P. BROWN.

MOLDING MACHINE.

APPLICATION FILED SEPT. 24, 1910.

1,048,290.

Patented Dec. 24, 1912.

2 SHEETS—SHEET 1.

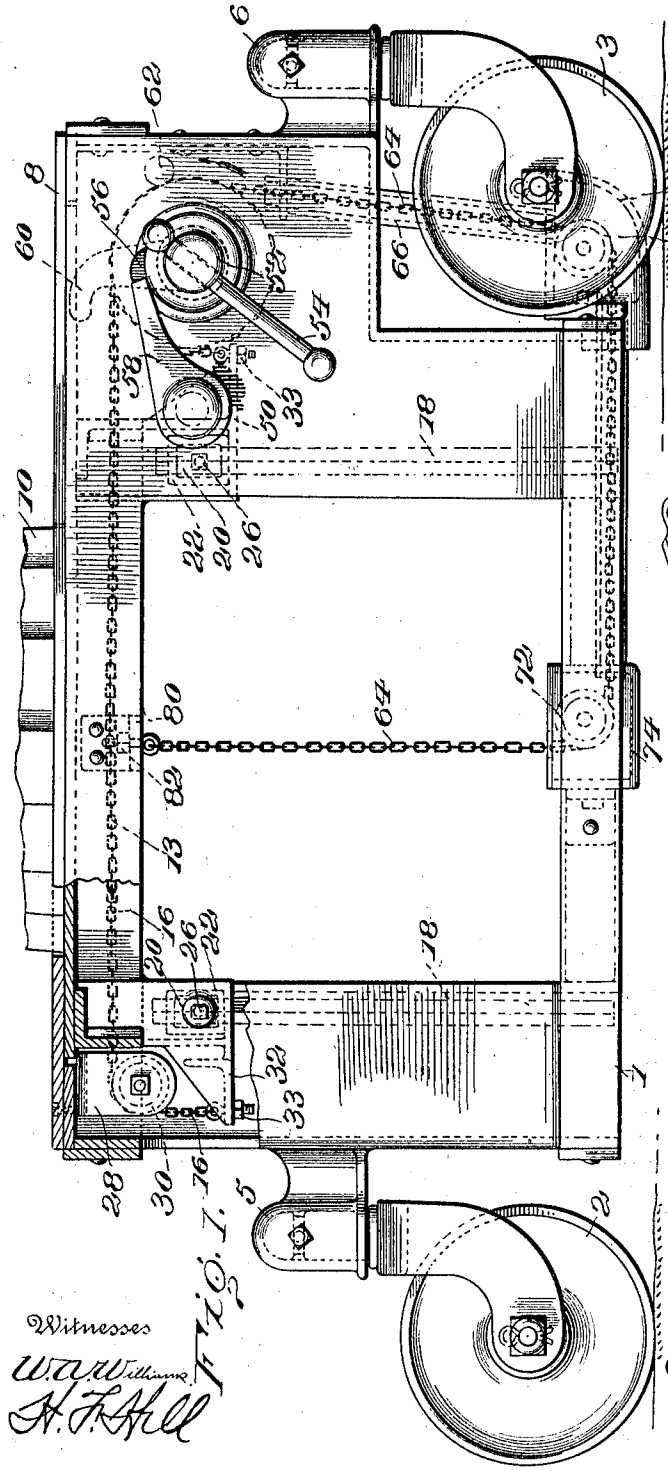

Fig. 1.

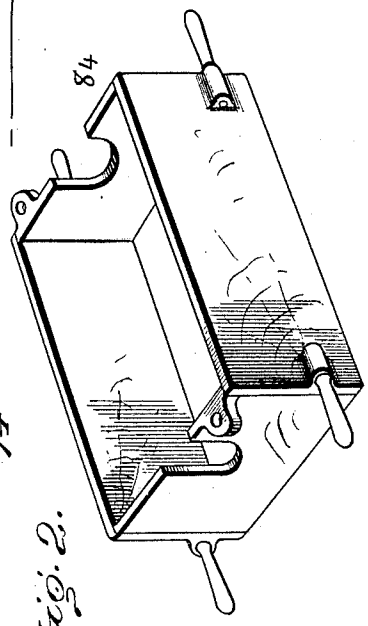

Fig. 2.

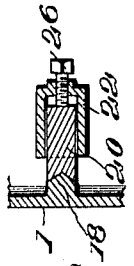

Fig. 3.

Witnesses

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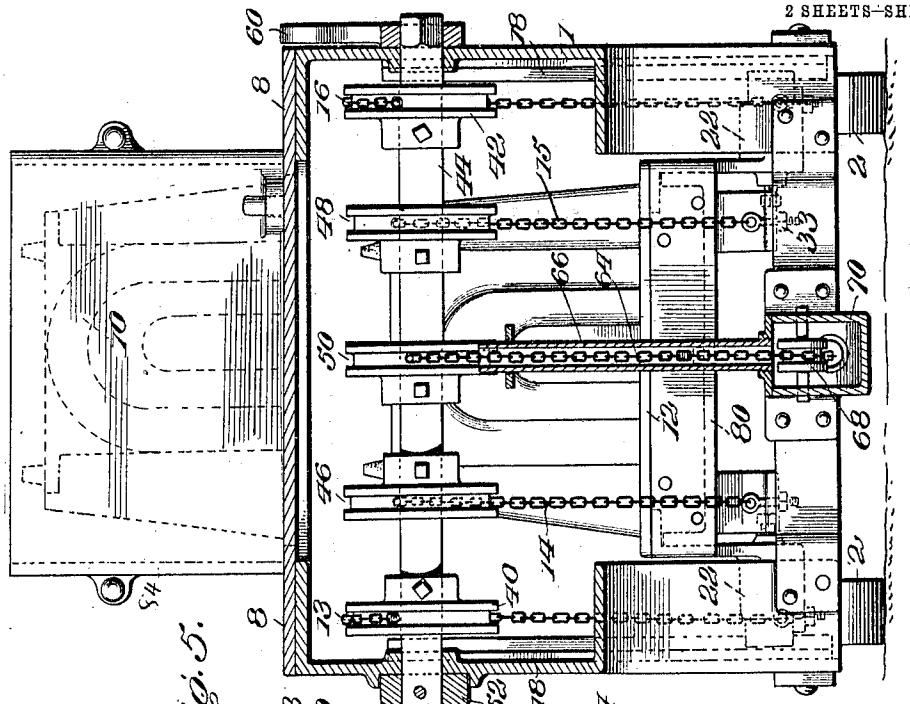

Fig. 5.

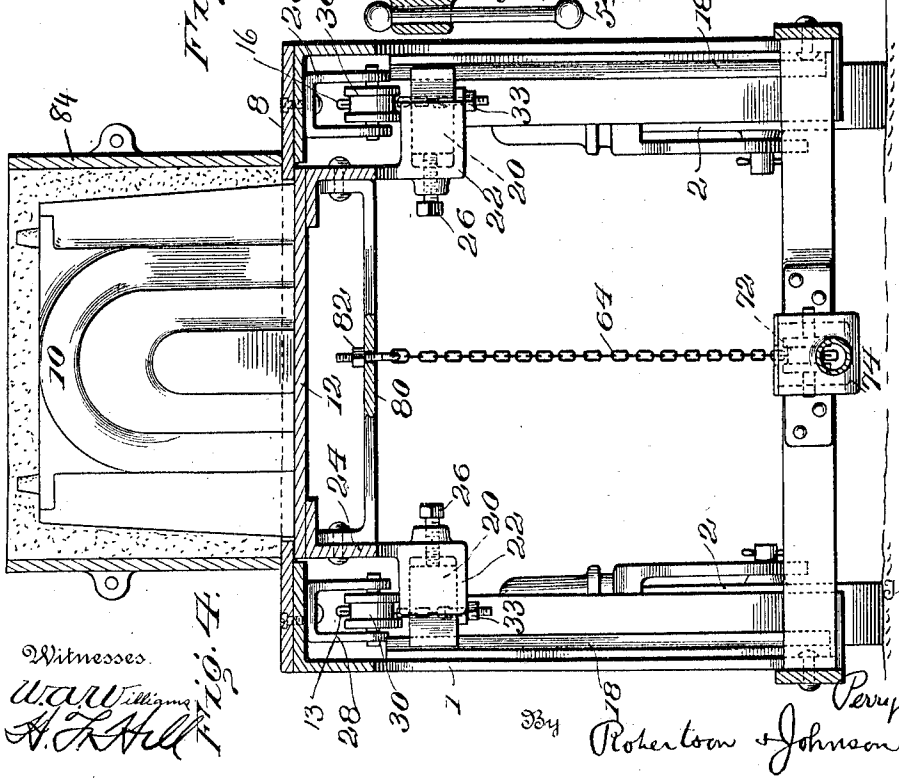

Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

PERRY BROWN, OF CORAOPOLIS, PENNSYLVANIA.

MOLDING-MACHINE.

1,048,290. Specification of Letters Patent. Patented Dec. 24, 1912.

Application filed September 24, 1910. Serial No. 583,693.

To all whom it may concern:

Be it known that I, PERRY BROWN, a citizen of the United States of America, and a resident of Coraopolis, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Molding-Machines, of which the following is a specification.

This invention relates to certain improvements in molding machines and more particularly in the machine for forming the mold in the flask, and the object of my invention is to construct a machine wherein the pattern plate is suspended by chains (or equivalent means) at its four corners and which is at the same time guided in its movement and held from lateral displacement, a fifth chain being employed, to pull the pattern plate downward as the suspending chains are released. The chains or equivalent devices are preferably carried by pulleys of uniform size fixed to an operating shaft and the pulleys are of such size that it takes only one revolution, or a little less, of said operating shaft to move said pattern plate from its extreme upper position to its lowermost position.

My invention consists of the arrangement shown in its preferable embodiment in the drawings forming part thereof, the details of which will now be described.

Figure 1 is a side elevation of my molding machine with parts broken away. Fig. 2 is a perspective view of the flask detached. Fig. 3 is a detail of a guide. Fig. 4 is a vertical cross section on a line drawn through the center of the machine with the pattern in the upper position. Fig. 5 is a similar section on a line taken through the operating shaft with the pattern in the lowermost position.

Referring now to the details of the drawings by numerals, 1 designates the main frame which, for convenience, is provided with a pair of wheels 2 and 3 at opposite ends of the frame supported in cast sockets 5 and 6 formed so that the wheels may turn entirely around, similar to casters. The frame 1 supports the usual stripping plate 8 through which the pattern 10 is projected in the operation of the machine; said pattern being supported by the pattern plate 12 (see Fig. 4). This pattern plate instead of being operated from a toggle or by gearing is suspended from its four corners by means of chains or equivalent devices designated by the numerals 13, 14, 15 and 16, and to form means which insure an even movement of the pattern plate, I employ four vertical V-shaped guides 18 with which coact guiding blocks 20 provided with V-shaped recesses fitting over the V-shaped guides 18; the guiding blocks 20 being adjustably held within pockets formed in blocks 22 cast on or secured to a rectangular frame 24 to which the pattern plate 12 is secured. It will be noticed that the blocks 20 are adjustably held in their pockets and their position controlled by their adjusting screws 26 so that in the event of wear the blocks may be adjusted to prevent the slightest unequal movement of the pattern plate, thus insuring the necessary steadiness.

I have hereinbefore referred to the fact that the pattern plate is suspended at its four opposite corners and the mechanism for suspending said plate will now be described. At one end of the frame I support two hangers 28 which carry a pulley 30, and chains 13 and 16 are supported by these pulleys and the ends extend downward and are connected to hangers 32 adjustable therewith by means of the adjusting nut 33. The said chains 13 and 16 extend from their pulleys 30 the whole length of the machine and their other ends are connected to drums 40 and 42 rigidly connected to the operating shaft 44. This shaft 44 also supports three other drums 46, 48, and 50; the drums 46 and 48 having the chains 14 and 15 connected to them, the other ends of these chains passing downward and being adjustably connected to hangers 51 projecting from the pattern plate frame 24. The shaft 44 extends through both sides of the main frame 1 and to one end is connected a cap 52 and an operating crank 54, the cap 52 having a lug 56 with which coacts a pawl 58 pivotally supported to the frame of the machine. It may here be stated that the drums on the shaft 44 are of such size that it takes a little less than one rotation of said shaft 44 to completely elevate the pattern plate from its lower position to its extreme upper position shown in Fig. 3. And on the opposite end of the shaft 44 I secure a rotatable pawl 60 which coacts with a lug 62 which is located at just the proper point to stop the further rotation of the shaft 44 when the pattern plate and its frame reach the lowermost position. The fifth drum 50 referred to as being secured to the shaft 44 has a fifth chain

64 connected to it and this chain passes downward through a pipe 66 and around a pulley 68 located within an elbow 70 of said pipe and from thence said chain 64 passes around a centrally located pulley 72 secured within a housing 74 immediately under the center of the pattern plate. From this pulley 72 the chain 64 passes upwardly and is secured to a horizontal bar 80 which extends laterally from one side to the other of the bar frame supporting the pattern plate. As will be seen from an inspection of Fig. 3 this chain 64, similarly to the other chains, is provided with an adjusting nut 82 to provide for the proper adjustment. It will be noticed that although this chain is supported by a drum connected with the same shaft 44 to which the other drums are connected, the chain operates in the opposite direction so that when the shaft 44 is rotated in one direction the four chains will give a direct pull upward on the pattern plate frame 24, the chain 64 from the center of the pattern plate frame being let out as the other chains are drawn, and in the reverse direction. This central chain 64 will draw the pattern plate 12 downward at the same time drawing downward the pattern 10 from the sand (which has been packed in the flask 84) through the stripping plate 8, the other chains 13, 14, 15 and 16 being let out simultaneously with the drawing of the chain 64 to permit such movement.

It will thus be seen that in my machine, the pattern plate is suspended from its four corners, and at the same time, it is guided laterally against displacement. It will also be observed that since the pulleys are of uniform size, steadiness of movement is insured, and the pulleys are so proportioned that it takes only a single rotation of the operating shaft to remove the pattern from the sand and lower it to its lowermost position.

What I claim and desire to secure by Letters Patent is:—

1. In a molding machine, the combination of a main frame, a stripping plate, a pattern plate movable to and from said stripping plate, means for suspending said pattern plate from near its four corners, a chain operating to pull the pattern plate downward as the suspending means are released, and means for simultaneously operating said suspending means and chain whereby the pattern plate is uniformly raised and lowered.

2. In a molding machine, the combination of a main frame, a pattern plate movable up and down, pulleys and chains, said pattern plate being suspended by said chains, a chain connected to pull the pattern plate downward as the suspending chains are released, and a single shaft coöperating with all of said chains whereby upon the operation of said single shaft, said pattern plate is elevated or lowered.

3. In a molding machine, the combination of a main frame, a pattern plate movable up and down, pulleys and chains, said pattern plate being suspended by said chains, and a single shaft coöperating with all of said chains, said pulleys and said shaft being so proportioned that upon a single rotation of said shaft the pattern plate may be raised or lowered.

4. In a molding machine, the combination of a main frame, a pattern plate, suspending chains, said pattern plate being suspended from said chains, a chain connected to pull the pattern plate downward as the suspending chains are released, an operating shaft, and a series of pulleys on said shaft of uniform size, whereby upon the operation of said shaft, said pattern plate is uniformly raised or lowered.

5. In a molding machine, the combination of a main frame, a pattern plate, suspending chains, said pattern plate being suspended from said chains, an operating shaft, and a series of pulleys on said shaft of uniform size, whereby upon the operation of said shaft, said pattern plate is uniformly raised or lowered, said pulleys being so proportioned that a single operation of said shaft moves the pattern plate the full extent of its movement.

6. In a molding machine, the combination of a main frame, a pattern plate, suspending chains, said pattern plate being suspended from said chains, a chain connected to pull the pattern plate downward as the suspending chains are released, an operating shaft, and a series of pulleys on said shaft of uniform size, whereby upon the operation of said shaft, said pattern plate is uniformly raised or lowered, said pulleys being so proportioned that a single operation of said shaft moves the pattern plate the full extent of its movement.

7. In a molding machine, the combination of a main frame, a pattern plate, suspending chains, said pattern plate being suspended from said chains, an operating shaft, a series of pulleys on said shaft of uniform size, whereby upon the operation of said shaft, said pattern plate is uniformly raised or lowered, said pulleys being so proportioned that a single operation of said shaft moves the pattern plate the full extent of its movement, and means for catching and holding said shaft when the pattern plate is in the upper position.

8. In a molding machine, the combination of a main frame, a pattern plate, suspending chains, said pattern plate being suspended from said chains, a chain connected to pull the pattern plate downward as the suspending chains are released, an operating shaft, a series of pulleys on said shaft of uniform

size, whereby upon the operation of said shaft, said pattern plate is uniformly raised or lowered, said pulleys being so proportioned that a single operation of said shaft moves the pattern plate the full extent of its movement, and means for catching and holding said shaft when the pattern plate is in the upper position.

9. In a molding machine, the combination of a main frame, a pattern plate, suspending chains, said pattern plate being suspended from said chains, an operating shaft, a series of pulleys on said shaft of uniform size, whereby upon the operation of said shaft, said pattern plate is uniformly raised or lowered, said pulleys being so proportioned that a single operation of said shaft moves the pattern plate the full extent of its movement, means for catching and holding said shaft when the pattern plate is in the upper position and means for catching and holding said shaft when the pattern plate reaches the lowermost position.

10. In a molding machine, the combination of a main frame, a pattern plate, suspending chains, said pattern plate being suspended from said chains, a chain connected to pull the pattern plate downward as the suspending chains are released, an operating shaft, a series of pulleys on said shaft of uniform size, whereby upon the operation of said shaft, said pattern plate is uniformly raised or lowered, said pulleys being so proportioned that a single operation of said shaft moves the pattern plate the full extent of its movement, means for catching and holding said shaft when the pattern plate is in the upper position and means for catching and holding said shaft when the pattern plate reaches the lowermost position.

11. In a molding machine, the combination of a main frame, a pattern plate, suspending chains, said pattern plate being suspended from said chains, a chain connected to pull the pattern plate downward as the suspending chains are released, piping for inclosing said last-named chain, an operating shaft, and a series of pulleys on said shaft, whereby upon the operation of said shaft, the pattern plate is raised or lowered.

Signed by me at Washington, D. C., this 23rd day of September, 1910.

PERRY BROWN.

Witnesses:
S. C. HILL,
THOMAS E. ROBERTSON.