

(No Model.)

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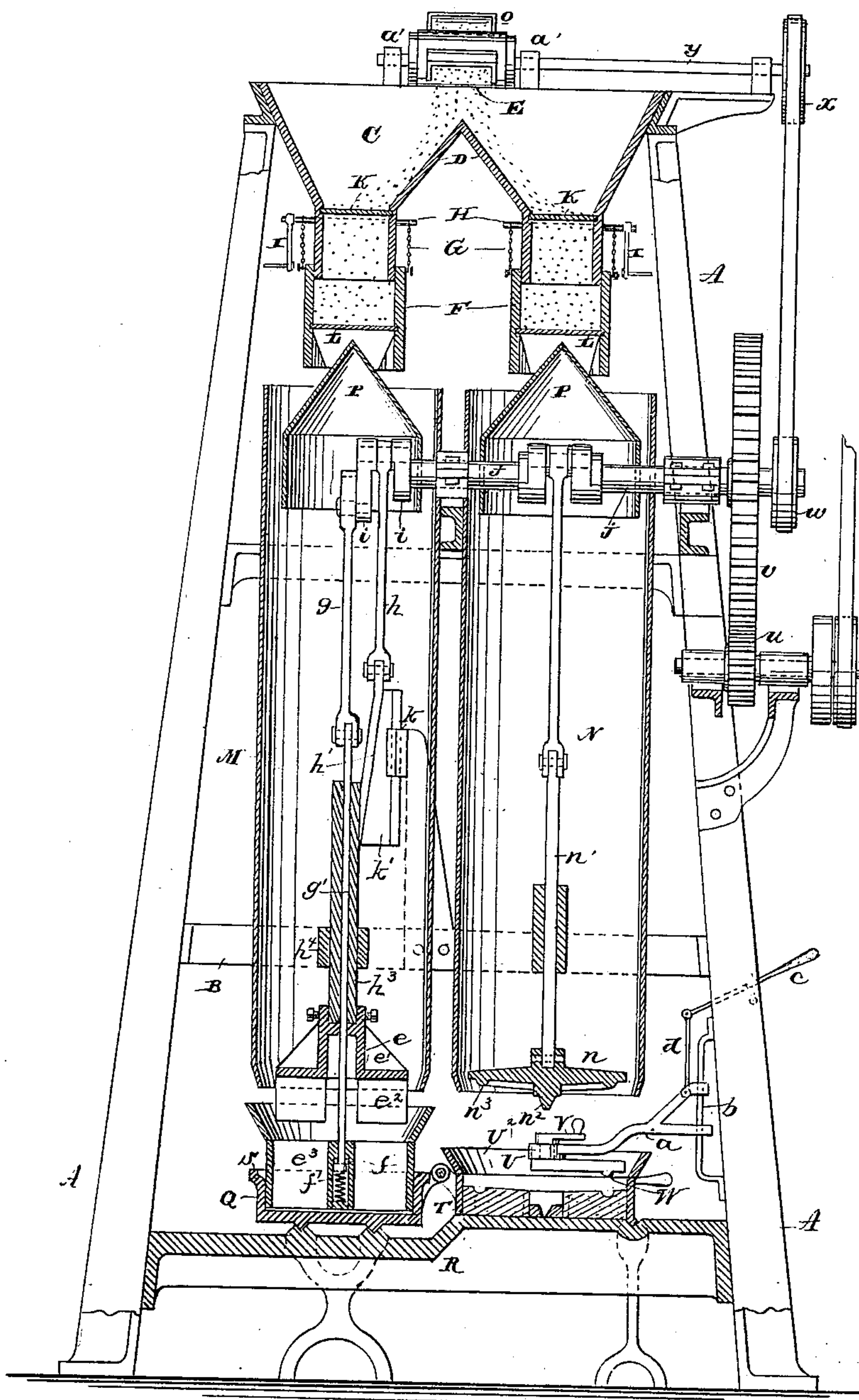
J. J. CARR.

MACHINE FOR MOLDING WHEELS.

No. 329,814.

Patented Nov. 3, 1885.

Fig. 1.



Witnesses.

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(No Model.)

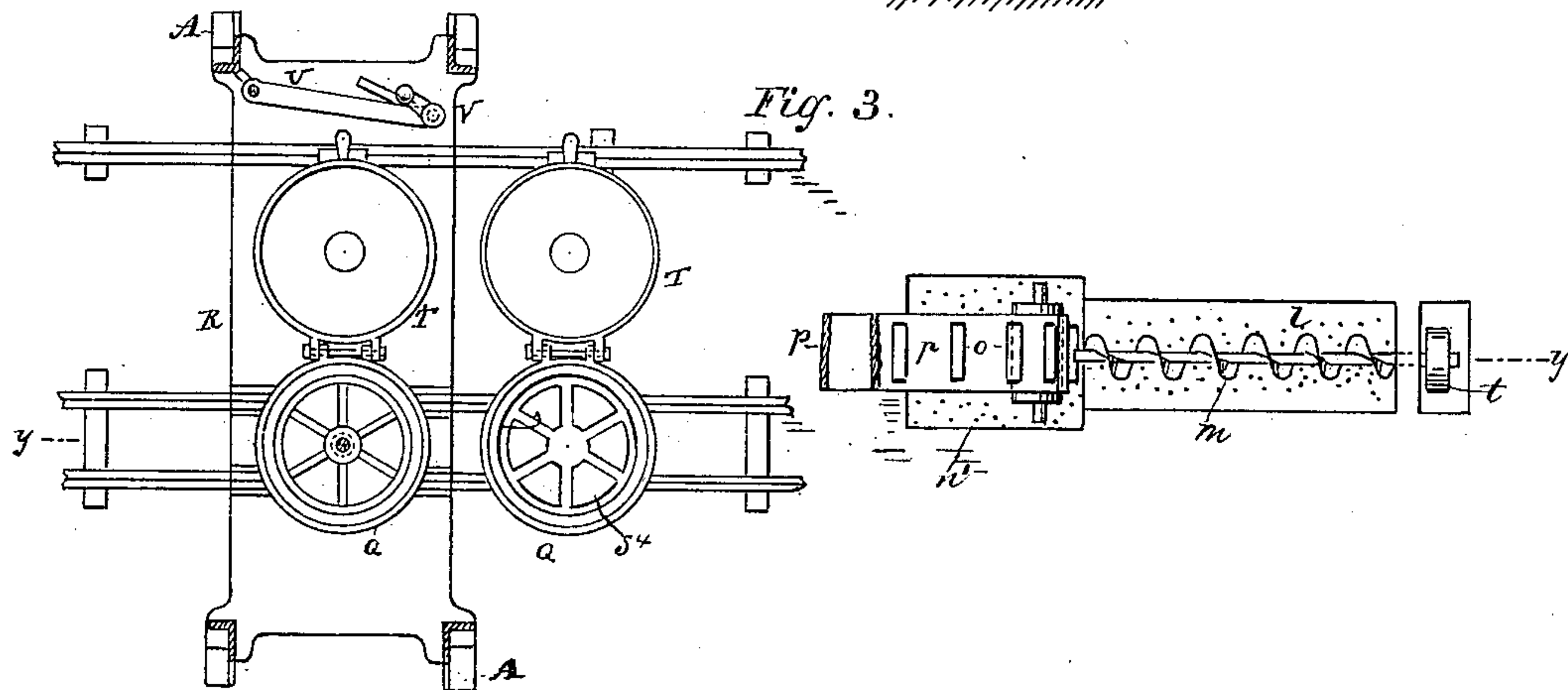
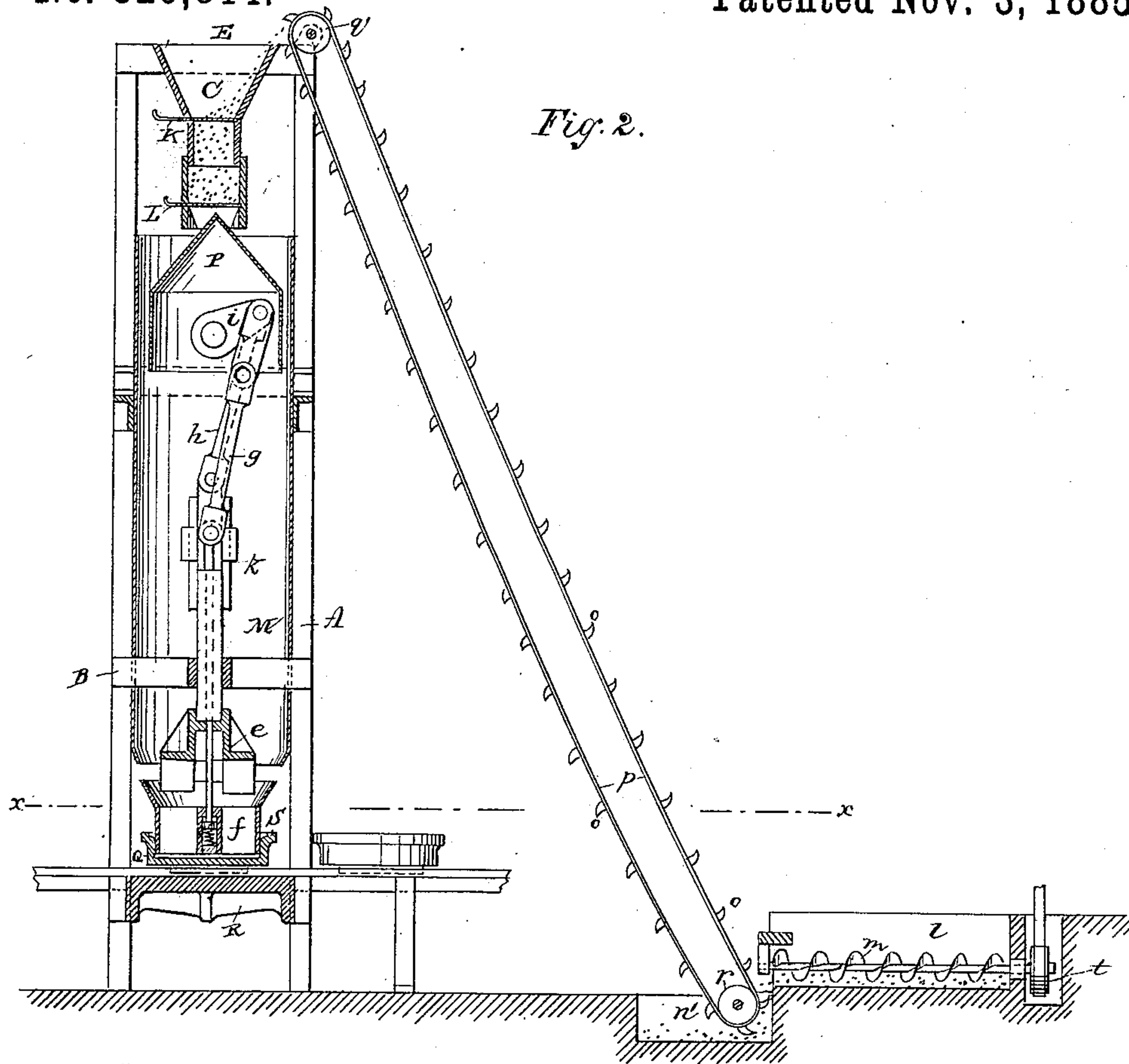
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FIG. 4.

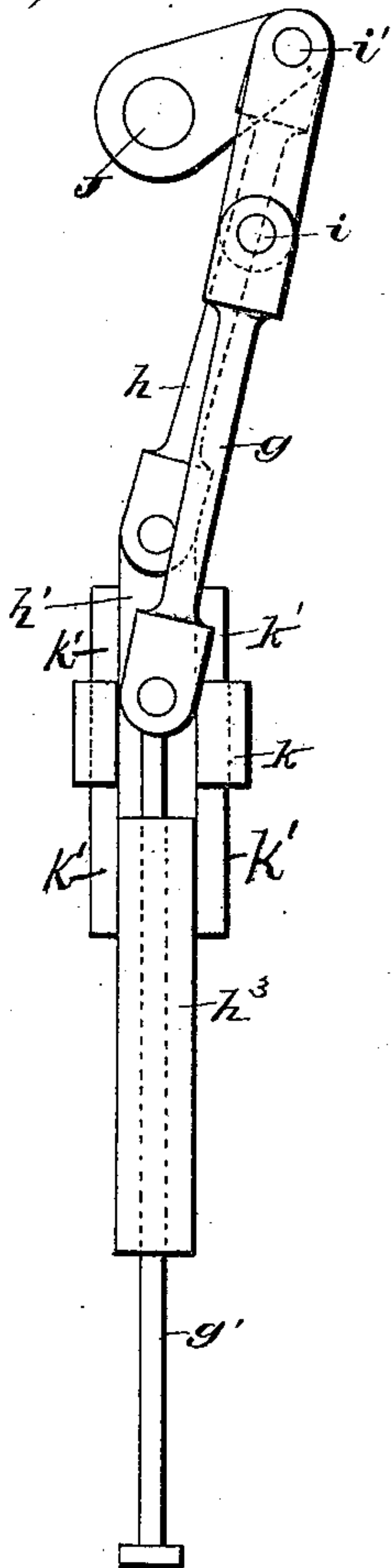


FIG. 5.

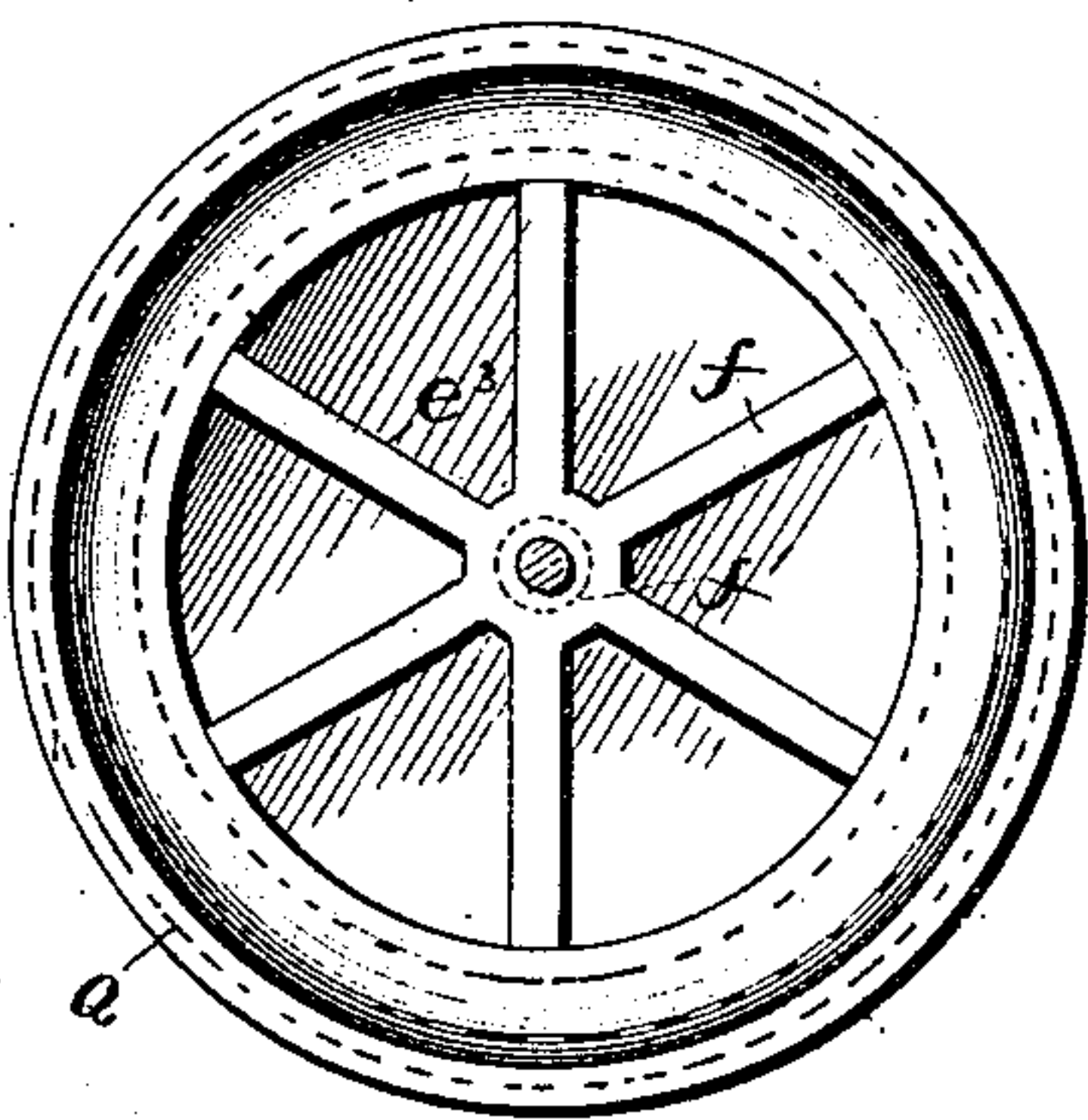


FIG. 7.

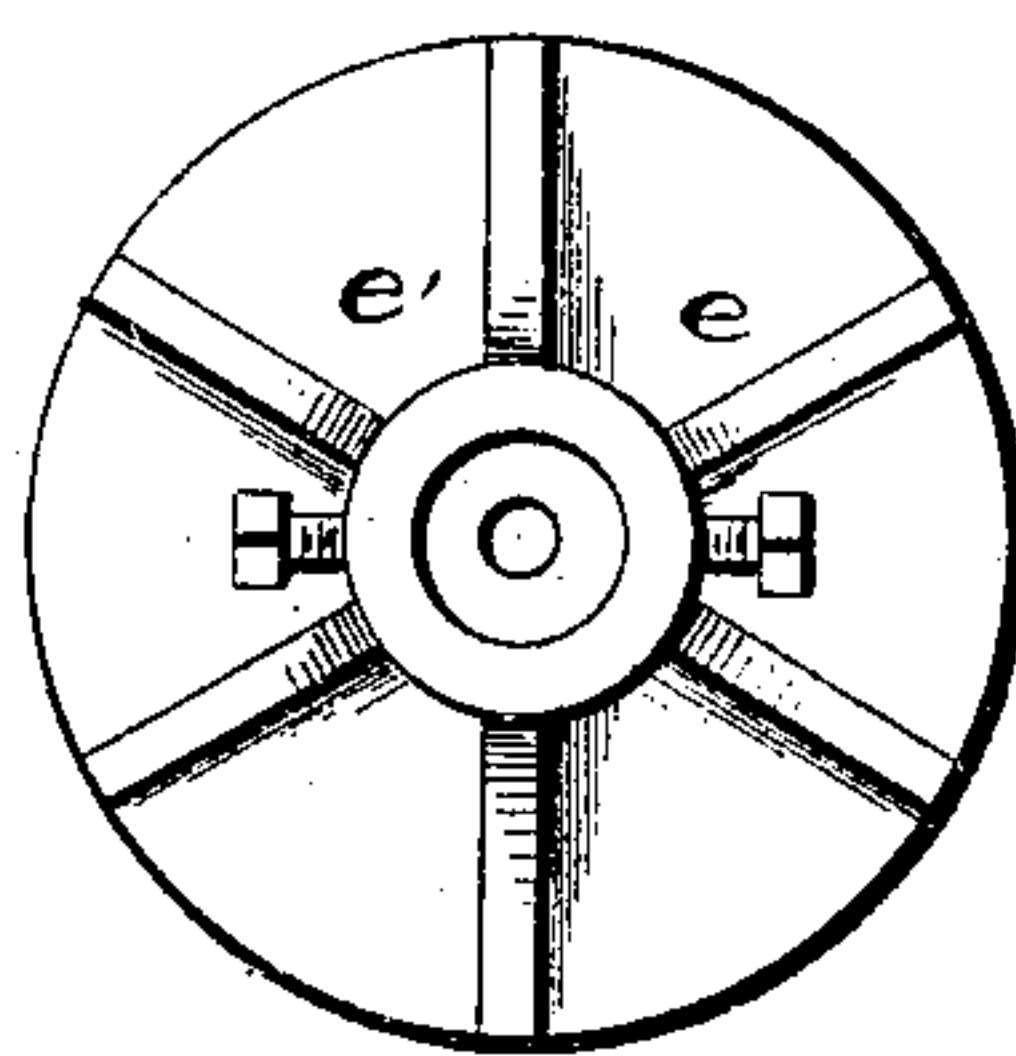
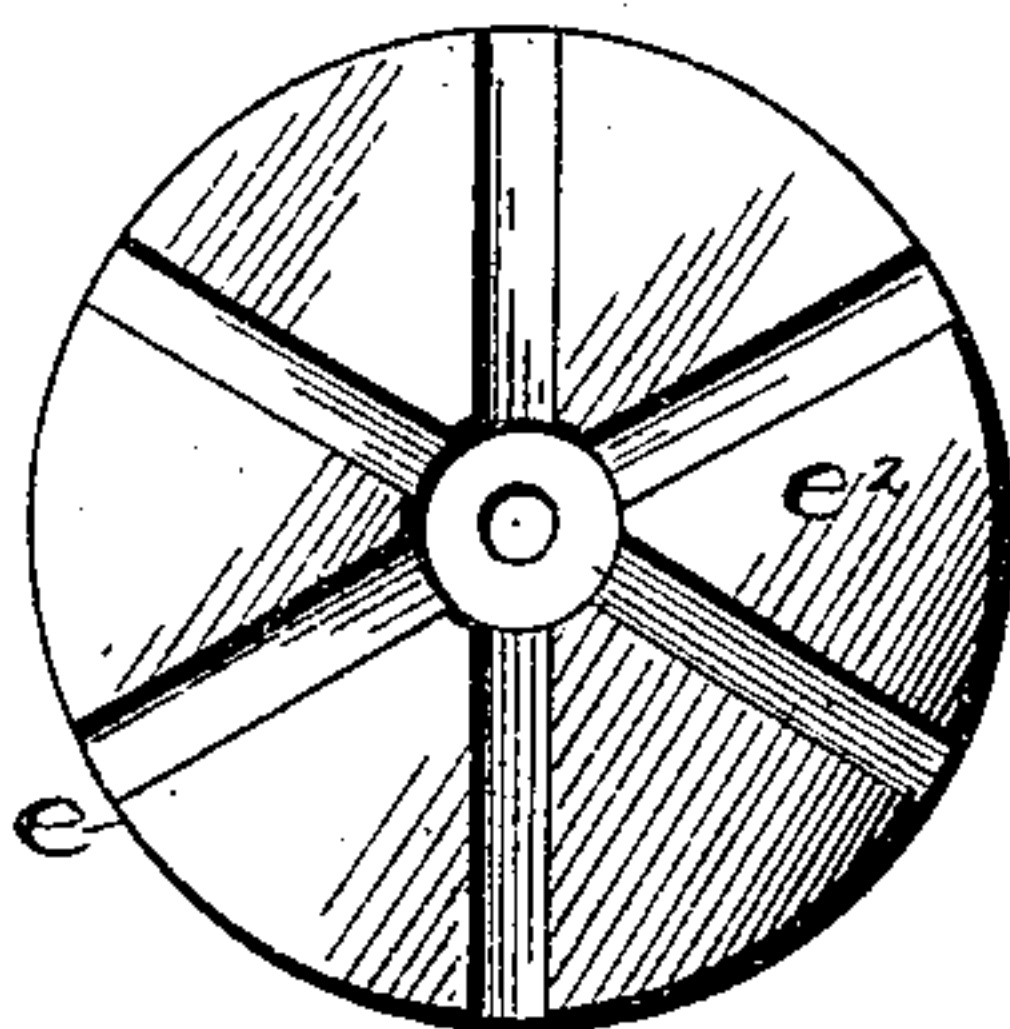


FIG. 6.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

JOSEPH J. CARR, OF WILKES-BARRÉ, PENNSYLVANIA.

## MACHINE FOR MOLDING WHEELS.

SPECIFICATION forming part of Letters Patent No. 329,814, dated November 3, 1885.

Application filed January 29, 1885. Serial No. 154,316. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH J. CARR, of Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain  
5 new and useful Improvements in Machines for Molding Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to  
10 make and use the same.

My invention relates to an improvement in machines for molding wheels, the object of the same being to provide a machine by means of which wheels may be molded expeditiously,  
15 economically, and with a slight expenditure of labor. A further object is to provide a machine of the above character which shall be simple and economical in construction and durable and efficient in use; and with these  
20 ends in view my invention consists in the certain features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is  
25 a view in longitudinal vertical section of a machine embodying my invention. Fig. 2 is a view in transverse vertical section. Fig. 3 is a view in horizontal section on the line  $x x$  of Fig. 2. Fig. 4 is an enlarged view of the  
30 double cranks. Fig. 5 is an enlarged view of the drag, showing the pattern therein. Fig. 6 is a bottom plan view of the rammer, and Fig. 7 is a top plan view of the same.

A represents a frame constructed of any  
35 desired material and preferably as shown, the same being provided with the intermediate cross-girders, B. The top of the frame is provided with the oblong hopper C, which is provided centrally with the gable-shaped plate  
40 D, by means of which the sand entering an opening, E, in the hopper is divided and caused to flow in equal portions into the converging hoppers F. The lower sections of the  
45 hoppers F are formed separately, and are enlarged and secured to the upper portion of the hoppers by means of the chains or ropes G, secured to suitable shafts, H, journaled in the said hoppers and operated by the cranks I. The object of so constructing the hoppers is to  
50 determine the size of the charge of sand to be delivered to the flask. The hoppers F are

provided with the upper and lower sliding gates, K and L, whereby the charge of sand to be delivered to the flask is gaged, thus avoiding any unnecessary waste thereof. 55

The operation of this portion of the device is as follows: The upper gates, K, are opened and the sand permitted to flow into the hoppers, filling the same. The gates K are then closed and the lower gates, L, opened, where-  
60 by the sand is delivered to the flask. By elevating the lower or movable sections of the hoppers the spaces between the gates K and L are contracted or lessened, and by lowering the movable sections the spaces are enlarged. 65  
By this means I am enabled to discharge the exact amount of sand necessary. The lower portions of the hoppers F are provided with the inwardly-converging faces O, whereby the sand is distributed in equal quantities on the  
70 surfaces of the cones P, which are suitably secured concentrically within the cylinders, and down which the sand rolls and is distributed equally into the drag and cope. The drag  
75 part Q of the flask is located on the V-shaped tracks formed on the table R, which latter is of size sufficient to receive and hold several flasks, so that when one mold is completed a new flask can be substituted for the one containing the  
80 mold. The drag is provided at its upper edge with the annular recess S, which corresponds to and forms a part of the wheel-flange. To the drag or one side thereof is hinged the cope T in such manner that when the same is turned  
85 over on the drag the rim of the said cope will rest flush and coincide with the upper edge of the drag. This cope is provided with a removable funnel,  $b^2$ , which directs the sand into the cope. A shaft, J, is journaled in  
90 suitable bearings on the frame, and is provided at one end with the cranks  $i$  and  $i'$ , the said cranks being located on the same side of the axis of the shaft at different angles. To the  
95 crank  $i$  is pivotally secured the arm  $g$ , to the lower end of which is pivoted the stem  $g'$ , to which is loosely secured the pattern-plate  $f$ . This pattern  $f$  is provided centrally with a box,  $f'$ , and adapted to receive and retain the enlarged end of the stem  $g'$ . Within the said  
100 box, below the stem  $g'$ , is located the coil or spiral spring  $f^2$ , whereby the bottom of the stem is cushioned against jar and wear. The



crank  $i'$  is provided with the arm  $h$ , to the lower end of which is pivoted the rod  $h'$ , carrying the hollow rod  $h^3$ . The rod  $h'$  is rigidly secured to the block  $k'$ , which latter rests and moves in the guide  $k$ , rigidly secured to the frame A. This hollow rod  $h^3$  moves in the guide  $h^4$ , secured centrally within the cylinder M, and partly embraces the rod  $g'$ , to which, as before stated, the pattern-plate is secured.

To the lower end of the hollow rod  $h^3$  is removably secured the rammer  $e$ , consisting, essentially, of the head  $e'$  and the depending flat-faced blocks  $e^2$ , which correspond in size and shape to the spaces between the partitions  $e^3$ , formed in the pattern-plate. The central portion of the rammer  $e$  is hollowed out for the reception of the box  $f'$  of the pattern-plate  $f$ . This pattern  $f$  consists, essentially, of a ring, and the central box, and a series of radiating arms or partitions,  $e^3$ , connecting the box and rim. This pattern-plate is lowered into the drag, the sand permitted to flow therein. The sand as it falls enters the spaces between the portions  $e^3$ , and is firmly compressed therein by the block  $e^2$  of the rammer  $e$ , which is now caused to descend. After the sand has been compressed the pattern-plate is withdrawn, leaving the sand arranged in blocks or masses  $s^4$ , as shown in Fig. 3. This leaves a central cavity in the mold, into which, if it is desired to cast a hollow hub, a core is placed. The opposite cylinder, N, is provided with the rammer and pattern  $n$ , secured to the arm  $n'$ , operated by the shaft J, the lower end of the rammer being provided with the lug  $n^2$ . The rammer is also provided near its edge with the annular depending rib  $n^3$ .

The construction of the cranks  $i$  and  $i'$ , and attachment of the arms  $g$  and  $h$  thereto, are such that when the pattern is lowered and supplied with sand the rammer  $e$  descends and remains in contact with the sand until the pattern is elevated and entirely withdrawn from the drag, at which time the crank carrying the rammer is elevated, and the rammer ascends, thus leaving the drag in readiness to be conveyed or moved to the foundry. When the sand is distributed to the cope, the same is leveled and smoothed therein by means of the sweep U, which is operated by means of the handle V. The sweep is provided with the depending lug W, for the purpose of forming an ornamental rib upon the wheel. If preferred, this may of course be dispensed with. The sweep is journaled in the depending arm  $a$ , which is journaled on the bracket  $b$ , secured to the frame A. The said arm is elevated and lowered on the bracket by means of the lever  $c$ , which is secured to the frame by means of the pivot  $c'$ .

$l$  represents a conveyer or mixer of ordinary construction, the same being provided with the endless screw M, by means of which the sand is conveyed into a suitable receptacle, U, from which place it is conveyed, by means of the cups  $o$ , secured to the face of the endless

belt, to the mouth E of the hopper C, the said endless belt being attached to suitable rollers or pulleys,  $q$  and  $r$ , secured to the frame A and the box  $n'$ , respectively. The screw M is operated by means of a driving-belt attached to the roller  $t$ , the opposite end being secured to a suitable drive-shaft, which also operates the drive-wheel  $u$ , which meshes with a spur-wheel,  $v$ , on the end of the shaft J. To the outer end of the shaft is attached a band-roller,  $w$ , which in turn is connected with the hand-roller  $x$ , which is rigidly secured to the shaft  $y$ , journaled in the bearings  $a'$  on the frame A, said shaft conveying the roller  $a$  and transmitting motion to the endless belt  $p$ .

From the above it will be seen that a wheel having a solid inner face, which is formed in the cope, and radiating flanges or webs integral with said back and rim, will be formed; but I would have it understood that I do not confine myself to any particular construction of pattern, and consequently to any style of wheel. After the cope and drag are filled and rammed they are removed from under the cylinders and carried to a position convenient to the cupola.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a molding-machine, the combination, with a table for supporting a whole or a portion of a flask, a hopper provided with two gates for regulating the flow of sand, and a cylinder open at both ends and located between the hopper and table, of a shaft passing through the cylinder, a rod located within the cylinder and connected to a crank on said shaft, and a rammer connected to said rod, substantially as set forth.

2. In a molding-machine, the combination, with a table for supporting a cope and drag and two cylinders located side by side above the table, of a shaft and patterns and rammers connected to said shaft, whereby the sand in the drag and cope is operated on simultaneously, substantially as set forth.

3. In a wheel-molding machine, the combination, with a pair of cylinders, of a revolving shaft journaled in the upper end of the cylinders, and patterns and rammers connected with said shaft, whereby they are reciprocated, substantially as set forth.

4. In a wheel-molding machine, the combination, with a pair of cylinders and a table for supporting the drag and cope under the same, of a pattern and rammer adapted to operate below one of said cylinders in conjunction with each other and a rammer or pattern-plate arranged to operate below the other cylinder, substantially as set forth.

5. In a molding-machine, the combination, with a cylinder and a table for supporting a whole or portion of a flask below said cylinder, of a double crank located in said cylinder and a pattern and rammer connected, respectively, to the cranks, whereby the sand is compressed in the portion of the flask imme-



diately under the cylinder, the above parts being constructed to permit the rammer to remain in contact with the sand until the pattern is withdrawn, substantially as set forth.

5 6. In a molding machine, the combination, with two cylinders arranged side by side, hoppers located above the cylinders and provided with gates for regulating the flow of sand, and cones secured to the cylinders below the hoppers, of a horizontal shaft located below the  
10 cones and rammers and a pattern connected to said shaft and operating below the cylinders, substantially as set forth.

7. In molding-machines, the combination,  
15 with a cylinder open at both ends, a table for supporting a whole or a portion of a flask, and a hopper having an extensible section and gates, of a crank-shaft and a rammer connected to said shaft and operating below the  
20 cylinder, substantially as set forth.

8. In a molding-machine, the combination, with a table for supporting a portion of a flask, a cylinder located above said table, and a shaft passing through said cylinder, of a reciprocating rod attached to and operated by said  
25 shaft and a pattern yieldingly secured to the lower end of the rod.

9. In a molding-machine, the combination, with a table for supporting a portion of a flask,  
30 a cylinder having a cone at its upper end, and a hopper located above the cone, of a shaft passing through the cylinder below the cone and provided with a crank and a rammer connected to and operated by said crank-shaft.

10. In a molding-machine, the combination, 35 with a table, a cylinder, and a shaft having a double crank thereon, the latter being located within the cylinder, of connecting-rods secured on the cranks and a pattern-plate and rammer respectively secured to the lower ends  
40 of the rods, substantially as set forth.

11. In a wheel-molding machine, the combination, with the cylinders and a crank-shaft journaled therein, of a connecting-rod secured to a crank in one of the cylinders, and a rammer  
45 secured thereto, and connecting-rods secured to cranks in the opposite cylinder, one of the rods carrying a rammer, and the other of said rods carrying a pattern-plate, substantially as  
50 set forth.

12. In a molding-machine, the combination, with a cylinder, of a sweep hinged to the frame beneath the cylinder and adapted to be moved laterally, substantially as set forth.

13. In a molding-machine, the combination, 55 with a table, a cylinder located above the same, a hopper provided with gates for regulating the discharge of sand, a crank-shaft passing into the cylinder, and a rammer connected with said crank, of devices for elevating the  
60 sand to the hoppers, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH J. CARR.

Witnesses:

EMMETT D. NICHOLS,  
JOHN G. WOOD.