No. 848,868. PATENTED APR. 2, 1907.

E. TRAMA.

DEVICE FOR FEEDING MELTING POTS.

APPLICATION FILED JULY 14, 1905.

6 SHEETS—SHEET 1.

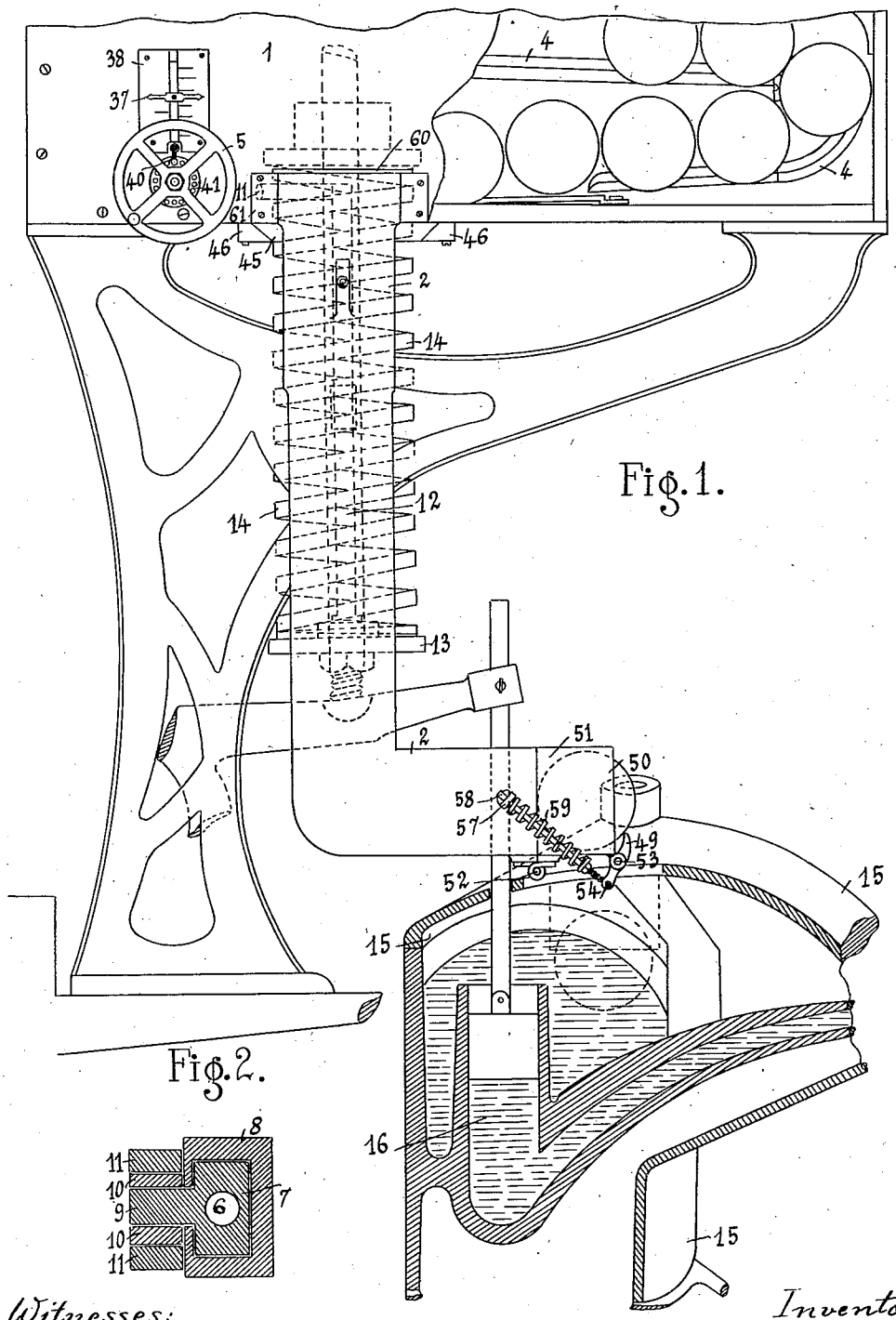

Fig. 1.

Fig. 2.

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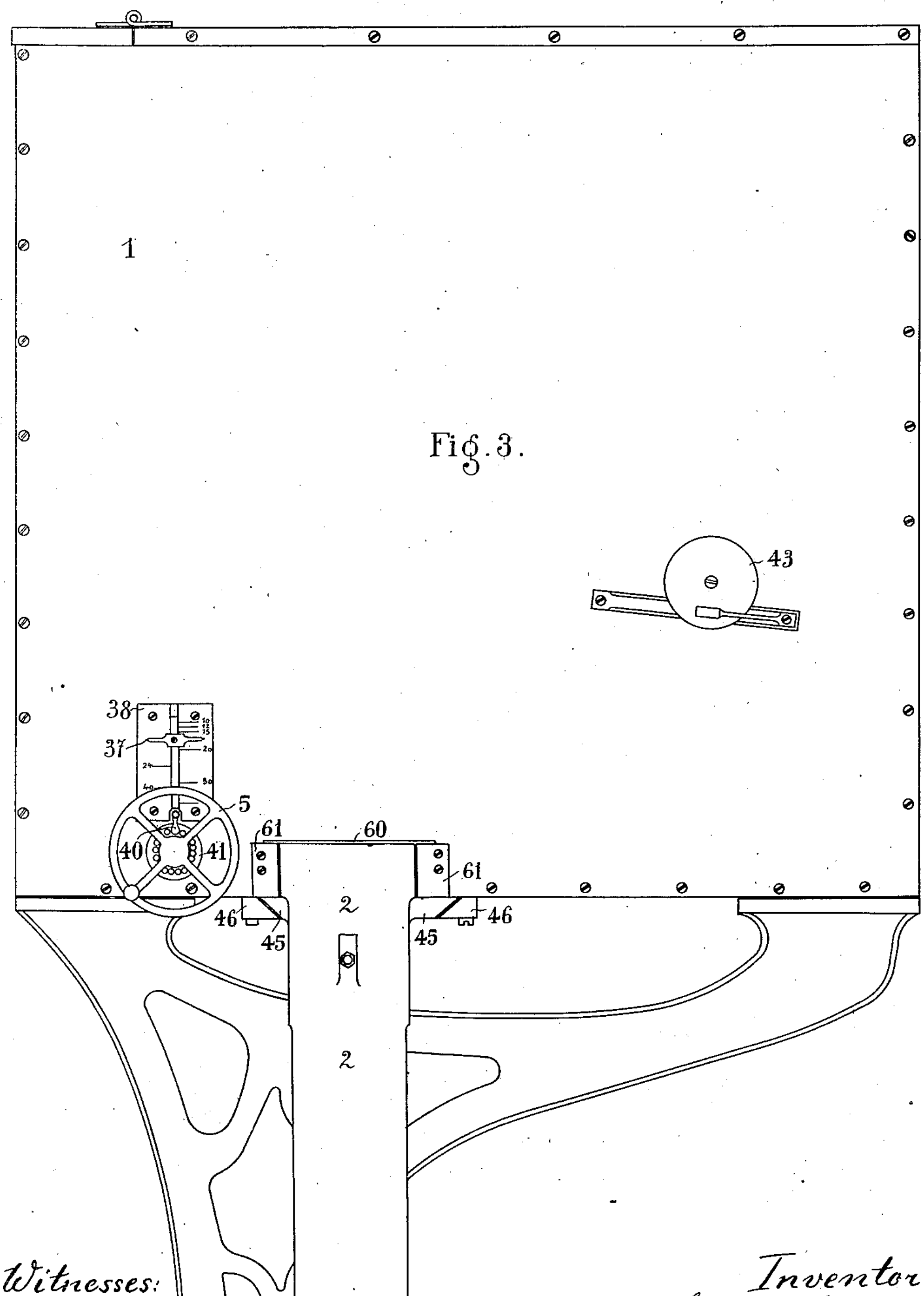

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6 SHEETS—SHEET 3.

Fig. 4.

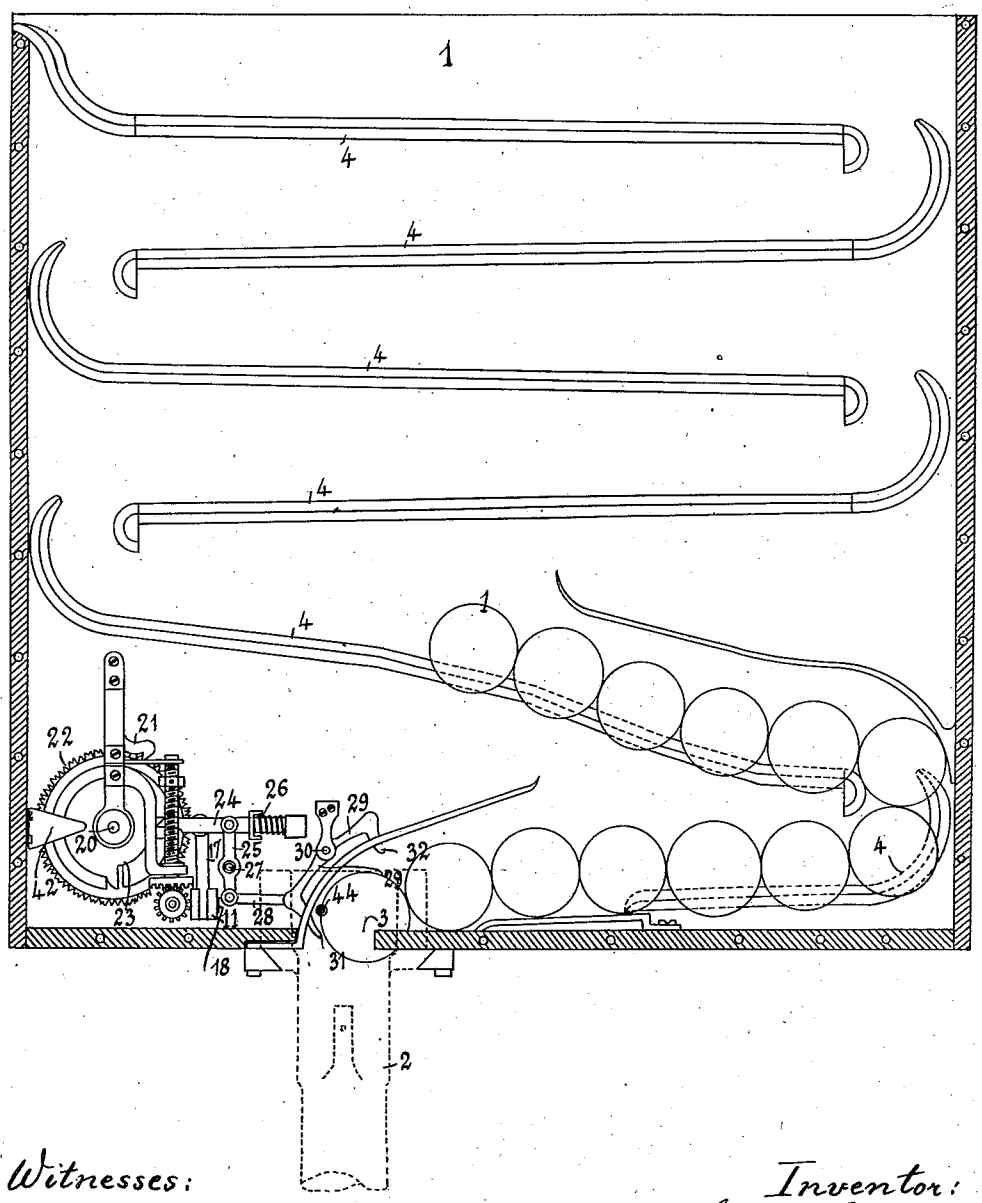

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Fig. 5.

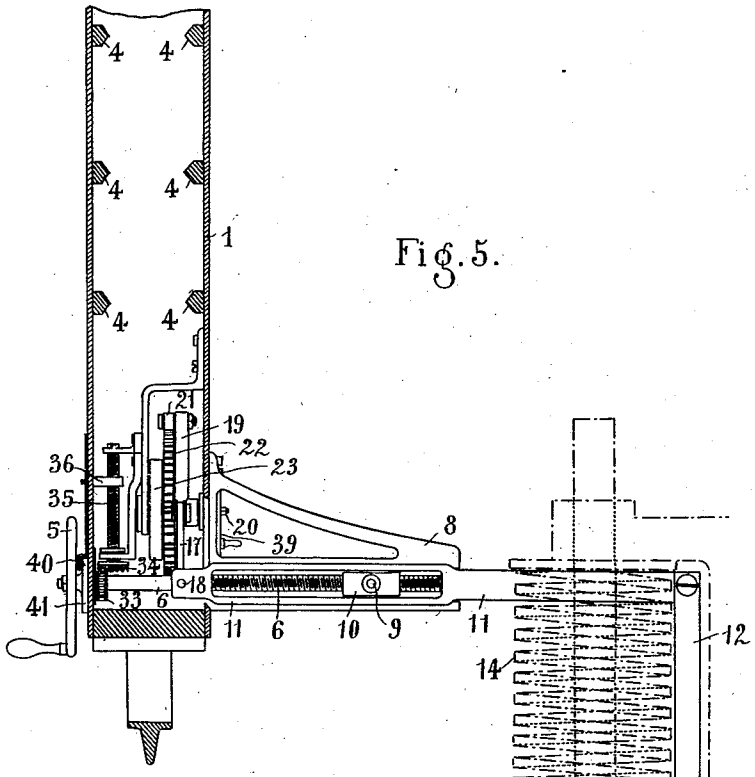
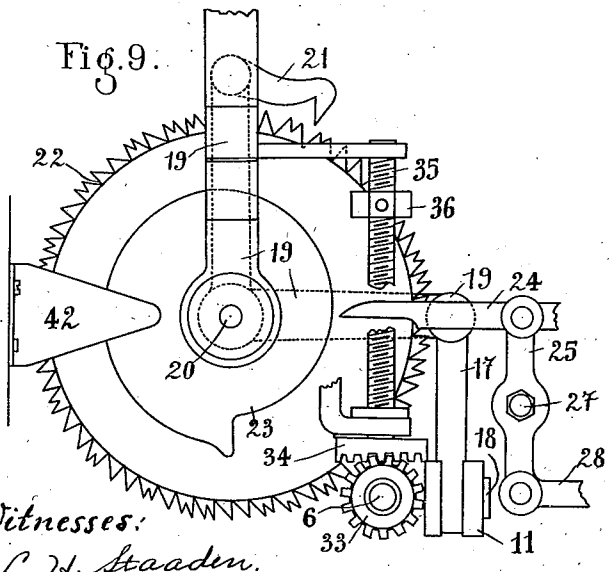


Fig. 9.



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6 SHEETS—SHEET 5.

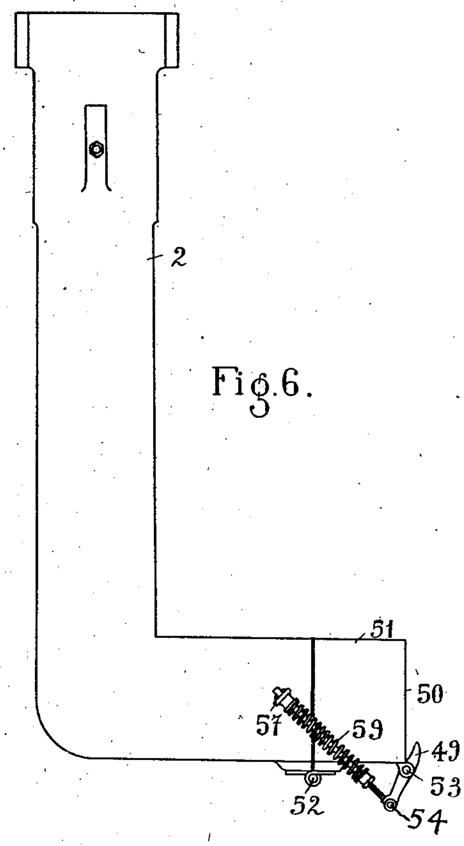

Fig. 6.

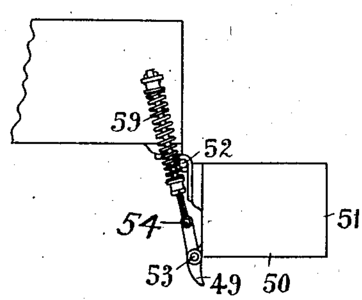

Fig. 7.

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No. 848,868. PATENTED APR. 2, 1907.

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6 SHEETS—SHEET 6.

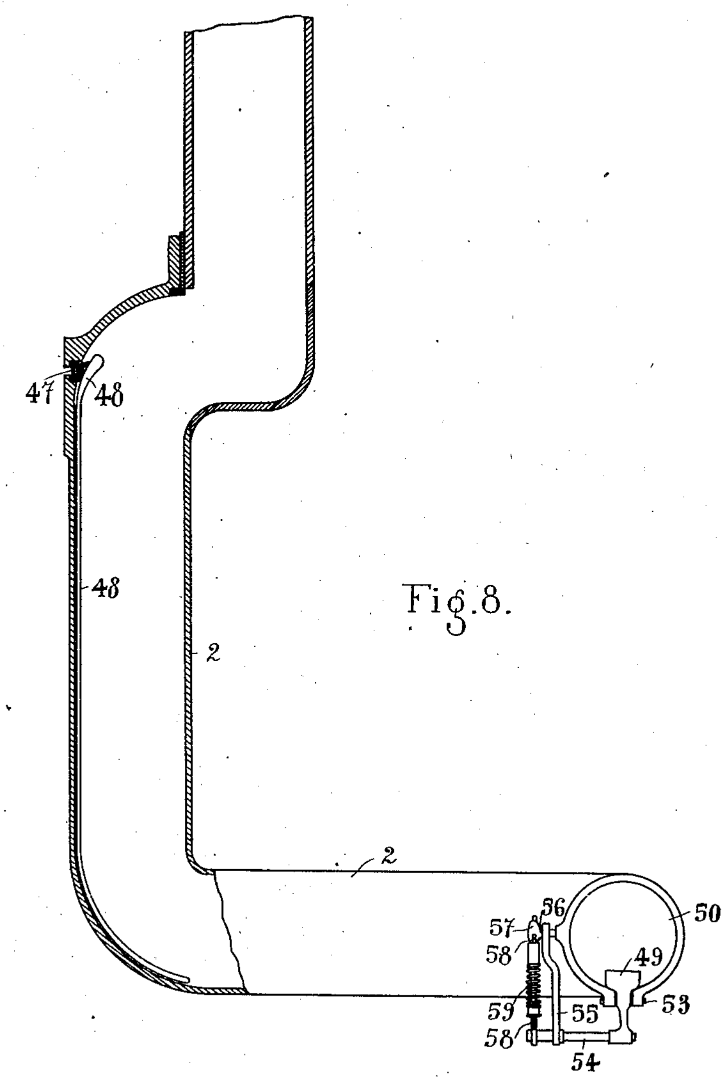

Fig. 8.

Witnesses:

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Inventor:

Eugène Trama

by Alfred Müller, Atty.

UNITED STATES PATENT OFFICE.

EUGÈNE TRAMA, OF MARSEILLE, FRANCE.

DEVICE FOR FEEDING MELTING-POTS.

No. 848,868. Specification of Letters Patent. Patented April 2, 1907.

Application filed July 14, 1905. Serial No. 269,752.

To all whom it may concern:

Be it known that I, EUGÈNE TRAMA, a citizen of the French Republic, residing at Marseille, in the Department of Bouches-du-Rhône, France, have invented certain new and useful Improvements in Devices for Automatically Feeding the Metal-Pot in Linotype-Machines, of which the following is a specification.

In linotype-machines the molten metal used for forming the lines is contained in a metal-pot, out of which it is forced at the required time by means of a pump-plunger, which drives the metal into the mold formed by the collected matrices. For the satisfactory working of the machine it is indispensable that the temperature of the metal contained in the metal-pot should be neither too high nor too low. If the temperature of the molten metal is too high, the line adheres to the mold and cannot be detached therefrom by the ejector. If one or two blocks of metal be added to that which is in the metal-pot, such fresh metal being cold will have the effect of congealing the molten metal. The consequence of this is that the plunger cannot force the metal into the mold. Now the operator sometimes forgets to put metal into the metal-pot at the required moment or puts in too much of it at once. In the first case the molten metal becomes too hot. In the second case it congeals.

All the disadvantages well known to operators which arise from the sudden variations of the temperature of the molten metal in the metal-pot may be avoided by means of the automatic feed device which forms the object of the present invention. Owing to the employment of this device, the metal enters the metal-pot automatically according to requirements. This device is provided with a magazine which contains, for example, the quantity of metal necessary for consumption during eight hours with normal production. It can be easily applied to all linotype-machines.

In the accompanying drawings, furnished by way of example, Figure 1 is a view, partly in section, showing the feed device and the metal-pot. Fig. 2 is a section of a detail; Fig. 3, a side elevation of the device. Fig. 4 shows the interior of the magazine. Fig. 5 is a transverse section of the magazine. Figs. 6, 7, and 8 are views of the feed-tube which conveys the balls of metal to the metal-pot. Fig. 9 is a detailed view, on an enlarged scale, of the mechanism employed in distributing the metal.

The device for automatically feeding the metal-pot consists, substantially, of a magazine 1, which contains the balls of metal, and is furnished in the lower part inside with mechanism for distributing these metal balls at certain times by means of some regulating adjustment previously made according to the idea of the operator, a feed-pipe 2, Fig. 3, conveying the metal into the metal-pot belonging to the linotype-machine.

The magazine 1 is charged at the top, and the metal balls are conveyed and guided toward the outlet 3 by inclined ribs or supports 4, Figs. 4 and 5, fixed at each side of the magazine 1.

The regulating of the discharge of the metal balls is effected by means of a hand-wheel 5, mounted on a shaft 6, having a screw-thread and controlling a traversing nut 7, Fig. 2, which slides in a guide-sleeve 8. The nut 7 is provided with a pivot 9, on which a slider 10, which moves in the guide-lever 11, Fig. 5, is mounted to turn. The guide-lever 11 is connected by one of its ends to a rod 12, which carries a ring 13, serving to support the spring 14, which actuates in the usual manner the pump-plunger of the metal-pot 15 belonging to the linotype-machine. 16 represents the pump-casing, in which the plunger moves, Fig. 1. Each time the plunger moves in the usual manner for the purpose of forming a line it lowers the rod 12, so that the lever 11 oscillates around the pivot 9. At 18 on the other end of the lever 11 a rod or connecting-rod 17, Figs. 5 and 9, is pin-jointed. The rod 17 is jointed to a bell-crank lever 19, which oscillates around the shaft 20 and carries a pawl 21, which engages with the teeth of a toothed wheel 22, keyed to the shaft 20. Each time the lever 11 oscillates around the pivot 9 of the slider 10 the pawl 21 is moved thereby to a certain extent, according to the position of the slider 10, which can be adjusted along the lever 11 by rotating the hand-wheel 5 and the screw-threaded shaft 6.

The toothed wheel has a fixed number of teeth, some of which are divided into two. This division enables the releasing of the metal balls to be regulated in the manner described farther on.

Onto the shaft 20 at the side of the toothed

wheel 22 a cam 23, Fig. 9, is fixed, which each time the shaft rotates pushes back a finger 24, pivotally connected with a lever 25 and under the action of an opposing spring 26. The lever 25 can turn in the middle around the fulcrum-pin 27 and is pivotally connected by its other end to a rod 28, which is in turn pivotally connected with the escapement-lever 29, which oscillates around the pivot 30.

Through the action of the cam 23 on the finger 24 the escapement-lever 29 gives a passage to the metal ball held by the nose 31, while the nose 32 retains the following ball. When a ball has been released, the various parts are returned to their original positions by the action of the spring 26.

In leaving the magazine 1 the metal ball passes through the tube 2, which will be described farther on, and thus enters the metal-pot.

From the foregoing it will be seen that each time the plunger belonging to the linotype-machine acts—that is to say, forms a line in the manner known—the pawl 21 will pass over one or more teeth on the wheel 22. When the plunger resumes its original position, the pawl returns and pushes forward the tooth at which it has stopped, causing the toothed wheel 22, and consequently the cam 23, to rotate to a certain extent determined by the position of the slider 10. Thus the position of the slider 10 can be regulated as desired—for example, twenty strokes of the plunger for one complete revolution of the wheel 22—that is to say, for one ball of metal falling into the metal-pot. The consequence of this is that if the adjustment has been made for twenty lines one ball of metal will fall into the metal-pot at each twentieth stroke of the plunger. This adjustment may be made for ten, twelve, twenty, twenty-four, thirty, forty, or sixty lines, and so on at the will of the operator. All that is required is for him to turn the adjusting hand-wheel 5, which controls the slider 10. On the shaft 6, the screw-threaded part of which actuates the slider 10, a toothed wheel 33 is mounted, Figs. 5 and 9, which engages with a wheel 34, keyed to the end of the screw-threaded shaft 35. On the shaft 35 is a traversing nut 36, to which an indicator 37 is fixed, which is arranged on the outside of the magazine 1 and moves over a scale 38, which bears the numbers "10, 12, 15," &c. In consequence of this arrangement if the adjusting-wheel 5 be rotated for the purpose of bringing the slider 10 into such a position that a ball of metal may fall into the metal-pot after twenty strokes of the plunger the indicator 37 stops opposite the line marked "20." The adjustment is thus easily effected. If, for example, it be desired that a ball of metal should fall each time the plunger has made forty strokes—that is to say, each time that forty lines have been formed—it is only necessary to turn the wheel 5 until the indicator 37 is opposite the line marked "40." A spring-catch 40, which moves into the holes in a disk 41, keyed to the shaft 6, serves to fix the position of the shaft 6 and to keep it stationary during the work. A spring 42 is employed for keeping the cam 23 and the wheel 22 to a certain extent in a rigid state.

To the shaft 20 a small hand-wheel 39, Fig. 5, is keyed, which in case of necessity enables the apparatus to be operated by hand and the cam 23 to be placed in its starting position for the gradations on the scale 38.

The rod 12 is in two parts connected by a nut with right and left screw-thread, which enables the length of the rod to be adjusted according to the tension of the spring 14.

Before charging the magazine 1 a pin or spindle is inserted in the hole 44, so that the shock of the balls of metal may not injuriously affect the escapement-lever 29.

The ball of metal when released being no longer retained leaves the magazine 1 and passes through the piece 45, which is held by the dovetailed supports 46, Fig. 3. From thence it enters the feed-tube 2. This tube is furnished inside opposite the inlet-opening for the ball with a spring 47, Fig. 8, intended for deadening the shock. This spring 47 adjoins another spring 48 of convex shape, which runs the whole length of the feed-tube 2. The spring 48 is intended to act as a brake, so that the shock of the ball in the bottom of the tube 2 may be reduced and the ball arrive in the horizontal part with only sufficient speed to enable it to reach the open end 50 of the tube. Having reached this point, the ball is retained by a stop 49 and occupies a movable part 51 of the tube, which is hinged at 52, Figs. 6 and 7. Under the weight of the ball the movable part 51 turns around the hinge 52. The stop 49 is pivoted at 53 and fixed at its other end to a rod 54, Fig. 8, on which one end of a rod 55 is mounted to turn. The other end of the rod 55 is slotted and slides on an arm 56, fixed on the side of the tube 2 and flattened at 57. This rod prevents the cramping of rod 54 and binding of pivot 53. Through the flattened part 57 slides a rod 58, which acts as a guide for the spring 59, which holds the stop 49 in the stationary position. The opposite end of the rod 58 is connected with the rod 54.

When the movable part 51 oscillates under the weight of the ball, the spring 59 is compressed and the stop 49 takes the position indicated in Fig. 7 and allows the passage of the ball under the influence of the latter's own weight. When the ball has fallen into the metal-pot beneath, the movable part 51 and the stop 49 return under the action of the spring 59 to the position indicated in Fig. 6.

The feed-tube 2 can be unmounted. In order to remove it from the pieces 61, it is only

necessary to raise it vertically. The plate 60 protects the part of the magazine against which the tube 2 bears.

What I claim, and desire to secure by Letters Patent, is—

1. In an automatic feed device for the metal-pots of linotype-machines, mechanism enabling the discharge of the balls to be regulated in accordance with a certain number of strokes of the plunger and comprising a hand-wheel mounted on a screw-threaded shaft, a perforated disk keyed to the said shaft, a spring for stopping the said disk, a traversing screw-nut mounted on the shaft, a slider mounted on the nut, a lever mounted to oscillate around the slider, a rod connected with one of the ends of the said lever, a ring on the rod which acts as an ordinary support to the plunger-spring, a rod pivotally connected with the other end of the said lever, a bell-crank lever joined to the rod, a pawl mounted on the bell-crank lever and adapted to engage with a ratchet-wheel, a cam, a shaft arranged to support the cam, the ratchet-wheel and the bell-crank lever, a finger actuated by the said cam, and an escapement-lever controlled by the said finger and allowing a passage for the balls, one by one, each time that the said toothed wheel effects a complete revolution, as described.

2. In an automatic feed device for the metal-pots of linotype-machines, the combination with the regulating-shaft of the mechanism for regulating the discharge of the balls of metal, of an indicator comprising a screw-spindle, toothed wheels gearing the screw-spindle to the regulating-shaft, a traversing nut mounted on the screw-spindle, an indicator arranged on the said nut and a graduated scale placed outside the magazine as described above.

3. In an automatic feed device for the metal-pots of linotype-machines, mechanism enabling the discharge of the balls to be regulated in accordance with a certain number of strokes of the plunger and comprising a hand-wheel mounted on a screw-threaded shaft, a perforated disk keyed to the said shaft, a spring for stopping the said disk, a traversing screw-nut mounted on the shaft, a slider mounted on the nut, a lever mounted to oscillate around the slider, a rod connected with one of the ends of the said lever, a ring on the rod which acts as an ordinary support to the plunger-spring, a rod pivotally connected with the other end of the said lever, a bell-crank lever joined to the rod, a pawl mounted on the bell-crank lever and adapted to engage with a ratchet-wheel, a cam, a shaft arranged to support the cam, the ratchet-wheel and the bell-crank lever, a finger actuated by the said cam, an escapement-lever controlled by the said finger and allowing a passage for the balls, one by one, each time that the said toothed wheel effects a complete revolution, and a hand-wheel keyed to the shaft which carries the toothed wheel and the cam and enabling the machine to be worked by hand in case of necessity.

4. In an automatic feed device for the metal-pots of linotype-machines, charged by means of balls of metal, a feed-tube for conveying the balls to the metal-pot, a spring mounted inside the vertical part for deadening the shock of the balls and a spring acting as a brake for moderating the fall of the said balls.

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

EUGÈNE TRAMA.

Witnesses:

PAUL H. CRAM,

HUBERT RIVIERE.