Aug. 2, 1938. A. J. STOUGES 2,125,695

SLUG CASTING MACHINE

Filed Sept. 11, 1937

Fig. 1.

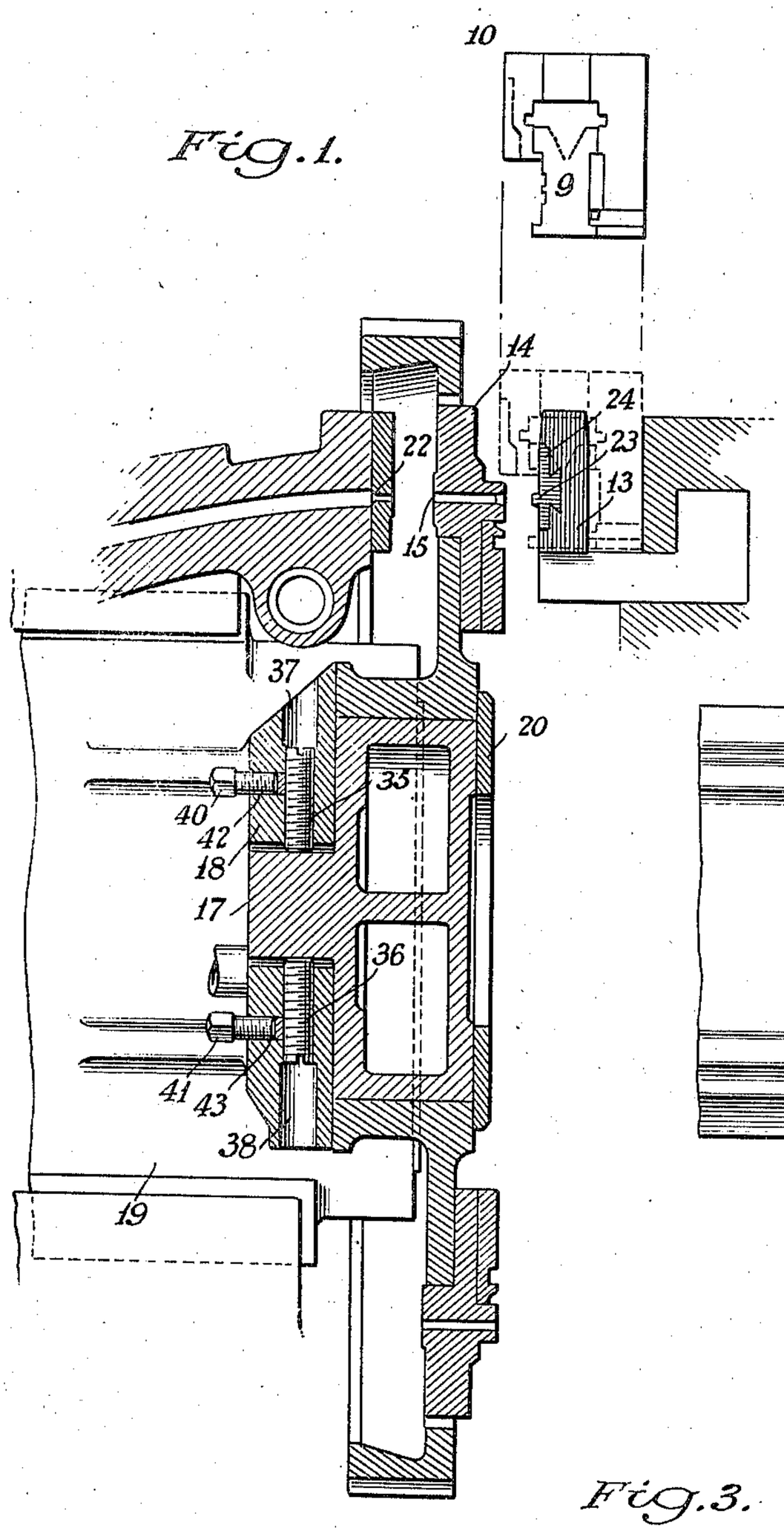


Fig. 2.

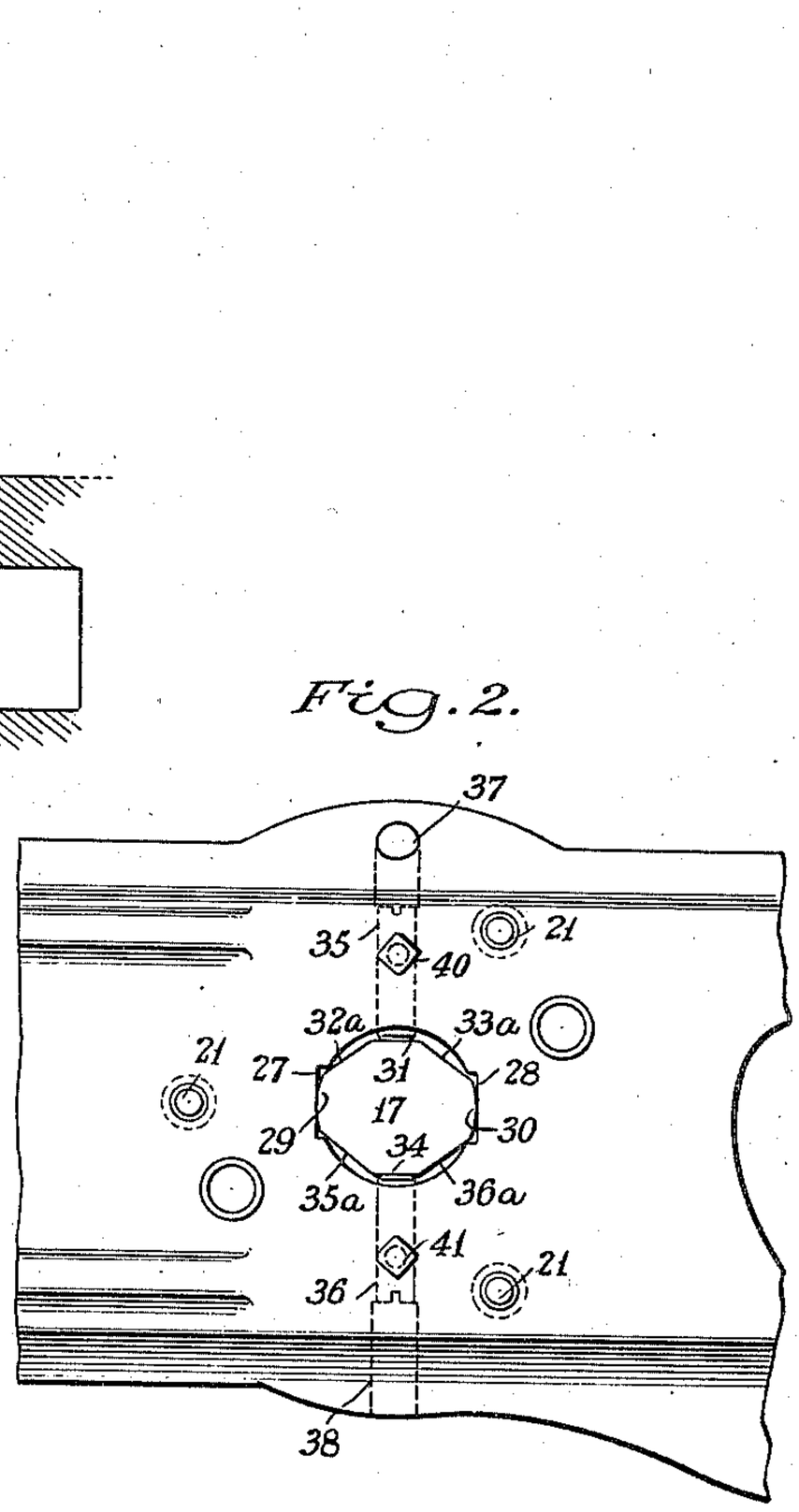
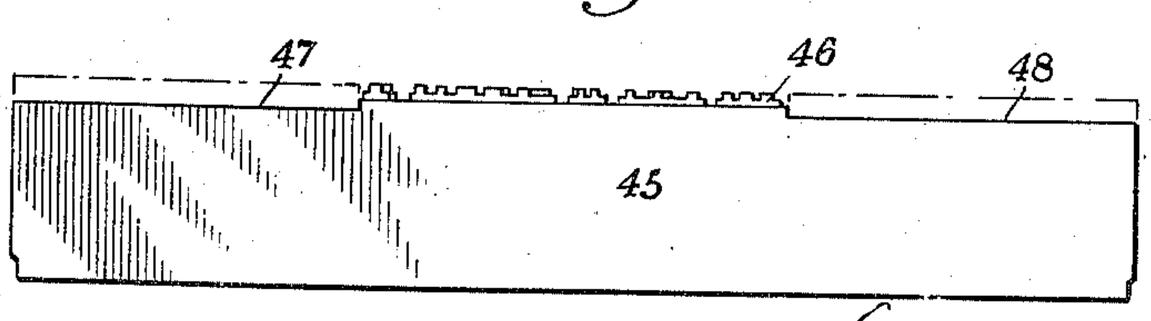


Fig. 3.



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Patented Aug. 2, 1938 2,125,695

UNITED STATES PATENT OFFICE

2,125,695

SLUG CASTING MACHINE

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Application September 11, 1937, Serial No. 163,403

15 Claims. (Cl. 199—47)

This invention relates to slug casting machines of the general organization represented in the U. S. Letters Patent No. 436,532 to O. Mergenthaler, wherein circulating matrices are released from a magazine in the order in which their characters are to appear in print and then assembled in line; the composed line transferred into a line transporter or so-called first elevator; the transporter lowered to position the line between a pair of vise jaws, which clamp it therebetween, and before the face of a slotted mold mounted on a rotatable mold wheel; the mold wheel advanced from its rotating position to carry the face of the mold against the line and the vise jaws; the mold filled with molten metal to form a type line or slug against the matrices which produce the type characters thereon; the mold wheel retracted to its rotating position; and the matrices thereafter returned through distributing mechanism to the magazine from which they started.

It is common practice to provide each of the vise jaws with a longitudinally disposed rib which enters the mold slot as the mold is carried forward by the mold wheel to casting position. These ribs in entering the mold slot serve to produce low-quad surfaces on the printing edges of the slugs beyond the type characters. In general, such an arrangement for producing low-quad slugs is satisfactory, but it is open to the objection that, unless the mold slot is directly opposite or at the same level as the projecting ribs on the vise jaws when the mold wheel moves forward during the casting operation, the ribs will not enter and form the necessary metal tight seal or joint between the top and bottom walls of the slot.

To meet this objection, it is proposed, in accordance with the present invention, to adjust the position or level of the mold slot with respect to the position or level of the projecting ribs on the vise jaws, whenever necessary, and to this end the stud about which the mold wheel rotates is adapted and arranged to be adjusted vertically. In consequence, any variation in the level of the projecting ribs with respect to the casting level of the mold slot may be easily corrected by adjusting the stud vertically to raise or lower the mold wheel the exact distance necessary to bring the mold slot directly opposite or at the same level as the projecting ribs.

For a clear understanding of the invention, reference may be made to the accompanying drawing wherein the invention is shown merely by way of example and in preferred form. Obviously, however, many variations and modifications may be made therein which will still be comprised within its spirit, and it is to be understood that the invention is not to be limited to any specific form or embodiment, except insofar as such limitations are specified in the appended claims.

In the drawing,

Fig. 1 is a side view, in section, of that portion of the machine embodying the present invention;

Fig. 2 is a rear view of the lateral arm in which the mold wheel stud is mounted; and

Fig. 3 is a view of a so-called low-quad slug.

In the usual operation of the machine, an assembled line of matrices 9 is transferred into a so-called first elevator or line transporter 10, which then descends from the full line position shown in Fig. 1 to the dotted line position shown therein to locate the line between a left-hand vise jaw 13 and a right-hand vise jaw (not shown), which jaws before casting move inwardly (either or both according as the machine is set for left-hand or right-hand quadding or for centering) to clamp the line between them. As usual, several molds 14 are mounted on a mold disk 16, each mold, for example, being of a different size to produce slugs of different point sizes. Also, as usual, the mold disk 16 is rotatably mounted on a stud 17 carried by a lateral arm 18 on the fore-and-aft mold slide 19, axial displacement of the disk on the stud being prevented by an annular collar 20 secured to the front face of the stud 17 by screws 21 and by the front face of the hub portion of the lateral arm 18.

After the composed line is presented in casting position, the mold slide 19 advances in the usual manner to bring the front face of the mold 14 into contact with the composed line and the casting faces of the vise jaws. The mouthpiece 22 of a metal pot then advances against the rear face of the mold, after which molten metal is forced into the mold to form a type bar or slug against the matrices which produce the type characters thereon.

Each vise jaw is provided with a longitudinally extending rib 23 which projects toward the mold 14 on substantially the same horizontal level as the mold slot 15. The rib 23 on each jaw is preferably formed on a slide 24 rearwardly secured to the jaw, as by fitting the slide into a dove-tailed recess in the casting face of the jaw (see the co-pending application of Richard R. Mead, Serial No. 81,394, filed May 23, 1936), this arrangement being desirable to permit the employment of different slides having ribs of

different widths to suit molds of different heights for casting slugs of different point sizes. The upper and lower edges of the ribs are beveled or inclined at opposite angles and the front portion of the upper and lower walls of the mold are correspondingly beveled or inclined, as in the Mead application just referred to.

Under the conditions stated, as the mold disk 16 is carried forward by the mold slide 19 to present the front face of the mold 14 against the casting edges of the assembled line of matrices and the casting faces of the vise jaws, the ribs 23 enter the end portions of the mold slot 15 and form a metal tight seal or joint. Then, by forcing molten metal into the mold slot 15, a slug 45 is produced having a character bearing portion 46 and low-quad end portions 47 and 48, it being observed that the slug shown in Fig. 3 is of the "centered" variety.

In the event, however, that the ribs 23 on the vise jaws are not directly in front or at the level of the mold slot 15 when the mold wheel moves forward to casting position, they will not enter and form the necessary metal tight seal. Since both the mold 14 and the ribs 23 are carried by moving parts of the machine, such mis-alignment may result during assembly of the machine or during the normal operation of the machine after assembly.

The present invention therefore provides means for correcting slight variations in the relative levels of the mold slot 15 and the projecting ribs 23 on the vise jaws to bring them into exact alignment, and to this end the stud 17 upon which the mold disk 16 rotates, instead (as ordinarily) of being fixedly mounted in the lateral arm 18 of the mold slide 19, is adapted and arranged to be adjusted vertically therein.

As shown more clearly in Figure 2, the fore-and-aft opening 26 of the lateral arm 18 in which the stud 17 is mounted is recessed to provide oppositely disposed vertical side faces 27 and 28, respectively, and the stud 17 is provided with two oppositely disposed arcuate portions 29 and 30, respectively, which are in sliding contact with the vertical side faces 27 and 28 of the opening 26. The stud 17 is also provided with a flat top face 31 which is connected with the upper ends of the arcuate portions 29 and 30 by sloping shoulders 32^a and 33^a, respectively, and with a flat bottom face 34 which is connected with the lower ends of the arcuate portions 29 and 30 by similar sloping shoulders 35^a and 36^a, respectively, the arrangement being such that when the stud 17 is located centrally in the opening 26, it is capable of limited up and down movement therein.

Adjusting screws 35 and 36 are provided for moving the stud 17 up and down in the opening, one of the screws being threaded through a tapped hole 37 in the lateral arm 19 with its lower end in engagement with the upper flat face 31 on the stud 17, and the other screw being threaded through a similar tapped hole 38 in the lateral arm 19 with its upper end in engagement with the lower flat face 34 on the stud 17. The adjusting screws 35 and 36 are locked in set position by set screws 40 and 41, respectively, one of which is threaded through a tapped hole 42 in the rear of the lateral arm 18 into engagement with the upper adjusting screw 35, and the other of which is threaded through a similar hole 43 in the rear of the lateral arm 18 into engagement with the lower adjusting screw 36.

In the event the mold slot 15 is slightly above or below the level of the vise jaw ribs 23 when the mold 14 is in its horizontal casting position, the set screws 40 and 41 may be backed off and the adjusting screws 35 and 36 manipulated to raise or lower stud 17. As the stud 17 is raised or lowered, the mold wheel 16 and active mold 14 carried thereby are raised or lowered accordingly, the contact between the arcuate portions 29 and 30 of the stud 17 and the vertical side faces 27 and 28 of the opening 26 serving to prevent lateral displacement of the stud during such vertical adjustment. When the mold slot 15 is properly aligned with the ribs 23, the adjusting screws 35 and 36 are again locked in position by the set screws 40 and 41.

While the adjustment of the mold wheel is herein intended specifically to bring about the alignment of the mold slot with the low-quad vise jaw ribs, it will be understood that the invention contemplates a similar adjustment of the mold wheel for any other purpose.

Having thus described my invention, what I claim is:

1. In a slug casting machine, the combination of a mold wheel carrying a slotted mold, a pair of vise jaws, at least one of which has a longitudinally extending rib on the casting face thereof, means for presenting said mold against said jaws, and means for adjusting the level at which said mold is presented against said jaws to insure entrance of the rib into the slot without disturbing the relationship between said mold and said wheel.

2. In a slug casting machine, the combination of a pair of vise jaws, at least one of which has a longitudinally extending rib on the casting face thereof, a mold wheel carrying a slotted mold and adapted to present said mold against said jaws, and means for changing the level at which said mold is presented against said jaws to insure entrance of the rib into the slot without disturbing the relationship between said mold and said wheel.

3. In a slug casting machine, the combination of a pair of vise jaws, a mold wheel carrying a slotted mold and adapted to present said mold against said jaws, and means for changing the level at which said mold is presented against said jaws without disturbing the relationship between said mold and said wheel.

4. In a slug casting machine, the combination of a mold wheel, and means for changing the position of the axis of rotation of said wheel to permit the presentation of an active mold at different casting levels.

5. In a slug casting machine, the combination of a mold wheel, a stud upon which said wheel is rotatably mounted, and means for changing the position of the stud to permit the presentation of an active mold at different casting levels.

6. In a slug casting machine, the combination of a mold wheel, a mold slide for advancing said wheel to present an active mold in casting position, and means for changing the level at which said mold wheel is advanced.

7. In a slug casting machine, the combination of a mold slide, a mold wheel rotatably mounted on the slide, a slotted mold mounted on the wheel, and means for changing the position of the axis of rotation of said wheel on said slide.

8. In a slug casting machine, the combination of a mold slide, a mold wheel rotatably mounted on the slide, a slotted mold mounted on the wheel, and means for changing vertically

the position of the axis of rotation of said wheel on the slide.

9. In a slug casting machine, the combination of a fore-and-aft mold slide having a lateral arm, a stud adjustably mounted in said arm, and a mold wheel rotatably mounted on said stud.

10. In a slug casting machine, the combination of a fore-and-aft mold slide having a lateral arm, a stud mounted in said arm, a mold wheel rotatably mounted on the arm, means for adjusting vertically the position of the stud in the arm, and means for preventing lateral displacement of the stud during such adjustment.

11. In a slug casting machine, the combination of a fore-and-aft mold slide having a lateral arm, a stud mounted in said arm, and a mold wheel rotatably mounted on said stud, said stud being capable of adjustment in one direction only in said arm.

12. In a slug casting machine, the combination of a fore-and-aft mold slide having a lateral arm, a stud mounted in said arm, a mold wheel rotatably mounted on said stud, means for adjusting said stud to a desired position, and means for thereafter locking said stud in its adjusted position.

13. In a slug casting machine, the combination of a fore-and-aft mold slide having a lateral arm, a pair of adjusting screws carried by said arm, a stud supported between oppositely disposed ends of said screws, and a mold wheel rotatably mounted on said stud.

14. In a slug casting machine, the combination of a fore-and-aft mold slide having a lateral arm, a pair of adjusting screws carried by said arm, means for locking said screws against rotation, a stud supported between oppositely disposed ends of said screws, and a mold wheel rotatably mounted on said stud.

15. In a slug casting machine, the combination of a fore-and-aft mold slide having a lateral arm, a pair of vertically disposed adjusting screws carried by said arm, means for locking said screws against rotation, a stud positioned between oppositely disposed ends of said screws, and a mold wheel rotatably mounted on said stud.

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