No. 859,583. PATENTED JULY 9, 1907.

A. SCHIEPE.

TYPE SETTING MACHINE.

APPLICATION FILED JAN. 8, 1906.

3 SHEETS—SHEET 1.

Fig.3.

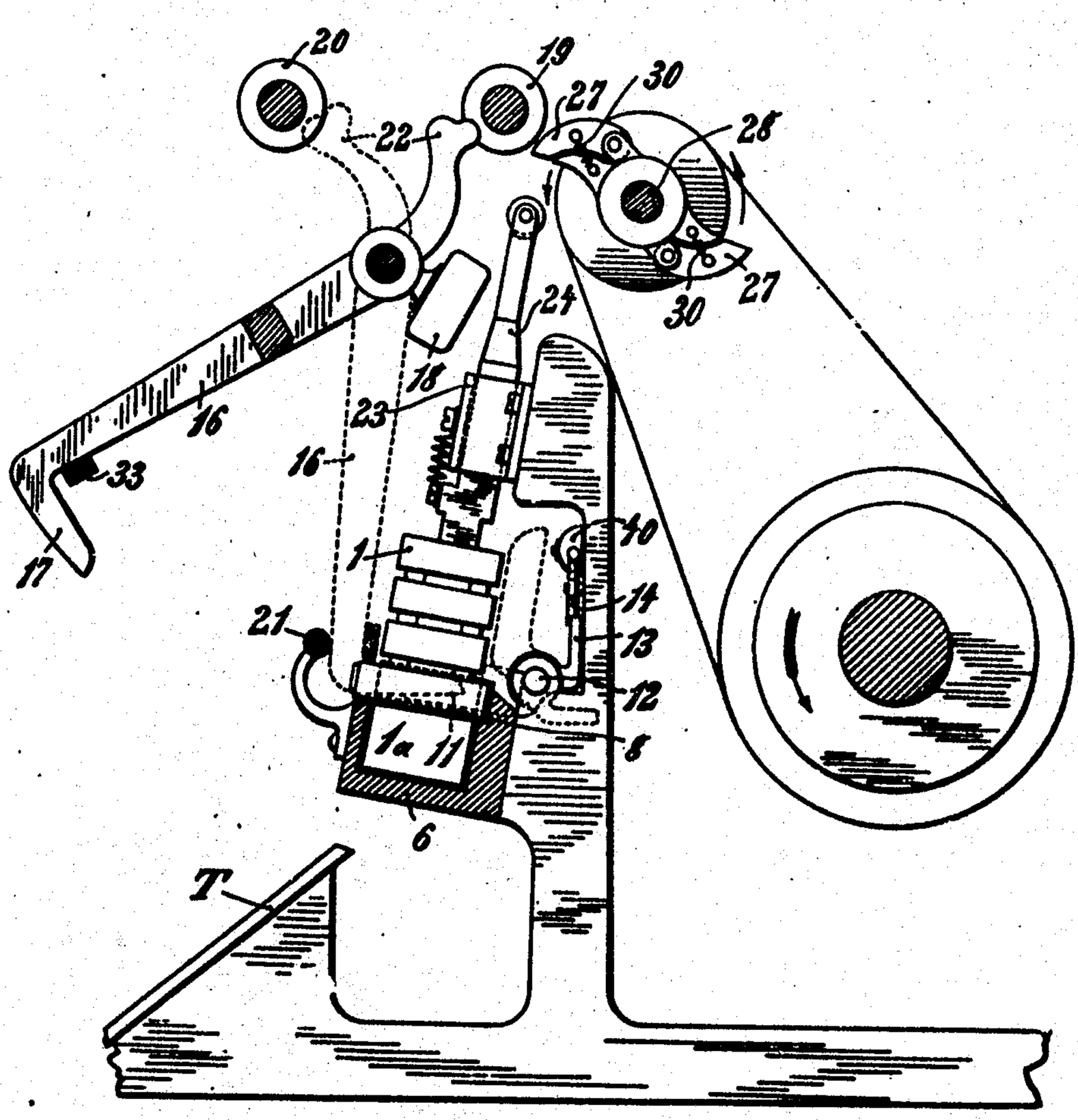


Fig.1.

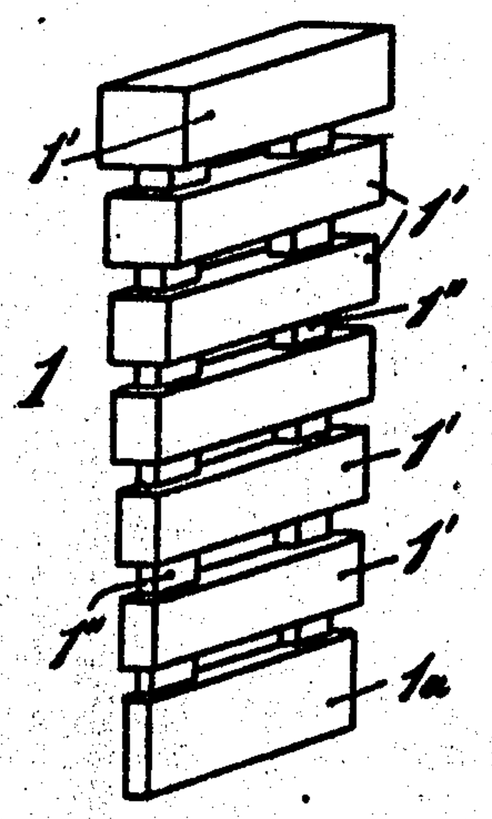
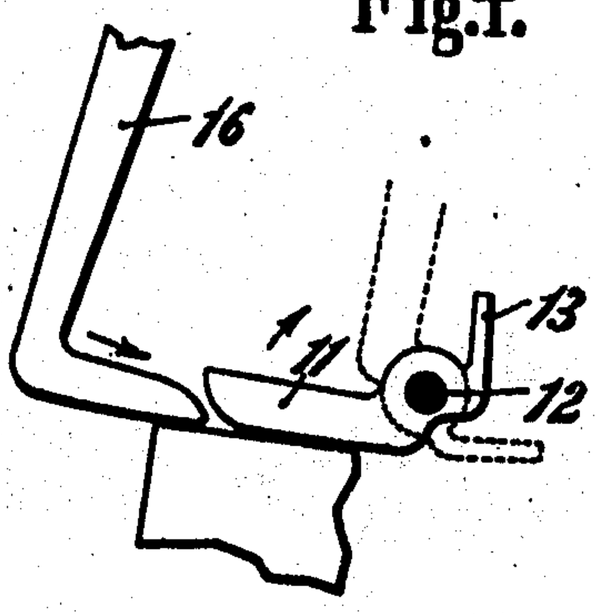


Fig.4.



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No. 859,583. PATENTED JULY 9, 1907.

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3 SHEETS—SHEET 2.

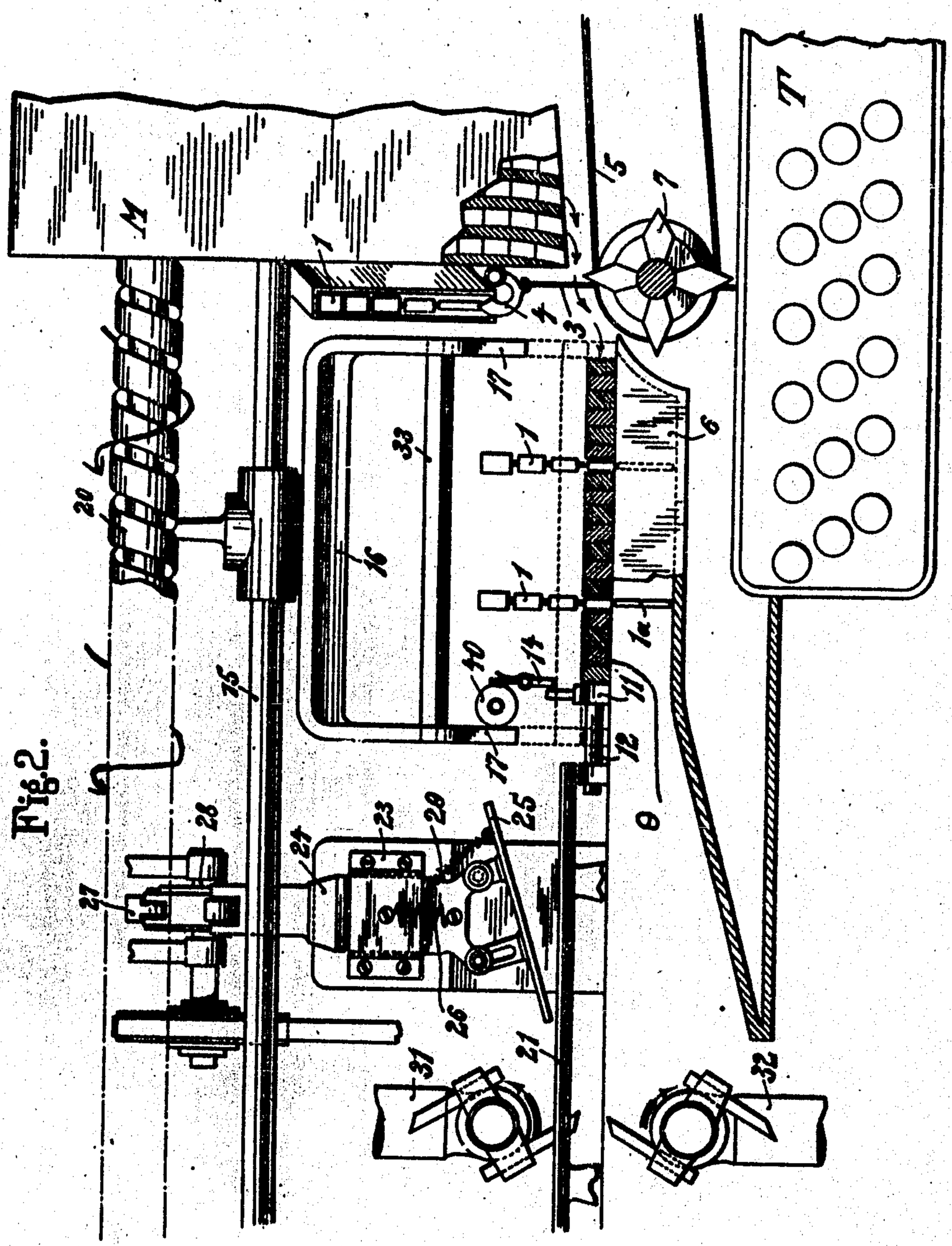

Fig.2.

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3 SHEETS—SHEET 3.

Fig.5.

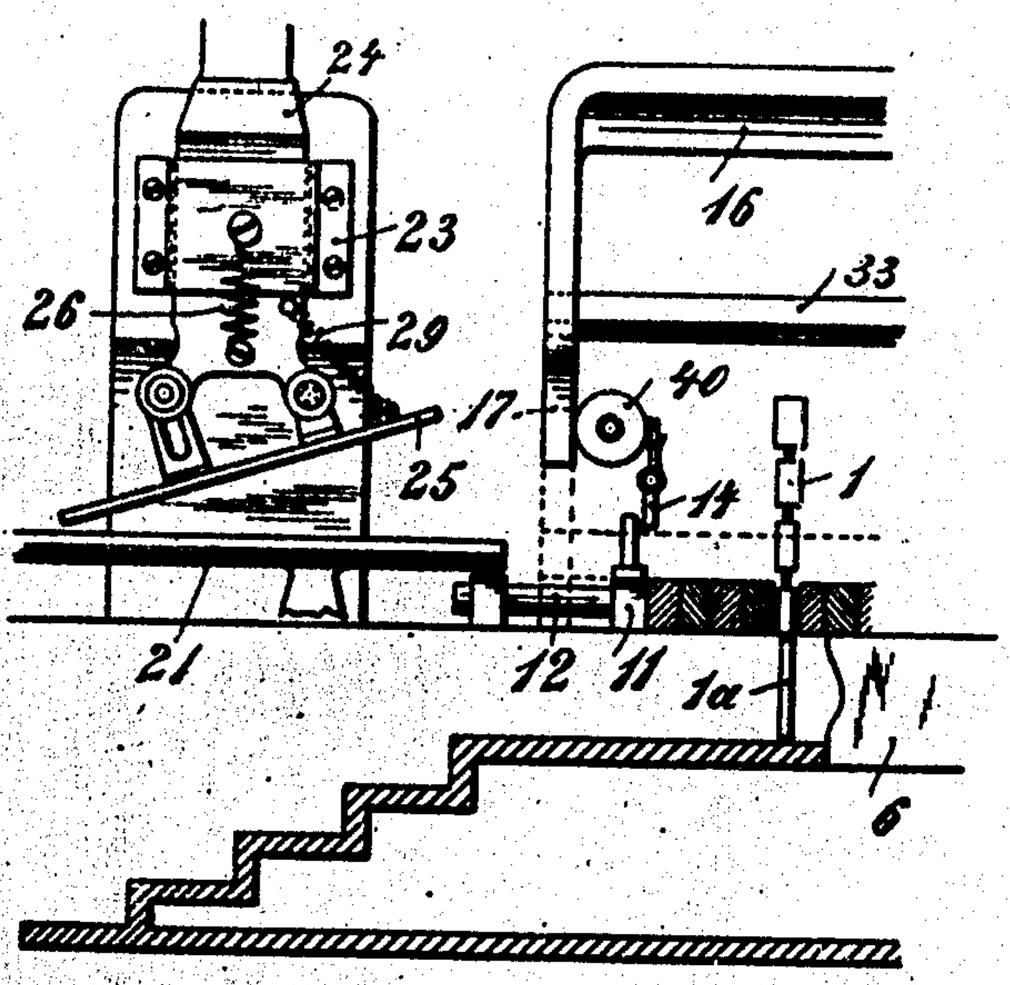


Fig.6.

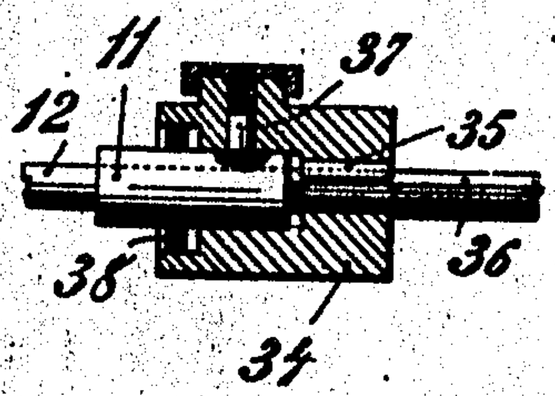


Fig.7.

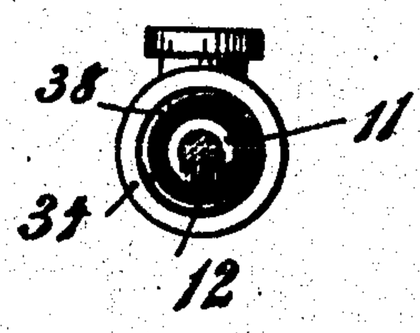
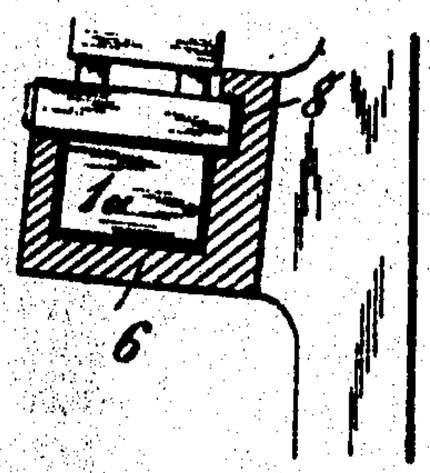


Fig.8.



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UNITED STATES PATENT OFFICE.

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TYPE-SETTING MACHINE.

No. 859,583. Specification of Letters Patent. Patented July 9, 1907.

Application filed January 3, 1906. Serial No. 294,386.

To all whom it may concern:

Be it known that I, AUGUST SCHIEPE, a subject of the German Emperor, and a resident of Berlin, Blücherstrasse 67, Empire of Germany, have invented certain new and useful Improvements in Type-Setting 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The present invention relates to an improved type setting machine and consists in certain improvements of details which will be hereinafter explained and which will be more particularly pointed out in the claims.

Figure 1 of the accompanying illustrative drawing shows in perspective a justifying wedge constructed according to this invention, in a number of sizes. Figs. 2 and 3 show the apparatus for carrying out the justifying process in front elevation and transverse section. Fig. 4 is a detail view showing a part of the apparatus. Fig. 5 is a view showing a modification of the inclined part of the bottom of the gutter shown in Fig. 2. Fig. 6 is a longitudinal cross-section through a detail. Fig. 7 is a cross-section of Fig. 6. Fig. 8 is a cross-section through the gutter showing a modification of the structure shown in Fig. 1.

As will be seen from Fig. 1 each justifying wedge 1 consists of a number of justifying pieces 1^1 made of gradually increasing thickness and which are so connected to each other by light cross pieces 1^{11} that they can be easily broken off. A further piece 1^a on the lower end of the wedge serves to afford the necessary guide to the justifying wedges in the composing stick, as will be hereinafter more fully explained.

In the wedge illustrated the justifying pieces are connected by two cross pieces 1^{11} but in some cases more than two cross pieces or only a single cross piece may be employed according to requirements. As the height of each justifying piece is at most not greater than the height of a letter of type the wedges must have different dimensions according to the grade of type with which they are designed for use.

For the purpose of insuring the effective driving in of the wedges the thickness of the cross pieces 1^{11} may equal the thickness of the justifying pieces so that they may be in the form of wedges from the thickness of the one to that of the other justifying piece; or the lower edges of the justifying pieces may be wedge shaped so as to be readily broken off.

For inserting the wedges 1 into the lines and driving them in according to the improved method under notice apparatus constructed as shown in Figs. 2 to 4 may be employed. The justifying wedges 1 are stacked in a channel and are released therefrom from time to time as desired by striking a special key of the key board T. This special key draws down a stop hook 4 by means of a rod 3 and the forward wedge then passes, with the types fed from the type magazine by the belt 5 into the composing stick 6 in which they are pressed, together with the types, by the action of the star wheel 7. The composing stick 6 which has, in the usual way, a somewhat backwardly inclined position is approximately gutter shaped and its rear side wall has on its inside upper edge a rectangular recess 8 in which the feet of the types 9 rest while the forward portions of the type rest freely upon the flat edge of the front side wall of the composing stick so that the compositor working in front of the machine at the key board T can readily see the letters, check the sentence and correct it, if necessary.

The lower part 1^a of the justifying wedges 1 engage in the gutter of the composing stick and are thereby prevented from falling over in consequence of the inclined position of the stick. The breadth of the justifying wedges corresponds to the width of the gap in the composing stick and is therefore less than the body height of the type.

The line of type which during the operation of composing moves towards the left, Fig. 2, pushes in front of it a stop 11 that can rotate and is guided upon a rod 12. When the type line has almost reached the desired length a rearward lug 13 (Fig. 3) on the stop 11 meets the lever 14 of a bell 40 and causes the bell to strike so warning the compositor that he must close the line.

The stop 11 is guided upon the rod 12 with sufficient friction to hold the letters set tightly locked up, for which purpose friction springs may be employed. The support on which the stop slides is so constructed that when the stop has moved a definite distance from the composing stick towards the right, Fig. 2, it is rotated about the rod 12 and is raised up until it is in a vertical position so that when the composed lines are pushed further on it moves out of the path of the justifying wedges, see the dotted position Figs. 3 and 4. This automatic raising of the stop may be attained by any desired means, such for example as by keeping the stop under the constant action of a spring which tends to rotate it to the right but is prevented from so doing by a locking device such as a friction lock for example that is released by lifting the stop a certain amount. An example of such a device is shown in detail in Figs. 6 and 7. A lateral extension of the hub of the stop 11 is engaged by a sleeve 34 which slides with the stop on the shaft 12, while its rotation is prevented by a key 35 engaging in a longitudinal keygroove 36 of the shaft. A spring catch 37 is adapted

to lock the hub 11 and sleeve 34 in the positions illustrated in full lines and in dotted lines in Fig. 3, by engaging two grooves provided on the outer surface of the hub of the stop 11. A spring 38 having its ends connected to the hub and to the sleeve respectively tends to turn the stop into its vertical position. But it is prevented from doing so by the spring catch 37. The latter, however, will yield to the force exerted on the stop by the bent ends 17 of the gripper 16.

The mechanism now to be described is employed for carrying away the finished line.

Upon a slide bar 15 is mounted so as to rotate and slide longitudinally, a gripper in the form of a lever 16 which is forked at its end and at its end portion 17 each arm is bent approximately at right angles.

When composing the gripper 16 is caused to assume a raised position, as shown in Fig. 3, and is held in this position by a spring or as shown by a weight 18. When a line has been completely composed the gripper 16 is depressed the bent over ends 17 then engaging each end of the line. The distance between the two ends 17 corresponds accurately to the length which the lines must receive by the justification.

Above the rod 15 are located two worms 19 and 20 which continuously revolve in the direction of the arrows.

An arm 22 of the gripper 16 when in its raised position engages the worm 19 and by its action is carried towards the end in which the type enters, *i. e.* to the right of Fig. 2. The screw threads of the worm 19 cease at such a distance from this end that the gripper 16 remains stationary in the position seen in Fig. 2 in which it can grasp the composed line of type on its downward swing. This downward movement of the gripper 16 is effected by hand, and when so effected the arm 22 engages with the worm 20 which pushes the gripper, together with the gripped line of type towards the left, Fig. 2. At the commencement of this movement the gripper 16 is held down by hand until one of its arms passes behind a guide rod 21 which holds the gripper down on its further travel and until the line reaches the front of the galley, when, the gripper 16 is again released from the rod 21 and automatically goes up, under the action of a spring or the weight 18, and engages with the worm 19 which again carries it forward.

In order to allow the line of type with the grippers 16 to move towards the left, Fig. 2, the stop 11 must be brought out of its path, it is therefore, as before described, so mounted that when raised a certain amount, it assumes of its own accord a completely out-of-the-way position shown by the dotted lines in Figs. 3 and 4. The preliminary raising is effected by one of the ends 17 of the gripper which when swung down engages the inclined or rounded end of the stop 11 (Fig. 4).

On the way to the galley the line of type passes under the action of a hammer which drives in the wedges for the purpose of filling out the line. This hammer, which may be formed and operated as desired, in the example illustrated it comprises a slide 24 mounted in a guide 28 and having at its lower end a flexibly mounted percussion body 25. A spring 26 keeps the slide in the raised position and after being depressed returns it to the raised position. The depression is effected by two fingers 27 which are secured to a rotary shaft 28 and alternately come in contact with a roller mounted upon the upper end of the slide 24. The slide 24 with the percussion body 25 thus continuously go up and down and the latter thereby hammers the wedges down if they are in position below it. Before the hammer is reached the bottom of the gutter in which the lower ends of the wedges are guided, is inclined downwardly so that the wedges can move downward. The bottom of the guiding gutter may be inclined, as shown in Fig. 2, in the form of an obliquely descending surface or in any other desired form, such for example as stepwise corresponding to the grade of type as shown in Fig. 5. The latter arrangement is particularly advantageous, because the positions of the sections 1′ will always register, when pressed down, with the upper and lower surfaces of the type, whereby, when the wedges are broken off by the cutters 31, 32, as explained hereafter, no part of a section 1′ will extend beyond the upper or lower surface of the types. The percussion body 25 is mounted to swing on the slide 24 so that it can yield when the line is completely justified and the wedges consequently cannot be unduly forced deeper. It can also, as shown, be influenced by a spring 29. In the same way the fingers 27 are yieldingly connected to the boss of the rotary shaft and are held in operative position by springs 30 which yield to strong resistance. After the wedges have been pressed home the line is carried further to the left in Fig. 2, so that the revolving upper and lower cutters 31, 32 strike against the wedges and break them off. Upon further movement towards the left the projecting ends of the light cross pieces 1′ will pass between the cutters the distance of the edges of which corresponds to the thickness of the line, whereby said projecting ends are trimmed down and the line is perfectly smoothed.

For the purpose of holding the line efficiently during the action of the cutters, a rail 33 may be arranged on the gripper 16 connecting both its arms and so arranged as to lie upon the head ends of the types when the lines are gripped. In like manner the foot ends of the types, instead of engaging in a recess 8 of the rear gutter wall may engage in a groove or channel the upper wall of which catches over the upper surface of the types as shown by dotted lines in Fig. 3 and in full lines in Fig. 8.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed I declare that what I claim is:

1. In a type setting machine, the combination with the composing stick adapted to receive a line of type, of a longitudinal bar extending from the composing stick to the galley, a swinging gripper slidably supported on said bar and adapted to be swung into engagement with the line of type, means normally to hold said gripper in its retracted position away from the line of type, means operative when the gripper engages the line of type to move the gripper to the galley, and automatic means to move the gripper from the galley back into its retracted position in front of the line of type.

2. In a type setting machine, the combination, with the composing stick adapted to receive a line of type, of a longitudinal bar extending from the composing stick to the galley, a swinging gripper slidably supported on said bar and adapted to be swung into engagement with the

line of type, means normally to hold said gripper in its retracted position away from the line of type, a rotary worm arranged to be engaged by said gripper and to move the same with the line of type to the galley, means to hold the gripper in engagement with the line of type and with said worm until it arrives at the galley when it will automatically swing back into its retracted position, and a worm arranged to engage the gripper when in its retracted position and to move the same back in front of the composing stick, where said worm is disengaged again from the gripper.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

AUGUST SCHIEPE.

Witnesses:

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WOLDEMAR HAUPT.