G. L. CURLE.

SLUG SAWING ATTACHMENT FOR LINOTYPE MACHINES.

APPLICATION FILED OCT. 22, 1917.

1,287,900. Patented Dec. 17, 1918.

5 SHEETS—SHEET 1.

Fig. 1

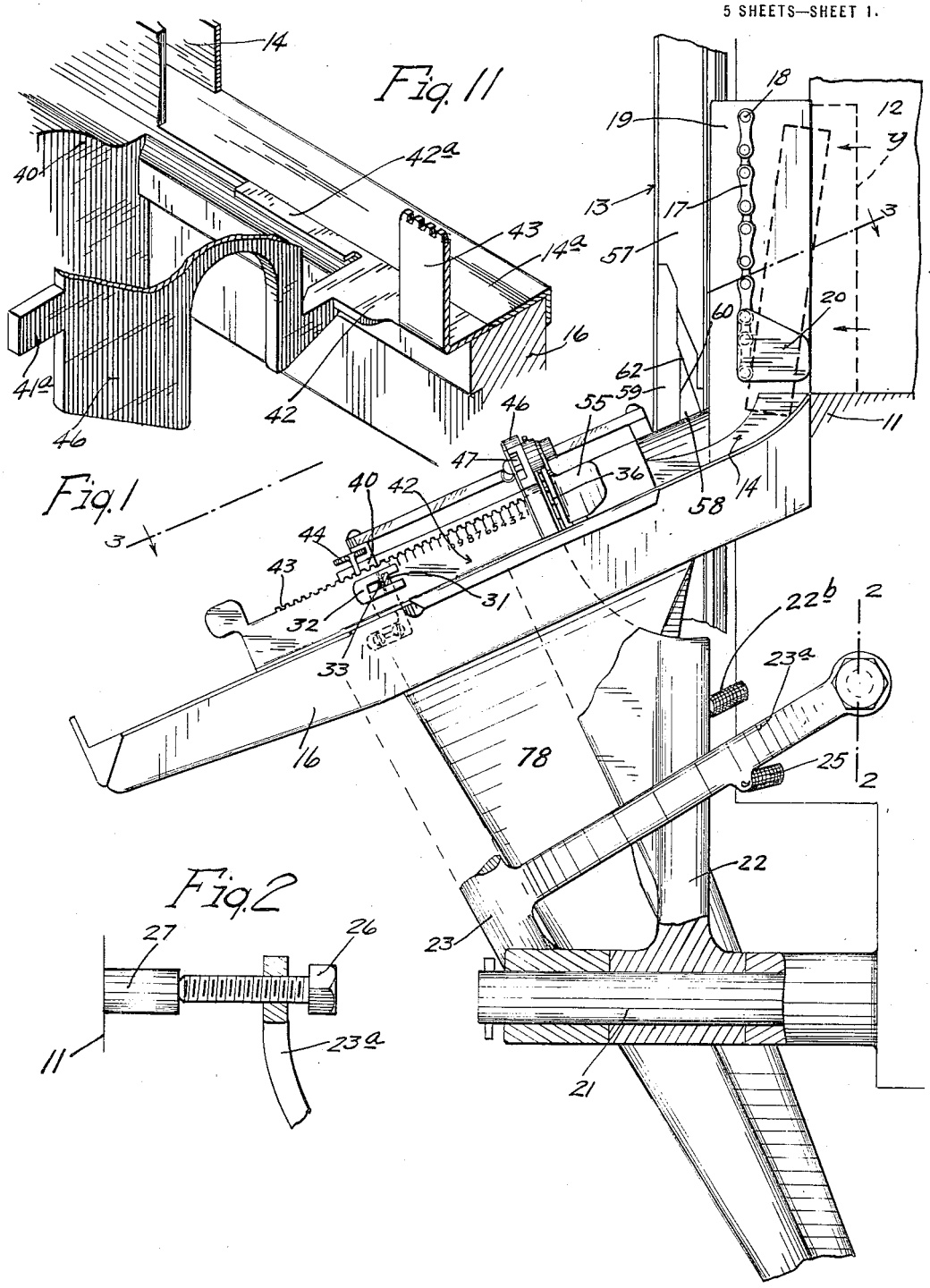

Fig. 2

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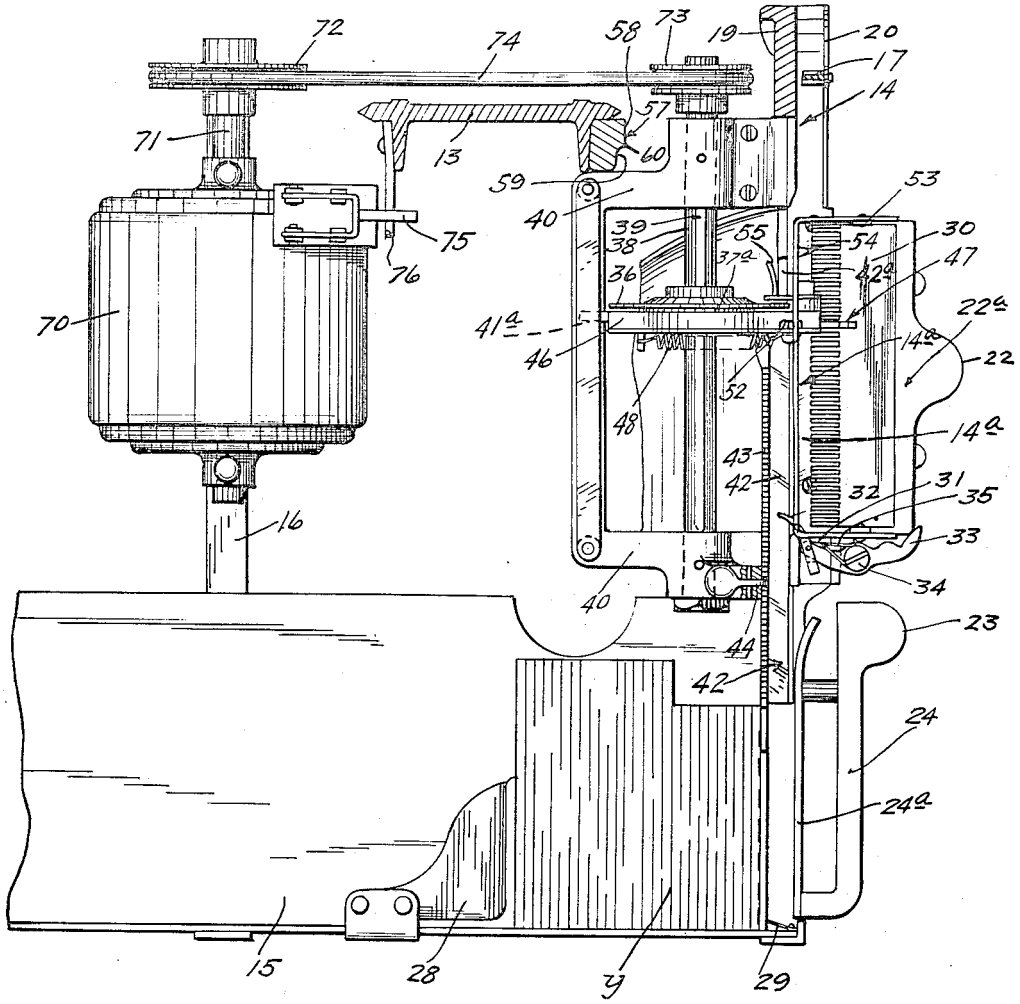
Fig. 3



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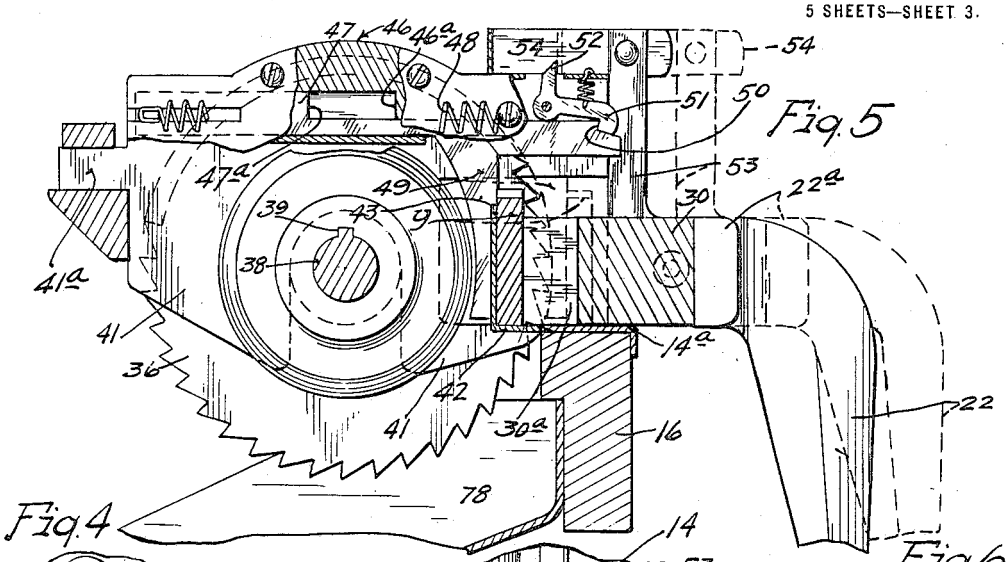

Fig. 5

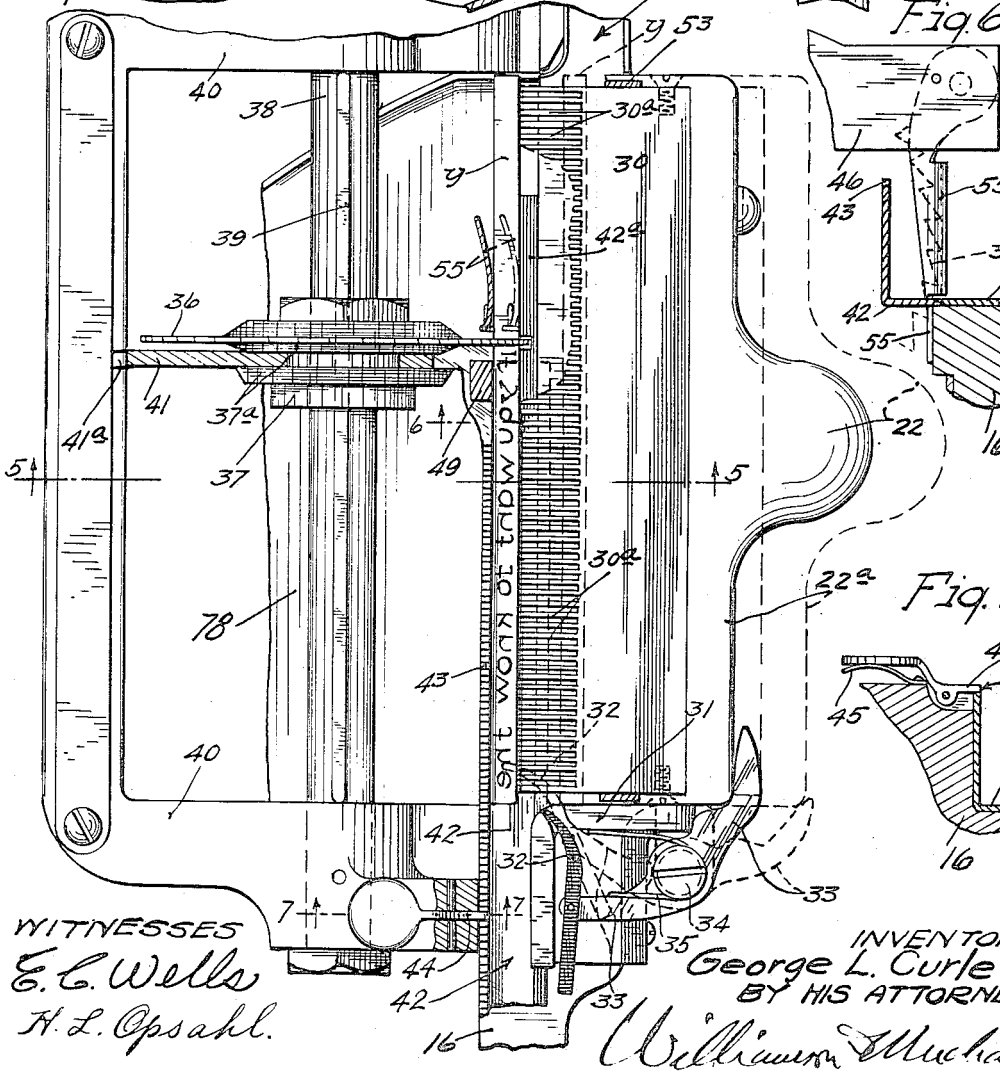

Fig. 4

Fig. 6

Fig. 7

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5 SHEETS—SHEET 4.

Fig. 8

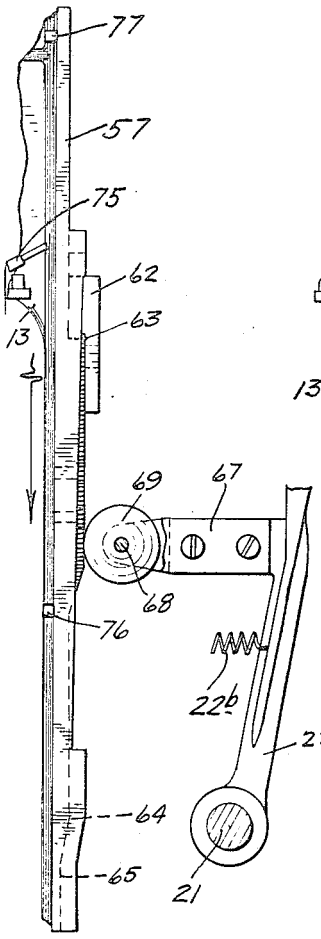


Fig. 9

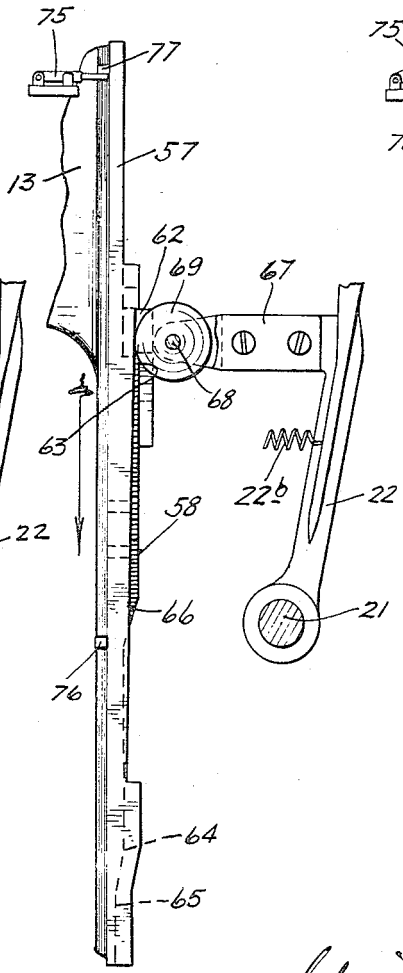
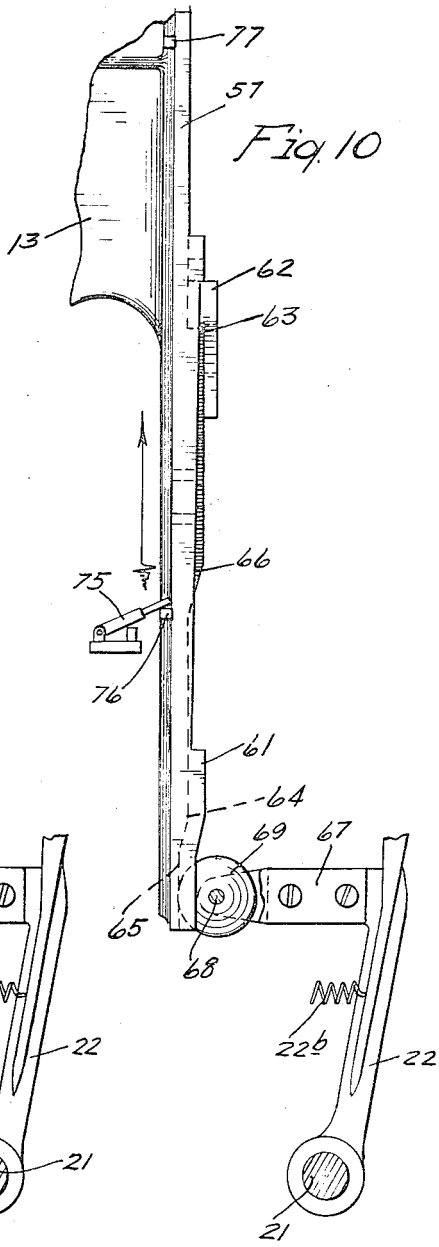


Fig. 10



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5 SHEETS—SHEET 5.

Fig. 8a

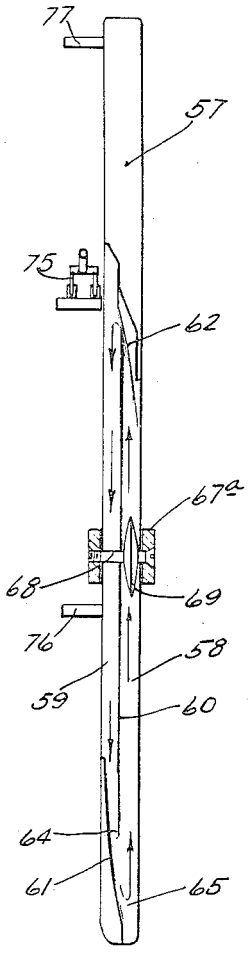


Fig. 9a

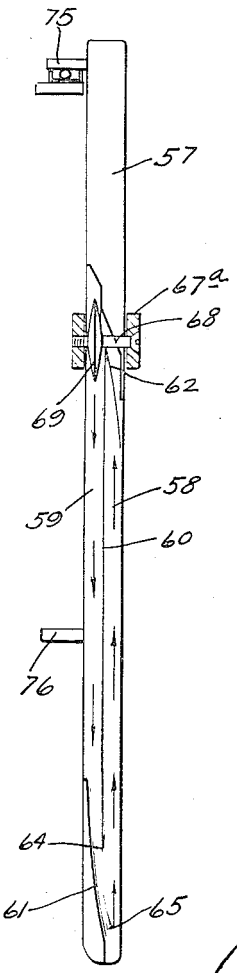
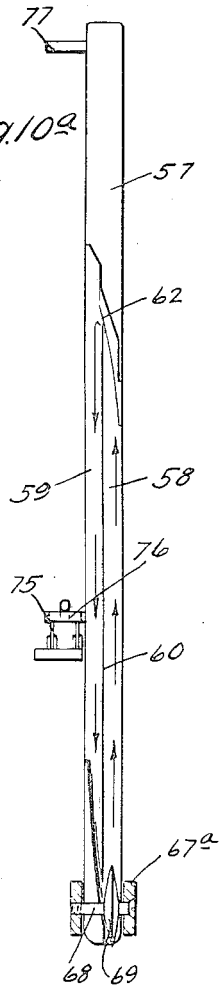


Fig. 10a



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UNITED STATES PATENT OFFICE.

GEORGE L. CURLE, OF MINNEAPOLIS, MINNESOTA.

SLUG-SAWING ATTACHMENT FOR LINOTYPE-MACHINES.

1,287,900. Specification of Letters Patent. Patented Dec. 17, 1918.

Application filed October 22, 1917. Serial No. 197,842.

To all whom it may concern:

Be it known that I, GEORGE L. CURLE, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Slug-Sawing Attachments for Linotype-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved automatic sawing attachment for cutting off the ends or trimming linotype slugs as they are delivered from the casting mold to the so-called "composing stick"; and to such ends, generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

A commercial form of the attachment is illustrated in the accompanying drawings wherein like characters indicate like parts throughout the several views.

Referring to the drawings,

Figure 1 is a view in side elevation with some parts broken away and some parts sectioned, showing the attachment connected to the so-called vise of the linotype machine in position to receive the slugs as they come from the slug delivery channel that leads from the casting mold;

Fig. 2 is a detail in section on the line 2—2 of Fig. 1;

Fig. 3 is a plan view with some parts sectioned on the line 3—3 of Fig. 1, looking at the same in the direction of the arrow marked adjacent to the said line;

Fig. 4 is an enlarged view of certain of the parts shown in Fig. 3, towit, showing the saw vise and immediately associated parts;

Fig. 5 is a vertical section on the line 5—5 of Fig. 4;

Fig. 6 is a detail in vertical section taken on the line 6—6 of Fig. 4;

Fig. 7 is a detail in vertical section on the line 7—7 of Fig. 4;

Figs. 8, 9 and 10 are fragmentary views showing mechanism whereby the saw is thrown into and out of action and for imparting the slug clamping and feeding movements to the so-called "saw vise", from a controller cam carried by the elevator of the linotype machine the said parts being shown in front elevation;

Figs. 8^a, 9^a, and 10^a are views corresponding in the position of the parts to Figs. 8, 9 and 10, respectively, and showing in side elevation, the controller cam and coöperating cam wheel; and

Fig. 11 is a fragmentary perspective of the parts which coöperate to form the so-called slug delivery trough and stacker trough and associated parts.

Of the parts of the linotype machine, the numeral 11 indicates the body member of the vise structure of the linotype machine proper, and which part, for the purposes of this case, may be considered as stationary. On the vise 11 is the usual slug delivery channel 12 through which the slugs *y*, as they come from the casting mold, are discharged in the customary way. The numeral 13 indicates a vertically movable bar of the elevator structure, which part is automatically given intermediate vertical movements in the customary well known way. The slugs, as they are delivered from the channel 12, stand vertical and their lower ends are crowded into the upper extremity of the inclined slug delivery trough 14, which directly, and as hereinafter described, is delivered to a composing stick or galley 15. The delivery trough 14 and composing stick or galley 15 are supported in oblique positions from the vise 11 by means of oblique brackets 16.

As a minor but important feature of invention, I provide a slug guard in the form of a chain 17 pivotally hung at its upper end at 18 from a fixed upright plate 19 located at one side of the delivery trough 14 and projecting above the same. In its free lower end, the chain 17 is provided with a laterally offset cheek plate 20 that holds the slug against lateral displacement as it is delivered from the channel 12 into the trough 14. This guard 17, being flexible and gravity supported, stands in position to properly guide even the shortest slugs from the chan-

nel 12 into the channel 14 and will yield and permits the longest slugs to be thus delivered.

Rigidly secured to and projecting forward from the lower portion of the vise 11 is a heavy stud 21 on which is mounted two heavy arms 22 and 23. The arm 23, at its free end, carries a packer head 24, and near its hub it is provided with an oblique arm extension 23ª that is subject to a tension spring 25 that is secured to the vise 11. The free end of the arm extension 23ª is provided with a stop screw 26 that is held by the spring 25 against a plunger 27 operated from the justification rod, not shown. This plunger rod 27 is an element found in the standard linotype machines, such as the Mergenthaler, and is immediately given reciprocating movements with a timed action well known to those familiar with such machines. As shown, the packer head 24 has an offset blade 24ª rigidly secured thereto, but arranged to directly engage the slugs, and having a curved upper end which assists in guiding the slugs to proper position in the composing stick or galley. For movements on the lower flange of the composing stick or galley stick 15 is a frictionally held abutment 28 and secured to the lower flange of said composing stick, near the right hand end thereof, as viewed in Fig. 3, is a light spring 29 that holds the lower end of the last delivered slug *y* in position, as will hereinafter more clearly appear.

The pivoted arm 22, at its upper free end, terminates in a head 22ª that forms one member of the so-called "saw vise", and rigidly holds a vise block 30 preferably of type metal and provided with longitudinally spaced lugs 30ª for the saw, presently to be noted.

Normally, the head 22ª is toward the right, so that the left hand face of the block 30 stands in such position that a slug dropped from the trough 14 will move past the same and will be stopped in front of the said block, by means of a small shelf 31 (see particularly Fig. 4), which view, however, shows the block and slug by full lines moved toward the left, but shows the slug by dotted lines in position in which it falls onto the shelf 31 from the trough 14.

Working through a slot in the shelf 31 is a retaining finger 32, the lower end of which is pivoted to a lever 33, which, in turn, is intermediately pivoted at 34 to a projection of the shelf 31, and has a curved end that is engaged by the vise jaw 22ª. A light spring 35 yieldingly holds the free end of the lever 33 pressed against the outer face of the said vise head. The purpose and operation of the retaining finger 32 will be hereinafter noted.

The saw 36 which is of the circular type, is rigidly, but detachably clamped to a hub 37 that is mounted to slide on a shaft 38 but mounted to rotate with said shaft by means of a long key 39. This shaft 38 is journaled in an open rectangular bracket 40 which is, or may be, an integral part of the trough 14, and is rigidly secured in respect to the linotype vise 11, and for the purposes of this case, may be treated as a rigid immovable structure.

The hub 37 is provided with laterally spaced flanges 37ª that afford an annular channel in which is seated a shipper plate 41. The left hand end of the shipper plate 41 is preferably formed with a projecting lug 41ª (see Fig. 5) that works in a longitudinal slot formed in that portion of the bracket 40 that extends parallel to the shaft 39, so that the said plate is held against rotation with the saw and its hub 37. Rigidly secured to the right hand end of the shipper plate 41 is a bar 42 that is L-shaped in cross section. This bar 42 underlaps the vise block 30 and its upstanding flange is spaced from the left hand face of said block so that the said bar 42 affords what may be termed a "stacker trough" and which delivers the trimmed slugs to the composing stick or galley. By reference to Fig. 11, it will be noted that the trough-forming bar 42, at its upper end, has a reduced extension or finger portion 42ª which, during the sawing action, underlies that portion of the slug that is being cut off and prevents the same from being bent downward. This feature is important, because it insures a straight and true cut of the saw through the slug. The upper surface of the said portion 42ª and of the horizontal flange of the bar 42, it will be noted, lies flush with the upper surface of the trough 14. The said bar 42 performs another important function, towit, it serves as an adjusting bar for setting the saw in different positions, so as to cut the slugs to any desired length; and hence, said bar 42, on the upper edge of its vertical flange, is formed with notches 43 that correspond to different desired lengths of the slugs. The notches 43 are adapted to be engaged by a latch 44 (see Figs. 3, 4 and 7) that is intermediately pivoted to the lower prong of the bracket 40 and is subject to a light spring 45.

That portion of the trough 14 that underlies the block 30 (see Fig. 5), has its flanges omitted and, as shown, is faced with a smooth metal plate 14ª, the upper surface of which alines with the upper surface of the horizontal flange of the bar 42.

The upper portion of the shipper plate 41 is formed with an offset cap 46 that affords a guard for the upper portion of the saw and a seat for a horizontally movable plunger 47 that is yieldingly pressed toward the right, in respect to Fig. 5, by a coiled spring 48 anchored thereto and to said cap

46. The plunger 47 has integrally formed therewith, or otherwise rigidly secured thereto, a depending jaw 49 that affords the second member of the so-called saw vise and is adapted to coöperate with the left hand face of the block 30 to clamp the slug *y*, as hereinafter described.

The plunger 47 is provided with a shoulder 47ª that is adapted to engage a shoulder 46ª of the cap 46 to limit the movement of the said plunger toward the right. At its projecting right hand end, the plunger 47 is provided with a shoulder 50 that is adapted to be engaged by a spring-pressed lock dog 51 (see Fig. 5) that is pivoted within the cap 46, and has a bevel pointed trip lug 52 that projects slightly above said cap.

The ends of the vise head 22ª are provided with upstanding posts 53 to which the prongs of a bail 54 are pivoted. The long bar portion of this bail 54 rides on the upper surface of the right hand end of the cap 46, and under movement of the vise head 22ª moves from one side to the other of a beveled end of the lug 52 of the latch dog 51 and operates thereon, as presently to be noted.

Pivoted to one side of the right hand end of the cap 46 (see Figs. 3, 4 and 6) is a depending gravity-hung deflecting plate 55, the depending blade of which stands in position to guide the slug against the face of the block 30, and to the right of the vise jaw 49. It may be here premised that the purpose of yieldingly mounting this deflecting blade 55 is to permit the same to move freely out of the way when the slug is moved toward the left by the jaw 22ª and block 30.

Attention is now directed to Figs. 8 to 10ª, inclusive, wherein, as noted, the numeral 13 indicates a vertically movable portion of the so-called "first elevator" of the linotype machine. To this vertically movable element 13 is rigidly secured a depending vertically disposed cam bar 57 which has a camway of peculiar construction and which will now be described.

On one face, this cam bar 57 is formed with two longitudinally and vertically extended cam surfaces 58 and 59 that are separated by a central ridge 60. At its lower end, the cam surface 59 extends to a deflecting cam 61 that stands outward therefrom and extends at its lower portion to a point at the right of the central ridge 60. At its upper portion, the right hand cam surface 58 extends to an outstanding deflecting cam 62 which, in a reverse manner from the deflecting cam 61, extends to a point at the left of the upper portion of the central ridge 60. The upper portion of cam surface 58 stands outward from the upper portion of cam surface 59, so that there is a drop between the two at 63. Cam surface 59, from top toward bottom, is at a slight angle to a perpendicular and recedes toward the left to point 64, and below point 64, there is a further drop toward the left, as indicated at 65. Drop 64 extends across both cam surfaces 58 and 59. From 64, cam surface 58 extends in a vertical plane to beveled surface 66 and from beveled surface 66, extends in another vertical plane farther offset to the right to its upper extremity.

The already noted vise operating arm 22 is provided with a projection 67 that terminates in a pronged head 67ª that carries a spindle 68. A sharp-edged cam wheel 69 is mounted to rotate and to move laterally on the spindle 68 and is arranged to run on the cam surfaces 58 and 59, to produce a variety of peculiar movements which will be noted in the description of the operation.

The saw shaft 38 is preferably driven from a small electric motor 70 shown as supported on the bracket 16. The armature shaft 71 of this motor is shown as provided with a grooved pulley 72 over which and a grooved pulley 73 on the saw shaft, runs a belt 74.

Preferably, this motor is arranged to be thrown automatically into and out of action, as follows:

The motor circuit is controlled by an electric switch 75, the projecting lever of which is adapted to be engaged by vertically spaced lugs or projections 76 and 77 carried by the bar 57.

The numeral 78 indicates an oblique chute which stands in position to receive the sawed-off ends of the slugs and to discharge the same below, or at one side of the machine.

Operation.

The operation summarized is substantially as follows:

Normally, the elevator 13 is in an intermediate position so that the cam bar 57 stands in the position shown in Fig. 8 with cam wheel 69 on the most projected upper portion of the camway 58; and in this position of the said parts, the arm 22, its head 22ª, the vise block 30 and the bail 54 will be retracted toward the right, as indicated by dotted lines in Figs. 3, 4 and 5. At this time, also, it will be noted that lock dog 51 holds slide 47 and vise jaw 49 retracted, as best shown by full lines in Fig. 5. Thus, the members of the so-called saw vise are open so that the slug to be sawed or trimmed, which is delivered from trough 14, will be lodged by gravity on the shelf 31. At this time, also, the retaining finger 32 is projected upward so that it stands just outward of the lower end of the delivered slug (note dotted line position Fig. 4 of said slug), and hence, will prevent the said slug from jumping off from the shelf when it slightly rebounds after first striking the shelf. The yielding deflection blade 55, as already indicated, assists in guiding the slug to the position just stated.

In this delivered position, of course, the slug is cleared of the saw. Obviously, by the adjustments already noted, the saw will be positioned to cut the slug at any desired point. Otherwise stated, by proper setting of the saw on the shaft 38, the slugs, regardless of the length and thickness in which they are cast, may be trimmed or cut down to finished slugs of any desired shorter length. Here it may be noted that the arrangement is such that the distance between the lower end of the bar or stacker trough 42 will always be slightly greater than the distance between the saw and the shelf 31, so that the trimmed slug, when it strikes the lower flange of the galley 15, will always freely pass under the lower end of the said bar 42.

The first movement of the elevator 13 and cam bar 57 is in a downward direction with the cam wheel 69 running on the upper and most outwardly projected portion of the camway 58, and while this movement takes place, the saw and other parts of this attachment remain in their normal positions already noted. At approximately the limit of the downward movement of the cam bar 57, wheel 69 runs against the deflecting cam 62 and is forced laterally so that it drops or moves to the left against the upper extremity of cam surface 59, and this permits spring 22^b to force arm 22 toward the left.

Such movement of the arm 22 toward the left, as stated, directly and indirectly produces the following actions, towit:

Movement of the vise head 22^a and block 30 toward the left permits spring 35 to retract the retaining finger 32 so that the slug may be pushed off from the shelf 31 and delivered to the stacker trough 42.

Slight movement toward the left is imparted to head 22^a and block 30 and the bail 54 operating on the lug 52 of latch dog 51 raises the latter and releases the plunger 47 so that the latter, under the action of spring 48, will quickly project the jaw member 49 toward the right until shoulder 47 has engaged shoulder 46^a. This movement of the vise jaw 49 does not, however, clamp the slug y against the block 30.

As cam bar 57 makes its upward movement from the position shown in Fig. 9, cam wheel 69 runs on the receding cam surface 59, the vise jaws 22^a and block 30 will continue their movement toward the left under the action of spring 22^b until the said jaw 22^a has tightly clamped the slug against the coöperating vise jaw 49, and thereafter, will continue its movement toward the left until it has carried the slug with it to the saw. Here, however, it should be stated that the motor circuit was closed and the saw thrown into motion approximately at the end of the downward movement of the cam bar 57, by engagement of lug 77 with the lever of switch 75. Hence, by the above noted movement of the saw vise toward the left, the slug, while firmly held in the vise, is presented to the saw and its upper end severed or trimmed off.

At the extreme upward movement of the cam bar 57, the cam wheel 69 runs against deflecting cam 61, and by the latter, is shaped into alinement with the lower portion of the camway 58, and approximately at the same time, the said wheel runs over the receding surface 64. When the slug is in position, however, the cam wheel 69 will not run entirely down cam incline 64, but in case there is no slug in position in the saw vise, the said wheel will run down the said cam incline and thereby permit a further movement of the vise jaw 22^a and block 30 required to force the jaw 49 and plunger 47 far enough to the left to insure reëngagement of the latch dog 51 with shoulder 50 of said plunger. Hence, it will be noted whether or not the slug is in position, each time the jaw vise 22^a is moved toward the left, plunger 47 and jaw 49 will be again secured by latch dog 51 in the normal position shown in Fig. 5. If there is a slug in position in the saw vise, as is usually the case, then the distance that the wheel 69 will run against cam incline 64 will depend on the thickness of the slug. In either of the events above noted, the initial upward movement of cam bar 57 will cause oblique cam surface 64 to impart a slight movement to wheel 69, and through arm 22, and its vise jaw 22^a, will impart a slight movement of the block 30 toward the right required to release the slug and to permit the same to fall by gravity down to stacker trough 42 to its proper position in the composing stick or galley.

The stacker head is given its movement toward the left from plunger 27 immediately after the slug has been dropped into the galley, as above stated, and the said stacker head, having performed this function, is returned to its normal position toward the right.

The block 30 is left in its slightly retracted position until the slug has been properly directed to the space between the next last deposited slug and the bar 24^a of the stacker head. When the elevator 56 and cam bar 57, on their downward movement, closely approach normal positions, cam wheel 69 runs over cam surface 66 and onto the highest or most outwardly projected portion of the camway 58, imparts the final movements of arm 22, vise head 22^a, block 30 and bail 54 toward the right to normal positions. Here it should be noted that under the above noted movement, bail 54 cams itself off the beveled end of the lug 52 of latch dog 51.

In the attachment above described, slugs which are cast with, or which carry adver-

tising figures, initial letters, and other overhanging casts, are handled just as readily and perfectly as are the ordinary slugs.

What I claim is:

1. The combination with a linotype machine, of a sawing attachment comprising a power-driven saw, means for presenting the ejected slugs to said saw to trim off the ends thereof, and means for intermittently starting and stopping said saw with an action timed in respect to the ejection of the slugs from said machine.

2. The combination with a linotype machine, of a sawing attachment comprising a power-driven saw, means for presenting the ejected slugs to said saw to trim off the ends thereof, and means for intermittently starting and stopping said saw with an action timed in respect to the ejection of the slugs from said machine, said means including an electric motor, a motor circuit and a switch in said circuit operated by movements of the elevator of said linotype machine.

3. The combination with a linotype machine, of a power-driven saw, a saw vise positioned to intercept the ejected slugs, and means timed in respect to the ejection of slugs from said linotype machine, to close said saw vise on the slugs and to present the same to the said saw.

4. The combination with a linotype machine, of a power-driven saw, a saw vise positioned to receive the slugs from said machine and comprising jaws, both of which are movable, machine-actuated means for reciprocating one of said jaws with a properly timed action in respect to the time of ejection of slugs from said machine, a latch for securing the other vise jaw in a retracted position, and a latch trip carried by the first noted jaw.

5. The combination with a linotype machine, of a power driven saw, a saw vise positioned to receive the slug from said machine and comprising jaws, both of which are movable, said jaws being positioned to receive the slug between them, a shelf for supporting the slug between the jaws, an arm carrying the first jaw, a spring impelling the second jaw toward the first, a latch for holding said second jaw retraced, a trip carried by the first jaw and operative to release said latch under initial movement of said first jaw toward said second jaw, and machine actuated means operative to move said first jaw so as to clamp the slug between the two jaws and then to feed the slug to the saw, the initial receding movement of said first jaw serving to release the trimmed slug to a position out of alinement with said shelf.

6. The combination with a linotype machine, of a power driven saw, a saw vise positioned to receive the slug from said machine and comprising jaws, both of which are movable, said jaws being positioned to receive the slug between them, a shelf for supporting the slug between the jaws, an arm carrying the first jaw, a spring impelling the second jaw toward the first, a latch for holding said second jaw retracted, a trip carried by the first jaw and operative to release said latch under initial movement of said first jaw toward said second jaw, machine actuated means operative to move said first jaw so as to clamp the slug between the two jaws and then to feed the slug to the saw, the initial receding movement of said first jaw serving to release the trimmed slug in a position out of alinement with said shelf, a galley positioned to receive the trimmed slug, and a machine actuated packer head for packing the slugs within the galley.

7. The combination with a linotype machine, of a power driven saw, a saw vise positioned to receive the slug from said machine and comprising jaws, both of which are movable, said jaws being positioned to receive the slug between them, a shelf for supporting the slug between the jaws, an arm carrying the first jaw, a spring impelling the second jaw toward the first, a latch for holding said second jaw retracted, a trip carried by the first jaw and operative to release said latch under initial movement of said first jaw toward said second jaw, a retaining finger working at the delivery edge of said shelf, and automatic means for projecting said finger when said first jaw is retracted and for retracting said finger when said jaw is moved toward the saw.

8. The combination with a linotype machine, of a power driven saw, a saw vise, a trough for delivering the slugs between the jaws of said vise, a shelf below said vise for holding the slug in position between the jaws thereof, an offset slug delivery trough receiving the trimmed slugs from said shelf, and means for moving said vise jaws first to clamp the slug and then to carry the slug to said saw.

9. The combination with a linotype machine, of a power driven saw, a saw vise positioned to receive the slugs and to deliver the same to said saw, and means for operating said saw vise comprising a cam bar timed for movement with the elevator of said linotype machine.

10. The combination with a linotype machine, of a power driven saw, a vise positioned to receive the slugs and to deliver the same to said saw, one of the jaws of said vise having an arm equipped with a laterally shiftable cam wheel, and a cam bar timed for movement with the elevator of said linotype machine and operative on said cam wheel.

11. The combination with a linotype machine, of a power driven saw, a vise positioned to receive the slugs and to deliver the

same to said saw, one of the jaws of said vise having an arm equipped with a laterally shiftable cam wheel, and a cam bar timed for movement with the elevator of said linotype machine and operative on said cam wheel, the said cam bar having two longitudinally extended cam surfaces with a dividing ridge between them and with deflecting surfaces at the extremities thereof, operative on said cam wheel, substantially as described.

12. The combination with a linotype machine, of a power driven saw, a vise positioned to receive the slugs and to deliver the same to said saw, one of the jaws of said vise having an arm equipped with a laterally shiftable cam wheel, and a cam bar timed for movement with the elevator of said linotype machine and operative on said cam wheel, the said cam bar having two longitudinally extended cam surfaces with a dividing ridge between them and with deflecting surfaces at the extremities thereof, one of the said cam surfaces being oblique to the line of its movement and the other cam surface being of irregular form, the said cam surfaces of said cam bar being operative, first, to close the jaws on the slug, second, to feed the slug to the saw, third, to separate the vise jaws slightly so as to release the trimmed slug, and fourth, to position the jaws of the vise to receive another slug.

13. The combination with a linotype machine, of a power driven saw, a vise positioned to receive the slugs and to deliver the same to said saw, one of the jaws of said vise having an arm equipped with a laterally shiftable cam wheel, and a cam bar timed for movement with the elevator of said linotype machine and operative on said cam wheel, the said cam bar having two longitudinally extended cam surfaces with a dividing ridge between them and with deflecting surfaces at the extremities thereof, a spring tending to move the second vise jaw toward the first, a latch normally holding said second jaw, a retracted body, a latch trip on the first jaw operative to release said latch under initial movement of the first jaw toward the second, and a reciprocating cam bar timed for movement with the elevator of said linotype machine.

14. The combination with a linotype machine, of a power driven saw shaft, a saw rotatable with but slidable on said shaft, a saw vise positioned to receive the slugs discharged from said machine, means for actuating said vise to clamp and move the slug to the saw, and means for adjusting said saw on said shaft.

15. The combination with a linotype machine, of a power driven saw shaft, a saw rotatable with but slidable on said shaft, a saw vise positioned to receive the slugs discharged from said machine, means for actuating said vise to clamp and move the slug to the saw, and means for adjusting said saw on said shaft, said means including a combined latch bar and slug guide.

16. The combination with a linotype machine, of a power driven saw shaft, a saw rotatable with but slidable on said shaft, a saw vise positioned to receive the slugs discharged from said machine, means for actuating said vise to move the slug to the saw, means for adjusting said saw on said shaft, said means including a combined latch bar and slug guide, a galley receiving the trimmed slugs, a shelf for stopping the slugs in said vise, and a machine actuated means operating the vise, to thereby carry the slug to said saw to move the same off from said shelf and to drop the trimmed slugs to said latch bar and slug guide.

17. The combination with a linotype machine having a slug delivery channel and an inclined trough receiving the slugs therefrom, of a power driven saw at one side of said slug trough, a vise receiving the slugs from said trough, means for operating said saw vise to clamp and carry the slugs laterally to the saw, a slug trough receiving the trimmed slugs from said vise, a galley receiving from said latter slug trough, and a machine actuated means for operating said vise.

18. The combination with a linotype machine having a slug delivery channel and an inclined trough receiving the slugs therefrom, of a power driven saw at one side of said slug trough, a vise receiving the slugs from said trough, means for operating said saw vise to carry the slugs laterally to the saw, a slug trough receiving the trimmed slugs from said vise, a galley receiving from said latter slug trough, a machine actuated means for operating said vise, and a gravity suspended guard operative on the slugs as they are delivered to said vise.

19. The combination with a linotype machine having a slug delivery channel and an inclined trough receiving the slugs therefrom, of a power driven saw at one side of said slug trough, a vise receiving the slugs from said trough, means for operating said saw vise to carry the slugs laterally to the saw, a slug trough receiving the trimmed slugs from said vise, a galley receiving from said latter slug trough, a machine actuated means for operating said vise, and a shelf upon which the slugs drop as they are delivered to said vise, movements of said vise to deliver the slugs to the saw serving to carry the slugs laterally from alinement with said shelf.

20. The combination with a linotype machine having a slug delivery channel and an inclined trough receiving the slugs therefrom, of a power driven saw at one side of said slug trough, a vise receiving the slugs

from said trough, means for operating said saw vise to carry the slugs laterally to the saw, a slug trough receiving the trimmed slugs from said vise, a galley receiving from said latter slug trough, a machine actuated means for operating said vise, a shelf upon which the slugs drop as they are delivered to said vise, a retaining finger working at the delivery edge of said shelf, and a finger actuating connection operated by the vise to retract said finger as the one vise jaw moves to carry the slug to the saw and laterally from alinement with said shelf.

21. The combination with a linotype machine, of a power-driven saw, means for forcing the slugs to the saw, and a bar constituting a slug guide underlying the slug, both above and below the saw during the sawing action.

22. The combination with a linotype machine, a galley and a slug guide extending from the slug delivery channel of said machine to said galley, of a saw located at one side of said slug guide and mounted for adjustments longitudinally thereof, and means for adjusting said saw to different positions, said means comprising a notched bar having a bottom flange constituting part of the slug guide and formed with a reduced extension which, during the sawing action, underlies that portion of the slug that is being cut off.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE L. CURLE.

Witnesses:
CLARA DEMAREST,
BERNICE G. BAUMANN.