the holder c, which by means of the bracket b is rigidly secured to the standard a' of the molding-machine a. Furthermore, the compressed air by being quickly discharged from the hood d, having been held in engagement with the wheel e for a time sufficient only to spend its force thereon, eliminates the danger of a back pressure, which would be caused by confining the air in the housing or hood and providing an insufficient exit therefor. Thus another source of loss is overcome in the vibrator of my invention.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a molding-machine, a holder, a hood or housing loosely mounted in said holder, rotatable means arranged in and partially surrounded by said hood, and means carried by said hood adapted to conduct motive fluid into the same to actuate said rotatable means and to produce by the rotation of the same a vibratory or reciprocating movement of the hood in said holder.

2. In a molding-machine, a holder, a hood or housing loosely mounted in said holder, rotatable means mounted in said hood, means carried by said hood adapted to conduct motive fluid into the same and against said rotatable means to reciprocate said hood in said holder and to produce independent of said holder the required shaking action by the movements of said hood.

3. In a molding-machine, a pattern-plate, a stationary holder, a hood or housing slidably arranged in said holder, rotatable means arranged in said housing, means carried by said hood adapted to conduct motive fluid into the same and against said rotatable means and to connect said hood with said pattern-plate, and said hood adapted when actuated by said rotatable means to impart its shaking movement to said pattern-plate.

4. In a molding-machine, a pattern-plate, a stationary holder, a hood or housing slidably arranged in said holder, rotatable means arranged in said housing, means projecting from said hood adapted to conduct motive fluid into the same and against said rotatable

means and means to connect said hood with said pattern-plate, and said hood adapted when actuated by said rotatable means to impart its shaking movements to said pattern-plate, and means carried by one of the projecting means of said hood adapted to limit the time of engagement of said hood with said pattern-plate.

5. In a molding-machine, a movable pattern-plate, a stationary holder, a hood or housing slidably arranged in said holder, rotatable means arranged in said housing, an inlet for motive fluid and an extension carried by said hood, a bolt carried by the extension of said hood adapted to engage said pattern-plate, said rotatable means adapted when actuated by a jet as of compressed air to impart a shaking action to said hood and by the same its extension and bolt to said pattern-plate, and said bolt adapted to determine the duration of engagement of said hood with said movable pattern-plate.

6. In a molding-machine, a movable pattern-plate, a stationary holder, a hood or housing slidably arranged in said holder, rotatable means arranged in said housing, an inlet for motive fluid and an extension carried by said hood, a bolt carried by the extension of said hood adapted to engage said pattern-plate, said rotatable means adapted when actuated by a jet as of compressed air to impart a shaking action to said hood and by the same, its extension and bolt to said pattern-plate, and said bolt adapted to determine by its length the duration of engagement of said hood with said movable pattern-plate, and means arranged in said stationary holder adapted to limit the reciprocatory movement of said hood therein.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

EDWIN E. WAITE.

Witnesses:

WILHELM VOGT,

THOMAS M. SMITH