July 11, 1939. G. L. CURLE 2,165,347

MEANS FOR LUBRICATING THE SIDE-TRIMMING KNIVES IN A TYPE CASTING MACHINE

Filed Sept. 3, 1937

Fig. 1

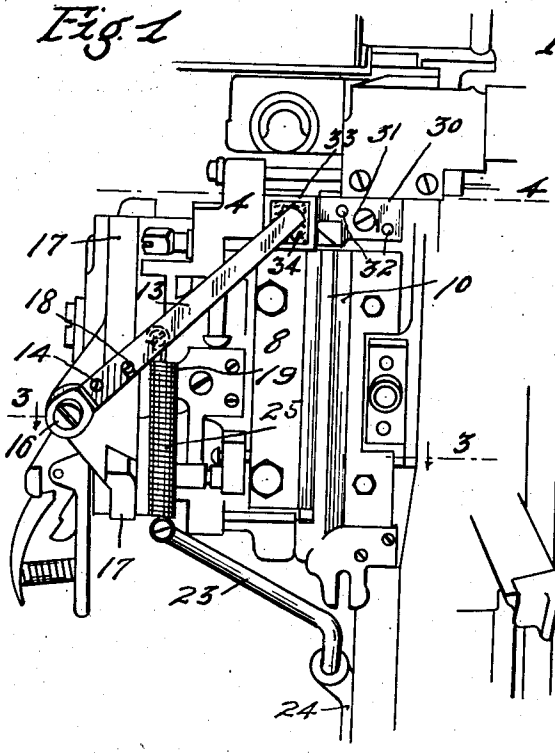


Fig. 2

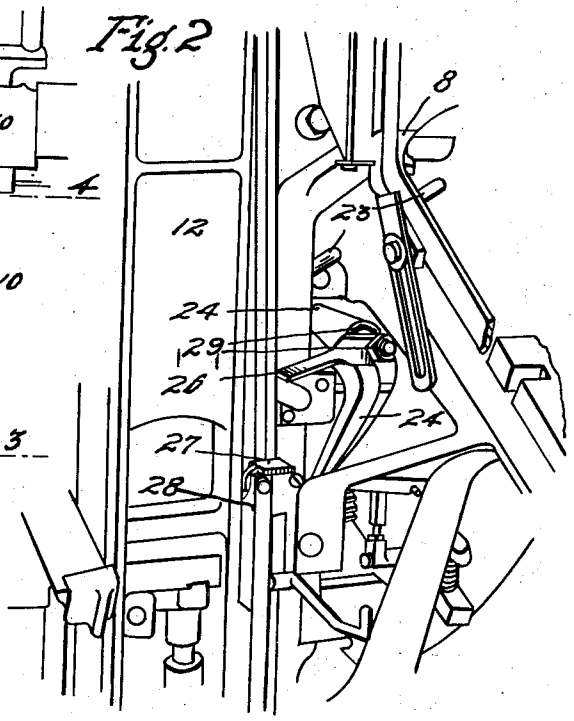


Fig. 3

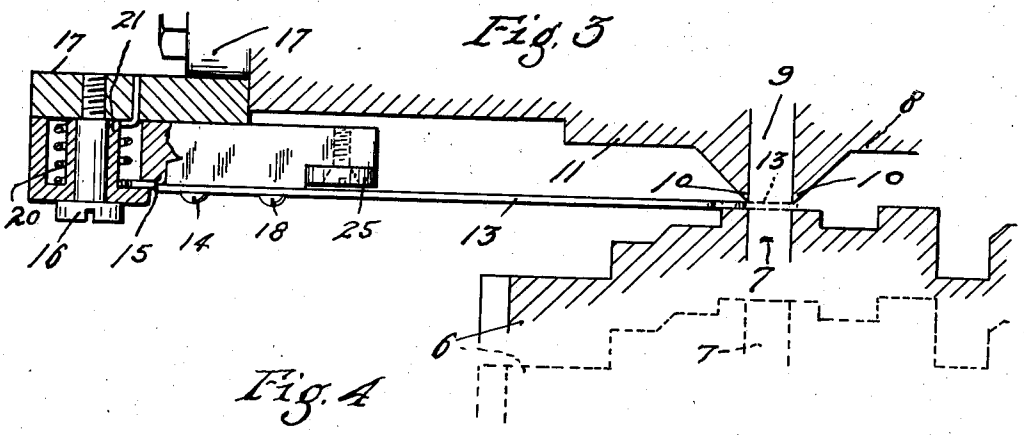
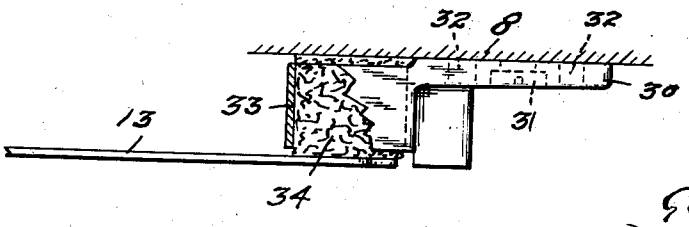


Fig. 4



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MEANS FOR LUBRICATING THE SIDE-TRIMMING KNIVES IN A TYPE CASTING MACHINE

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2 Claims. (Cl. 199—62)

My present invention relates to type casting machines and more particularly to the slug-trimming knives, at the sides of the type slug channels, and the knife wiper therefor.

This invention provides means for lubricating the trimming knives to prevent leading thereof. While the invention is intended for general use, it is especially well adapted for use in connection with the knife wiper disclosed and broadly claimed in my United States Letters Patent No. 1,808,977, issued June 9, 1931, and entitled "Knife wiper for type casting machines".

It is well known that type slugs, as they are successively cast, vary slightly in thickness and the sides thereof are not always parallel so that they have a slight longitudinal taper. To true up these type slugs, as they are ejected from the vise of the type costing machine, they are forced between a pair of trimming knives at the sides of the type slug channel, that shave a slug to a predetermined thickness.

As type slugs are successively forced between the trimming knives by the ejection blade, considerable friction is produced therebetween, which results, in the absence of a lubricant, in leading the cutting edge portions of the trimming knives. The successive passing of hot type slugs between the trimming knives, as they are received from the molds, heats said knives. This heat from the trimming knives, as well as from the molds, accelerates the leading of the trimming knives.

It may be here stated that one side of a type slug has a plurality of transverse raised ribs and at the other side thereof the respective end of the line of type projects slightly outward thereof. It is these surfaces, to wit: the ribs and the projecting end of the line of type that are trimmed by the trimming knives. In trimming a type slug, relatively thick shavings are usually cut from the ribs while the shavings cut from the projecting end of the line of type are usually very thin, and in some instances, fuzz-like.

In the absence of a lubricant on the trimming knives, the very thin or fuzzy shavings are difficult to remove, for the reason that due to the thinness thereof, they are more quicky heated and welded to the leaded surfaces of the trimming knives. When the knife wiper passes over the trimming knives, the fuzzy metal welded thereto is very often turned into the slug channel by said wiper instead of being removed thereby. Metal welded to the trimming knives and extending into the slug channel, is pressed onto the next following type slug forced between the trimming knives, and thereby makes an imperfect type slug which leaves a black spot on the printed page, which is detrimental to neat and clear printing.

It is the primary object of this invention to prevent leading of the trimming knives. To the above end, generally stated, the invention consists of the novel construction and arrangement of parts hereinafter described and defined in the claims.

In the accompanying drawing, which illustrates the invention, like characters indicate like parts throughout the several views.

Referring to the drawing:

Fig. 1 is a fragmentary inner face view of the vise of a type casting machine and knife wiper which forms a part of the invention embodied in the machine;

Fig. 2 is a fragmentary perspective view showing in diagram an outside elevation of the vise and first elevator, together with the mechanism for operating the knife wiper;

Fig. 3 is a view partly in plan and partly in section taken on the irregular line 3—3 of Fig. 1, on an enlarged scale; and

Fig. 4 is a view partly in plan and partly in section taken on the irregular line 4—4 of Fig. 1, on an enlarged scale.

Of the parts of the type casting machine shown in the drawing, it is only necessary to note the molds 6, only one of which is shown, ejector blade 7, vise 8, slug channels 9, trimming knives 10, knife block 11 and first elevator 12.

One of the trimming knives 10 is on the frame of the vise 8 and the other thereof is on the knife block 11, and which block is mounted on said frame. As is well known, the vise 8 is mounted for vertical swinging movement to and from an operative position and there is a plurality of molds 6 that are successively brought into registration with the slug channel 9. The first elevator 12 is intermittently actuated by a cam, not shown, in timed relation with the movement of the molds 6. At the time one of the molds 6 is brought into registration with the slug channel 9, the ejector blade 7 forces a type slug from said mold into the slug channel 9 and at which time the sides of said type slug are trimmed by the knives 10. From the slug channel 9, the trimmed type slug is ejected into a galley, not shown.

The knife wiper includes a flat blade 13 pivoted at 14 to an oscillatory head 15, which, in turn, is pivoted at 16 to a bracket 17 rigidly secured to the knife block 11. This wiper blade

13 is normally held against movement on its pivot 14 for common oscillatory movement with the head 15 by a set-screw 18 which extends through a notch 19 in the lower edge of said blade and has screw-threaded engagement with the head 15.

The head of the set-screw 18 impinges against the outer face of the wiper blade 13 with sufficient friction to hold the same under normal pressure. Said wiper blade 13 is normally and yieldingly held by a coiled spring 20 in a raised position in which it is at one side of the slug channel 9 with its free end thereabove, see Fig. 1. This spring 20 encircles an internal hub 21 on the head 15 and one of its ends is anchored to the bracket 17 and its other end is attached to said head. Upper and lower stop surfaces 22 on the head 15 limit the lifting movement of the wiper blade 13 by the spring 20 and the downward or operative movement thereof by certain connections, as will hereinafter appear.

It is important to note that the wiper blade 13 is mounted to oscillate in the arc of a circle and in the plane of the cutting edges of the trimming knives 10 for flat contact therewith under the same pressure throughout the entire length of said knives. By reference to Fig. 1 it will be noted that the wiper blade 13 is pivoted materially to one side of the slug channel 9 so that said wiper blade moves over the trimming knives 10 with a combined wiping and shearing action thus causing a relatively long portion of the wiper blade 13 to contact with said knives. This movement of the wiper blade 13 over the knives 10 distributes the wear thereon over a relatively long surface so that said blade always remains smooth under wear. The pressure with which the wiper blade 13 contacts with the knives 10 may be varied, at will, by springing the free end portion of said wiper blade either toward or away from the knives 10. It will be noted by reference to Fig. 3, that there is sufficient clearance between the face of the mold 6 and the knives 10 to permit the wiper blade 13 to freely work therebetween.

Suitable connections are provided for automatically operating the wiper blade 13 from the elevator 12 during its lifting movement to swing said blade on its pivot 14 against the tension of the spring 20 and cause said blade to pass over the knives 10 with a wiping and shearing action to remove any shavings that may be deposited thereon and clear the trimming knives for the next type slug to be ejected from the mold 6 and into the slug channel 9. These connections include a crank 23 journaled in a crank bearing 24, attached by screws to the frame of the vise 8, and a link 25, in the form of a coiled spring, which connects the outer end of the head 15 to said crank.

On the journaled end of the crank 23 is a radially projecting arm 26 arranged to be intermittently engaged by a trip 27 hinged to a bearing post 28 attached by screws to the elevator 12. During the lifting of the elevator 12, which is after a type slug has been trimmed by the knives 10 and ejected from the type slug channel 9 into the galley, the trip 27 engages the finger 26, rocks the crank 23, which, in turn, swings the wiper blade 13 against the tension of the spring 20 and causes said knife to pass over the knives 10 from the top to the bottom thereof. At the limit of the downward movement of the wiper blade 13, the trip 27 passes out of engagement with the arm 26 and at which time the spring 20 returns the wiper blade 13 and its operating connections to normal positions. During the downward or return movement of the elevator 12, the trip 27 engages the finger 26 and is swung thereby on its hinge to permit said trip to pass the arm 26. After the trip 27 passes the arm 26, it is returned by gravity to normal position. It will be noted that the arm 26 is adjustably held between a pair of opposing nuts 29 on the crank 23. By circumferentially adjusting the arm 26 on the crank 23, the timing of the movement of the wiper blade 13 by the elevator 12 may be varied, at will.

In case a type slug after being injected into the slug channel 9 by the ejector 7 is retracted thereby into the path of movement of the wiper blade, said wiper blade when operated will engage said slug with sufficient pressure to be released from the set-screw 18 with which it frictionally contacts. With the wiper blade 13 released from the set-screw 18, it will turn on its pivot 14 and thereby release the operating connections for said wiper blade so that they will be engaged by the elevator without damage to the wiper blade or actuating connections. It is, of course, an extremely simple matter to again reset the wiper blade 13 and secure the same against pivotal movement on the head 15 by the set-screw 18. As the wiper blade 13 moves downward over the knives 10 the shavings removed from the knives by said wiper will be precipitated in advance of the knife.

The link 25, as shown, is in the form of a coiled tension spring of such strength as to operate the wiper blade 13 under normal conditions but will yield in case said blade sticks during its operative movement to prevent undue strain thereon or on the operating connections therefor.

In addition to the parts of the type casting machine heretofore identified, it is important to note the banking block 30 located above the trimming knives 10 and detachably secured to the vise frame 8 by a screw 31 and a pair of pins 32.

Except for the banking block 30, the parts thus far referred to are fully shown and described in the patent heretofore identified.

Referring now in detail to the present invention. From a broad viewpoint, any suitable means may be provided for applying a lubricant to the trimming knives 10.

As a simple and convenient means of applying a lubricant to the trimming knives 10, I employ the knife wiper, the blade of which carries oil from a supply and deposits the same directly on said knives during each operative stroke of said blade to remove shavings from the trimming knives 13.

The oil supply is held in a box-like receptacle 33 cast as an integral part of the banking block 30. This receptacle 33, as shown, is open at its top and bottom and contains a body of felt 34 saturated with oil. It will be noted that the bottom of the receptacle 33 is close to the vise frame 8, see Fig. 4, and the felt 34 extends above the top of said receptacle. The position of the oil supply is such that when the knife wiper blade 13 comes to rest, at the completion of its return stroke, its free end portions rests on the felt 34. The face of the felt 34 is slightly above the under side of the knife wiper blade 13 so that when the free end portion of said blade moves onto the felt 34, it is slightly lifted by springs and thereby placed under sufficient tension to press oil in the

felt 34 onto the under side of the knife wiper blade 13.

During the operative stroke of the wiper blade 13, oil on the under side thereof is deposited on the trimming knives 10 by a compound wiping action which extends both longitudinally and transversely of said knives. This wiping action is accomplished by the arc in which the wiper blade 13 swings. During the return stroke of the wiper blade 13, any oil remaining thereon is wiped over the trimming knives 10 and said knives are more thoroughly lubricated.

The application of the lubricant to the trimming knives 10 takes place midway between the lock-up time for casting and the lock-up time for ejection of the cast type slug.

From the above description it is evident that just before a type slug is ejected the knife wiper is operative to remove shavings cut from the previously ejected slug, from the trimming knives 10 and thereafter apply a lubricant to said knives to prevent leading during the ejection of the next following type slug. In applying my invention to a type casting machine, it is only necessary to remove the banking block on the machine and substitute therefor the banking block with which the receptacle 33 is cast.

It will be understood that the invention described is capable of various modifications within the scope of the invention herein disclosed and claimed.

What I claim is:

1. In a type casting machine, means on the vise frame for holding a substance saturated with a lubricant, in combination with a pair of long laterally spaced trimming knives on the vise frame for trimming the sides of a type slug as the same is forced therebetween, a flat wiper blade pivoted relative to the vise frame, at one side of the trimming knives with its free end portion normally resting on the substance, and for edgewise movement therefrom onto the trimming knives, and means for oscillating the wiper blade to move the same longitudinally on the trimming knives and then return the same thereon to the substance, whereby during the forward stroke of the wiper blade, a shearing action is produced between the wiper blade and the trimming knives to remove metal from the trimming knives cut from a type slug and following said shearing action, the lubricant adhering to the wiper blade from the substance, is wiped by said blade transversely oblique onto the trimming knives, and during the return stroke of the wiper blade the lubricant is redistributed on the trimming knives in a reverse direction from that in which it was applied thereto.

2. The structure defined in claim 1 in which the type casting machine further includes a banking block and in which the means for holding the substance is a receptacle integral with the banking block.

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