A. F. DONALDSON.

BABBITTING MACHINE.

APPLICATION FILED MAY 24, 1919.

1,332,975.

Patented Mar. 9, 1920.

2 SHEETS—SHEET 1.

Fig. 1

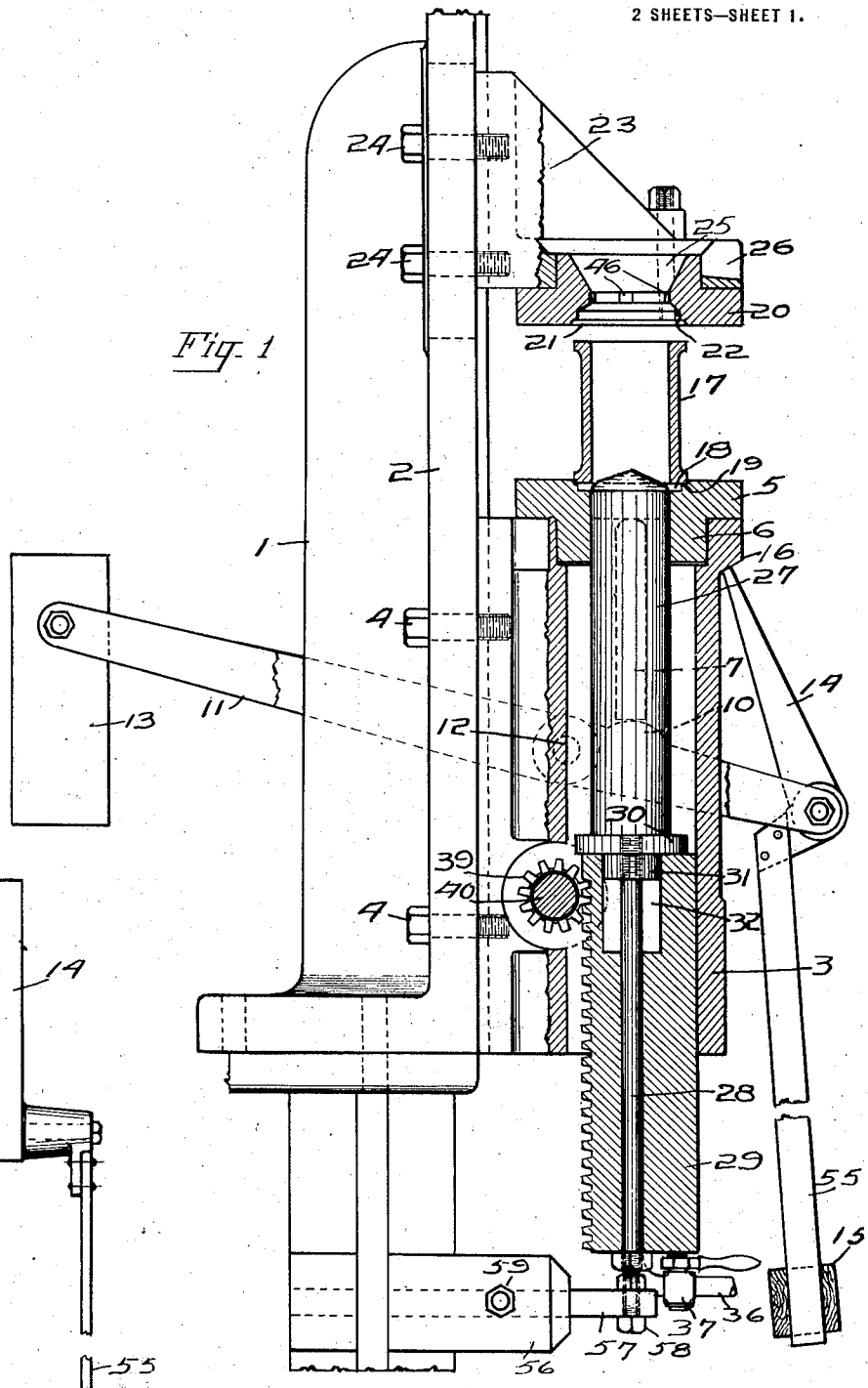
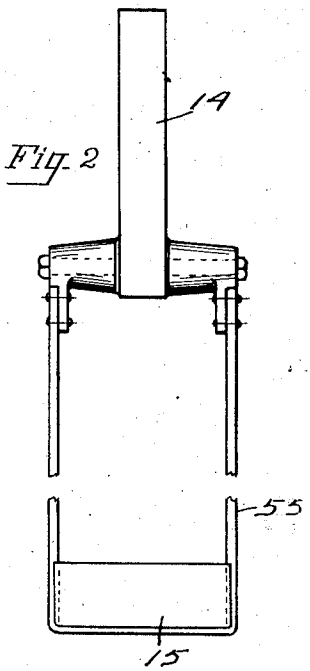


Fig. 2



Inventor.

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by

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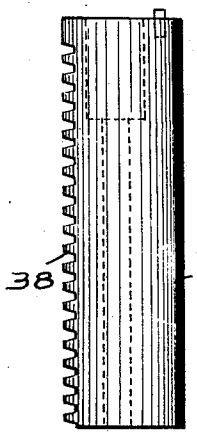


Fig. 4

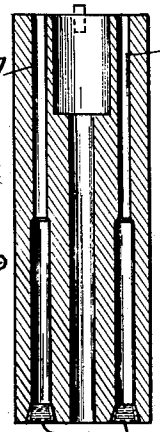


Fig. 5

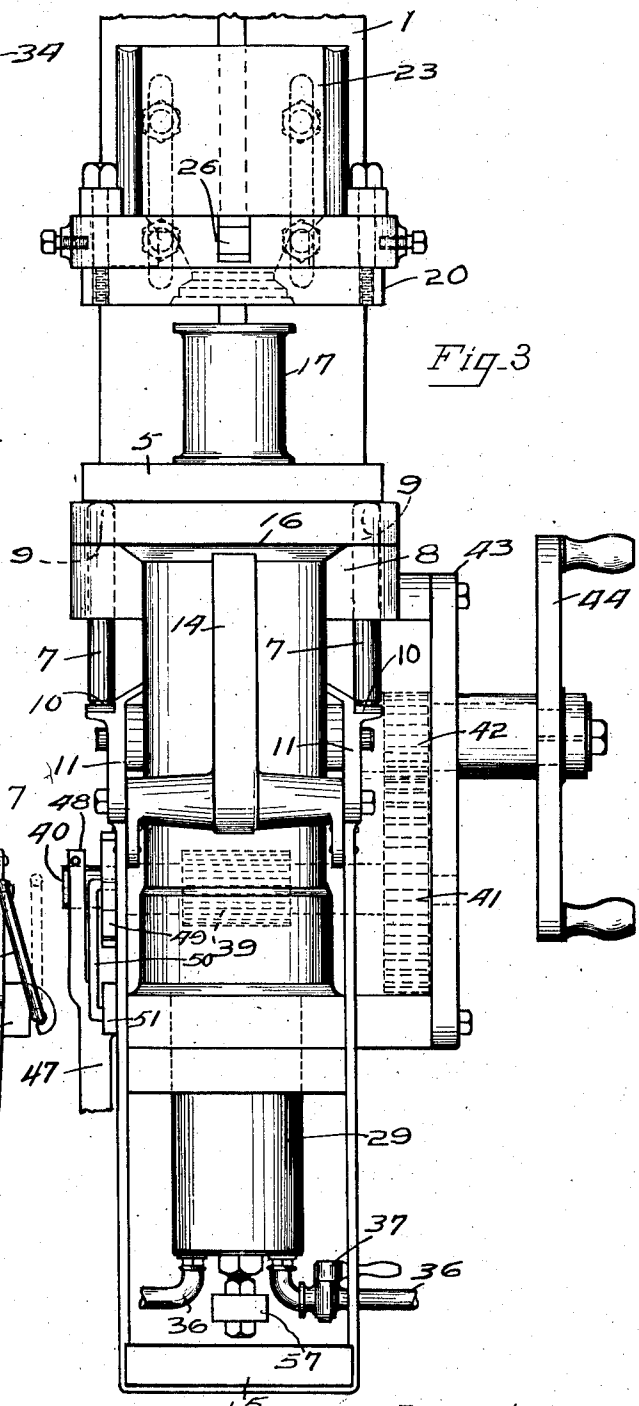


Fig. 3

Fig. 7

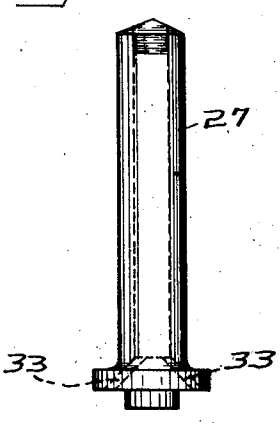


Fig. 6

Inventor
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UNITED STATES PATENT OFFICE.

AUGUSTUS F. DONALDSON, OF TOLEDO, OHIO, ASSIGNOR TO THE BUNTING BRASS & BRONZE COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

BABBITTING-MACHINE.

1,332,975. Specification of Letters Patent. Patented Mar. 9, 1920.

Application filed May 24, 1919. Serial No. 299,510.

To all whom it may concern:

Be it known that I, AUGUSTUS F. DONALDSON, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Babbitting-Machine; 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 make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention has for its object to provide in connection with a babbitting machine a means whereby the Babbitt metal may be cooled at a certain definite rate to insure cohesion of the metal with the bushing and to regulate the metal flow to obviate the effects of metal contraction due to cooling and withdrawal from the hot babbitted bushing.

The invention may be contained in structures of different forms. To illustrate constructions containing my invention I have selected one of such structures and shall describe it hereinafter. The structure selected is illustrated in the accompanying drawings.

Figure 1 of the drawings illustrates a side view of a machine shown partly in section. Fig. 2 is a front view of a pedal member used in releasing a centering and clamping means in the bushing. Fig. 3 is a front view of the machine illustrated in Fig. 1. Fig. 4 illustrates a side view of a rack. Fig. 5 illustrates a sectional view of the rack shown in Fig. 4. Fig. 6 illustrates the babbitting core. Fig. 7 illustrates a lever used for withdrawing the core from the babbitted bushing.

1, Figs. 1 and 3, is the supporting frame of the machine. It has a vertical face plate 2 to which are secured parts of the machine. 3 is a housing that is bolted to the face plate 2 by means of the bolts 4. It has a cap plate 5 located on the upper end that has a boss or extension 6 that extends to some depth into the housing 3 and forms a guide for movements of the cap plate 5 relative to the housing. A pair of pins 7 are located in bosses or ears 8 formed on the housing 3. They have rounded ends 9 that press against the under side of the cap plate 5 to raise the cap plate 5 relative to the housing 3 and yet permit a limited amount of tilting movement in the plate 5.

The pins 7 rest upon the cams 10 located on or forming a part of a lever 11. The lever 11 is pivoted on the pins 12 that extend from the housing 3. One end is provided with the weight 13, while the other end is provided with a pivoted dog 14 that is connected to the pedal 15. The dog 14 engages under the flange 16 formed on the front of the upper edge of the housing 3 to hold the weight 13 up and to release the pressure of the lever 11 and the cams 10 on the pins 7. By movement of the pedal 15 toward the machine the lever is released and the weight 13 operates to lift the pins 7 that ride on the cams 10 and to raise the cap plate 5. The bushing 17 that is to be babbitted is placed on the cap plate 5 and into a recess 18. The recess 18 may be cut so as to form a shoulder 19 on which the lower end of the bushing is placed leaving a space between the bottom of the recess 18 and the lower end of the bushing 17. The upper end of the bushing 17 fits a similar plate 20 which is also provided with a recess 21 that has a shoulder 22 against which the upper end of the bushing 17 is pressed by the operation of the lever 11 and the weight 13. The lower edge of the recess between the face of the plate 20 and the shoulder 22 is beveled so as to automatically center the bushing 17 with reference to the plate 20 when it is raised so as to press against the shoulder 22. The plate 20 is supported in a bracket 23 which is bolted to the face plate 2 by means of the bolts 24. The plate 20 together with parts of the bracket 23 forms a hopper 25 into which Babbitt metal may be poured when the bushing 17 has been placed in position and clamped between the plates 5 and 20. They also form an overflow trough 26 from which the metal may be gathered when the core 27 is raised into the bushing 17 to eliminate the surplus of the metal that is poured into the bushing 17 to heat it to the proper babbitting temperature as well as to give it the babbitt coating or covering.

The core 27 is connected by a rod 28 to a rack 29. The lower end of the core is provided with a flange 30 and a boss 31. The boss 31 fits into a recess 32 of the rack

29. The core 27 is made hollow and is provided with two openings 33 that communicate with passageways 34 formed in the rack 29. The lower ends of the passageways 34 are threaded as at 35 and pipes 36, preferably flexible, communicate with the passageways 34, the connecting nipples being threaded into the ends 35 of the passageways 34. One of the pipes 36 is provided with a valve 37 that may be located in any position for convenience of operation and a proper cooling medium, such as water, may be directed through the valve 37 at the proper times and for the proper length of time. The water will pass up through one of the passageways 34 into the core 27 and out through the other passageway 34 and through the other pipe 36 when the valve 37 is open. The rack 29 moves in the housing 3 and is provided with the teeth 38. The pinion 39 operates to move the rack up and down in the housing 3 and to raise and lower the core 27 into and out of the bushing 17.

The pinion 39 is located on the shaft 40 that is located in the housing 3. The cog-wheel 41 is also keyed to the shaft 40 and is operated upon by the pinion 42 located between the plate 43 and the housing 3. The pinion 42 is connected to the crank 44. Rotation of the crank 44 causes rotation of the pinion 39 and upward movement of the rack 29 and the core 27. The bushing 17 is, in the operation of the machine, first clamped between the plates 5 and 20 and then filled with the babbitting metal until the bushing is raised to the same temperature as the Babbitt metal whereupon the core 27 is raised and the surplus of the Babbitt metal, that is, other than that that is located intermediate the core and the bushing and which forms the babbitt layer and possibly some that enters the recesses 18 and 21, is pushed upward from the bushing 17 out through the lower part of the hopper 25 into the trough 26 from whence it may be collected by a suitable receptacle, such as a dipper. The bushing 17 quite accurately fits in the recesses 18 and 21 and against the shoulders 19 and 22. The boss 6 of the plate 5 being somewhat loosely placed in the upper end of the housing 3 and the rounded ends of the pins 7 permitting a slight tilting movement of the plate 5 causes the ends of the bushing 17 to snugly fit the plates 5 and 20 notwithstanding a slight irregularity of the ends of the bushings 17 or notwithstanding any slight deviation from parallelism between the planes of the upper and lower edges or end surfaces of the bushing 17. The core 27 quite accurately fits the plate 5 and will pass up through an opening in the plate 20 that extends to the recess 21 and communicates with the hopper 25. The core 27 quite accurately fits the opening thus formed in the plate 20. The wall of the opening in the plate 20, however, is provided with the niches 46 which permit communication of the molten metal in the hopper 25 after the core 27 has been raised, with the metal that surrounds the core 27 in the bushing 17 and feeds to the metal within the bushing molten metal in the hopper 25 during the cooling operation of the metal in the bushing.

When the metal has been properly cooled by the regulation of the flow of the cooling medium through the valve 37, the core 27 is lowered. This is done by the operation of the lever 47 which may be made of any length but it is shown as broken off for purposes of illustration in the figures. The lever 47 is provided with four fingers 48 that fit over the shaft 40 and on each side of the ratchet 49 which is secured to the shaft 40. The lever 47 is provided with a link 50 which is pivotally secured in the ear 51 so that as the lever 47 is raised the link 50 will slip over the ratchet 49 and engage with the teeth. Downward movement of the lever will cause rotation of the ratchet 49 and rotation of the pinion 39 so as to draw the rack 29 and the core 27 downward until the core 27 is drawn from the bushing whereupon the bushing 17 may be removed from the machine and trimmed by any of the methods well known.

The rack 29 may be sustained in its lowermost position by means of the bracket 56 having an adjustable arm 57 that is secured in position by means of the bolt 59. The arm 57 is provided with a bolt 58 that abuts the bolt 28 and thus limits the downward movement of the rack 29.

I claim:—

1. In a babbitting machine for babbitting bushings, a fixed plate and a movable plate fitting the ends of the bushing, means for raising one of the said plates and the bushing to the fixed plate, the said plates having a means for automatically centering and placing the bushings in axial alinement with the plates when the ends of the bushings are pressed by the plates.

2. In a babbitting machine for babbitting bushings, a fixed plate having a movable plate for fitting the ends of the bushing, and means for raising the movable plate and the bushing, the said plates having a means for automatically centering and placing the bushing in axial alinement with the plates, a core, and means for raising and lowering the core through one of the plates and the bushing.

3. In a babbitting machine for babbitting bushings, a fixed plate having a movable plate for fitting the ends of the bushing, and means for raising the movable plate and the bushing, the said plates having a means for automatically centering and placing the bushing in axial alinement with the plates, a core, and means for raising and lower-

ing the core through the plates and the bushing.

4. In a babbitting machine for babbitting bushings, a fixed plate having a movable plate for fitting the ends of the bushing, and means for raising the movable plate and the bushing, the said plates having a means for automatically centering and placing the bushing in axial alinement with the plates, a core, and means for raising and lowering the core through one of the plates and the bushing, the upper of the plates having a means for directing the molten metal into and out of the bushing.

5. In a babbitting machine for babbitting bushings, a pair of clamping members for clamping the ends of the bushings, and means for permitting one of the clamping members to tilt so as to cause the members to fit the ends of the bushings.

6. In a babbitting machine for babbitting bushings, a pair of clamping members for clamping the ends of the bushings, and means having a rounded contact surface for moving the clamping members toward each other.

7. In a babbitting machine for babbitting bushings, a pair of recessed clamping plates, a pair of pins having rounded ends for moving one of the plates, and a weighted lever for moving the pins.

8. In a babbitting machine for babbitting bushings, a pair of recessed clamping plates, a pair of pins having rounded ends for moving one of the plates, a weighted lever for moving the pins, and a dog for holding the lever released from the pins.

9. In a babbitting machine for babbitting bushings, a pair of recessed clamping plates, a pair of pins having rounded ends for moving one of the plates, a weighted lever for moving the pins, a dog for holding the lever released from the pins, and a pedal for operating the dog.

10. In a babbitting machine for babbitting bushings, a hollow core, and means for conducting a cooling medium into the core and means for regulating the flow of the cooling medium to regulate the cooling of the metal of the bushing.

11. In a babbitting machine for babbitting bushings, a hollow core, means for conducting a cooling medium into the core for regulating the cooling of the metal of the bushing, and means for moving the core into and out of the bushings.

12. In a babbitting machine for babbitting bushings, a hollow core, a rack connected to the core, a pinion for operating the rack, means for rapidly moving the core into the bushings, and a lever mechanism for drawing the core from the bushings.

13. In a babbitting machine for babbitting bushings, a pair of clamping plates, a lever for raising one of the clamping plates, a foot operated dog for holding the lever released from the clamping plate, one of the plates having a trough for receiving the superfluous metal from the bushing, a hollow core, a rack connected to the core and having passageways connected to the interior of the core, means for conducting a cooling medium to and through the rack and core, means for rapidly moving the core into the bushing through one of the clamping plates and into the other of the clamping plates and operating on the said rack, and means also operating on the rack to withdraw the core from one of the clamping plates and the bushing.

In testimony whereof I have hereunto signed my name to this specification.

AUGUSTUS F. DONALDSON.