F. H. WOLEVER.

VERTICAL CASTING MACHINE.

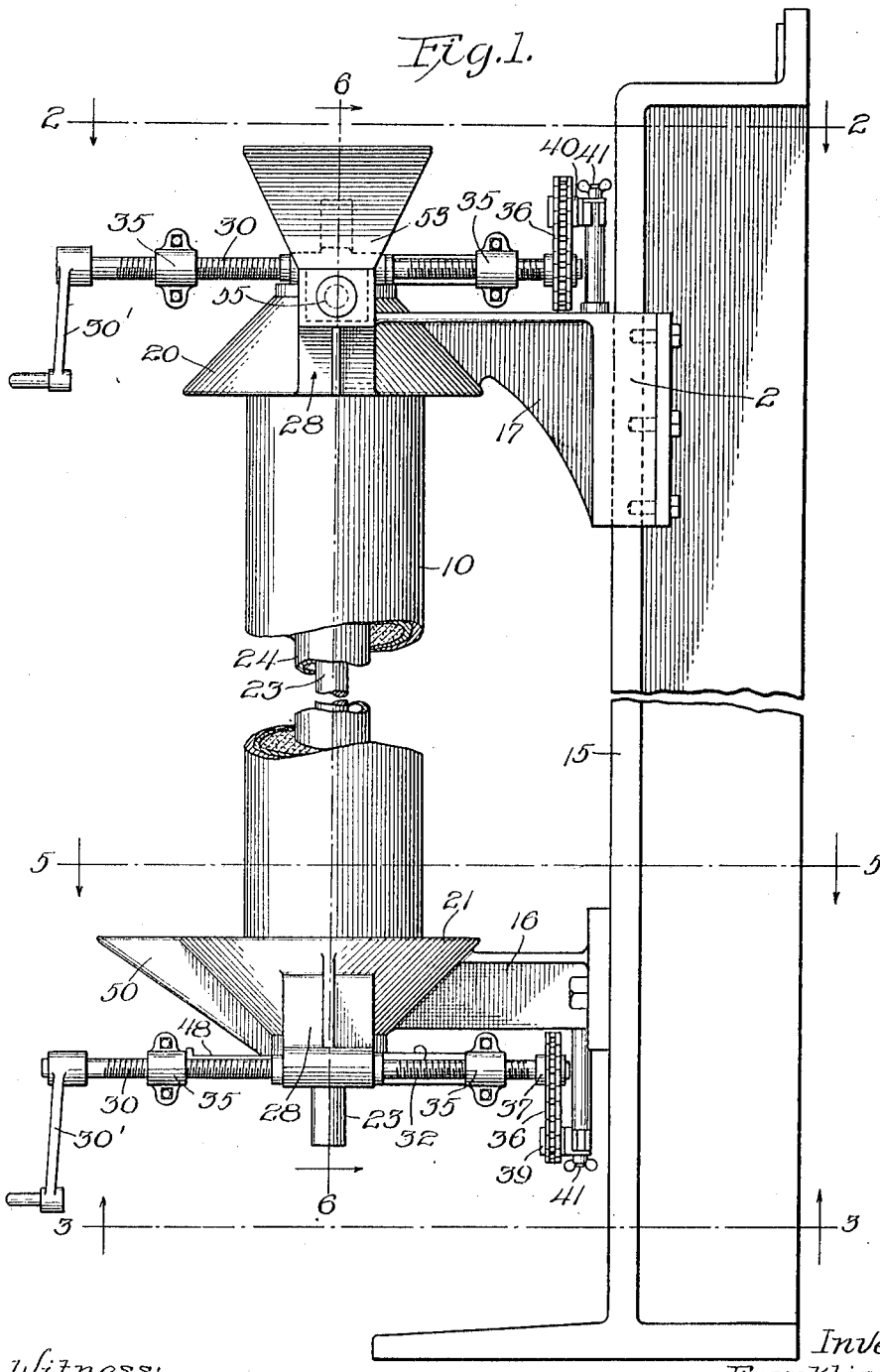
APPLICATION FILED JULY 9, 1917.

1,316,992.

Patented Sept. 23, 1919.

3 SHEETS—SHEET 1.

Fig. 1.



Witness:

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Inventor:

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3 SHEETS—SHEET 2.

Fig. 2.

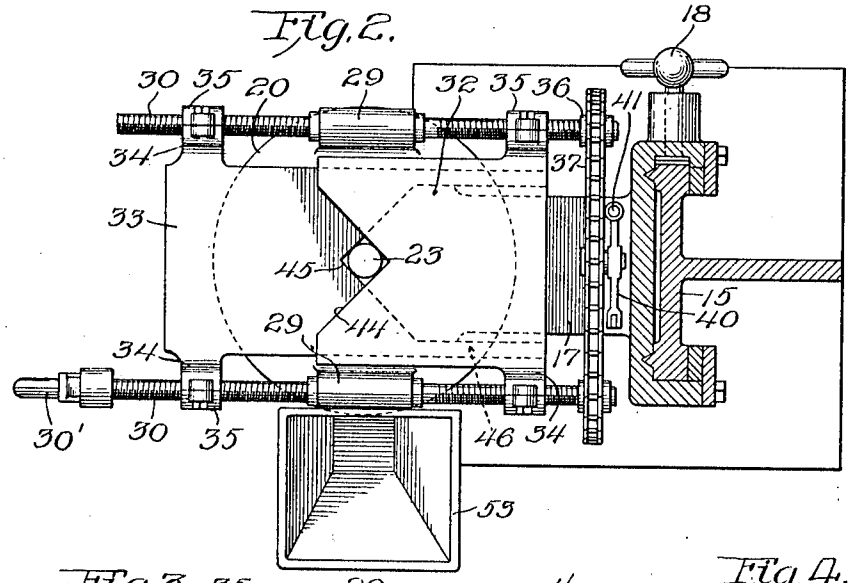


Fig. 3.

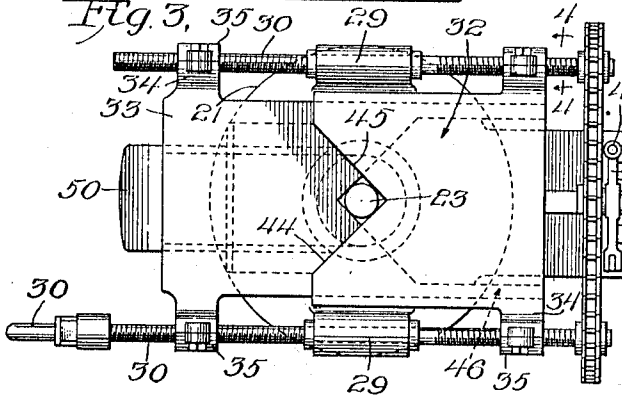


Fig. 4.

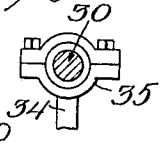
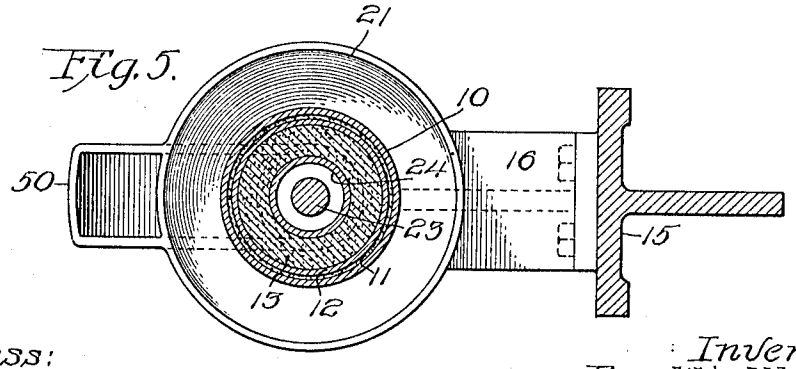


Fig. 5.



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3 SHEETS—SHEET 3.

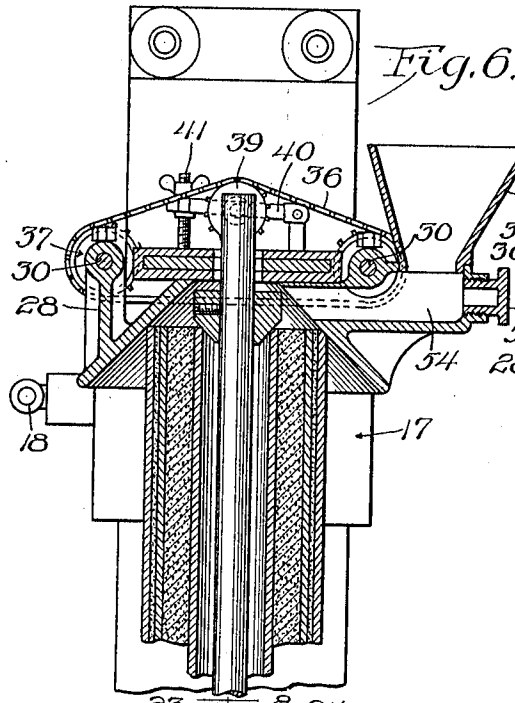


Fig. 6.

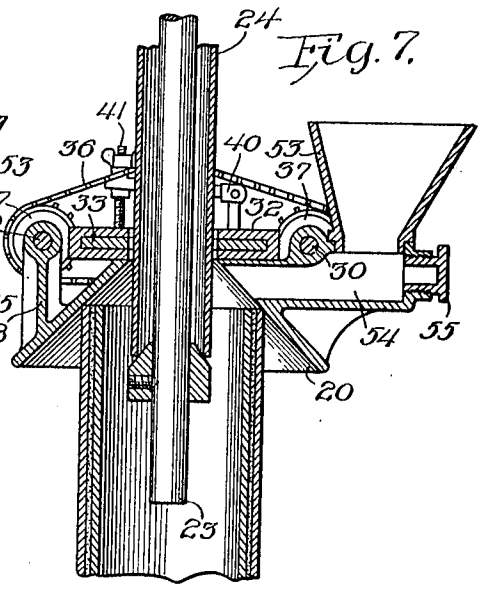
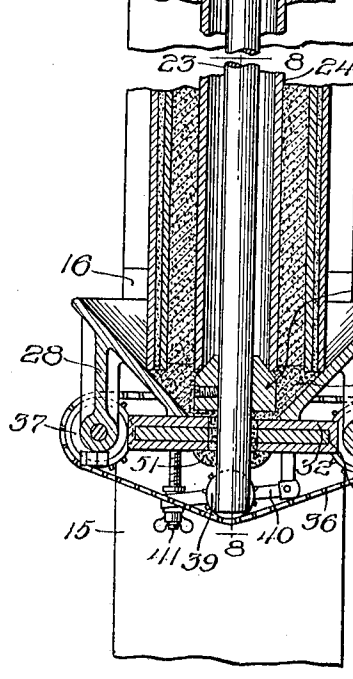


Fig. 7.



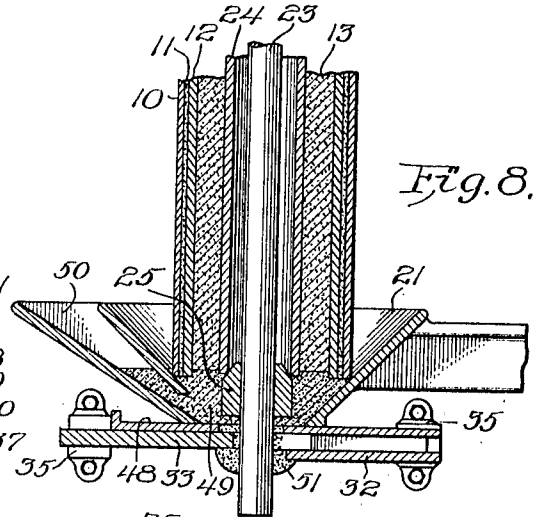


Fig. 8.

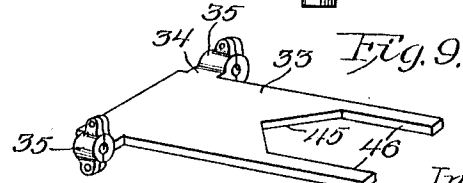


Fig. 9.

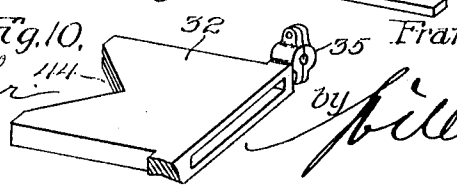


Fig. 10.

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UNITED STATES PATENT OFFICE.

FRANKLIN H. WOLEVER, OF CHICAGO, ILLINOIS, ASSIGNOR TO IDEAL ROLLER CO., OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

VERTICAL CASTING-MACHINE.

1,316,992. Specification of Letters Patent. **Patented Sept. 23, 1919.**

Original application filed April 21, 1917, Serial No. 163,579. Divided and this application filed July 9, 1917. Serial No. 179,421.

To all whom it may concern:

Be it known that I, FRANKLIN H. WOLEVER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Vertical Casting-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a machine employed for making rollers, especially adaptable for inking rollers for printing presses, platens of type writing machines and rollers for clothes wringers, such for instance as is shown in my prior U. S. Letters Patent No. 1161756, dated November 23, 1915.

The present invention relates more specifically to a machine for casting the core of the roller, and among the objects of the invention is to produce a core casting machine which is so constructed and arranged as to center in vertical position the mold in which the shell and liner has been previously formed and to hold it central during the pouring operation; to provide novel centering devices for so centering the mold in the machine; to provide novel means of centering in the casting mold a stock or an adapter tube forming part of the roller; to provide novel means for supporting the machine, constructed and arranged to adjust the machine to different length molds; to provide novel means for adjusting the machine to molds of different diameters, and to otherwise improve and simplify core casting machines.

The invention consists in the combination and arrangement of the parts shown in the drawings and described in the specification, and is pointed out in the appended claims.

In the drawings:—

Figure 1 is a broken-away side elevation of a core casting machine embodying my invention.

Figs. 2 and 3 are sections on the lines 2—2 and 3—3 of Fig. 1.

Fig. 4 is a detail section on the line 4—4 of Fig. 3.

Fig. 5 is a section on the line 5—5 of Fig. 1.

Fig. 6 is a broken axial section on the line 6—6 of Fig. 1.

Fig. 7 is a like section of the upper end of the mold, showing the manner of inserting and centering the stock and adapter tube in the mold.

Fig. 8 is an axial section on the line 8—8 of Fig. 6.

Figs. 9 and 10 are perspective details of the stock centering plates of the casting machine.

In making a roller, the shell 12 is formed in the mold 10 against a liner 11, preferably by centrifugal action, in accordance with the method described in my co-pending application for Letters Patent, Serial No. 163,579, filed April 21st, 1917, of which this application is a division.

After the shell 12 hardens the mold 10 is placed in an upright position in a core casting machine constituting the present invention, after which the material is poured into the shell to produce the core or body 13 of the roller. Said casting machine is made as follows:—

15 designates a standard or support which carries toward its lower end a fixed bracket 16 and toward its upper end a vertically adjustable bracket 17, which latter is locked in adjusted positions by a screw 18. Said brackets 16, 17, carry upper and lower hollow cone shaped, mold centering and supporting members 20, 21, respectively, which engage the upper and lower ends, respectively, of the mold 10. The mold is assembled in the machine by moving the upper bracket 17 and its centering member upwardly the required distance, placing the mold in the lower centering member and thereafter adjusting the upper bracket and centering member to the upper end of the mold.

Associated with said mold centering and supporting devices are upper and lower centering devices for the roller stock 23 and adapter tube 24, if the latter be employed.

The adapter tube, when employed, is embedded in the roller when the roller proper is made at the factory, and is applied to the stock at the printing shop, in the manner shown in my application for Letters Patent, Serial No. 179,419 filed of even date herewith, now Patent No. 1,285,536, dated May 6, 1918, and which also is a division of my aforesaid application. The same character of stock and centering cones 25 are used at the factory for the purpose of properly centering the adapter tubes in the core molding machine previous to the core cast, as are used to center the stock in the roller at the printing shop. The stock centering means shown may be employed also where the adapter tube is omitted and the stock embedded directly in the core. Said stock centering devices are made as follows:—

28, 28 designate lugs or brackets which are made integral with and extend upwardly and downwardly, respectively, from the upper and lower centering and supporting members 20, 21, respectively. Each pair of lugs carries bearings 29 for a pair of oppositely extending, right and left hand screw threaded shafts 30; said shafts being rotatively mounted in the bearings 29 but endwise immovable therein. Associated with each pair of shafts and extending across the open, apical ends of the members 21, 22, are sliding, overlapping stock centering and mold closing plates 32, 33, respectively, the former being made hollow to receive the latter. Said plates are provided with laterally extending lugs 34, which carry split or divided nuts 35, the parts being so arranged that when the screw shafts 30 are turned, as by cranks 30′, the centering plates are moved toward or from each other, depending upon the direction of rotation of the shafts. Preferably the shafts are geared together, as by a sprocket chain 36, engaging sprocket wheels 37 carried by corresponding ends of the shafts of each pair. Said sprocket chains are tensioned by tension devices embracing idler rollers 39 carried by swinging arms 40 which are adjusted and held in place by means of threaded portions engaging screws 41.

The proximate ends of the plates 32, 33 of each pair are formed to provide V-shaped notches 44, 45, the margins of which are spaced at such relatively wide angles with respect to each other that when the plates are moved away from each other a large diamond shaped opening is formed between said V-shaped ends; said openings being at least as large as the apical openings of the centering and supporting members 20, 22, so that when the plates are thus opened at the top of the machine sufficient space is provided to admit the adapter tube 24. Preferably the single thickness plates 33 are provided at the terminals of their V-shaped notches with guide arms 46 of such length as to remain in engagement with the hollow centering plates 32 when said plates are most widely separated.

Inasmuch as the bottom centering plates constitute, in connection with the adjacent mold centering and supporting member 21, the bottom of the mold chamber, it becomes desirable to place a filler plate 48 over the single thickness centering plate 33 so as to avoid a space between the single thickness centering plate and the lower edge of the conical mold centering member 21.

In centering the stock and adapter tube, the upper centering plates are separated to an extent to permit the tube to pass therebetween, the lower plates being separated only a sufficient distance to permit the stock to extend through the opening between them. The tube and stock are then lowered until the upper end of the stock is in the plane of the upper centering plates. Thereupon the upper centering plates are moved together to center the upper end of the stock and tube. Thereafter the lower centering plates are moved inwardly against the lower end of stock to complete the centering of the stock and tube.

After the stock has been thus centered the lower portion of the lower centering and supporting member 21 is filled with a body of waxy material 49 of such character as to close against the escape of the core material when it is later poured into the mold.

The said waxy substance is poured into the lower centering and supporting member 21 after the mold has been assembled and centered in the casting machine, through an opening or hopper 50, shown as made integral with said member, and the opening around the lower end of the stock 23, due to the angular edges of the centering plates fitting against the cylindric stock, may be first closed by a lump 51 of like material.

The core material is then poured into the upper end of the space in the mold between the shell and adapter tube through a hopper 53 and a conduit 54. Said conduit is closed by an end plug 55, the removal of which permits access to the conduit to clean or clear the same. After the core material hardens to form the core 13 the upper and lower stock centering devices are released from the stock and the screw 18 is loosened to permit the upper bracket 17 and the upper centering and supporting member 20 and the parts carried thereby to be raised sufficiently to release the upper end of the mold and the assembled centering stock. Thereafter the mold may be lifted from the casting machine.

An advantage of the construction described lies in the facility in which the mold may be centered in the machine when the machine is assembled for a casting operation and in the accuracy in which the mold may be centered relatively to the vertical axis of the machine.

A further advantage of the construction described is found in the facility and accuracy of centering the stock and adapter tube in the mold after the mold has been assembled in the machine, and in the simplicity of the devices for thus centering the stock and adapter tube, or the stock alone, if the adapter tube be not employed.

A further feature of advantage of the machine lies in its adaptability to molds of different lengths whereby the same machine may be employed for manufacturing rollers of widely different lengths. Likewise the conical supporting members 20 and 21 adapt the machine to molds of widely different diameters; and the machine is capable of accurately adapting itself, and adapting its stock and adapter tube centering devices, to all the various lengths and diameters of molds. This feature of the construction results in greatly simplifying and reducing a plant for producing rollers of different lengths and diameters and consequently reduces the first cost installation and the later cost of operation.

It will be understood that the structural details of the casting machine are capable of considerable variation within the spirit and scope of the invention and that the invention is therefore not limited to said details, except as to claims where the same are specifically set forth, and as imposed by the prior art.

I claim as my invention:—

1. A core casting machine, comprising adjustable upper and lower mold engaging centering and supporting members and an upright mold extending between and supported by said members.

2. A core casting machine comprising upper and lower mold centering and supporting members, an upright mold extending between and supported by said members, and means to adjust one of said members toward and from the other member and to lock it in adjustment.

3. A casting machine comprising upper and lower conical mold engaging, centering and supporting members and upper and lower stock centering means.

4. A roller casting machine comprising conical upper and lower mold centering and supporting members and upper and lower stock centering means carried by said mold supporting and centering members.

5. A core casting machine comprising upper and lower relatively movable hollow conical mold centering and supporting members having apical openings, and stock centering means movable across said apical openings.

6. A core casting machine comprising upper and lower relatively movable hollow conical mold centering and supporting members having apical openings, stock centering means movable across said apical openings, and screw threaded means to actuate said stock centering means.

7. A core casting machine comprising upper and lower hollow conical mold centering and supporting members having apical openings, stock centering plates slidable upon each other and movable toward and from each other across said openings and screw threaded means to actuate said plates.

8. A core casting machine comprising upper and lower hollow conical mold centering members having apical openings, stock centering plates movable toward and from each other across said openings and provided on their proximate edges with stock engaging notches and means to actuate said plates.

9. In a roller casting machine, a conical mold centering member having an apical opening, telescopic stock centering plates movable across said opening and means to actuate said plates.

10. In a roller casting machine, a conical mold centering member having an apical opening, telescopic stock centering plates movable across said opening and right and left hand screw shafts to actuate said plates.

11. In a roller casting machine, a conical mold centering member having an apical opening, telescopic stock centering plates movable across said opening, central bearings carried by said centering member and rotative right and left hand screw shafts mounted in said bearings and threaded to said stock centering plates.

12. A stock centering device for a roller casting machine comprising plates slidable upon each other and provided with opposed stock engaging notches, with means to move said plates toward and from each other.

13. A stock centering device for a roller casting machine comprising plates slidable upon each other and provided with opposed stock engaging notches, and with threaded nuts and a pair of right and left hand threaded shafts to engage said nuts, with means to rotate said shafts.

14. In a roller casting machine, an upright frame, a bracket fixed thereto, a mold centering and supporting member carried by said bracket, a second bracket vertically adjustable on the frame, a mold supporting and centering member carried by the latter bracket, a mold supported and centered by

said members, and a hopper associated with the upper bracket and communicating with said mold.

15. In a roller casting machine, an upright frame, a bracket fixed thereto, a mold centering and supporting member carried by said bracket, a second bracket vertically adjustable on the frame, a mold supporting and centering member carried by the latter bracket, a mold supported and centered by said members and a hopper associated with the lower supporting and centering member through which a sealing medium may be conducted to said lower member to seal the lower end of the mold.

In witness whereof I claim the foregoing as my invention, I hereunto append my signature in the presence of two witnesses at Chicago, Illinois, this 7th day of June, 1917.

FRANKLIN H. WOLEVER.

Witnesses:
W. L. HALL,
A. E. WALBRIDGE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."