UNITED STATES PATENT OFFICE

ROBERT M. O'CONNOR AND RUSSELL T. TODD, OF WARREN, OHIO

TYPE SLUG CASTING MACHINE OR THE LIKE

Application filed June 25, 1931. Serial No. 546,582.

The present invention relates to a new and useful safety attachment for type slug casting machines which acts as an automatic mold liner protector.

5 Among the principal objects and advantages of the present invention are: the elimination of one manual operation in changing the machine from casting and ejecting a long line to a shorter one or vice-versa; to eliminate the time usually required to make a change in the length of the ejector mechanism; to avoid damage to line slug casting machines through failure of the operator to set the ejecting mechanism to the proper length to correspond to the length of the mold placed in operating position, thus causing damage to the line cast, the ejecting mechanism, or the mold lines; also to eliminate loss of time in the operation of the machine occasioned by wrong setting of the ejecting mechanism.

Other objects and advantages will readily become apparent from the following description when taken in connection with the accompanying drawings.

Referring to the accompanying drawings, Fig. 1 is a front elevational view of a portion of the slug type casting machine with the safety attachment applied thereto; Fig. 2 is a fragmentary side view of the attachment on an enlarged scale taken on the line 2—2 of Fig. 1; and Fig. 3 is a fragmentary detailed view of the master gear or disk; and Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Fig. 3.

The numeral 1 designates in general the usual reciprocating mold disk which has removably secured and disposed therein one or more molds 2 provided with liners 3 which determine the thickness and the length of the slug to be cast therein. The mold disk is provided on its periphery with gear teeth in mesh with the teeth on the pinion 4. The pinion 4 is axially slidable outwardly against the tension of a spring, not shown, and is disengageable from a pin carried by the shaft 5 so that it may be revolved independently of the shaft for rotating the mold disk to bring a selected mold 2 into a different operating position. The pinion 4 and the toothed portion of the mold disk 1 are made to a 4 to 1 gear ratio.

In placing one of the molds 2 in operating position it is necessary, in order to properly eject the cast slug from the mold 2 so as to avoid damage to the mold and its liners, to set the selectable ejector mechanism, which is provided with integral blades of different sizes, or made up of a series of segments, to the length corresponding to the opening in the mold. This is accomplished by moving the handle of lever 7 up or down over a notched segment, not shown, a graduated scale 6 being provided to indicate to the operator the proper setting of the selectable ejector mechanism. The operation and construction of this selectable ejector mechanism is well known in the art and therefore requires no detailed description.

The safety attachment which is the subject matter of the present invention comprises the bracket 25 secured to a portion of the machine frame, designated in general at A, by screws 26. Secured to the upper portion of the bracket, by means of bolts 33, a gear casing 31 is provided within which are rotatably supported gears 10 and 11 secured to a shaft 39 journailed in the gear housing. Gear 4 is normally out of mesh with gear 11 during the operation of the machine. When, however, a change in the operating position of the molds 2 is required, pinion 4 is pulled outwardly by means of the knob 15 against spring tension and brought into mesh with the teeth of gear 11. A master gear or disk 38 pivotally mounted on a stud 24 secured to bracket 25 is in mesh with the pinion 10. These gears 10, 8, and 11 form a reduction gearing having a 4 to 1 gear ratio with pinion 4 so that upon the rotation of pinion 4, while in mesh with gear 11, they will cause a corresponding angular rotation of the mold disk 1. In other words, when the mold disk 1 is turned through a certain angle, the master gear or disk 38 will turn through a corresponding or equal angular space.

The gear or disk 38 is provided with four groups of radially spaced perforations 12 into a selected one of each group of which a threaded stud 13 carrying a roller 14 is in
sorted as shown in Fig. 4. The purpose of these perforations is to provide for the setting of the studs 13 and rollers 14 in selected positions, as indicated by the graduations on the disk, to correspond to the length of the opening in each of the four molds 2 which is placed in operating position on the mold disk 1. Thus when the studs for the rollers 14 are placed in the proper holes 12 to correspond to the openings in each of the four molds on the mold disk 1, any rotation of pinion 4 by the operator to change the operating position of the mold disk will cause a corresponding change in the position of the gear or disk 8. When such a change is made the roller 14, having previously been placed in the proper hole 12, will force the slide 16 down against the tension of spring 17 which normally tends to retain the slide in an elevated position and in contact with one of the rollers 14. This turning movement of the disk 8 and consequently the vertical movement of the slide 16 will move the ejector handle 7 to the required setting for the mold 2 placed in operating position. This setting will be indicated by the graduation appearing at an opening in the portion of the machine frame 18 in which the scale is slideable. After mold disk 1 is set in the desired position, pinion 4 returns to its normal position through the influence of the spring associated therewith and passes out of mesh with gear 11. Gear 11, and consequently disk 8, is retained in set position by means of a plunger pin 19 which contacts with a recess or depression formed in the hub of the gear 11 by means of the compression spring 21 disposed in a hole in the gear casing 21. The spring is adjustably backed up by collar 22 disposed in the hole 21 and retained therein by means of a set screw 23. Thus the pin 19 retains gears 11, 10, and 8 stationary and in definite set position while disengaged from the pinion 4 and maintains the teeth of the gear so that they will readily aline with pinion 4 when the latter is pulled outwardly to mesh with the teeth in gear 11 so that changes in mold positions and the proper type slug ejector selection can be made easily.

The slide 16 is disposed in a recess formed in the bracket 25 and retained therein by means of the plate 25a and secured to the bracket by means of suitable screw fastenings. A linkage connection is provided between the slide 16 and ejector selecting handle 7. This linkage comprises a link 27 pivotally secured by a pin and cotter connection 28 to the slide 16, and a corresponding connection 29 is provided at the other end of the link for pivotally connecting the link to a fulcrumed lever 30 and the latter is pivotally secured to a bracket 35 by means of a pin and cotter connection 32, and is shown as a portion of the framework of the machine. An adjustable link connection is provided between the lever 30 and ejector selecting handle 7 and comprises a threaded socket member 34 pivoted to the lever 30 at 35, a rod 36 threaded at both ends and a universal joint connection 37 with the ejector selecting handle 7.

From the above description it will be seen that in the operation of the slug type casting machine it is necessary for the operator to place liners 3 in the molds 2 to determine the proper length and thickness of the slugs or lines to be cast. It is then necessary to place the studs of rollers 14 in the proper holes 12 as determined by the figures marked adjacent to the holes and corresponding to the liners 3 placed in the molds 2. When the rollers have been properly positioned, any change in the operating position of molds 2 by means of pinion 4 will automatically set the ejector handle 7 to its proper position so that the ejector blades 9 will properly correspond to the openings in the molds.

What we claim is:

1. A type slug casting machine comprising a reciprocating mold disk, an axially slideable driving pinion geared to said mold disk and releasable from its driving shaft when moved axially outwardly, a selectible ejector means for delivering the slugs from the molds in said disk, a selector mechanism for determining the ejector to be used, said selector mechanism comprising a rotatable perforated disk normally retained stationary, a gear driving connection for manually rotating said disk when said axially slideable pinion is brought into mesh with said gear driving connection to simultaneously rotate said mold disk and perforated disk, said driving pinion and gear driving connection being so proportioned that the mold disk and perforated disk are moved through corresponding angular distances, pins selectively secured in the perforations in said disk, and a linkage connection between said perforated disk and said selectible ejector means for actuating and retaining the latter by the engagement of said pins with a portion of the linkage mechanism.

2. A type slug casting machine comprising a reciprocating mold disk, an axially slideable driving pinion geared to said mold disk and releasable from its driving shaft when moved axially outwardly, a selectible ejector means for delivering the slugs from the molds in said disk, a selector mechanism for determining the ejector to be used, said selector mechanism comprising a rotatable perforated disk having groups of perforations arranged in corresponding angular relation to the molds on said mold disk, a gear driving connection for manually rotating said perforated disk when said axially slideable pinion is brought into mesh with said gear driving connection to simultaneously rotate said mold disk and perforated disk, said driving
pinion and gear driving connection being so proportioned that the mold disk and perforated disk are moved through corresponding angular distances, pins selectively secured in the perforations in said disk; a depressible spring pressed member normally in contact with a selected pin on said perforated disk, and a linkage connection between said depressible member and said selectable ejector means for retaining the latter in proper ejector selecting position.

3. A type slug casting machine comprising a reciprocating mold disk, an axially slideable driving pinion geared to said mold disk and releasable from its driving shaft when moved axially outwardly, selectable ejector means for delivering the slugs from the molds in said disk, a selector mechanism for determining the ejector to be used, said selector mechanism comprising a rotatable disk, projections arranged in corresponding angular relation to the molds secured to said disk in selected radial positions, a gear driving connection for manually rotating said rotatable disk when said axially slideable pinion is brought into mesh with said gear driving connection to simultaneously rotate said mold disk and rotatable disk, said driving pinion and gear driving connection being so proportioned that the two disks are moved through equal angular distances, a spring influenced slideable member normally in contact with a selected one of said projections, and a connection between said slideable member and selectable ejector means for retaining the latter in proper ejector selecting position.

4. A type slug casting machine comprising a reciprocating mold disk, an axially slideable driving pinion geared to said mold disk and releasable from its driving shaft when moved axially outwardly, selectable ejector means for delivering the slugs from the molds in said disk, a selector mechanism for determining the ejector to be used, said selector mechanism comprising a rotatable disk, a gear driving connection for manually rotating said rotatable disk when said axially slideable pinion is brought into mesh with said gear driving connection to simultaneously rotate said mold disk and rotatable disk, a connection between said disk and the selectable ejector means, and means selectively secured in position on said disk for actuating and retaining the connection in proper ejector selecting position.

5. A type slug casting machine comprising a reciprocating mold disk, an axially slideable driving pinion geared to said mold disk and releasable from its driving shaft when moved axially outwardly, selectable ejector means for delivering the slugs from the molds in said disk, a selector mechanism for determining the ejector to be used, said selector mechanism comprising a rotatable disk, a gear driving connection for manually rotating said rotatable disk when said axially slideable pinion is moved outwardly into mesh with said gear driving connection to simultaneously rotate said mold disk and rotatable disk, and means selectively secured in position on said disk for actuating and retaining the selectable ejector means in proper ejector selecting position.

6. A type slug casting machine comprising a reciprocating mold disk, an axially slideable driving pinion geared to said mold disk and releasable from its driving shaft when moved axially outwardly, selectable ejector means for delivering the slugs from the molds in said disk, a selector mechanism for determining the selector to be used, said selector mechanism comprising a rotatable disk, a gear driving connection for manually rotating said rotatable disk when said axially slideable gear is moved axially outwardly into mesh with said gear driving connection to simultaneously rotate said mold disk and rotatable disk, and means on said disk for actuating and retaining the selectable ejector means in proper ejector selecting position.

7. A type slug casting machine comprising a reciprocating mold disk, an axially slideable driving pinion geared to said mold disk and releasable from its driving shaft when moved axially outwardly, selectable ejector means for delivering the slugs from the molds in said disk, a selector mechanism for determining the selector to be used, said selector mechanism being actuated by said axially slideable gear when the latter is moved axially outwardly and manually rotated to bring a selected mold into working position, and connecting means interposed between said selector mechanism and said selectable ejector means, said selector mechanism and connecting means actuating and retaining the selectable ejector means in proper ejector selecting position.

8. A type slug casting machine comprising a reciprocating mold disk, means for manually rotating said disk to selected positions, selectable ejector means for delivering the slugs from the molds in said disk, a selector mechanism for determining the ejector to be used, said selector mechanism being actuated by said means for manually rotating said mold disk to selected positions, and connecting means interposed between said selector mechanism and said selectable ejector means, said selector mechanism and connecting means actuating and retaining the selectable ejector means in proper ejector selecting position.

In testimony whereof, we affix our signatures.

ROBERT M. O'CONNOR.
RUSSELL T. TODD.