

No. 764,621.

PATENTED JULY 12, 1904.

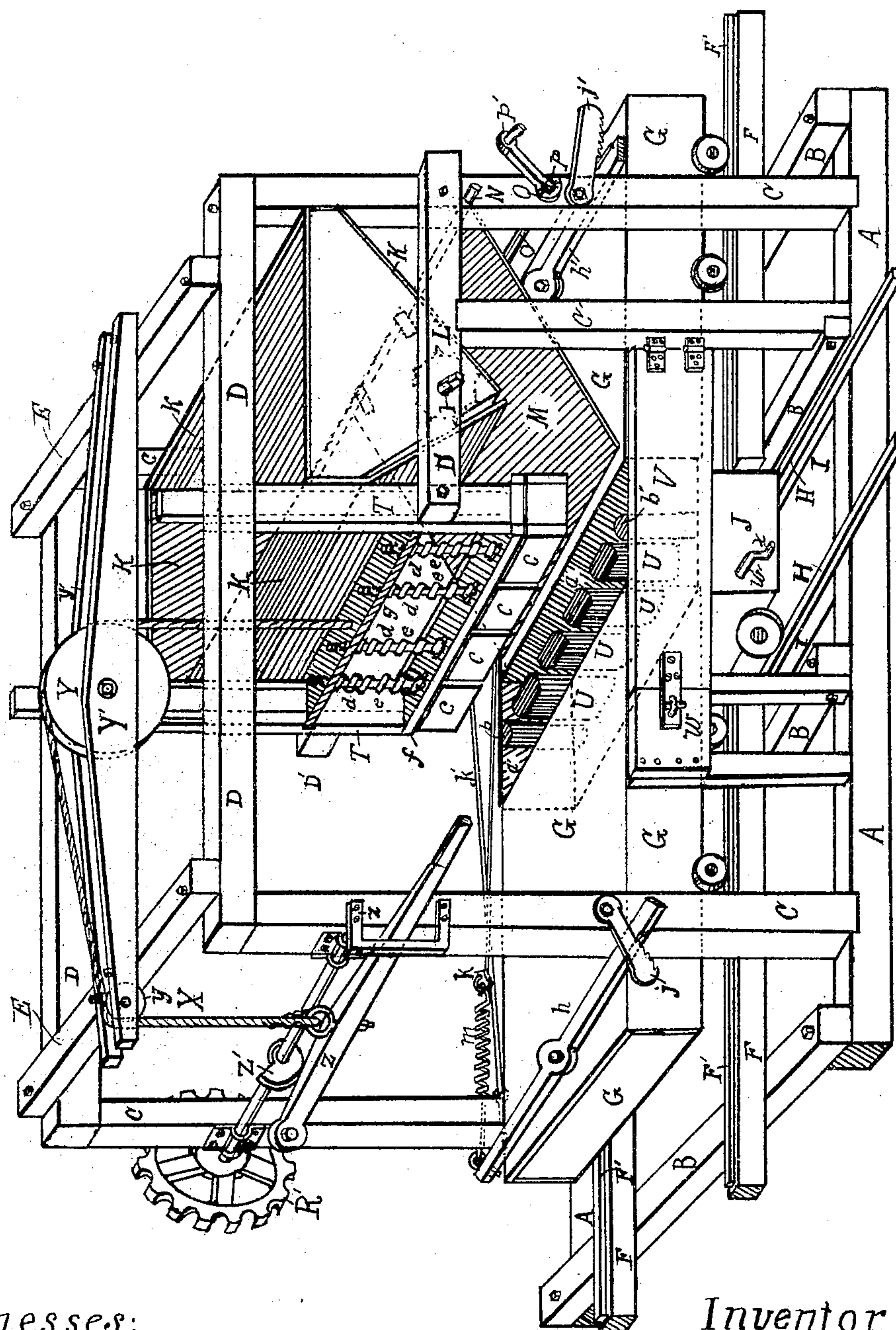
J. B. OLIVER.  
ARTIFICIAL STONE MAKING MACHINE.

APPLICATION FILED MAR. 29, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



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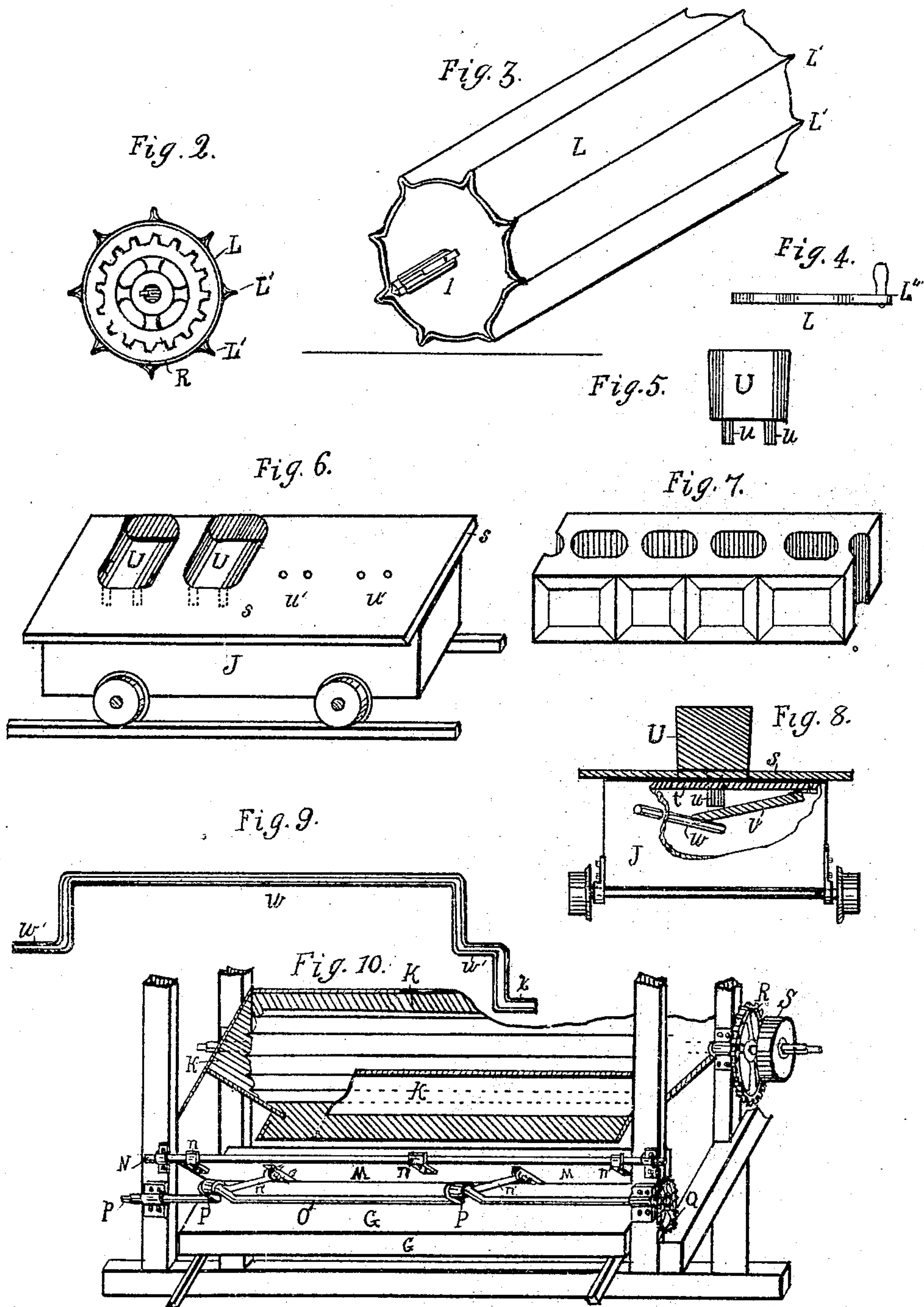
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

JOHN B. OLIVER, OF OKLAHOMA, OKLAHOMA TERRITORY.

## ARTIFICIAL-STONE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 764,621, dated July 12, 1904.

Application filed March 29, 1904. Serial No. 200,590. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN B. OLIVER, a citizen of the United States, residing at Oklahoma city, in the county and Territory of Oklahoma, have invented a new and useful Artificial-Stone-Making Machine, of which the following is a specification.

My invention relates to improvements in artificial-stone-making machines in which one end of the mold is stationary, though not necessarily so, and serves as a pattern to shape the back end of the stone, while the opposite or front end, which also serves as a pattern, is hinged and secured in place while the stone is being formed and then opened to permit the exit of the stone, which rests upon a bed-plate supported by a car, and by said car the stone is transported to the drying-yard. The vertical ends of two cars constitute the sides of the mold, which are adjustable. By placing two or more bed-plates upon the car the vertical dimension of the stone can be regulated, and by placing thereon blocks or cores hollows or openings of any desired size and form are produced. A hopper is provided for the reception of the prepared material near the bottom of the hopper, and extending its entire length is a feeding-roller, which by being turned or rotated forces the material out through an opening for that purpose and the material falling upon an inclined apron or chute, which is being agitated, is conveyed into the mold, where the cores have been properly placed, and around which the material is pressed by a series of packers having a vertical action, all of which will hereinafter be more fully described.

The objects of my invention are, first, to provide a mold which is easily and quickly adjusted to making stone of any desired width, depth, length, and any number at a time; second, to construct a stone-making machine having a series of packers which operate to press the material around the cores and sides of the mold while the stone is being formed; third, to provide means by which the material shall be fed into the mold and distributed automatically; fourth, to provide that the bed-plate forming the bottom of the mold shall rest on

a car, so that by opening a door, which forms one end of the mold, the stone or stones when formed can be easily and quickly taken to the drying-yard; fifth, to construct a machine which shall be cheap, durable, adapted to small or large capacity, to be operated by hand or power, and economize both time and labor. I accomplish these objects by the mechanism illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of the entire machine. Fig. 2 is an end view of the feeding-roller with its sprocket-wheel attached. Fig. 3 is a perspective view of the feeding-roller. Fig. 4 is a plan view of the feeding-roller crank used when operating the machine by hand. Fig. 5 is a side elevation of one of the cores for making hollows in the stone. Fig. 6 is a perspective view of a car with a bed-plate on it and two cores in place. Fig. 7 is a perspective view of a finished stone. Fig. 8 is a sectional view of a car with a portion of its end broken away to show the mechanism for raising the cores out of the stones. Fig. 9 is a compound crank or lifting-bar belonging to the car. Fig. 10 is a modified perspective view of the right side and rear of a portion of the machine.

Similar letters refer to similar parts throughout the several views.

The sills A A, with the cross-sills B B B B and the corner-posts C C C C, and the plates D D, with their cross-ties E E, constitute the principal framework of the machine. On the joists or beams F F are securely placed car-rails F', upon which the mold side cars G G move together and apart. The transporting-car J is supported by and moves upon rails H H, which are supported by sills I I.

The hopper K, in which the prepared material is placed, contains a feeding-roller L. (See Figs. 2 and 3.) Below or immediately beneath the hopper is an inclined apron or chute M for guiding the material into the mold as it is forced out of the hopper by the feed-roller L. The upper edge of apron M is loosely attached to a cross-rod N. When the machine is in operation, the lower edge of the apron M has a semivertical oscillating



motion produced by the mechanism illustrated in Fig. 10, in which it is shown that annular clasps pass around the cross-rod and are attached to the upper edge of the apron M, and to its under side thill-coupling studs are attached securely, and to these one end of pitman-rods  $n'$  are connected, while the other end is loosely attached to the double crank rod or shaft O at P. Said shaft O may be rotated by a crank attached at its end  $p$  or by passing a sprocket-chain around the sprocket-pulley Q and around the sprocket-wheel R, which with the driving-pulley S are firmly attached to the shaft of the feeding-roller L, which is provided with longitudinal ribs upon its periphery. The hopper K is supported in part by posts C' C' and cross-beams D' D', and to the extended end of said beams is attached securely the lower portion of guides T T for holding in position the vertically-sliding sash which constitutes the principal framework of the packers  $c c c c$ , which are inverted boxes having standards  $d d d d$ , securely attached, which pass up through the sash-sill  $f$  through the spiral springs  $e e e e$  and through the sash cross-plate  $g$ . By these packers which encircle each core being independent and provided with said spiral springs any irregularities in the feeding or distribution of the material is compensated for.

To the cross-plate of the vertically-sliding sash a rope X is attached, which passes up over pulley Y and over pulley  $y$  and passing downward is attached to tamping-lever Z, which has one of its ends loosely attached to post C, and the other end works loosely in guide  $z$ . The said tamping-lever Z may be operated by hand to raise the packers (they fall of their own weight) or by power by passing a sprocket-chain over sprocket-wheel R' to rotate shaft  $r$  and cam Z', the said chain connecting with a sprocket-wheel secured to the feeding-roller shaft  $l$  or other convenient connection.

The inner ends of cars G G are vertical and constitute the sides of the mold,  $a$  being the right side and  $a'$  the rear end. The mold can be adjusted to any desired width by properly placing the movable mold-cars G G, which are held in place by levers  $h$  and  $h'$  and the serrated bars  $j$  and  $j'$ , attached loosely to posts C C, and also by rods  $k$  and  $k'$ , with their connected spiral springs  $m$  and  $m'$ , (not shown,) the said rods  $k k'$  being attached to the rear corner-posts C C.

The cores U U U U may be of any desired shape and size, provided the strength of the stone is not sacrificed and that they will draw out of the finished stone; but their top should be on a level with the top of the mold. The semicores  $b$  and  $b'$  make the recesses in the ends of the stone and are not confined to any prescribed form or size. The ornamentations of the face of the stone are formed by placing

patterns in the side (in this case the left side) of the mold. (See Fig. 7.)

In Fig. 1 the front end of the mold is a door V, hinged to post C' and hasped to plank W while in operation. By reference to Figs. 5, 6, and 8 it will be seen that the bottom of the mold is the bed-plate  $s$ , which rests on the car J, the bed-plate being provided with holes for the projecting pins of the cores to pass down through to hold the cores in position while the material is being packed around them. When it is desired to remove the cores, which taper slightly, the following device is arranged: To the under surface of the top of the car  $t$ , Fig. 8, is hinged a board  $v$ , with its loose end resting on the compound crank-bar  $w$ , which is supported by the ends of the car J at the bearings  $w'$ , and by pressing its subcrank  $x$  downward the main body of the crank-bar raises the board  $v$  and forces the pins  $u$ , with their cores U, upward sufficiently to enable them to be grasped by the hand and remove them, which may be done before the stone leaves the mold or afterward. To remove the stone when the machine is arranged as in Fig. 1, unlock levers  $h$  and  $h'$  by raising serrated bars  $j$  and  $j'$  and roll mold-cars G G apart, at W unhasp and open door V, run the car J to the drying-yard, and transfer the stone from the bed-plate to the drying-boards by hand or in any convenient way.

When the machine is operated by hand, the prepared material is placed in the hopper, and by the crank L' attached (Fig. 4 illustrates the crank) the feeding-roller is rotated, which by its ribs L' L' L', &c., forces the material out through an opening, adjustable for that purpose. The material falls upon the inclined apron M, which is being agitated by turning crank  $p'$ , thus distributing the material in the mold while the packers are tamping it by the upward-and-downward movement of lever Z.

By extending the length of the mold and the car J and increasing the number of packers and modifying their form and the form of the cores and using what is known in the art as "cut-offs" any desired style and number can be made at one and the same operation. It is deemed unnecessary to illustrate the cut-offs or dividing-plates, which are thin sheets of metal set on edge in the mold laterally to make two or more stones instead of one with the same material and at the same time.

I am aware that machines have been constructed prior to this invention for making artificial stone; but my observation and experience with them convinces me that they all, as at present constructed, require too much time and labor for the amount of finished product they produce.

The utility of my improvement is daily demonstrated, and while I do not claim originality of machines for that purpose what I do



claim as my invention, and desire to secure by Letters Patent, is—

1. In an artificial-stone-making machine, the combination of a sustaining and supporting frame, with a mold-car mounted and movable on a track, and a delivery-car mounted on a track and moving at right angles to the mold-car, and having a carrying plate or plates forming the bottom of the mold-car during the process of forming the stone, substantially as and for the purpose specified.

2. In an artificial-stone-making machine, the combination of a sustaining and supporting frame, with a longitudinal and triangular hopper, a transformable ribbed roller mounted therein, and a rectangular apron or chute for receiving from the hopper and delivering material to the molds, substantially as and for the purpose specified.

3. In an artificial-stone-making machine, the combination of a sustaining and supporting frame with a hopper and a transformable ribbed roller mounted therein, a delivering-apron, a rectangular mold, mounted on a movable car, and having multiform cores therein and a vertically-moving sash or gate, carrying spring-adjustable packers for compressing the stone material in the mold and around the corners, substantially as and for the purpose specified.

4. The combination, in an artificial-stone-making machine, of sills, posts, plates, ties, beams, &c., and the necessary framework to support a vertically-sliding gate or sash having standards passing up through the sill and plate thereof, said standards being encircled by spiral springs and having secured to their lower end packers, like boxes with the under side removed, the packer having an upward and downward movement in unison yet each being independent of the other to compensate for any irregularities in the feeding and distribution of the material in the mold while the stone is being formed by these packers tamping the material around the cores and sides of the mold, substantially as described.

5. The combination, in an artificial-stone-making machine, of the necessary framework to support a vertically-sliding gate or sash, and having attached to its top plate or cross-bar a rope X passing up over pulleys Y and downward and attached to a horizontal lever Z its rear end being attached, loosely, to a post C the other end forming a handle and working loosely in a guide z; the upward-and-

downward movement of the lever Z, by means of the rope X, produces a reciprocal motion of the packers, substantially as described.

6. The combination, in an artificial-stone-making machine, of the necessary framework to support an inclined apron or chute adapted to convey the material from the hopper to the mold and distribute it in the same by an oscillating agitation of the lower portion of the apron, its upper edge being loosely attached to a cross-rod N and having two or more pitman-rods secured to its under side the opposite ends of the said pitman-rods being loosely attached to a double crank-shaft O, one end of which is adapted to a crank for rotating it and the rear end having a sprocket-pulley attached by which it may be rotated, substantially as described.

7. The combination, in an artificial-stone-making machine, of a framework to support a mold consisting of the sides being the vertical ends of two portable cars, the rear end being stationary or portable, the bottom being a bed-plate resting on a portable transporting-car, the front end being a door adapted to open for the car and stone to pass out to the drying-yard, the said door being held firmly in position during the construction of the stone, substantially as described.

8. In connection with a stone-making machine, and as an essential element thereof, a portable car adapted to a portable track extending from the mold to the drying or curing yard, the said car supporting a bed plate or plates which constitutes the bottom of the mold during the process of forming the stone; the said car being provided with a device for raising the cores up out of the stone when finished, consisting of a board with one edge attached, loosely or hinged to the under surface of the top of the car, the other edge resting on a compound crank-shaft supported by the ends of the car in a manner that by rotating the shaft the board comes in contact with the lower ends of the core-pins which project below the under surface of the top of the car and thus the cores are raised sufficiently to grasp and remove them; all substantially as described and for the purposes set forth.

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