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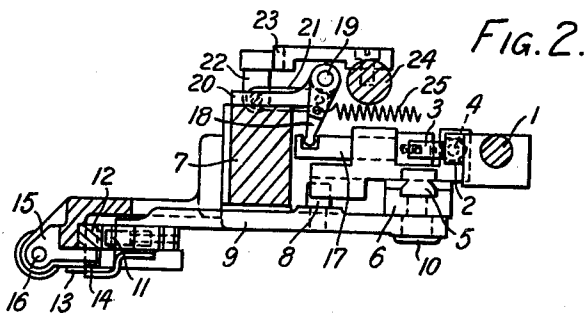
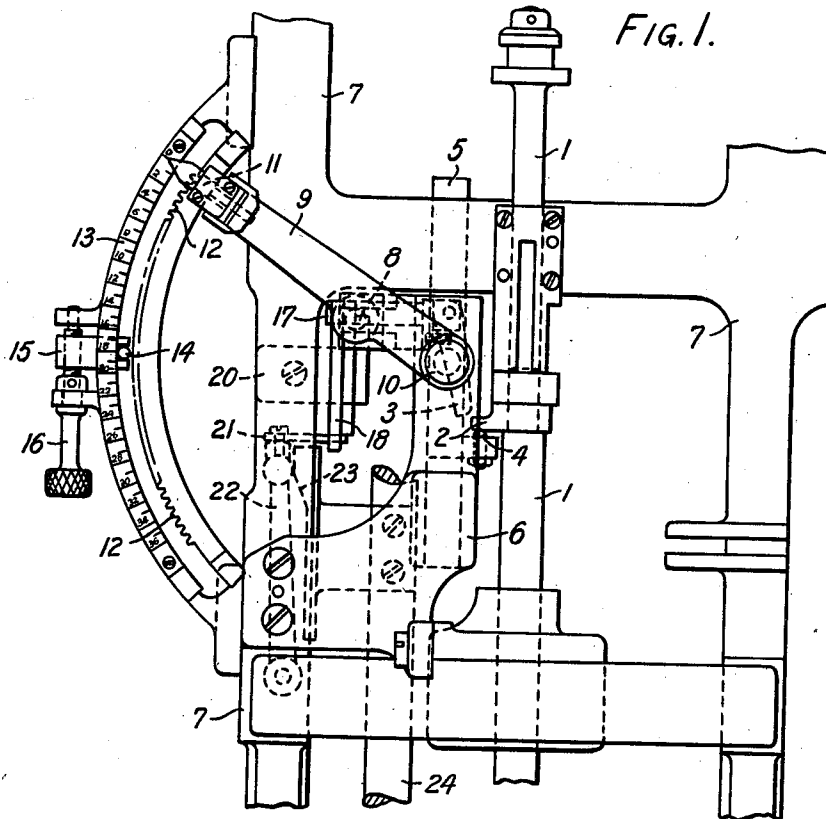
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2,201,633

TYPOGRAPHICAL SLUG CASTING MACHINE

Filed April 19, 1939

4 Sheets-Sheet 1



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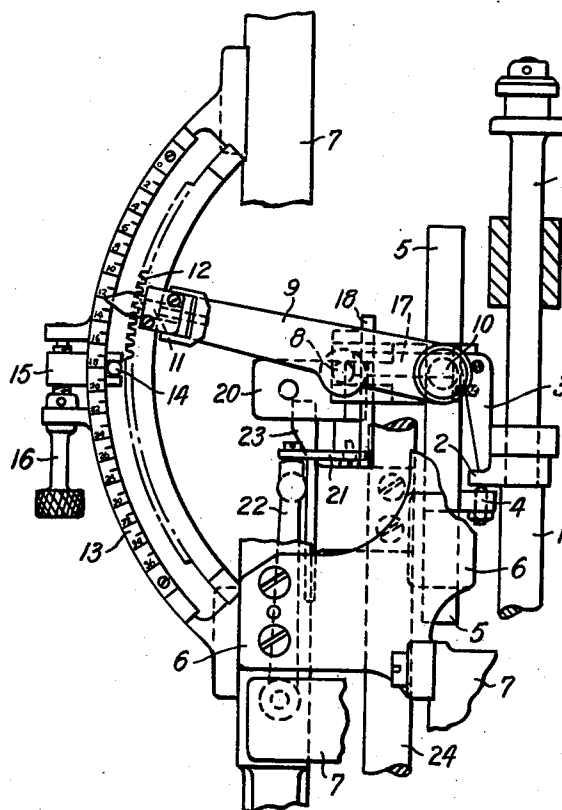
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TYPOGRAPHICAL SLUG CASTING MACHINE

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FIG. 3.



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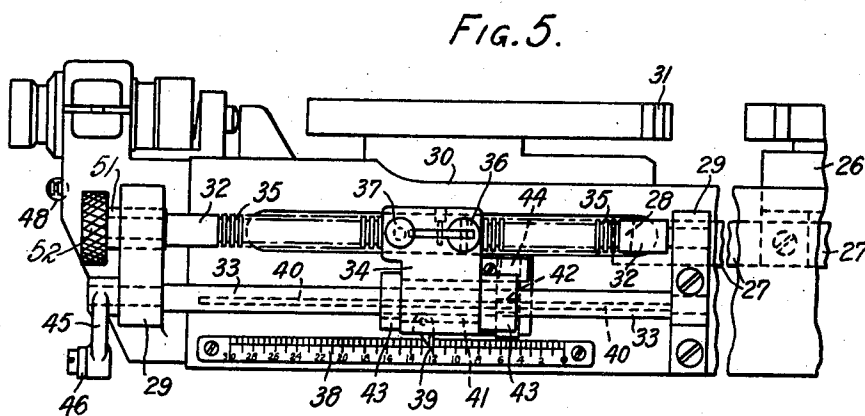
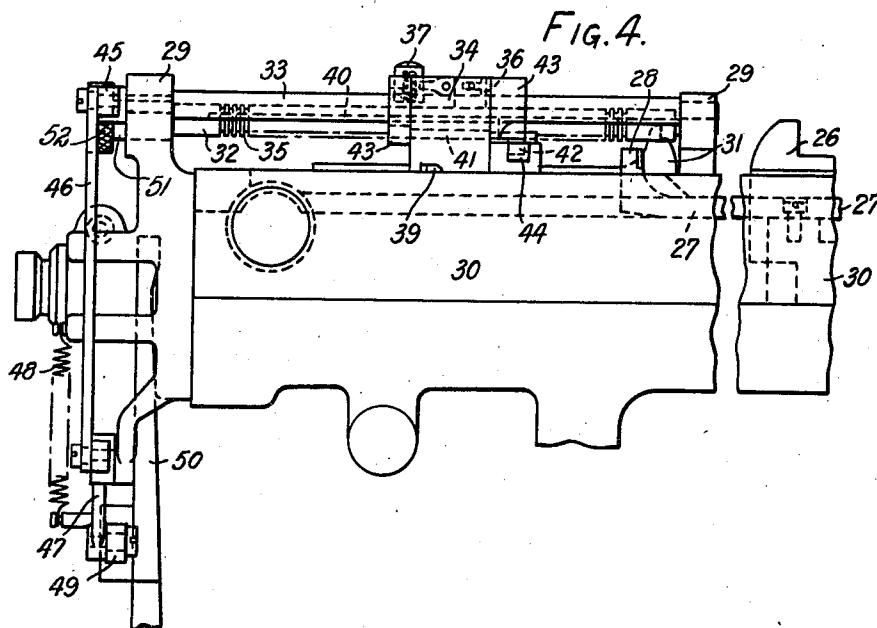
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TYPOGRAPHICAL SLUG CASTING MACHINE

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4 Sheets-Sheet 3.



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TYPOGRAPHICAL SLUG CASTING MACHINE

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4 Sheets-Sheet 4

FIG. 6.

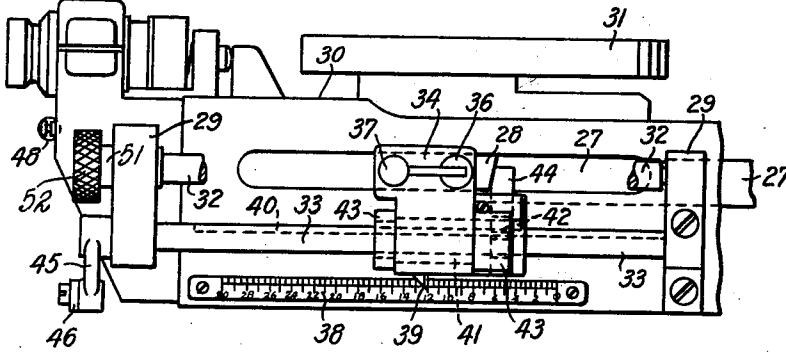


FIG. 7.

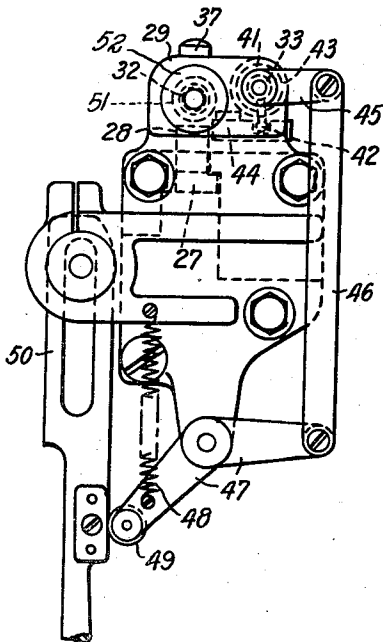
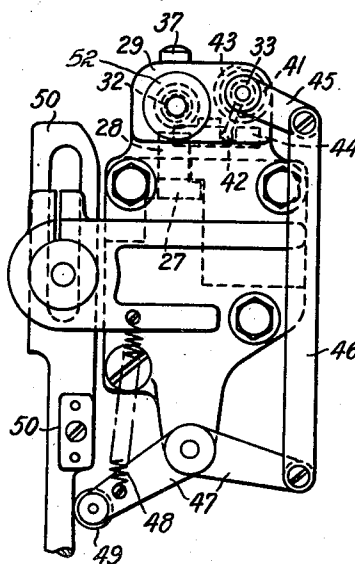


FIG. 8.



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2,201,633

TYPOGRAPHICAL SLUG CASTING
MACHINE

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Application April 19, 1939, Serial No. 268,660
In Great Britain April 21, 1938

6 Claims. (Cl. 199—50)

This invention relates to typographical slug casting machines such as those known under the registered trade-mark "Linotype," and is concerned with indenting devices which, when one or both of the vice jaws are moved inwardly to clamp a composed matrix line of less than full length, determine the extent of the inward movement of the jaw or jaws and thus produce a definite indent at one end or at both ends of the cast slug.

A disadvantage of known indenting devices, comprising a stop adjustable to limit as desired the inward movement of the jaw or jaws, arises during justification of the composed line when there is a danger of the pressure of the justifying bar upon the spacebands in the line exceeding the spring pressure urging and holding the jaws together, with the result that the jaws may be forced apart and may not maintain the prearranged indented length.

The main object of the present invention is to eliminate this danger, and with this end in view the invention consists in a typographical slug casting machine comprising means for moving a line clamping jaw inwardly to clamp a composed line of less than full length, means for limiting the said inward movement when it is desired to produce an indented slug, and stop means operated from a periodically movable part of the machine after the said inward movement has been effected whereby separation of the jaws before and during the casting of a slug is prevented. The stop means may act upon a jaw-moving rod adapted to co-act with an indenting device such as that described in the specification of United States Letters Patent No. 2,035,064, or it may act directly upon, or in connection with, a line-clamping jaw instead of upon the jaw-moving mechanism. Actuation of the stop means according to the invention may be effected by the movement of the justification rods, or the jaw wedge block.

The invention further contemplates provision for effecting both a coarse setting and a fine setting of the stop controlling the inward movement of the jaw or jaws for indenting.

Different constructional forms of the invention are hereinafter described with reference to the accompanying drawings in which:

Figure 1 is an elevation of the pertinent parts of the vice frame of a machine with one constructional form of the invention applied thereto;

Figure 2 is a plan of the mechanism shown in Figure 1;

Figure 3 is a view similar to Figure 1 with por-

tions broken away, and showing the parts in relatively different positions;

Figure 4 is an elevation of portion of a vice frame with a further constructional form of the invention applied thereto;

Figure 5 is a plan view of the apparatus represented in Figure 4;

Figure 6 is a plan view similar to Figure 5, but partly broken away and with the parts in different positions, and

Figures 7 and 8 are side elevations, as viewed from the left of Figures 5 and 6 respectively.

Referring first to Figures 1, 2 and 3, the invention is here illustrated as applied to mechanism of the kind described in the specification of the before-mentioned Letters Patent No. 2,035,064. In this arrangement, the bar 5 which carries the adjustable stop 4 determining the inward movement of the jaws, is slidable in a bracket 6 secured to the vice frame 7 and carries a forked slide 17, movable towards and away from the jaw operating rod 1. On a pivot in the fork (which is adjacent to the jaw operating rod) there is provided a dependent latch 3 which is normally urged out of its vertical position, towards the jaw operating rod 1, by a small compression spring between itself and the block, such displacement being limited by a stop. The lower end of the depending latch 3 is level with the upper surface of the stop-engaging abutment 2 carried by the jaw operating rod 1.

At the end of the forked slide 17 remote from the jaw operating rod is provided, in the side of the slide, a channel whereby the slide has a joint connection with the enlarged edge of a gate lever 18 which is pivotally mounted on a vertical spindle 19 in a bracket 20 on the vice frame 7. In this manner the forked slide, while movable up or down relatively to the gate lever, remains connected therewith whatever the vertical position to which the bar 5 carrying the jaw rod stop 4 is adjusted. The lower end of the gate lever 18, is connected by a horizontal link 21 to the upper end of a cam lever 22 which is pivoted at its lower end to the vice frame 7 for movement about a horizontal axis, so that the upper end of this cam lever moves towards or away from the jaw operating rod. A tension spring 25 between the lower face of the gate lever 18 and a fixed point on the vice frame urges the gate lever 18 (and thereby the forked slide 17 and the cam lever 22) towards the jaw operating rod 1, but a roller mounted at the upper end of the cam lever 22 contacts with an inclined surface 23 on one of the justification rods 24 of the machine, when the

justification rod 24 is in its lowermost position, and holds the cam lever 22 (and thereby the gate lever 18 and forked slide 17) away from the jaw rod 1, against this spring action.

5 From this description it will be clear that after the jaws have been closed by descent of the jaw rod to the limit defined by its adjustable stop, upward movement of the justifying rods moves the inclined cam surface thereon from the cam lever roller, whereupon, under the spring action
10 described, the gate lever is moved about its pivot towards the jaw rod and thus forces the forked slide, with the latch thereon, against the jaw rod, so that the latch is pressed, by contact with the
15 jaw rod and against the action of its compression spring, to a vertical position above the jaw rod abutment and thus locks the jaw rod against upward movement, as indicated in Figure 3, in which the setting lever 9 is shown in a position
20 different from that in which it is represented in Figure 1.

As in the device described in the above-mentioned Patent No. 2,035,064, the bar 5 carrying the jaw rod stop 4 can be vertically adjusted by
25 a lever 9 pivoted to the machine frame at its inner end on a stud 10, adjacent to the jaw rod 1, and connected by a stud 3 at a suitable intermediate point between its ends, to the bracket 4 on the bar 5. In the embodiment of the present
30 invention being described, the outer end of this adjusting lever 9 is provided with a pointer which moves over an arcuate graduated on a fixed bracket 13 to indicate the setting of the bar, and the lever 9 is locked in its settings by a releas-
35 able spring loaded plunger 11 which engages with coarsely spaced teeth on an arcuate rack 12 adjacent to the graduated scale. To allow for fine setting the arcuate rack 12 is slidable in a channel of the bracket 13 upon which the scale is
40 mounted and a peg 14 on the rack engages with a block 15 positioned between arms projecting from the side of the bracket, this block 15 being adjustable, by a milled-headed micrometer screw
45 16 between the arms to an extent equal to at least the spacing of two of the rack teeth. It will be seen that with this arrangement an operator can quickly obtain a coarse setting of the jaw rod stop by manual release of the adjusting lever plunger and its re-engagement with the
50 rack at approximately its desired new setting, whereafter the finer adjustment is effected by means of the micrometer screw which moves the rack and thereby the adjusting lever to the desired extent relatively to the arcuate scale.

55 According to the constructional form of the invention illustrated in Figures 4 to 8, the locking means act directly in connection with a line-clamping jaw instead of upon the jaw moving mechanism. In the constructional form in question, there is secured to the right-hand jaw block
60 26 a rigid strip-like arm 27 extending substantially horizontally towards the left-hand side of the machine and being turned up at its free end to form a stop 28. Between brackets 29 extending upwards from the vice cap 30 in front of the
65 left-hand jaw 31, extend two substantially horizontal parallel rods 32, 33 having slidably mounted thereon a block 34. The rod 32 nearer to the jaw is substantially in the same vertical plane as the strip like arm 27 extending from the right-
70 hand jaw block 26, but at a somewhat higher level, and has teeth or grooves 35 over a substantial part, or the whole, of its length. A detent in the form of a pivoted latch 36 in the block
75 34, movable by a spring-controlled finger-oper-

able button 37 engages the teeth or grooves 35 of this rod and enables the block to be disengaged therefrom and secured thereto in any desired position along its length. The teeth or grooves 35 are preferably spaced at $\frac{1}{2}$ em intervals, and a scale 38 on the vice cap 30, used in conjunction with a pointer or marking 39 on the block 34, facilitates the block setting.

The other rod 33 (more remote from the left-hand jaw) is provided with a keyway 40, and a sleeve 41, housed in the said block 34, encircles this rod and is keyed thereto, by a key 42 extending through the sleeve 41 and depending therefrom as a lug. The sleeve 41 has a collar 43 at each end to prevent longitudinal movement
15 relatively to the block 34, but is capable of rotational movement about its own axis in the block.

A bolt 44 housed in the block 34 is slidable beneath and towards or away from the first-mentioned rod 32 (i. e., in a direction substantially horizontal and substantially perpendicular to the left-hand jaw 31), and this bolt 44 has a slot into which projects the above-mentioned lug or key 42 so that movement of the bolt 44 is controlled by rotational movements of the keyed
20 sleeve 41 and rod 33.

A projecting arm 45 secured to the keyed rod 33 at the left-hand end (i. e., beyond the vice cap) is linked by a link 46 to one arm of a pivoted lever 47, the other arm of which is urged
30 by a tension spring 48 (extending between that arm and a fixed point of the machine frame) in such a sense that the linkage tends to move the bolt 44 to its position nearest to the left-hand jaw, but a roller 49 on the outer extremity of this spring-urged lever-arm is engaged by the
35 left-hand jaw wedge 50, when the latter is down in its inoperative position, and is held down thereby against the spring action, so that in these normal circumstances the bolt 44 is retracted from the left-hand jaw 31.

The operation of this constructional form of the device is as follows:

When it is desired to cast an indented slug the finger-operable detent 37 of the block 34 is depressed and the block moved along its supporting rods 32, 33 by the amount less than full line length by which the slug is to be indented, this setting being facilitated by the scale 38 and pointer 39 provided, whereafter the detent is released and holds the block in that setting. Before the casting operation the right-hand jaw block 26 moves inwards until the stop 28 projecting therefrom abuts against the block 34 (Figure 6), which thus determines the jaw spacing. When, thereafter, the left-hand jaw wedge 50 is raised, it releases the linkage system 47, 46, 45 connected with the keyed rod 33, whereupon the latter is caused to rotate and slide the bolt 44 associated therewith in the block 34, behind the upturned end 28 of the projecting arm 27 of the right-hand jaw block 26 (Figures 6 and 8). In this way the jaw is locked against reverse movement, under the influence of justification pressure or for any other reason, until the left-hand jaw wedge 50 descends and releases the bolt 44.

In order to allow for a finer setting of the block than is possible with the toothed rod and detent, the left-hand end of the rod 32 may be mounted in a screw-threaded sleeve 51, screwed into the respective supporting bracket 29 and having a milled head 52 facilitating adjustment thereof. The other end of the rod is longitudinally movable to a slight extent in its bearing, and thus, after the block has been coarsely set on the rod
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by means of the tooth and detent adjustment, the rod can be moved longitudinally by the screwed sleeve 51 to any fine setting desired.

5 The devices just described are preferably included in a machine having known means for adjusting the left-hand jaw to any position, and means for moving the right-hand jaw inwardly for quadding, thus allowing any line to be indented as desired at either the left or right.

10 Having described our invention we declare that what we claim and desire to secure by Letters Patent is:

1. In a typographical slug casting machine, the combination with a pair of line-clamping jaws and a periodically operated device connectible to at least one of said jaws and operable to effect inward movement of the connected jaw, of an abutment on said device, a slide adjustable relatively to said device, a stop on said slide located in the path of the said abutment, a second stop carried by said slide, and means operable to bring said second stop into engagement with said abutment to prevent separation of the jaws before and during casting.

25 2. In a typographical slug casting machine, the combination with a pair of line-clamping jaws and a periodically operated device connectible to at least one of said jaws and operable to effect inward movement of the connected jaw, of an abutment on said device, a slide adjustable relatively to said device, a stop on said slide located in the path of the said abutment, a justification rod operable to justify the line after the said inward movement, a second stop carried by said slide, and connections between said second stop and the justification rod whereby operation of said rod adjusts said second stop into engagement with said abutment.

40 3. In a typographical slug casting machine, the combination with a pair of line-clamping jaws and means adapted to move at least one of said jaws inwardly, of a stop member carried by the

inwardly movable jaw, an adjustable block on the other jaw adapted to engage said stop member, and a bolt operable from a periodically movable organ of the machine to engage said stop member and prevent separation of the jaws before and during casting. 5

4. In a typographical slug casting machine, the combination with a pair of line-clamping jaws and means adapted to move at least one of said jaws inwardly, of a stop member carried by the inwardly movable jaw, an adjustable block on the other jaw adapted to engage said stop member, a wedge block operable after said inward movement, a bolt carried by the adjustable block and connections between the said wedge block and bolt whereby operation of said wedge block adjusts the bolt into engagement with the stop member. 10 15

5. In a typographical slug casting machine, the combination with a pair of line clamping jaws and a periodically operated device connectible to at least one of said jaws and operable to effect inward movement of the connected jaw, of an abutment on said device, a slide adjustable relatively to said device, a stop on said slide located in the path of the said abutment, a second stop carried by said slide, means adapted to effect coarse adjustment of said slide, and means adapted to effect fine adjustment thereof. 20 25

6. In a typographical slug casting machine, the combination with a pair of line-clamping jaws and means adapted to move at least one of said jaws inwardly, of a stop member carried by the inwardly movable jaw, an adjustable block on the other jaw adapted to engage said stop member, means adapted to effect course adjustment of said block, and means adapted to effect fine adjustment thereof. 30 35

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