Feb. 23, 1932. W. J. FIEGEL ET AL 1,846,482

BABBITTING MACHINE

Original Filed Dec. 19, 1927 4 Sheets-Sheet 1

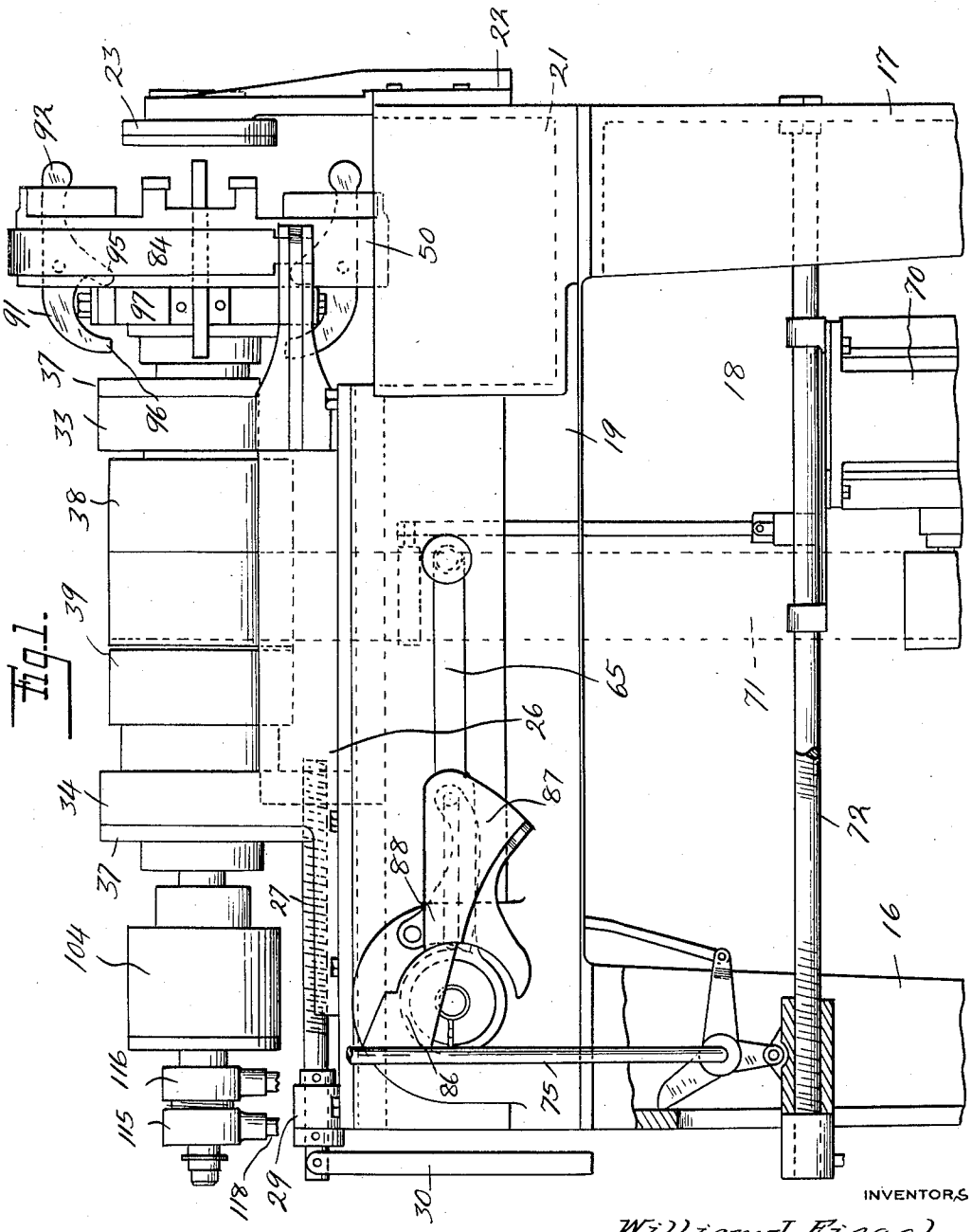


Fig. 1.

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BABBITTING MACHINE

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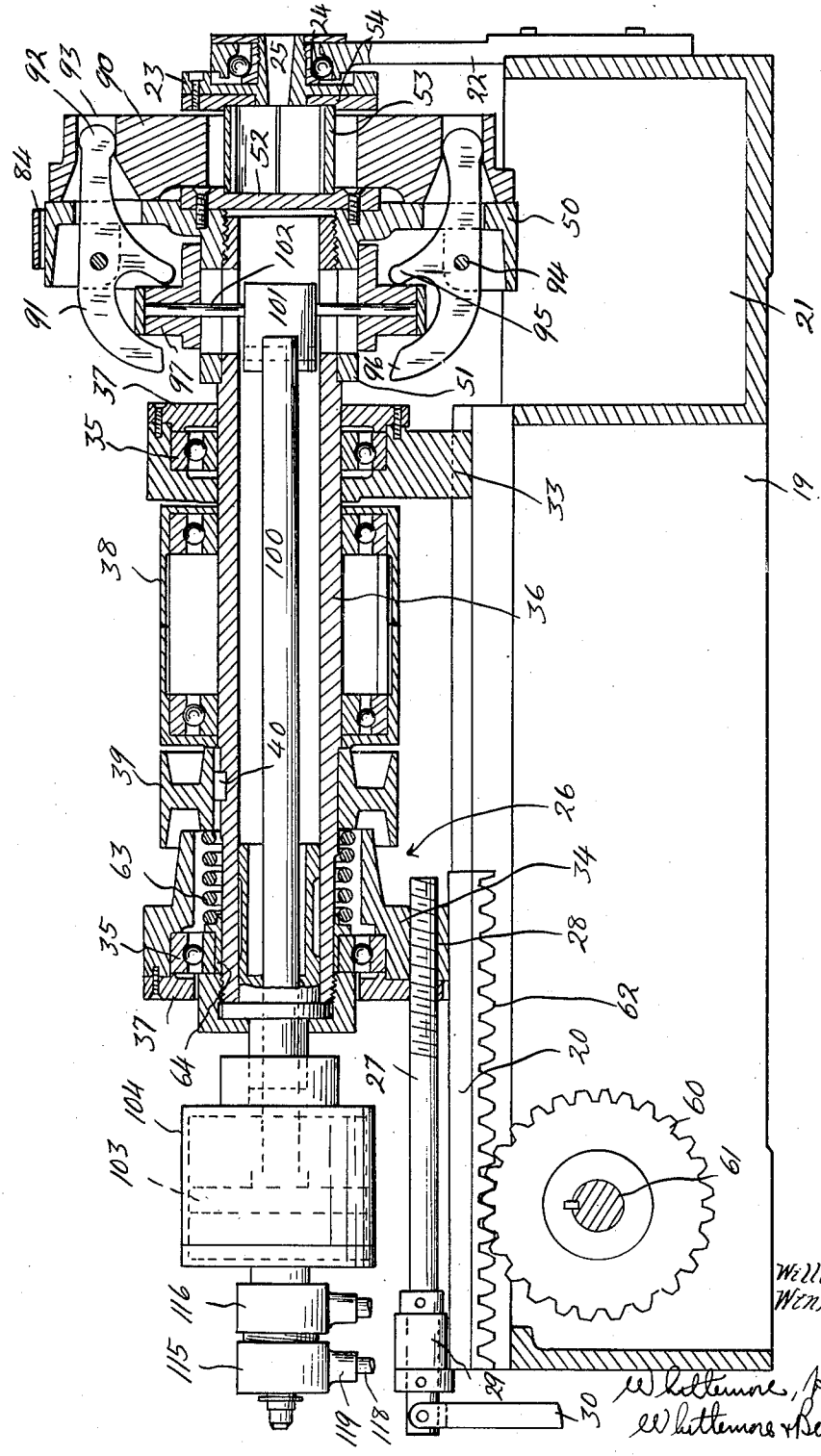


Fig. 2.

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BABBITTING MACHINE

Original Filed Dec. 19, 1927 4 Sheets-Sheet 3

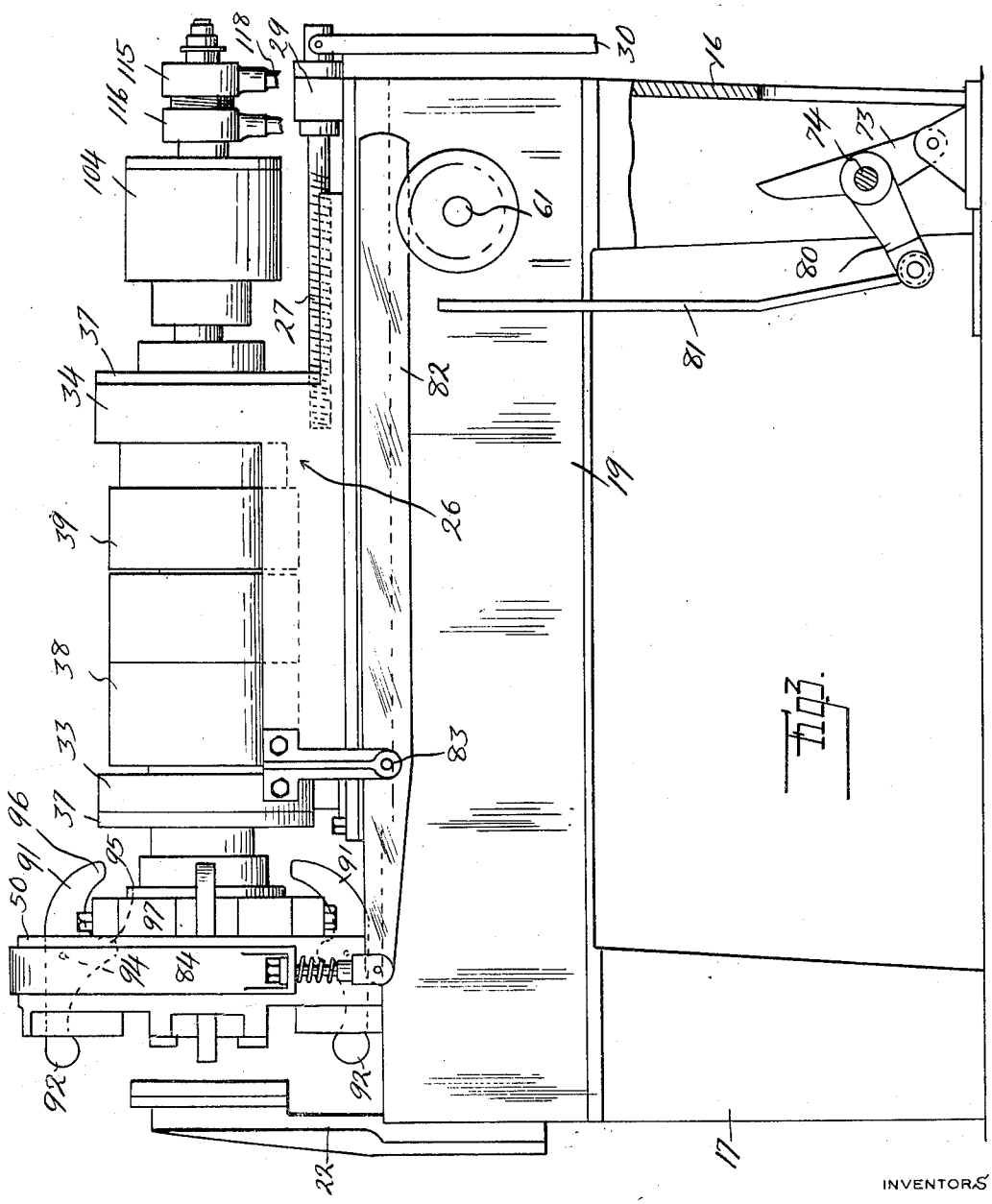


Fig. 2.

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BABBITTING MACHINE

Original Filed Dec. 19, 1927 4 Sheets-Sheet 4

Fig. 4.

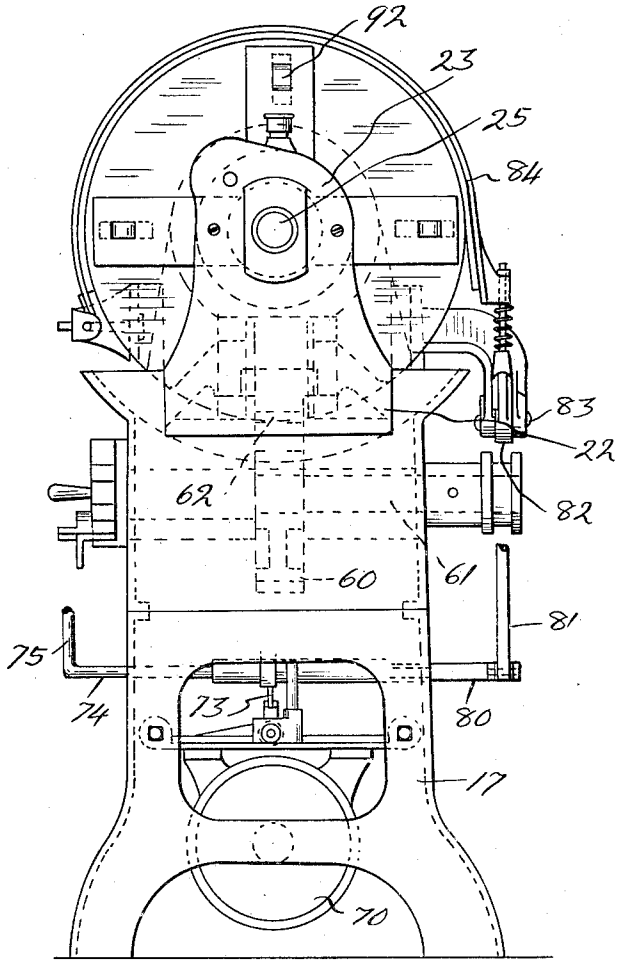
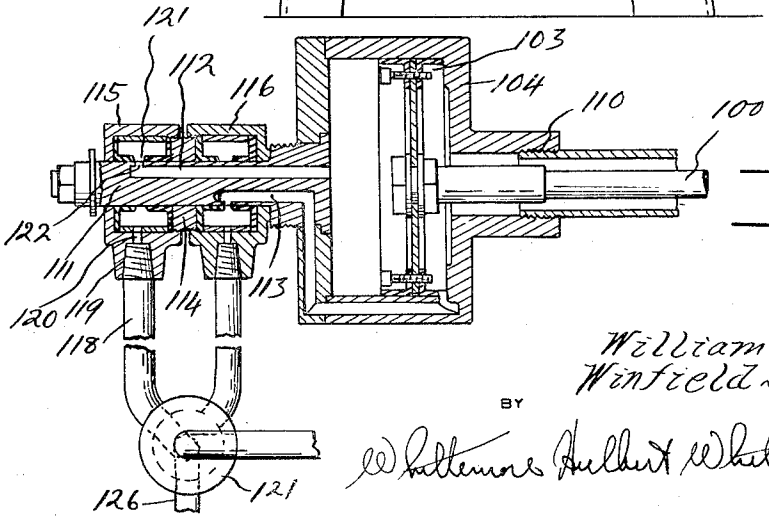


Fig. 5.



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Patented Feb. 23, 1932 1,846,482

UNITED STATES PATENT OFFICE

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BABBITTING MACHINE

Original application filed December 19, 1927, Serial No. 241,143. Divided and this application filed June 30, 1930. Serial No. 465,043.

This invention relates to babbitting machines and has particular reference to a machine for lining the interiors of connecting rods and bearings with babbitt or the like.

This application is a division of our copending application Serial Number 241,143, filed Dec. 19, 1927.

One of the primary objects of this invention is to provide an improved means for holding the bearing, connecting rod or the like, during the babbitting operation.

Other objects and advantages of this invention, together with the numerous novel details of construction thereof, will become more apparent as the following description proceeds, particularly when reference is had to the accompanying drawings wherein:

Figure 1 is an elevational view with certain parts broken away of a machine constructed in accordance with the teachings of this invention;

Figure 2 is a longitudinal sectional view through the upper portion of the machine shown in Figure 1;

Figure 3 is a fragmentary side elevational view of the machine showing the side opposite to that shown in Figure 1;

Figure 4 is an end elevational view of the machine; and

Figure 5 is an enlarged sectional view through a portion of the structure shown in Figure 1.

Referring then particularly to the drawings wherein like reference characters designate corresponding parts throughout all views, it will be noted that the machine includes a supporting framework including the end sections 16 and 17 connected and braced by suitable tie rods 18. Supported on the frame is a bed 19 and slidably mounted on this bed in suitable guideways formed on the upper surface thereof, is a carriage 20. Arranged at the forward end of the bed 19 and above the front section 16 of the frame is a trough-like receptacle 21, to the front wall of which is secured a standard 22, carrying at its upper free end a face plate 23. The face plate 23 is rotatably journaled on a bearing 24 carried by the standard and the face plate is provided centrally with a passage 25 through which babbitt or the like may be discharged in a manner hereinafter to be more fully described.

The carriage 20 is provided with suitable guideways for slidably receiving a second carriage 26. A shaft 27 threadedly engages the carriage 26, as at 28, to provide means for adjusting the carriage 26 longitudinally of the carriage 20. The shaft 27 is journaled in the bearing 29 carried by the carriage 20 and is provided with the handle 30 whereby the same may be rotated.

The carriage 26 includes the front and rear uprights 33 and 34, respectively, each of which is bored to receive bearings 35 which journal a drive shaft 36. As illustrated, cover plates 37 may be secured to the uprights to enclose the bearings. The drive shaft is provided intermediate the standards 33 and 34 with the idler pulley 38 and the driving pulley 39, the latter being secured to the drive shaft by any suitable means such as the key 40. The idler pulley is considerably wider than the drive pulley, for a purpose which will hereinafter be more fully described.

The numeral 50 designates a head which, as illustrated in Figure 2 of the drawings, may be in the form of a disk-like plate having the hub 51 threadedly mounted on the end of the shaft 36. The head is provided on its outer face with a plate 52 which is adapted to engage the end of a work piece, such as the bearing 53, to clamp the same against a plate 54 fixed to the face plate 23. Thus, as illustrated in Figure 2 of the drawings, the work piece is clamped for rotation between the head 50 and the face plate 23 in such a position that babbitt or the like forced through the passage 25 will be discharged into the interior of the bearing.

For moving the head 50 to and from clamping positions, there is provided a gear 60 mounted on a shaft 61, this gear being adapted for engagement with a rack 62 formed on the under side of the carriage 20. Minor variations in the length of the bearings to be clamped may be compensated for by a spring 63 sleeved on the shaft 36 and engaging at its one end the drive pulley 39 and at

its other end a collar 64 carried by the rear bearing 35. The lever 65 fixed to the shaft 61 and arranged at one side of the frame provides means for rotating the shaft 61 to move the carriage through the rack and gear 62 and 60.

A motor 70 slidably mounted on the tie rods 18 is arranged to drive a belt 71 which extends upwardly for engagement with the pulleys 38 and 39. A rod 72 fixed to the motor is adapted to be reciprocated by a lever 73 mounted on a shaft 74, there being provided a lever 75 for actuating the shaft. The arrangement is such that the rod 72 may be moved longitudinally of the frame of the machine to move the motor and the driving belt to either idle or driving positions.

A link 80 fixed to the shaft 74 carries a rod 81 arranged to engage an arm 82 upon actuation of the rod 74 to move the motor to idle position. When the rod 81 engages the arm 82, it swings the latter about its pivot 83 to apply a brake, designated generally by the reference character 84 to the head 50, the arrangement being such that whenever the motor is shifted to move the drive belt into engagement with the idler pulley, the brake will be applied to the head 50 to stop rotation of the same.

A plate 86 carried by the actuating handle 75 cooperates with a plate 87 carried by the actuating handle 65 to provide means whereby the motor 70 may not be moved to driving position until the head 50 is in work-clamping position and to prevent movement of the head out of work-clamping position until the motor has first been moved to idle position. There is also provided a wedge member 88 carried by the actuating lever 65 to effect a wedging of the carriage 20 in its forward or work-clamping position.

All of the structure above described is claimed in the parent application of which this is a division. The present invention is directed particularly to the provision of additional clamping means for the work piece, which clamping means was disclosed but not claimed in the parent application.

Referring then particularly to Figure 2 of the drawings, it will be noted that the head 50 is in the nature of a chuck and is provided with the radially movable jaws 90 adapted to move between the plates 52 and 54 to engage the outer periphery of the work piece when the latter is clamped between these plates. The jaws 90 are moved radially relative to the head 50 by links or members 91 having ends 92 mounted in sockets 93 formed in the jaws 90. The links 91 are pivoted as at 94 within the head 50 and are provided with fingers 95 and 96 which embrace a sleeve 97 slidably mounted on the hub 51 of the head.

For moving the sleeve 97 there is provided a connecting rod 100 which extends through the shaft 36, this shaft being tubular for this purpose. The connecting rod 100 is connected at its forward end to a head 101 which carries pins 102 which are fixed to the sleeve 97. The shaft 36 and hub 51 are slotted to provide for movement of the pins 102, as clearly illustrated in Figure 2 of the drawings.

The other end of the shaft is fixed to a piston 103 which is mounted in a cylinder 104 for reciprocation therein. Means are provided for supplying a fluid such as air under pressure to opposite ends of the cylinder to provide for reciprocation of the piston 103 and to thus effect a reciprocation of the connecting rod 100 and the sleeve 97.

It will be apparent that since the pins 102 project through openings in the shaft 36, the rod 100 must rotate with this shaft. To provide for rotation of the rod 100 with the shaft 36, the latter may be threaded into the end of the cylinder 104 as at 110 so that the piston, cylinder, rod and shaft all rotate together as a unit.

To provide for rotation of the cylinder while permitting the supply of a fluid under pressure to this cylinder, the structure shown in Figure 5 is provided, and by reference to this figure, it will be noted that there is fixed in the end of the cylinder 104 a spindle 111 provided with the passages 112 and 113, respectively. The passage 112 opens directly into the cylinder on one side of the piston 103, while the passage 113 is extended through the wall of the cylinder to communicate with the interior of the latter on the other side of the piston. The spindle 111 is journaled in a bearing 114, and threaded on this bearing are housings 115 and 116, respectively. A fluid supply conduit 118 is fixed in a nipple 119 carried by the housing 115 and communicates with the interior of this housing by a passage 120. The interior of the housing 115 is in turn placed in communication with the passage 112 in the spindle by the annular slot 121 formed in the housing and the inlet opening 122 formed in the spindle and in alignment with the slot. Thus, whenever fluid under pressure is supplied to the conduit 118, this fluid will be conducted to one side of the piston 103 through the housing 115, slot 121 and passage 112.

A similar arrangement is provided for conducting fluid under pressure from a conduit 122 which is fixed in a nipple carried by the housing 116, to the opposite side of the piston. The circumferential slots on the inner peripheries of the housings provide for the rotation of the spindle within the housings while still permitting the supplying of fluid under pressure from the housings to the passages formed in the spindle. A valve 125 controls the passage of fluid under pressure from a supply pipe 126 to the conduits 118 and 122, the valve 125 being of standard construction, and being

adapted to admit fluid under pressure to one of the conduits while permitting the exhausting of the other conduit. Thus, fluid under pressure may be admitted to the cylinder on either side of the piston to effect a reciprocation of the piston.

From the above it is believed that the invention will be clearly apparent. The head 50 may be moved toward or away from the face plate to clamp a piece of work against the face plate in the manner clearly illustrated in Figure 2 of the drawings. Obviously, the shaft 36 may be rotated to effect a rotation of the head and the work piece so that babbitt or the like discharged into the interior of the work piece through the passage 25 will be centrifugally deposited on the inner periphery of the work piece.

With the head in work-clamping position, the valve 125 may be actuated to move the piston to the left, as viewed in Figure 2 of the drawings, with the result that the sleeve 97 will engage the finger portions 96 of the links 91 to effect an inward movement of the jaws 90 to a position where these jaws will engage the outer periphery of the work piece. Thus, the work piece will be firmly held in position during rotation of the same. Obviously, upon completion of the babbitting operation, the rod 100 may be moved in the opposite direction to move the jaws outwardly away from engagement with the work piece.

While the invention has been described with considerable detail, it is to be clearly understood that the description is for the purposes of illustration only and that the right is therefore reserved to make such changes in the details of construction and arrangement of parts as will fall within the purview of the attached claims.

What we claim as our invention is:

1. In a machine of the character described, the combination with a face plate and a head movable toward and away from said face plate to clamp a piece of work against the same, of jaws carried by said head for movement radially thereof, said jaws being adapted for engagement with the outer periphery of said piece of work when the latter is clamped between said head and said face plate.

2. In a machine of the character described, the combination with a face plate and a head for clamping a piece of work against said face plate, of radially movable jaws carried by said head and engageable with the periphery of said piece of work, and means for moving said jaws relative to said head.

3. In a machine of the character described, the combination with a face plate and a head for clamping a piece of work against said face plate, of jaws movably carried by said head, members pivotally mounted on said head and engageable with said jaws for moving the same, and means for actuating said members to move said jaws into and out of engagement with the outer periphery of the piece of work.

4. In a machine of the character described, the combination with a face plate and a head movable toward and away from the face plate for clamping a piece of work against the same, of a plurality of radially movable jaws carried by said head, members pivotally carried by the head and connected to the jaws for moving the same, said members being provided with spaced finger portions, and means engageable with the spaced finger portions of said members for actuating the members to move the said jaws.

5. In a machine of the character described, the combination with a head movable to a position to clamp a piece of work, of jaws mounted for radial movement on said head for engagement with the outer periphery of the piece of work clamped by said head, members carried by said head for engaging said jaws to move the same, said members being provided with spaced finger portions, and a sleeve-like member having a portion engageable with the spaced finger portions of said members for actuating the latter to move the said jaws radially of the said head.

6. In a machine of the character described, the combination with a face plate and a head for clamping a piece of work against said face plate, of jaws movable radially of said head for engagement with the outer periphery of the said piece of work, and fluid pressure actuated means for moving said jaws radially of said head.

7. In a machine of the character described, the combination with a face plate, a head for clamping a piece of work against said face plate and a tubular shaft mounting said head, of jaws carried by said head and radially movable thereon for engagement with the outer periphery of the piece of work clamped between the head and the face plate, and means for moving said jaws radially of said head, said means including a rod extending longitudinally of and within the said tubular shaft and means for reciprocating said rod.

8. In a machine of the character described, the combination with a face plate, a head movable toward and away from said face plate to clamp a piece of work against the same, and a rotatable tubular shaft mounting said head, of jaws slidably carried by said head for engagement with the outer periphery of the piece of work clamped between said head and the face plate, and means for sliding said jaws relative to said head to move the same to and from work-clamping position, said means including a rod extending longitudinally of and within the said tubular shaft and fluid pressure means for actuating said rod.

9. In a machine of the character described, the combination with a face plate, a head movable toward and away from said face plate to clamp a piece of work against the same, and a rotatable tubular shaft mounting said head, of jaws slidably carried by said head for engagement with the outer periphery of the piece of work clamped between said head and the face plate, and means for sliding said jaws relative to said head to move the same to and from work-clamping position, said means including a rod extending longitudinally of and within the said tubular shaft, fluid pressure means for reciprocating said rod, a head carried by one end of said rod, and connections between said head and said jaws.

10. In a machine of the character described, the combination with a face plate, a head movable toward and away from said face plate to clamp a piece of work against the same, and a rotatable tubular shaft mounting said head, of jaws slidably carried by said head for engagement with the outer periphery of the piece of work clamped between said head and the face plate, and means for sliding said jaws relative to said head to move the same to and from work-clamping position, said means including links pivotally carried by said head and connected to said jaws to move the same, and a member mounted for movement longitudinally of said shaft and engageable with said links to actuate the same.

11. In a machine of the character described, the combination with a face plate, a head movable toward and away from said face plate to clamp a piece of work against the same, and a rotatable tubular shaft mounting said head, of jaws slidably carried by said head for engagement with the outer periphery of the piece of work clamped between said head and the face plate, and means for sliding said jaws relative to said head to move the same to and from work-clamping position, said means including links pivotally carried by said head and engageable with said jaws, a sleeve-like member mounted for movement longitudinally of said tubular shaft and engageable with said links, and a rod extending longitudinally of and within said tubular shaft for actuating said sleeve-like member.

12. In a machine of the character described, the combination with a face plate, a head movable toward and away from said face plate to clamp a piece of work against the same, and a rotatable tubular shaft mounting said head, of jaws slidably carried by said head for engagement with the outer periphery of the piece of work clamped between said head and the face plate, and means for sliding said jaws relative to said head to move the same to and from work-clamping position, said means including links pivotally carried by said head and connected to said jaws, said links being provided with spaced finger portions, a sleeve mounted for movement longitudinally of said tubular shaft and having a portion engageable with the spaced finger portions of said links, a rod extending longitudinally of said shaft, connections between said rod and said sleeve, and means for reciprocating said rod.

13. In a machine of the character described, the combination with a face plate, a head movable toward and away from said face plate to clamp a piece of work against the same, and a rotatable tubular shaft mounting said head, of jaws slidably carried by said head for engagement with the outer periphery of the piece of work clamped between said head and the face plate, and means for sliding said jaws relative to said head to move the same to and from work-clamping position, said means including links pivotally carried by said head and having end portions engageable in sockets formed in said jaws, said links being also provided on their free ends with spaced finger portions, a sleeve mounted for movement longitudinally of said tubular shaft and engageable with the spaced finger portions of said links, a rod mounted for reciprocation within said tubular shaft, a head on said rod, pins connecting said head to said sleeve, and fluid pressure means for effecting a reciprocation of said rod.

In testimony whereof we affix our signatures.

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