No. 774,918. PATENTED NOV. 15, 1904.

L. MARY.

POTTERY MOLDING MACHINE.

APPLICATION FILED DEC. 13, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

E—F

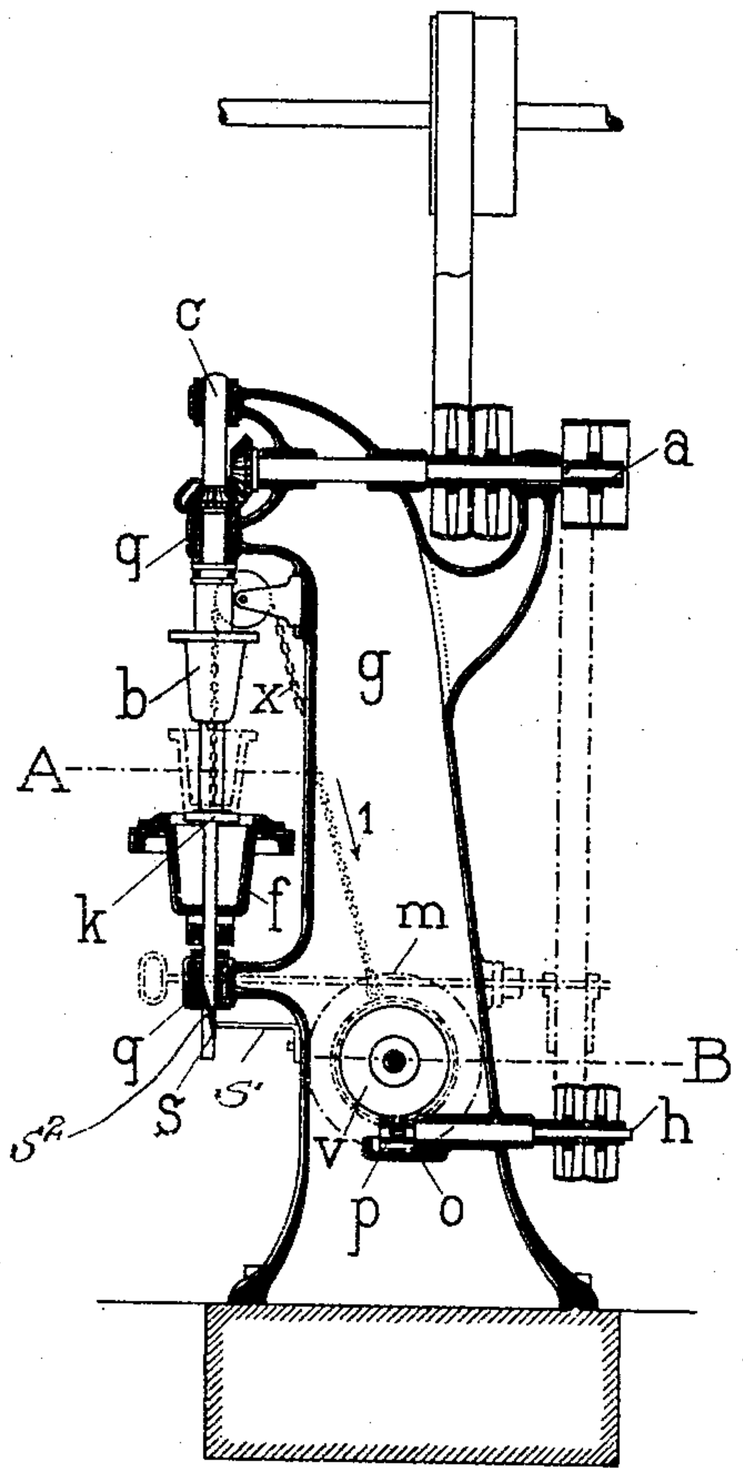


Fig. 2.

A—B.

Fig. 3.

C—D.

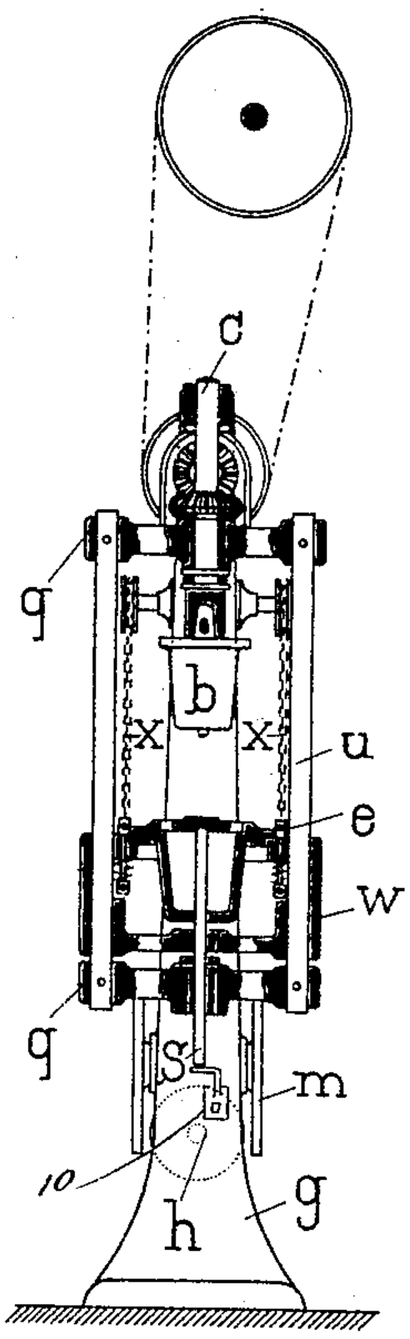
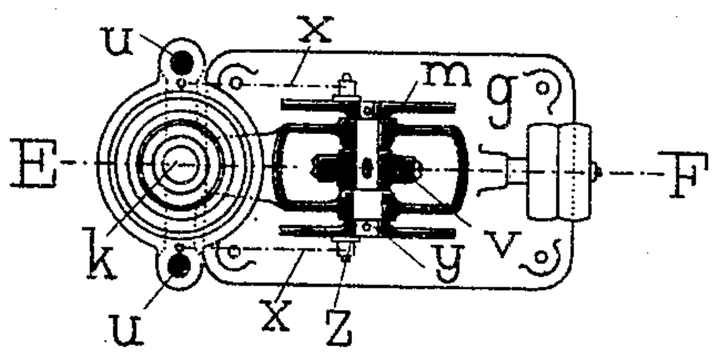
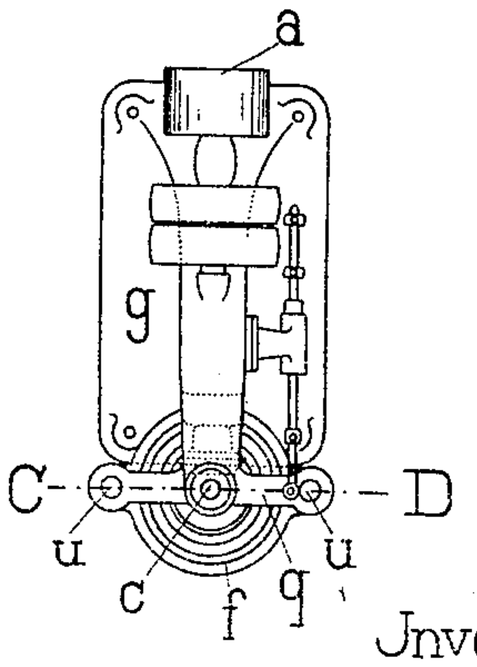


Fig. 4.





Witnesses

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No. 774,918. PATENTED NOV. 15, 1904.

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POTTERY MOLDING MACHINE.

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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 5.

A—B.

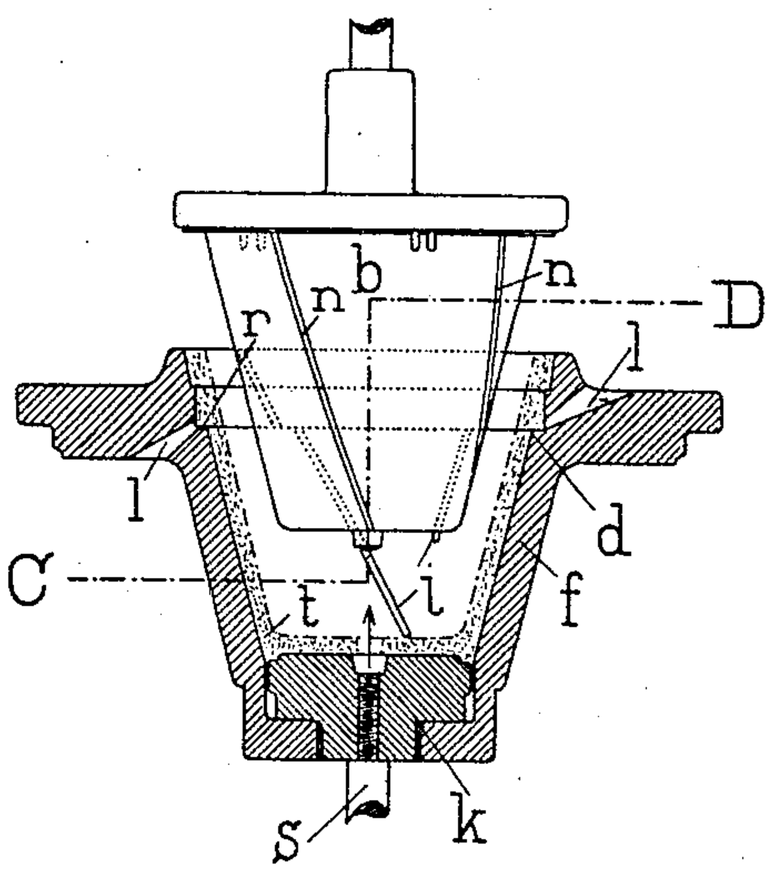
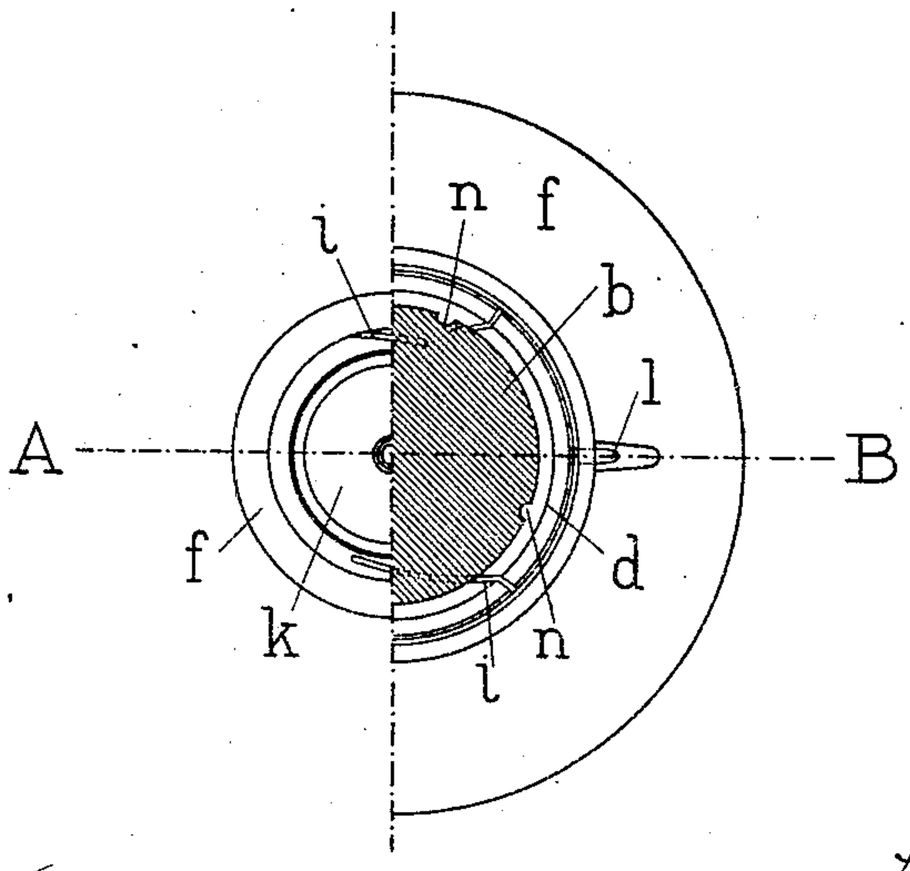


Fig. 6.

C—D.



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POTTERY MOLDING MACHINE.

APPLICATION FILED DEC. 13, 1902.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 7.

C — D.

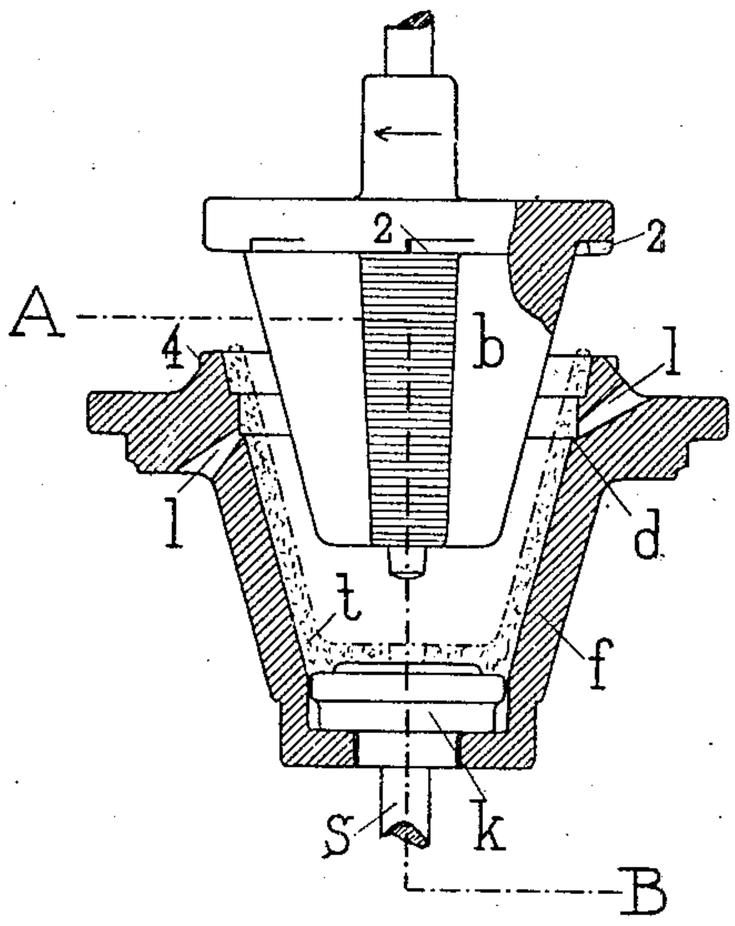


Fig. 8.

A — B.

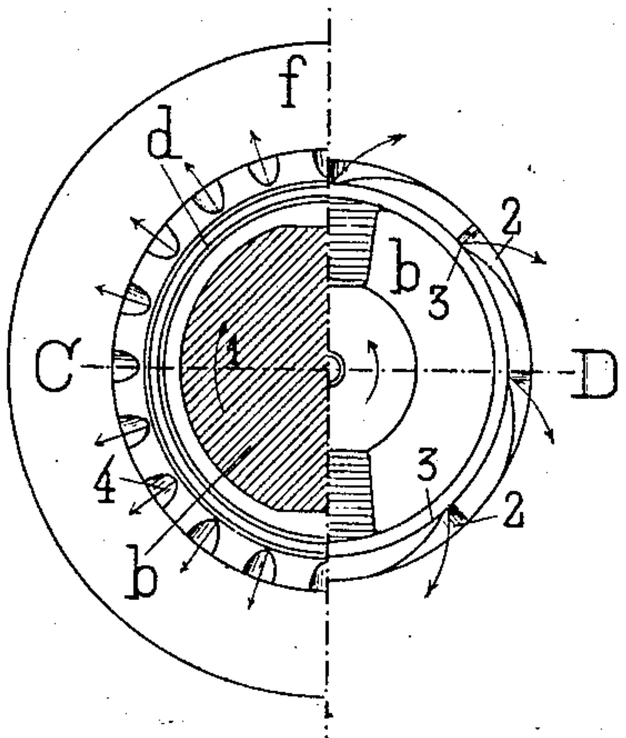


Fig. 9.

E — F.

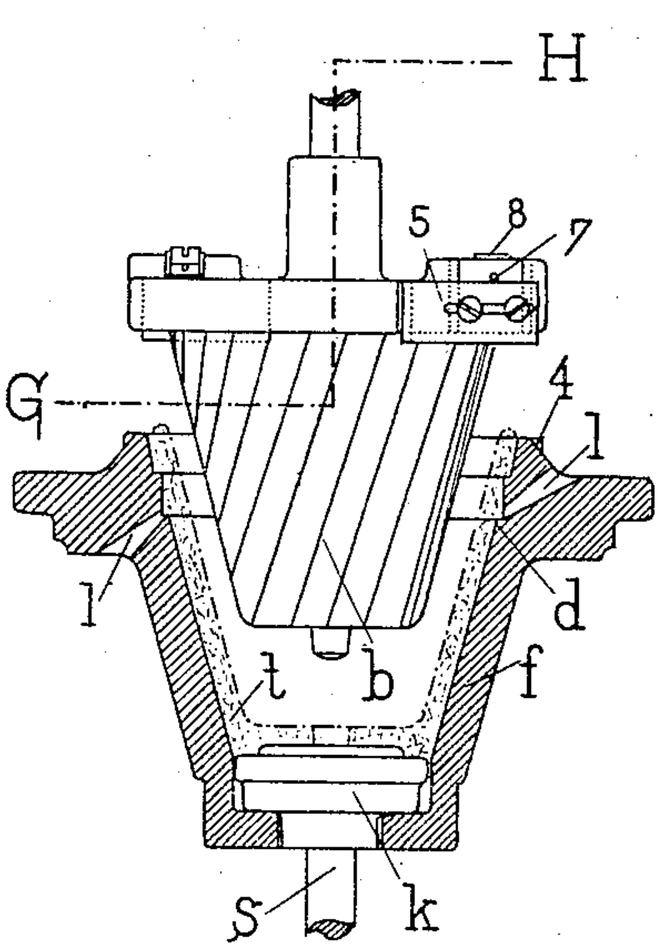
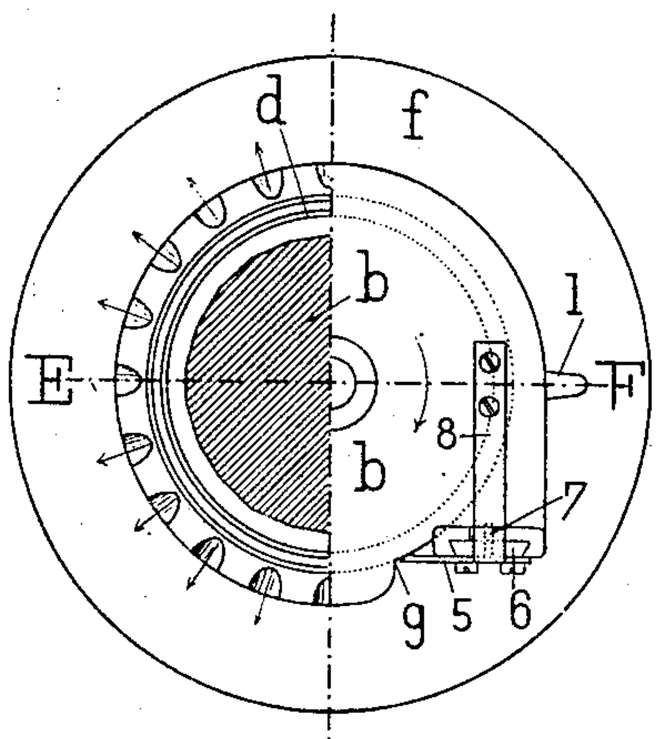


Fig. 10.

G — H.



Witnesses

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No. 774,918. Patented November 15, 1904.

UNITED STATES PATENT OFFICE.

LOUIS MARY, OF FEGERSHEIM, GERMANY.

POTTERY-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 774,918, dated November 15, 1904.

Application filed December 13, 1902. Serial No. 135,152. (No model.)

To all whom it may concern:

Be it known that I, LOUIS MARY, a subject of the Emperor of Germany, residing at Fegersheim, in the Province of Alsace, in the German Empire, have invented certain new and useful Improvements in Pottery-Molding Machines, of which the following is a specification.

The machines and molds at present employed by potters do not admit of perfect ware being turned out owing to the interior of the molds being insufficiently ventilated and the surplus clay not thoroughly removed therefrom.

My new machine is designed for the manufacture of revolved ware from clay, and is more particularly adapted for the fabrication of those articles which, in addition to careful execution in general, must be of high porosity. Such wares are, for instance, flower-pots, either with or without a lip, flower-vases, drip-pans, and other garden utensils.

In order to make the invention more readily understood, I will now describe it with reference to the accompanying drawings, which show a form of construction of the machine adapted for the manufacture of ordinary lipped flower-pots.

Figure 1 is a vertical section of the machine, taken on line E F of Fig. 2. Fig. 2 is a horizontal section on line A B of Fig. 1. Fig. 3 is a vertical section on the line C D of Fig. 4. Fig. 4 is a plan of Fig. 3. Fig. 5 is a detail view, drawn to a larger scale, showing a vertical section of the flask and the revolving core coöperating therewith. Fig. 6 is a section on the line C D of Fig. 5. Fig. 7 is a view similar to Fig. 5, but showing a second form of core. Fig. 8 shows on the left of the center line a horizontal section on the line A B of Fig. 7 and on the right of the center line an under side view of the core. Fig. 9 is a view similar to Figs. 5 and 7, showing a third form of core. Fig. 10 is a sectional plan view taken on the line G H of Fig. 9.

The main frame *g* of the machine is cast in one piece with cross-arms *q*, which serve to support the operative parts of the machine. The core *b* is secured to the vertical shaft *c*, which is rotated by the horizontal shaft *a* and suitable gear-wheels. In this machine, however, the core *b* has no up-and-down motion. The flask *f*, on the other hand, does not revolve. It is carried by the frame *w*, which is caused periodically to slide up and down on the vertical parallel guide-rods *u* by means of disk cranks *m*, the pin *z* of each of which is connected by a chain *x* to the frame *w*. Motion is transmitted to the cranks from the shaft *a* by means of a belt driving the shaft *h*, to which is keyed the worm *p*, gearing with the worm-wheel *v*, keyed to the crank-shaft.

When the flask has reached its lowermost position, as shown in the drawings, a lump of clay of suitable size is placed upon the movable flask-bottom *k*, which owing to arrest of the rod *s*, to which it is attached, has already come to rest at an earlier period. The arrest of the rod *s* may be effected by any suitable device—for instance, by means of a bracket l^0, Fig. 3, bolted to the main framing, or by a pin s', projecting from the lower bearing and engaging in a groove s^2 in the rod *s*, Fig. 1. The flask now again ascends on the chains *x*, moving in the direction of the arrow 1, and carries the bottom *k* and the clay with it, forcing them against the core *b*. The latter bores into the clay similarly to the thumb of a potter working with a simple wheel, so that finally the clay assumes the form shown by the dotted lines in Fig. 1—*i. e.*, the form of the space which at the uppermost position of the frame *w* remains between the flask *f* and the core *b*.

To facilitate the molding operation and the ejection of the surplus clay over the rim of the flask and to promote expulsion of the air from the latter, I provide air-channels *n*, Figs. 5 and 6, in the core *b*, or the core instead of being of circular cross-section may be constructed with one or more facets or flat surfaces, Figs. 7 and 8, or may present a number of such surfaces arranged spirally, if desired, as shown in Figs. 9 and 10.

In the highest position of the flask its rim butts against the projecting top edge or lip of the core *b*, this contact between rim and lip taking place prior to the pins *z*, which draw upon the chains *x*, reaching their lowest po-

sition. For this purpose I provide at each end of the frame *w* an eyebolt *e*, to the eyes of which the chain is secured, while the frame rests on spiral springs resting on the bolt-heads. Thus when the disk cranks *m* rotate further the flask remains for a moment at rest pressed against the core. This short interval of rest is sufficient to admit of the lip of the flower-pot being trimmed or finished off.

It is necessary to finish off or trim the flower-pot as above mentioned, since between the surfaces which contact, respectively, with the core and the flask there remains a certain amount of clay adhering, owing to the cohesion of the material, and such clay prevents exact contact of the said molding implements, so that the molded pot presents irregularities or friable projections. The machine must therefore be allowed time to eject such surplus material and the lip of the core so shaped and provided with notches or recesses that the wedge-shaped portions of clay may be forced outward as far as possible, while the last remnant is pressed into channels formed in the flask and running outwardly and downwardly in slanting direction. Figs. 7 and 8 show a core and flask formed in the above-described manner. The core rotates in the direction of the arrow and is provided with a number of notches or recesses 2 in its lip. The front wall of each recess runs radially, while the other wall, 3, which lies behind the first when the core is in rotation is so formed as to act as a blade, so that the clay projecting over the edge is, as it were, cut off and ejected in the direction of the curved arrows, Fig. 8. In order that this clay may pass out unobstructed, the top of the flask is provided with a number of marginal flutes or grooves 4, running diagonally downward, whereby the surplus clay is conducted on to the supporting-flange of the flask. Instead of the grooves 4 the top of the flask may be formed all round as a more or less sharp rim, as shown by the sectioned portion in Fig. 7. In this case the cap or top of the core is constructed with a pendent lip to take over the flask-rim and provided with grooves similar to the flutes 4 otherwise provided in the flask. By this means also the core is centered in the flask at the last moment of completing the molding of the pot.

In the case of particularly tough and sticky material it may be necessary to effect the finishing off of the pot-rim by means of scrapers secured to the core and pressed against the rim of the flask by flat springs, as shown in Figs. 9 and 10. The scrapers or blades 5 (of which there may be one or more) are screwed to guide-blocks 6, sliding vertically in guides secured to the edge of the core-top. In Figs. 9 and 10 the guides are shown in their lowermost position, each controlled by a stop-pin 7 and spring 8. When now the rim of the flask approaches that of the core, the knives 5 are pressed back and cut into the surplus clay at 9, the material being thrown aside, whereby the edge of the pot is rendered smooth. As the flask again retreats from the core the spring 8 depresses the guide-block of the knife 5 into the position of rest, when the stop 7 rests upon the surface of the core.

During the finishing-off period the spiral springs coiled on the bolts *e* are compressed to a certain extent, but return to their normal position when the pins *z* on the cranks *m* leave the lowest position and the flask *f* commences to descend.

The core readily leaves the molded pot on account of the air-channels or flat surfaces, as described. The release of the pot from the flask presents more difficulty when the material is of extremely soft non-resistant nature, liable to lose its form. The release is effected at the moment when the guide-rod *s* of the base *k* is stopped by the bracket l^0 or by the pin *s'* reaching the upper end of the groove s^2 in the rod *s* or any other suitable device that may be employed, the flask itself descending further. Since the pot lies air-tight against the wall of the flask, owing to the lubricant employed, the pot is liable if the flask is rapidly receded to collapse something in the manner of a crushed-in silk hat. This is found to be frequently the case with hand-machines, as with these the rapid descent of the flask cannot be prevented. The rapid retreat, however, is to a great extent avoided in the present machine, owing to the much more uniform descent conditioned by the disk cranks. The inconvenience is mainly obviated, however, by the flask having air-channels *l*, as shown in Figs. 5 and 6. The provision of air-holes *l* is of particular importance. During molding of the pot these holes become filled with the surplus oil, which on releasing the pot from the flask is removed by the inrushing air.

For many clays of greasy nature and for large pots, &c., I employ the following means to procure an easy release of the pot from the flask: The lower portion of the guide-rod *s* of the bottom *k* is provided with a spiral groove s^2, in which engages a pin *s'*, projecting from the lower bearing. In this manner a rotary motion is imparted to the bottom *k* in the descent of the flask, whereby the following advantages are attained:

First. The bottom of the flask is revolved in the flask and the pot thus loosened, inasmuch as air can now more readily enter from below.

Second. Release of the pot from the flask takes place much more easily when the motion is a rotary one than when it is merely a vertical one.

Third. The flask-bottom descends an inclined plane on the guide-rod, so that the descent of the bottom relatively to that of the

flask itself is somewhat retarded, whereby a very gradual separation takes place.

What I claim is—

1. Pottery-molding machine, comprising a main framing, a rotary core mounted at a fixed height in said framing, a vertically-sliding frame, spring-suspension devices for said frame, chains attached to said devices and suitable means for drawing upon and releasing the same, a flask carried by said frame, a vertically-reciprocating plate to receive the clay, forming a movable bottom for said flask, in the upward movement pressed by the flask against the core, and means for arresting the plate in the downward movement previously to the flask, so as to release the molded article, substantially as described.

2. Pottery-molding machine, comprising a main framing, a rotary core mounted at a fixed height in said framing, a vertically-sliding frame, spring-suspension devices for said frame, chains attached at one end to said devices, pulleys over which the chains pass, a crank-shaft driven by suitable means, and cranks mounted thereon and secured to the other ends of the chains, a flask carried by said frame, a vertically-reciprocating plate to receive the clay, forming a movable bottom for said flask, in the upward movement pressed by the flask against the core, and means for arresting the plate in the downward movement previously to the flask, substantially as described.

3. In a pottery-molding machine, the combination of a flask having an up-and-down motion, and a movable bottom for the same, consisting of a plate to receive the clay, supported by a guide-rod provided with a spiral groove, and a pin secured to a stationary part of the machine and engaging in said groove, whereby a rotary motion is imparted to the plate, for the purpose of easier removal of the molded article from the flask, substantially as described.

4. In a pottery-molding machine, the flask having a grooved rim, a rotary core, sliding knives secured to the top of the latter and springs pressing the said knives against the rim of the flask, whereby the superfluous clay which is pressed out is removed and conducted through the grooves of the rim, and the edge cut off at the moment of completion of the articles being molded, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

LOUIS MARY.

Witnesses:
JOSEPH ROHMER,
JOHAN N. KOHL.