

(No Model.)

2 Sheets—Sheet 1.

M. W. WALKER & W. JOWITT.

MOLDING AND MOLD DISTRIBUTING MACHINE.

No. 395,466.

Patented Jan. 1, 1889.

Fig. 1.

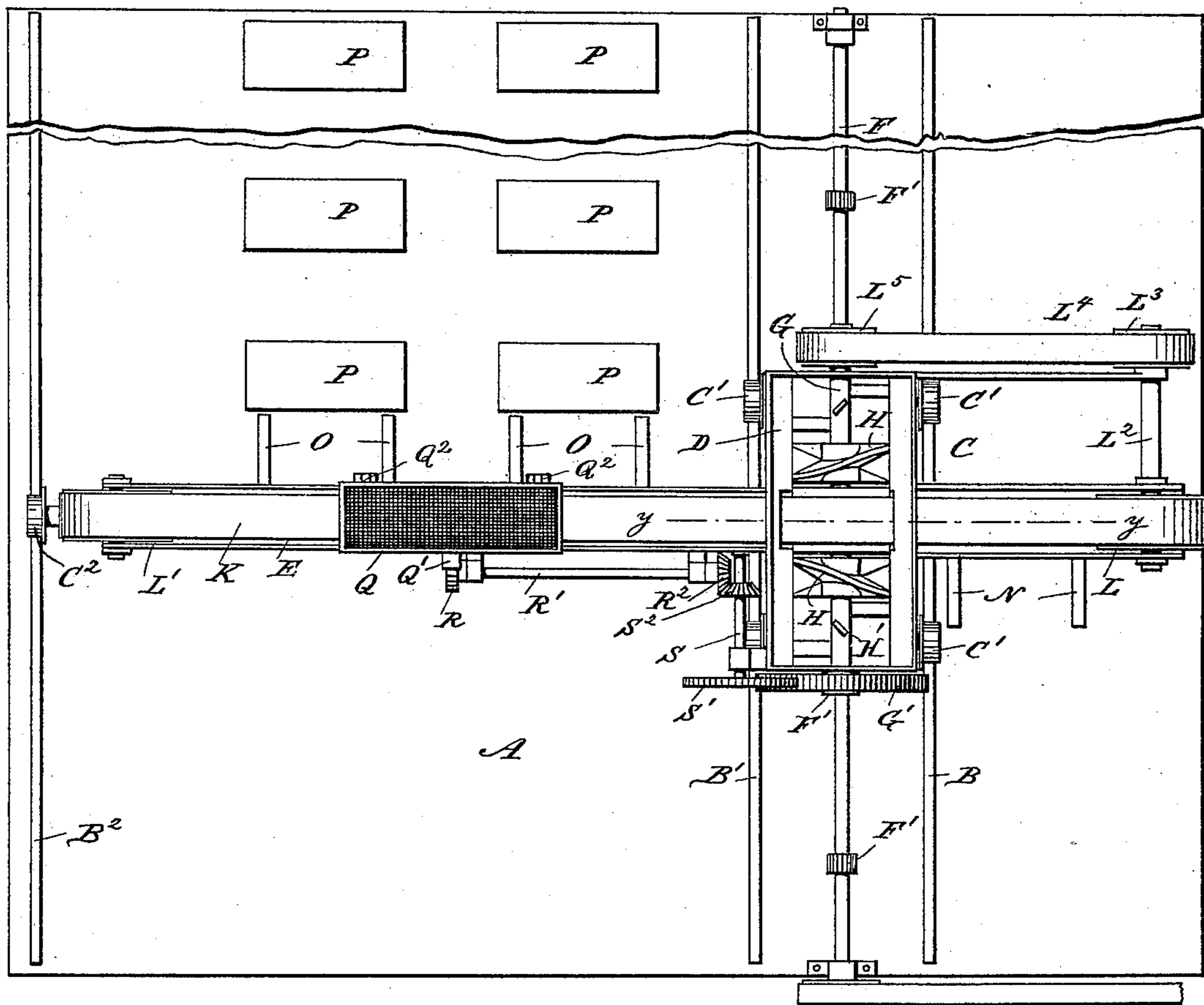
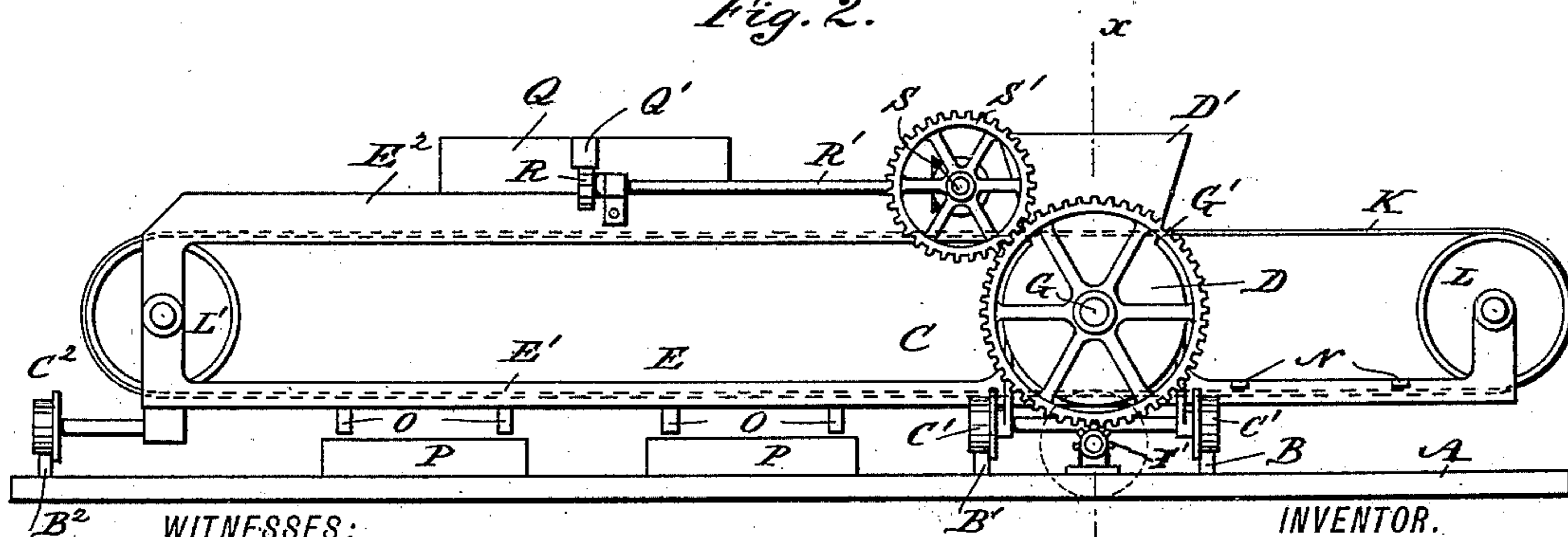


Fig. 2.



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Fig. 3.

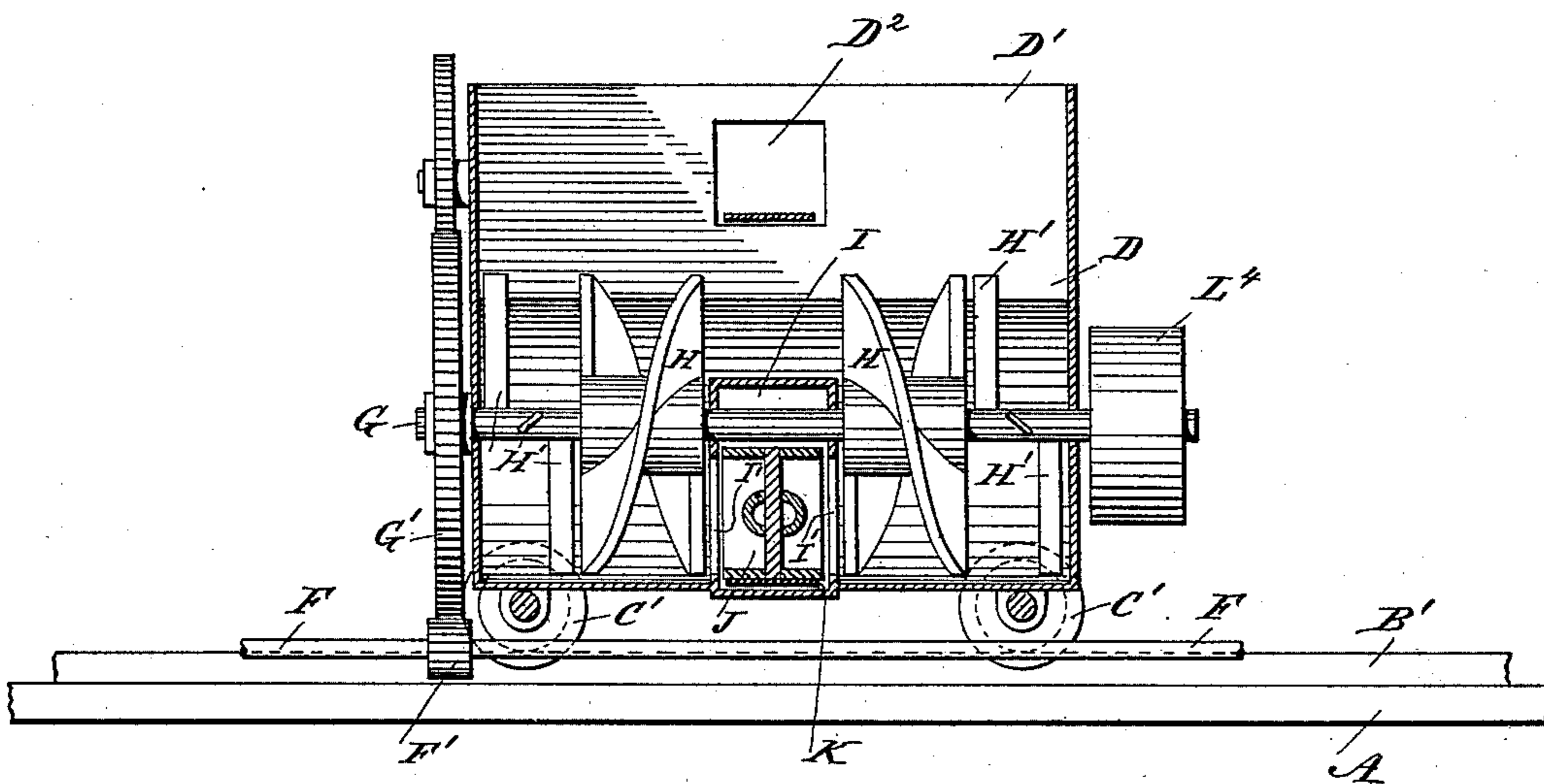


Fig. 4.

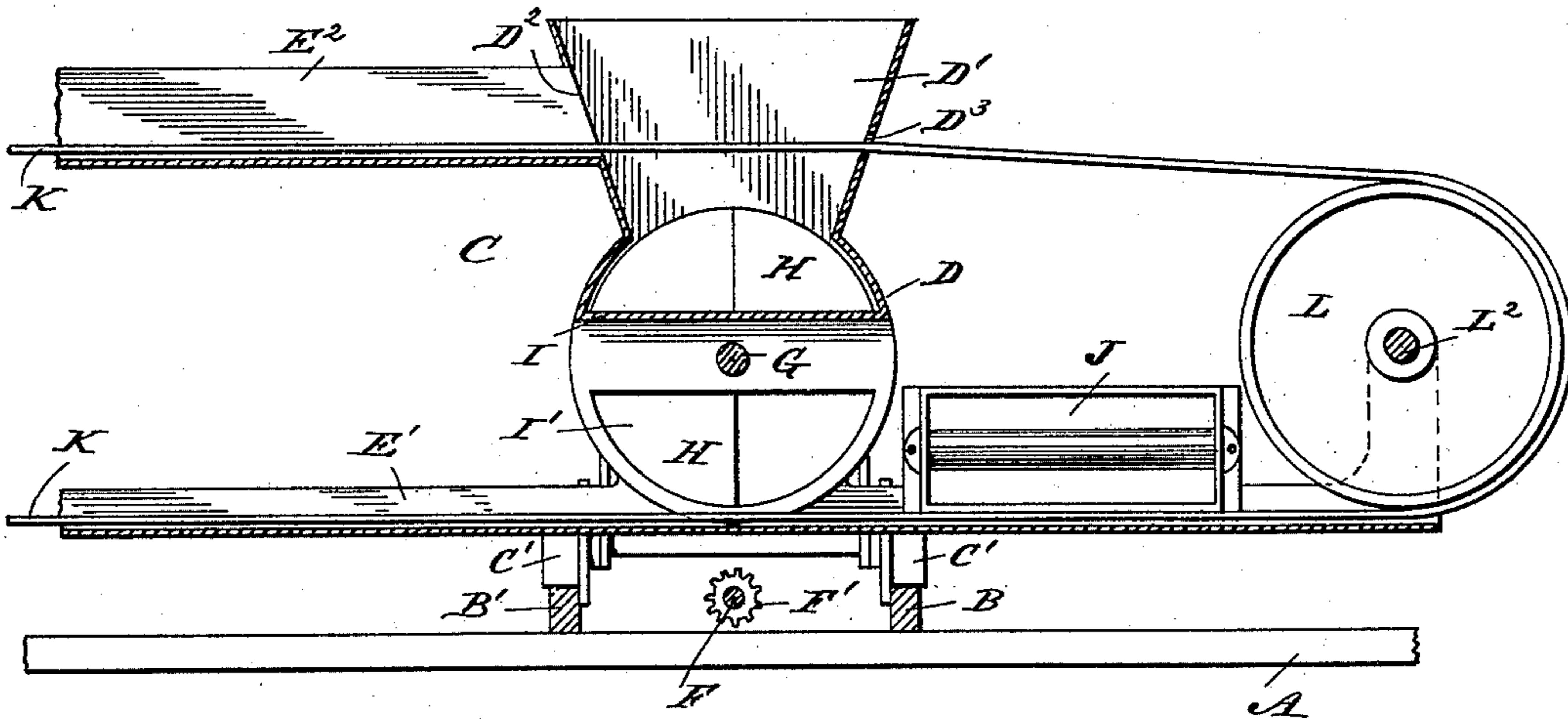
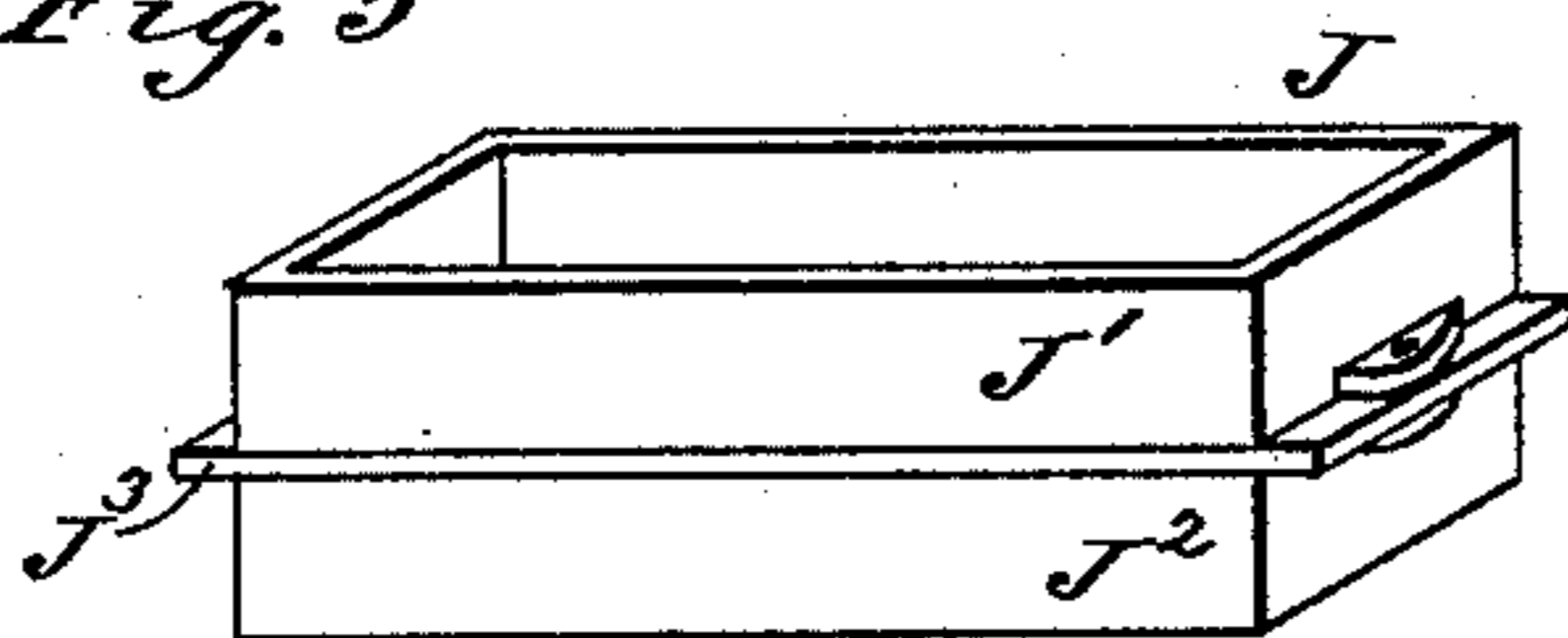


Fig. 5.

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# UNITED STATES PATENT OFFICE.

MARTIN W. WALKER AND WILLIAM JOWITT, OF SING SING, NEW YORK.

## MOLDING AND MOLD-DISTRIBUTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 395,466, dated January 1, 1889.

Application filed May 19, 1888. Serial No. 274,425. (No model.)

*To all whom it may concern:*

Be it known that we, MARTIN W. WALKER and WILLIAM JOWITT, of Sing Sing, in the county of Westchester and State of New York, have invented a new and Improved Molding and Mold-Distributing Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for filling sand into molds and distributing the latter on the floor of the foundry.

The invention consists of a carriage carrying an endless belt supporting the molds and passing through a sand-machine in which sand is filled into the mold, and further consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement, a portion of the floor and track being broken away. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged transverse section of the improvement on the line  $x x$  of Fig. 2. Fig. 4 is an enlarged sectional side elevation of the same on the line  $y y$  of Fig. 1, and Fig. 5 is a perspective view of one of the flasks.

On the foundry-floor A are formed the three parallel tracks  $B B' B^2$ , on which is held to travel a carriage, C, provided with the wheels  $C'$ , traveling on the tracks  $B B'$ , and supporting a casing, D, provided at its upper end with a hopper,  $D'$ . The carriage also supports a frame, E, provided on one outer end with a wheel,  $C^2$ , traveling on the track  $B^2$ . Between the tracks B and  $B'$  is mounted to rotate in suitable bearings a shaft, F, connected with suitable machinery for imparting a rotary motion to the said shaft. At suitable distances apart on the said shaft are secured the pinions  $F'$ , one of which is adapted to engage at one time a gear-wheel,  $G'$ , secured on one outer end of the shaft G, mounted to rotate in suitable bearings in the casing D, passing, preferably, through the latter.

On the shaft G, inside of the casing D, are secured two spirals, H H, and the arms H', for agitating the sand held in the casing D.

The inner ends of the spirals H abut against the sides of the box I, extending longitudinally through the casing D, being open at each end and being provided in its sides with openings I'. (Plainly shown in Fig. 4.)

When the shaft G is rotated, the spirals H press the sand inward and through the openings I' in the sides of the box I and into the flask J, which passes through the box I longitudinally, being held on the lower part of an endless belt, K. The latter travels in suitable guideways,  $E'$  and  $E^2$ , formed on the frame E, and the said belt also passes over the pulleys L and  $L'$ , mounted to rotate in suitable bearings at the end of the frame E. The shaft  $L^2$ , carrying the pulley L, also carries a pulley,  $L^3$ , over which passes a driving-belt,  $L^4$ , also passing over a pulley,  $L^5$ , secured on the end of the shaft G opposite the gear-wheel  $G'$ . Thus when the shaft G is rotated a like motion is imparted to the shaft  $L^2$ , which, by its pulley L, imparts a traveling motion to the endless belt K.

On the side and at one end of the lower guideway,  $E'$ , of the frame E are held the arms N, over which are passed the flasks J, in order to place the latter conveniently on the lower part of the traveling belt K. On the other end of the guideway  $E'$  of the frame E are secured downwardly-extending arms O, which serve to slide the filled flasks downward from the traveling belt K onto the boards P, which form the bottom of the flask, and on which the latter rests until the liquid metal is poured into the same.

The upper guideway,  $E^2$ , of the frame E opens at one end into an opening,  $D^2$ , formed in the hopper  $D'$ , which is also provided with an opening,  $D^3$ , at the opposite side to the opening  $D^2$  and serving for the passage of the belt K, as is plainly shown in Fig. 4. On top of the guideway  $E^2$  is hinged a box, Q, provided near its bottom with a sieve, and having an up-and-down movement, so that the sand used for the flasks and thrown into the said box Q is separated from impurities and lumps. The good sand passing through the sieve in the box Q falls on the top of the endless belt K and is carried by the latter through the opening  $D^2$  into the hopper  $D'$  of the casing D.

The up-and-down movement of the box Q

is derived by providing the box with an arm,  $Q'$ , extending from the opposite side of the box from that on which the hinges  $Q^2$  are placed and resting on top of the ratchet-wheel  $R$ , secured to one end of a shaft,  $R'$ , mounted to rotate in suitable bearings on the guideway  $E^2$ . The shaft  $R'$  carries a bevel gear-wheel,  $R^2$ , meshing into a bevel gear-wheel,  $S^2$ , secured on the shaft  $S$ , carrying a gear-wheel,  $S'$ , meshing into the gear-wheel  $G'$ , fastened on the shaft  $G$ .

The flask  $J$  (shown in Fig. 5) consists of the usual three parts,  $J'$ ,  $J^2$ , and  $J^3$ , of which the parts  $J'$  and  $J^2$  are the boxes placed on the match-board  $J^3$ , held between the said boxes  $J'$  and  $J^2$ , as shown in Fig. 5. The flask  $J$  is provided with a match-board, as the machine is specially intended for molding cast-iron pipes and pipe-fittings, or other similar articles.

The operation is as follows: The carriage  $C$  is moved in such a position on the tracks  $B$ ,  $B'$ , and  $B^2$  that the gear-wheel  $G'$  meshes with one of the pinions  $F'$  on the shaft  $F$ . The latter is then set in motion, so that the said pinion  $F'$  imparts a rotary motion to the gear-wheel  $G'$ , secured on the shaft  $G$ , and the latter imparts a rotary motion to the endless belt  $K$ , as before described. The gear-wheel  $G'$  also imparts an up-and-down movement to the box  $Q$  by the means above referred to, so that the sand thrown into the said box  $Q$  passes through the bottom sieve onto the belt  $K$ , and is delivered by the latter to the hopper  $D'$  and the casing  $D$ . The operator lifts a flask,  $J$ , edgewise onto the arm,  $N$  and pushes it onto the traveling belt  $K$ , which latter carries the flask into the box  $I$ . The flask on passing through the box presents its open sides to the openings  $I'$  in the said box  $I$ , so that the spirals  $H$  press the sand from the casing  $D$  through the said openings  $I'$  into the two boxes  $J'$  and  $J^2$  of the flask  $J$ . The flask then passes out through the other end of the box  $I$  and travels along with the belt  $K$  on the lower guideway,  $E'$ , to be finally removed by an operator and passed over the arms  $O$  down onto the bottom plate,  $P$ . The flasks are then separated, the match-plates removed, the flasks then reassembled, and the sprues made.

After one of the flasks  $J$  has passed into the box  $I$  the operator places another flask over the arm  $N$  on the belt  $K$ , so that one flask  $J$  travels behind the other through the box  $I$ , is packed with sand, and is removed from the arms  $O$  to the bottom board,  $P$ . When the row of bottom boards,  $P$ , is filled with flasks, the carriage  $C$  is moved forward on the tracks  $B$ , so that the gear-wheel  $G'$  is disengaged from the pinion  $F'$  and is re-engaged by the next following pinion  $F'$  on the said shaft  $F$ . The above-described operation is then repeated.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. In a molding and mold-distributing machine, the combination, with a carriage, of an endless belt mounted on the said carriage, and a flask-filling machine held on the said carriage and through which said endless belt passes, substantially as shown and described.

2. In a molding and mold-distributing machine, the combination, with a carriage, of an endless belt mounted on the said carriage and carrying the flasks, a casing held on the said carriage through which said belt passes, and means, substantially as shown and described, for filling the molds while passing through the said casing, as set forth.

3. In a molding and mold-distributing machine, the combination, with a carriage, of an endless belt mounted on the said carriage and carrying flasks, a casing held on the said carriage and containing sand to be filled into the molds, said belt passing through the said casing, a shaft journaled in the said casing, and spiral plates secured to the said shaft to press the sand into the molds on the said belt, substantially as shown and described.

4. In a molding and mold-distributing machine, the combination, with a carriage, of an endless belt mounted on the said carriage, a casing on the said carriage and containing sand to be filled into the flasks, said belt passing through the said casing, a shaft journaled in the said casing, spiral plates secured to the said shaft to press the sand into the molds on the said belt, and arms held on the said shaft to agitate the sand in the said casing, substantially as shown and described.

5. In a molding and mold-distributing machine, the combination, with a carriage, of an endless belt mounted on the said carriage, a casing on the said carriage and containing sand, a box held in the said casing, being open at its ends and provided in its sides with openings, said belt passing through the said box, and means, substantially as described, for filling the flasks while passing through the said box, as set forth.

6. In a molding and mold-distributing machine, the combination, with a carriage, of an endless belt mounted on the said carriage, a casing on the said carriage and containing sand, a box held in the said casing, being open at its ends and provided in its sides with openings, said belt passing through the said box, and means, substantially as described, for filling the flasks while passing through the said box, comprising a shaft journaled in the said casing, and spiral plates secured to the said shaft and abutting at their inner ends on the sides of the said box, to press the sand through the openings in the said box into the flasks, substantially as shown and described.

7. In a molding and mold-distributing machine, the combination, with tracks laid on the foundry-floor, of a carriage on the said tracks, a casing secured on the said carriage, a shaft journaled in the said casing and carrying spiral plates, and an endless belt mount-

ed on the said carriage, passing through said casing and being operated from the said shaft, substantially as shown and described.

5 8. In a molding and mold-distributing machine, the combination, with tracks laid on the foundry-floor, of a carriage on the said tracks, a casing secured on the said carriage, a shaft journaled in the said casing and carrying spiral plates, an endless belt mounted on the  
10 said carriage, passing through said casing and being operated from the said shaft, and a frame held on the said carriage and having guideways which support the said belt, substantially as shown and described.

15 9. In a molding and mold-distributing machine, the combination, with tracks laid on the foundry-floor, of a carriage on the said tracks, a casing secured on the said carriage, a shaft journaled in the said casing and carrying spiral plates, an endless belt mounted  
20 on the said carriage, passing through said casing and being operated from the said shaft, a frame held on the said carriage and having guideways which support the said belt, and  
25 a sieve hinged on the upper guideway and discharging into the upper part of the endless belt, so that the sand passes into the casing, substantially as shown and described.

30 10. In a molding and mold-distributing machine, the combination, with tracks laid on the foundry-floor, of a carriage on the said tracks, a casing secured on the said carriage, a shaft journaled in the said casing and carrying spiral plates, an endless belt mounted  
35 on the said carriage, passing through said casing and being operated from the said shaft, a frame on the said carriage and having guideways which support the said belt, a sieve hinged on the upper guideway and discharging  
40 into the upper part of the endless belt, so

that the sand passes into the casing, and means, substantially as described, for imparting a swinging motion to the said sieve from the shaft in the casing, as set forth.

11. In a molding and mold-distributing machine, tracks held on the foundry-floor, bottom boards located on the foundry-floor, and a shaft having a rotary motion and provided with pinions, in combination with a carriage on the said tracks, a casing mounted on the  
45 said carriage, a shaft passing through the said casing and provided with a gear-wheel meshing into one of the said pinions, spiral plates secured on the said shaft in the said casing, a box formed longitudinally in the said casing  
50 and provided with open ends and openings in the sides, an endless belt operated from the said shaft in the casing, passing through the said box and supporting the flasks to be filled, a frame held on the said carriage and provided with guideways supporting the said  
55 endless belt, and arms projecting from the lower guideway, substantially as shown and described.

12. In a mold and mold-distributing machine, the combination, with a casing containing the sand, of a box open at its ends and held longitudinally in the said casing, the sides of the said box being provided with openings, spiral plates journaled in the said casing  
65 and abutting at their inner ends at the sides of the said box, and a belt passing longitudinally through the said box and supporting the flasks to be filled, substantially as shown and described.

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