

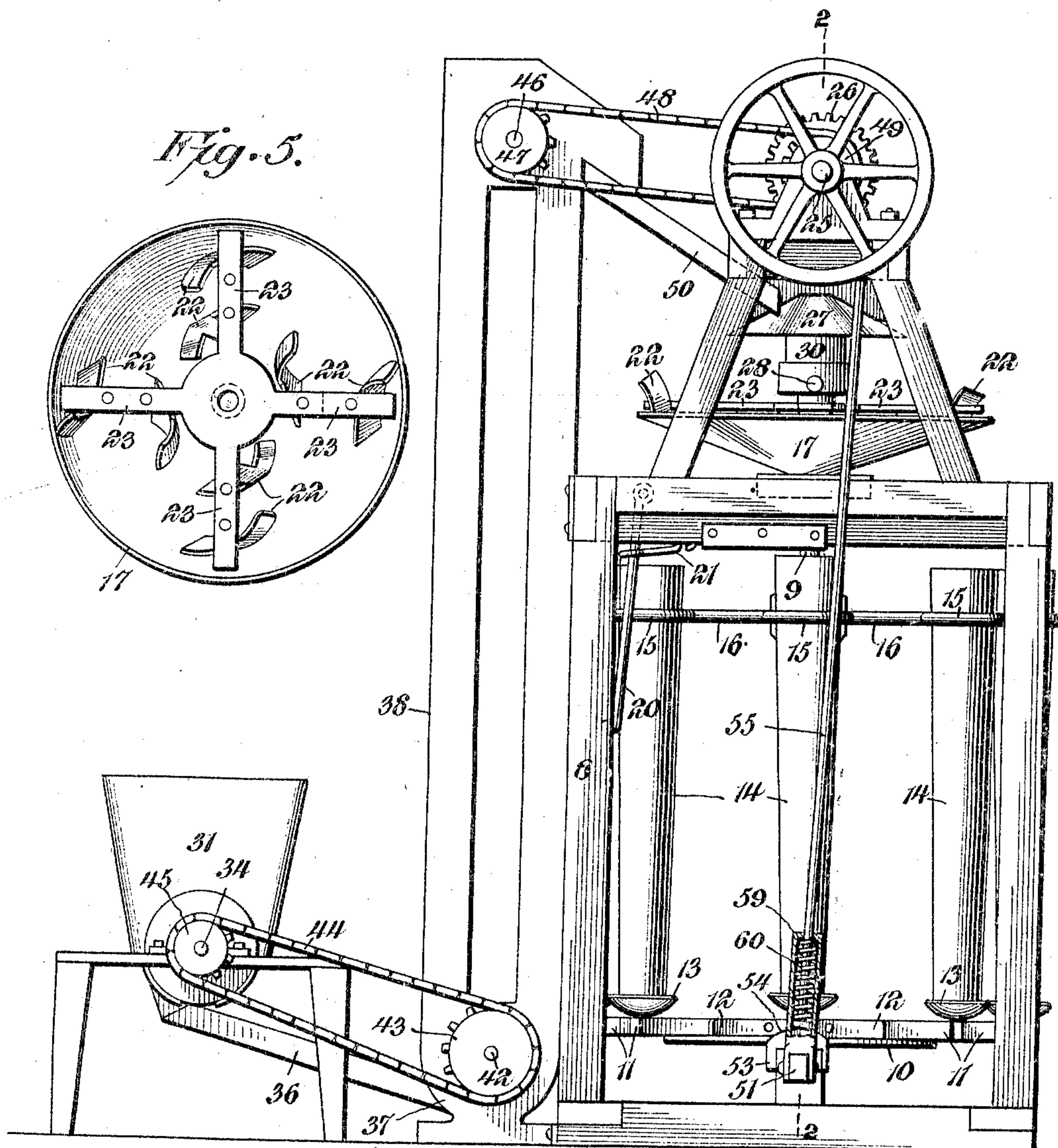
No. 811,873.

PATENTED FEB. 6, 1906.

J. ROGERS.
MOLDING MACHINE.
APPLICATION FILED MAY 20, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 6.

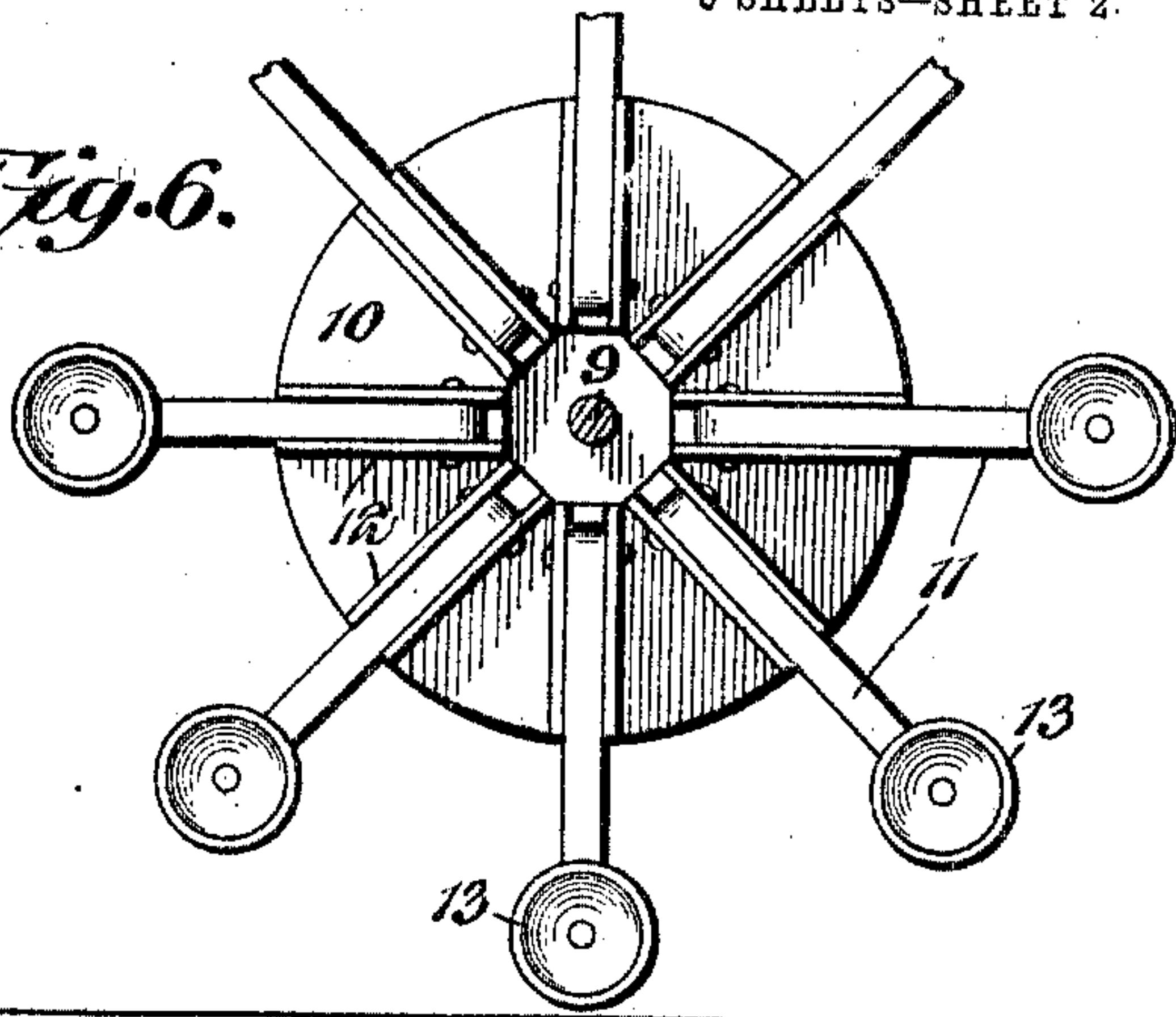


Fig. 2.

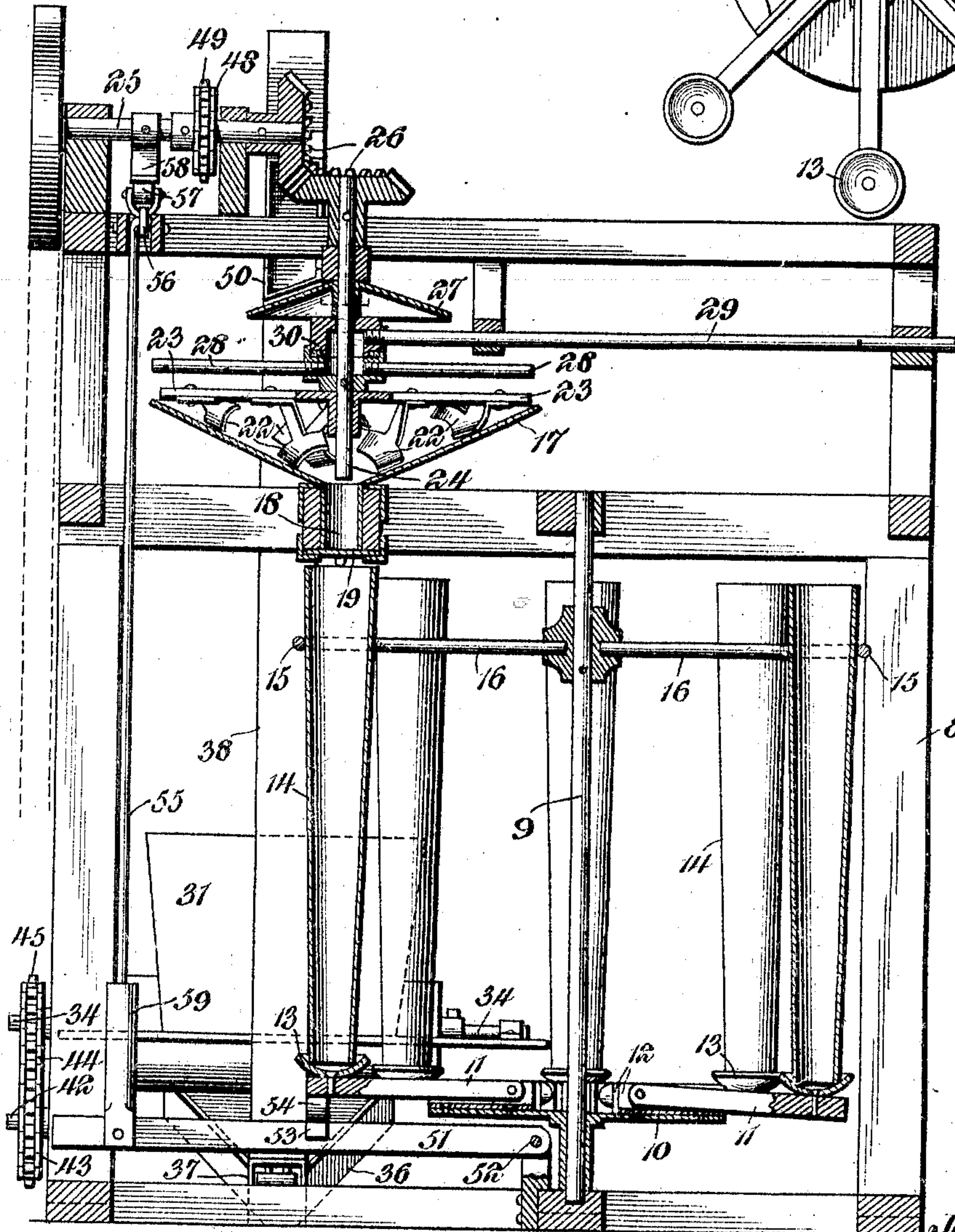
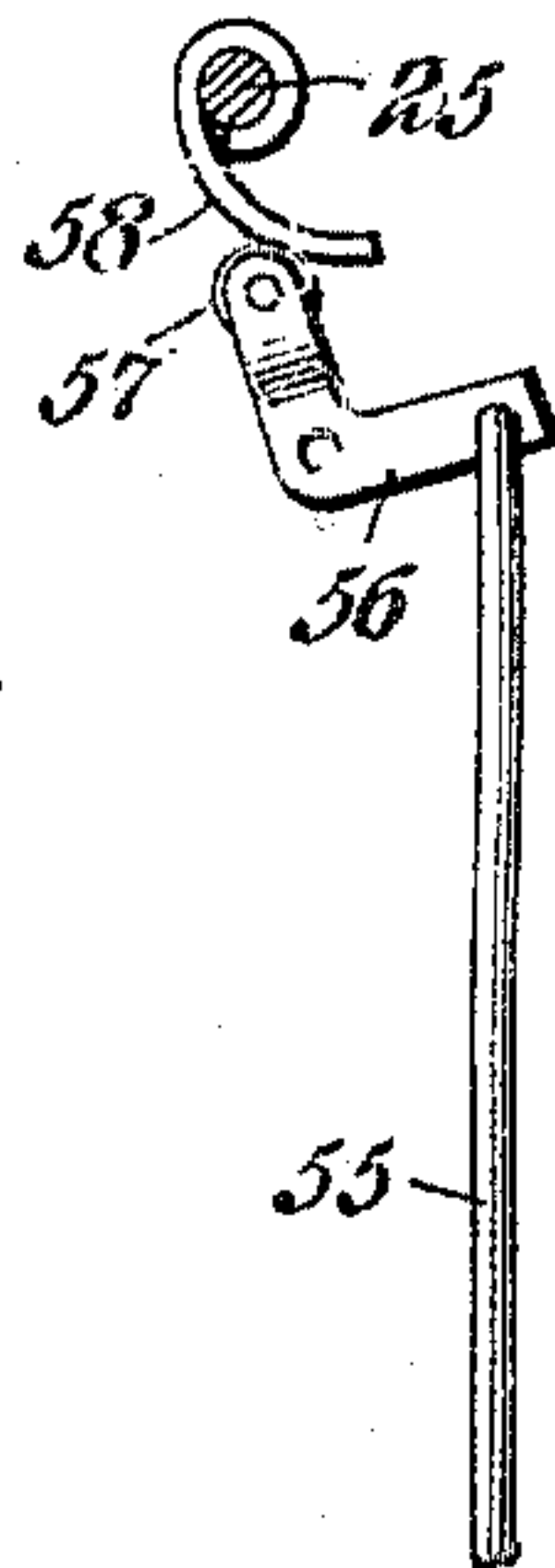


Fig. 7.



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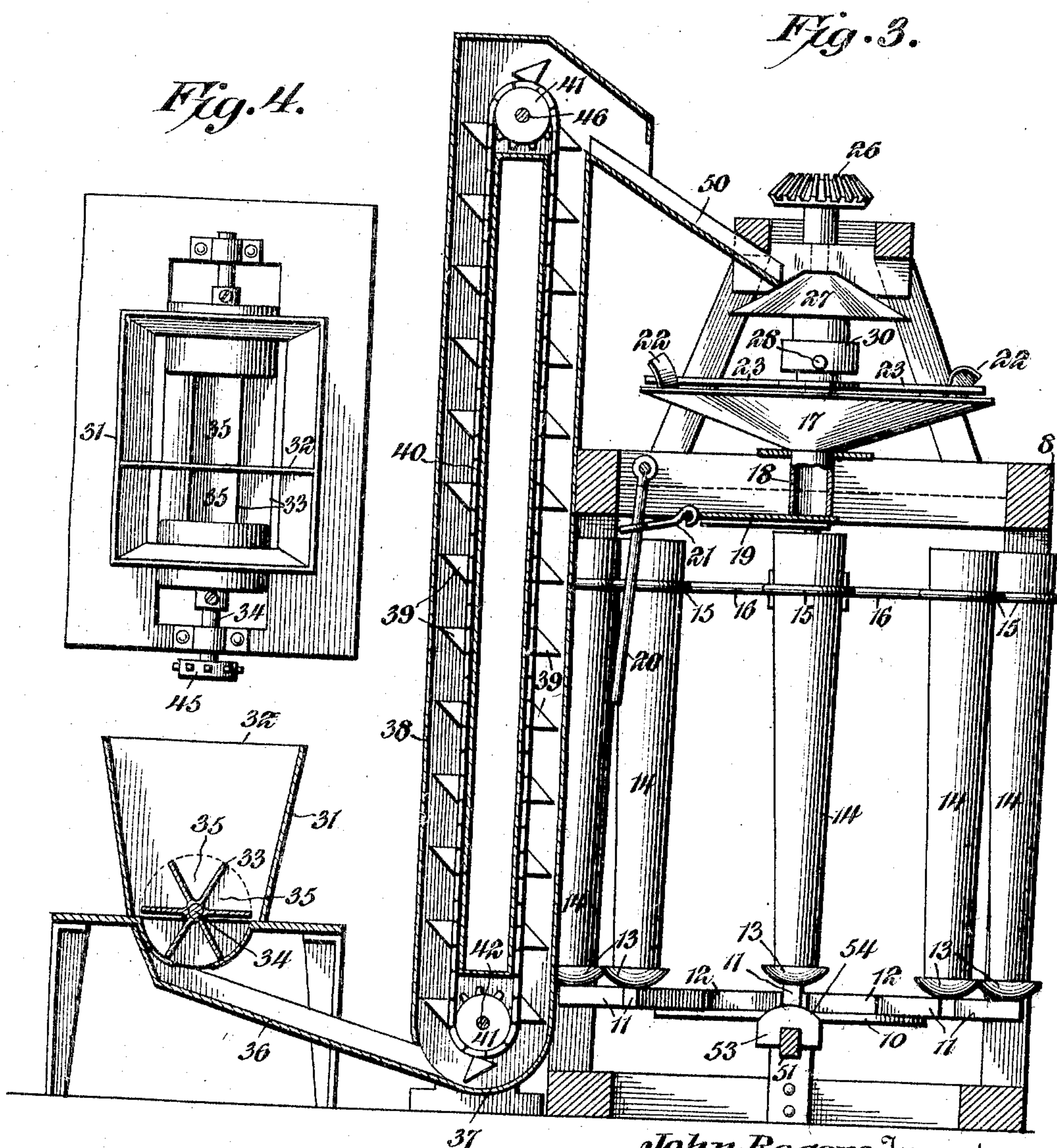
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOHN ROGERS, OF PLATTEVILLE, WISCONSIN.

MOLDING-MACHINE.

No. 811,873.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed May 20, 1905. Serial No. 261,472.

To all whom it may concern:

Be it known that I, JOHN ROGERS, a citizen of the United States, residing at Platteville, in the county of Grant and State of Wisconsin, have invented a new and useful Molding-Machine, of which the following is a specification.

This invention relates to means for manufacturing articles of concrete or cementitious material, and more particularly fence-posts, though not necessarily limited to the latter.

One of the principal objects is to provide a novel and simple machine of the above character, whereby posts or other articles may be rapidly and inexpensively manufactured and will be without blow-holes or other material defects. To this end novel mechanism is provided for thoroughly mixing the material in a dry state, moistening and simultaneously stirring the mixture to thoroughly eliminate the air and gases, and thereafter feeding the same into successive molds, which are automatically shaken and joggled to drive from the concrete the remaining gas and also the surplus water, thus causing the material to be compacted thoroughly in the molds and as a result forming articles that are free from defects.

An embodiment of the invention that is considered preferable is illustrated in the accompanying drawings and is described in the following specification. An inspection of the claims will show, however, that the invention is not limited to the exact structure set forth.

In the drawings, Figure 1 is an end elevation of the machine. Fig. 2 is a sectional view on the line 2 2 of Fig. 1. Fig. 3 is a cross-sectional view. Fig. 4 is a plan view of the measuring device. Fig. 5 is a top plan view of the mixing mechanism. Fig. 6 is a plan view of a portion of the mold-carrier. Fig. 7 is a detail view of the operating means for the mold-shaking mechanism.

Similar reference-numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated a suitable frame 8 is employed, in which is journaled the upright shaft 9 of a rotatable carrier having a hub-plate 10, on which are pivotally mounted a plurality of radially-disposed mold-supporting arms 11, movable in a vertical direction. These mold-supporting arms are pivoted at their inner ends to and between guide-flanges 12, their outer ends projecting beyond the hub-plate 10 and carrying

cupped holders 13, in which the lower ends of the molds 14 are seated. The said molds 14 in the present instance are in the form of open-ended tapering tubes, the smaller ends being supported upon the cups 13, the upper portions being slidably mounted in eyes 15, carried by the outer ends of guide-rods 16, secured to the upper portion of the shaft 9.

Suitably supported in the frame 8 above the carrier at one side of the axis of rotation thereof is a hopper 17, having a depending delivery-spout 18 disposed above the path of movement of the upper ends of the molds 14. This spout is controlled by a sliding gate 19, movable transversely beneath the same and operated by a lever 20, connected to said gate by a link 21. In the hopper 17 are located mixing or stirring devices comprising plows or shovels 22, carried by arms 23, that are secured to an upright shaft 24, arranged concentrically with respect to the hopper. The shaft 24 in the present instance is operated from a driving-shaft 25, through the medium of intermeshing beveled gears 26.

Secured to the shaft 24 above the hopper 17 is a downwardly-inclined conical spreader-table 27, of less diameter than the hopper, as clearly shown in Fig. 2. Between the spreader-table 27 and the stirrer shovels or plows and secured to the shaft 24 are radially-disposed sprinkling-pipes 28, operating over the hopper and supplied from a pipe 29, in communication with the pipes 28 through a suitable coupling 30.

Located at one side of the frame 8 is measuring mechanism, comprising a hopper 31, divided by a partition 32 into compartments for gravel and cement, and journaled so as to rotate through the lower portion of the hopper is a rotatable measuring device, comprising radially-disposed walls 33, carried by a shaft 34 and forming pockets 35. This measuring device, operating through the lower portions of both compartments, carries the material therefrom, as will be apparent, and delivers it to a downwardly-inclined chute or spout 36, that leads to the boot 37 of a suitable elevator 38. The elevator 38 is located at one side of the frame and may be of any suitable structure, in the present instance being shown as an endless series of pockets 39, carried by a chain 40, operating over upper and lower pulleys 41. The lower pulley is carried by a shaft 42, projecting from one side of the boot 37 and having a sprocket-wheel 43, connected by means

of a chain 44 with a sprocket-wheel 45 on the shaft 34. The upper pulley 41 is mounted on a shaft 46, projecting from one side of the casing of the elevator and having a sprocket-wheel 47, driven by a chain 48, which is engaged by a sprocket-wheel 49 on the driving-shaft 25. From the upper or delivery end of the elevator a downwardly-inclined trough or spout 50 leads to a point above and at one side of the spreader-table 27.

For the purpose of shaking the molds while being filled an actuating-bar 51 is pivoted at its inner end, as shown at 52, beneath the carrier and directly adjacent to the lower end of the shaft 9. This bar or lever is provided between its ends with a transversely-disposed mold-support-engaging block 53, having a curved upper edge 54 and located beneath the path of movement of the outer ends of the mold-supporting arms 11, being movable into said path, as hereinafter described. The bar 51 and block 53 are, as illustrated in Fig. 3, disposed in the vertical plane of the spout 18, so that when a mold is disposed beneath said spout the supporting-arm for such mold is located over and in engagement with the block 53, carried by the bar 51. The outer end of said bar 51 has an extensible yielding link connection 55 with one arm of a bell-crank lever 56, pivoted upon the frame 8, the other arm of said lever having an antifriction-roller 57, engaged by a wiper-cam 58, carried by the drive-shaft 25. The said link 55 consists of sections the upper of which is connected to the bell-crank lever 56, the lower being in the form of a boxing 59, in which the lower hinged arm of the upper section is slidably mounted, said boxing containing a spring 60, bearing against the upper end of the boxing and the lower end of the upper section, all of which is illustrated in Fig. 1.

In operation the gravel and cement are introduced, respectively, into the compartments of the measuring-hopper 31 and being delivered therefrom in proper proportion by the measuring device will gravitate down the inclined chute 36 into the boot of the elevator. Said elevator will carry the material upwardly and deliver it upon the chute or spout 50, which in turn will direct it upon the spreader-table. By the time it has reached this table the material has been thoroughly commingled and, gravitating down the table, will enter the outer portion of the hopper. In this hopper it is thoroughly stirred and mixed by the shovels or plows, and at the same time water is allowed to flow in small quantities through the pipes, so that the material will be sprinkled as it is mixed. The stirring action is continued until the gas formed by the introduction of water has been entirely eliminated, and then one of the empty molds is brought beneath the spout 18, and said spout is opened by withdrawing

the gate 19, the material being fed through said spout into the mold by the plows or shovels 22. Simultaneously with this feeding action the mold is given a vertical shaking or jostling movement by means of the actuating-bar 51, which is continuously swung in a vertical position and allowed to drop by means of the wiper-cam 58, operating the bell-crank lever 56, which, as already described, is connected to the free end of the bar 51. The material will be thereby thoroughly compacted in the mold. The remaining gas and air that may be contained therein will be driven off and the surplus water will also be driven to the top, so that it will flow off, leaving a post that is smooth and thoroughly compact. When one mold is filled, the carrier is turned to bring another to position, and the action can thus be made practically continuous, the filled molds being removed and replaced by empty ones.

It will thus be seen that a comparatively simple machine is provided, whereby flawless concrete or artificial stone articles can be manufactured with ease and rapidity and at small cost.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In apparatus of the class described, the combination with a mold-support, of a mold mounted thereon, mixing mechanism mounted over the mold, means for delivering the material from the mixing mechanism to the mold, an elevator delivering to the mixing mechanism, and measuring mechanism delivering the material to the lower portion of the elevator.

2. In apparatus of the class described, the combination with a movable mold, of mixing mechanism mounted thereover, means for delivering the material from the mixing mechanism to the mold, an elevator located at one side of the mold-support and delivering to the mixing mechanism, and measuring mechanism located at one side of the mold-support and having a delivery-spout associated with the boot of the elevator.

3. In apparatus of the class described, the combination with a movable carrier, of a plurality of molds mounted thereon, mixing mechanism mounted thereover and including a hopper having a delivery-spout disposed at one side of the axis of rotation of the carrier, the molds on said carrier being suc-

cessively movable into alinement with the spout, means for controlling the passage of material to the molds, and means for feeding material to the mixing mechanism.

4. In apparatus of the class described, the combination with a mold-support, of a mold mounted thereon, a hopper located thereover and delivering to the mold, mixing and moistening mechanism mounted on the hopper, means for feeding material to the hopper, and a spreader located between the feeding means and hopper, and means for controlling the passage of mixed material from the hopper to the molds.

5. In apparatus of the class described, the combination with a carrier, of a plurality of molds mounted on the carrier, a hopper located over the carrier and having a delivery-spout disposed over the path of movement of the molds, mixing mechanism mounted in the hopper, means for feeding material to the hopper, and a downwardly and outwardly inclined spreader located between the feeding means and hopper and over the mixing means.

6. In apparatus of the class described, the combination with a mold-support, of a mold mounted thereon, a hopper delivering to the molds, an upright rotatable shaft, mixers carried by the shaft and located in the hopper, a downwardly-inclined conical spreader-table secured to the shaft and located over the hopper, means for delivering material upon the table, and means for controlling the passage of mixed material from the hopper to the mold.

7. In apparatus of the class described, the combination with a movable support, of molds located thereon, a hopper located thereover and delivering successively to the molds, rotatable mixing means operating in the hopper, means for controlling the passage of material from the hopper to the molds, and rotatable sprinkling means located over the hopper.

8. In apparatus of the class described, the combination with a rotatable carrier, of a plurality of molds mounted thereon and rotatable therewith, a hopper located over the carrier at one side of its axis of rotation and having a delivery-spout disposed over the path of movement of the molds and delivering to said molds, mixing and sprinkling means movably mounted in and over the hopper, means for controlling the passage of material through the delivery-spout to the molds, and means for feeding material to the hopper.

9. In apparatus of the character described, the combination with a rotary carrier, of a plurality of radiating mold-supporting arms pivoted upon the carrier, means for swinging the arms to jar the molds mounted thereon, and means for feeding concrete to the molds.

10. In apparatus of the character described, the combination with a rotary carrier, of a plurality of radiating arms pivoted

at their inner ends upon the carrier, molds supported on the outer ends of the arms, means for successively swinging the arms to jar the molds mounted thereon, and means for feeding concrete to each mold while the same is being jarred.

11. In apparatus of the class described, the combination with a rotatable carrier, of a plurality of oscillatory mold-supports pivotally mounted on the carrier, and rotatable therewith, and means for successively oscillating the supports.

12. In apparatus of the character described, the combination with a movable carrier, of a plurality of molds movably mounted thereon and movable therewith, common means for successively shaking the molds, and common means for feeding material successively to the molds, said shaking and feeding means operating simultaneously on the same mold.

13. In apparatus of the character described, the combination with a movable carrier, of a plurality of molds movably mounted thereon and movable therewith, common means located below the molds for successively shaking the same, said molds being successively movable into coöperation with the shaking means, and means for feeding material successively toward the molds, said feeding means being disposed over the shaking means and operating simultaneously therewith on the same mold.

14. In apparatus of the character described, the combination with a rotatable carrier, of a plurality of radiating arms pivoted at their inner ends upon the carrier, molds mounted on the outer ends of the arms, means for successively oscillating the arms, said arms being successively movable over the operating means, and concrete-feeding means located above the oscillating means and arranged to feed material to the mold that is being operated by the oscillating means.

15. In apparatus of the class described, the combination with a vertically-movable oscillatory and pivotally-mounted mold-support, of a pivotally-mounted actuating-bar located beneath the same and movable in an upright direction, and means for effecting the movement of the bar to oscillate the support.

16. In apparatus of the class described, the combination with a rotatable carrier, of a plurality of oscillatory mold-supporting arms pivotally mounted on the carrier, a vertically-movable actuating device located beneath the carrier, and means for operating the device, said mold-supporting arms being successively movable over and into the path of movement of the actuating device upon the rotation of the carrier.

17. In apparatus of the class described, the combination with a rotatable carrier, of a plurality of mold-supporting arms pivotally mounted on the carrier, a pivoted actuating-

bar located beneath the carrier, said mold-supporting arms being rotatable with the carrier and successively movable into and out of the path of movement of the actuating bar, and means associated with the bar for effecting the movement thereof.

18. In apparatus of the class described, the combination with a movable carrier, of a plurality of mold-supports movably mounted on and movable with the carrier, means located over the carrier for feeding material successively to the molds, and means located beneath the carrier for successively shaking the mold-supports while the material is being fed thereto.

19. In apparatus of the class described, the combination with a rotatable carrier, of a plurality of molds movably mounted thereon, means located above the carrier and over the path of movement of the molds for successively feeding material thereto, and means located beneath the molds for successively shaking the same while material is being fed thereto.

20. In apparatus of the class described, the combination with a rotatable carrier, of a plurality of mold-supporting arms pivotally mounted on the carrier, means for mixing and feeding material to the molds of the carrier, said means including a hopper having a delivery-spout disposed above the path of movement of the molds mounted on the arms, a shaking arm pivotally mounted beneath the carrier and beneath the spout of the hopper, said arm being arranged to engage the mold-supporting arms for successively moving the same when beneath the hopper, and common means for moving the arm and the mixing and feeding mechanism.

21. In apparatus of the class described, the combination with a support movable in an upright direction, of means for effecting the movement of the support, a cupped holder mounted on the support, and a mold having an open bottom that fits in the cupped holder.

22. In apparatus of the class described, the combination with a support movable in an upright direction, of means for effecting the movement of the support, a cupped holder mounted on the support, a guide located above the holder, and a mold slidably mounted in the guide and having an open

bottom that detachably fits in the cupped holder.

23. In apparatus of the class described, the combination with a mold-support, of mixing mechanism located thereover, means for feeding material from the mixing mechanism to a mold placed on the support, a revoluble spreader located over the mixing mechanism and delivering material thereto, and means for feeding material to said revoluble spreader.

24. In apparatus of the class described, the combination with a mold-support, of a hopper located thereover and delivering to the molds placed on the support, mixing mechanism operating in the hopper, a rotary spreader located over the hopper and of less diameter than the same, means for feeding material to the spreader, and a sprinkler located over the hopper and beneath the spreader, said sprinkler delivering water to the hopper.

25. In apparatus of the class described, the combination with material-mixing means, of means for sprinkling water slowly thereupon during the stirring action, means for feeding the mixture to a mold, and means for imparting a shaking movement to the mold during the feeding action to compact the material therein as rapidly as it is fed thereto.

26. In apparatus of the class described, the combination with material-mixing means, of means for moistening the material while being mixed, means for feeding the mixture to a mold, and means for shaking the mold during the feeding action.

27. In apparatus of the class described, the combination with means for measuring material and mixing the same in a dry state, of means for thoroughly stirring the mixture and sprinkling water slowly thereupon during the stirring action, means for feeding the mixture to a mold, and means for imparting a shaking movement to the mold during the feeding action to compact the material therein as rapidly as it is fed thereto.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN ROGERS.

Witnesses:

GRACE L. KING,
A. T. ROGERS.