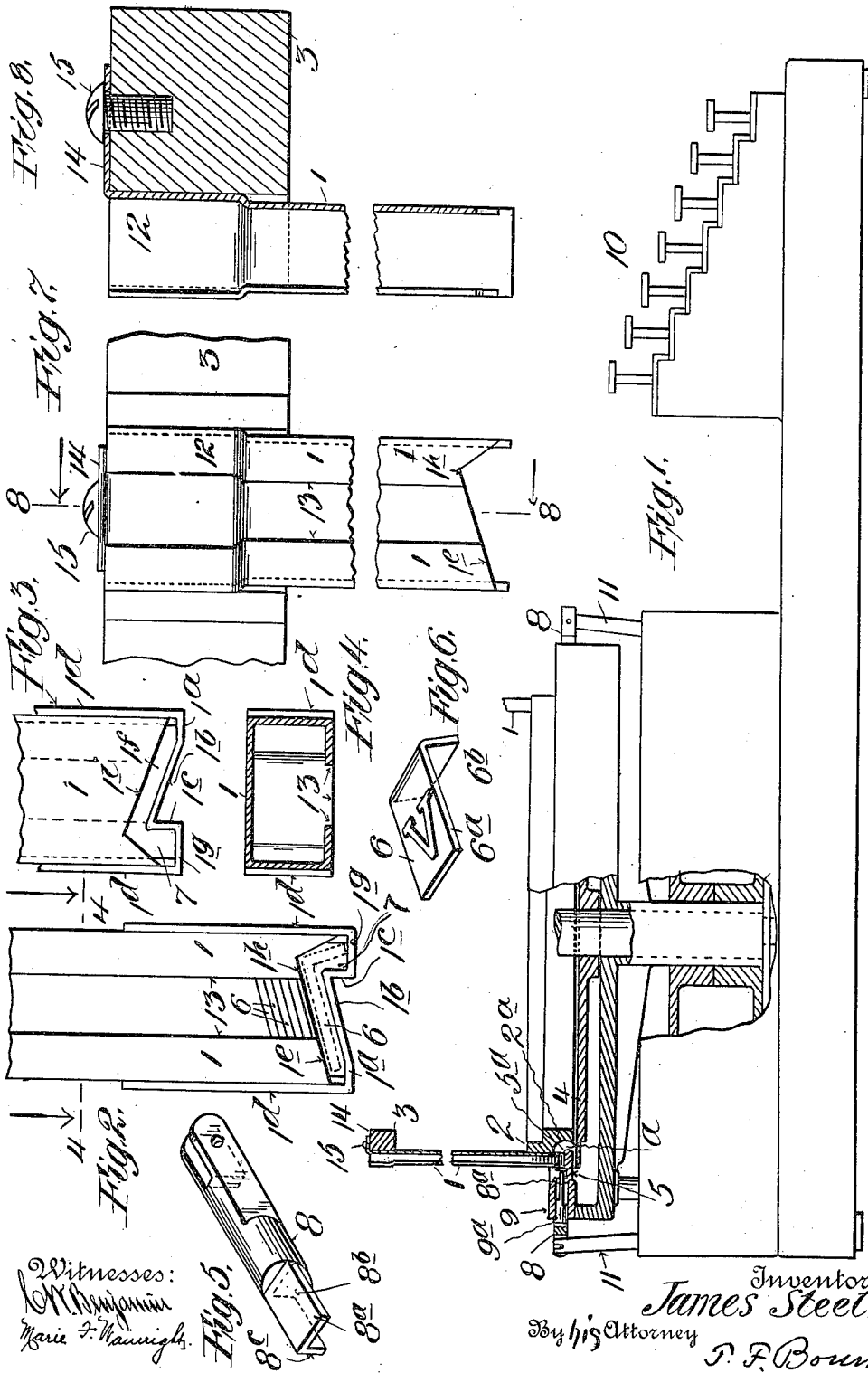


J. STEEL.
TYPE SETTING MACHINE.
APPLICATION FILED MAY 2, 1908.

1,013,624.

Patented Jan. 2, 1912.



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UNITED STATES PATENT OFFICE.

JAMES STEEL, OF LITTLE FALLS, NEW JERSEY.

TYPE-SETTING MACHINE.

1,013,624.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES STEEL, a citizen of the United States, and resident of Little Falls, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Type-Setting Machines, of which the following is a specification.

My invention relates to improvements in the class of type setting machines wherein peculiarly shaped type are deposited as required upon a revolving table or disk which, by centrifugal action, propels the type to the appropriate receiving and assembling means, and my invention is particularly useful in the class of type setting machines set forth in United States Letters Patent to Elah Terrell, No. 870,699, dated Nov. 12, 1907, and No. 880,341, dated Feb. 25th, 1908.

The object of my invention is to prevent any type from being delivered to the rotating or centrifugal table or disk that is not properly placed in the type receiving tube, to the end that if a type should be wrongly placed in such tube said type cannot be pushed from the tube, which will thereby be an indication to the operator to remove such wrongly placed type from the tube, all whereby the accuracy of selecting the type for assembly is increased.

The type I have shown are of substantially L-shape, having the character produced upon the shank or longer portion, a shorter foot portion extending at an angle therefrom, and adapted to be superimposed upon each other in a tube, the lower end or bottom wall of which tube is shaped substantially corresponding to the angular shape of the type when they are in proper position in the tube, and the front and back walls of the tube at their lower parts are provided with openings of substantially just sufficient size and appropriate outline to permit the type to be pushed edgewise therefrom. A suitable pusher of substantially the same edgewise formation as the type is guided to travel into or through the lower openings of the tube to engage the corresponding edge of the lowermost type in the tube, all whereby if a type in the tube is not in proper position it cannot be pushed through the lower opening of the tube because it will engage the adjacent wall of the latter, and thereby the pusher will be prevented from discharging such type from the tube.

My invention also comprises the novel details of improvement and combinations of parts that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein,

Figure 1 is a partly sectional side elevation of a portion of a type setting machine provided with my improvements, Fig. 2 is a detail outer face view of the lower portion of one of the type tubes, Fig. 3 is a similar view of the opposite side of said tube, Fig. 4 is a cross section on the line 4, 4, of Fig. 2, looking in the direction of the arrows, Fig. 5 is an enlarged perspective view of the type pusher, Fig. 6 is a perspective view of one of the type, Fig. 7 is an enlarged face view of the type tube, the intermediate part being broken away, and Fig. 8 is a vertical section substantially on the line 8, 8, in Fig. 7.

Similar numerals of reference indicate corresponding parts in the several views.

In the accompanying drawings the numeral 1 indicates a type receiving tube which is shown attached at its lower part to a suitable ring 2, and at its upper part to a ring 3, there being any suitable number of such tubes arranged in a circle, and at 4 is a rotary table or disk below the tubes 1, which may be mounted to rotate on a central pivot or shaft as set forth in the patents above mentioned. Between the lower ends of tubes 1 and the rotary table 4 is a suitably supported guide ring 5, the inner rounded or curved edge 5^a of which in conjunction with the annular concavity or groove 2^a of ring 2 form a guideway *a* down which the type 6 slide from tubes 1 to rotary table 4, and the type are thereby turned over to rest upon said table with their characters facing downwardly, all in manner substantially similar to that set forth in the patents before mentioned. The substantially L-shape type 6 are to be superimposed within tubes 1 and lie in the position shown in dotted lines in Fig. 1, with the long and short members 6^a, 6^b projecting downward, and their characters uppermost, and the bottom of each tube 1 is formed to substantially correspond with the under surface of the type, that is to say, the bottom wall of each tube has a horizontal part 1^a, an upwardly inclined portion 1^b substantially corresponding to the angle of the long arm or shank of the type, and the downward por-

tion 1^c forming a pocket 7 in which the short arm or foot of the type projects and rests on the horizontal part 1^a.

The bottoms of tubes 1 may be formed by strips of metal bent into the required shape and having upwardly extending members 1^a extending along the outer side of the tubes and secured thereto, as by solder. The front and rear walls of tubes 1 at their lower ends are cut away at 1^c, 1^f, in angular form substantially corresponding to the angular form of the type 6, the upper edges 1^b, 1ⁱ, substantially following the line of the bottom portion 1^b, and of such height as to permit only the lowermost type 6 to be pushed from the opening 1^f into the turning and delivering guideway *a*. With this arrangement, if the type are properly stacked in a tube in the relation shown in dotted lines in Fig. 2, only the lowermost type may be pushed out of the tube one by one, but if one of the type should be placed in the tube in the wrong position, as with its character facing downwardly and its shank and foot members extending upwardly, it would not correspond in relation to opening 1^f of tube 1, but its upwardly extending members would aline with the wall of the tube and thereby be prevented from being pushed from the tube.

The pushers or plungers 8 I have shown are carried in suitable guides 9^a in a ring 9 that is located outside of tubes 1, and the inner type-pushing portion 8^a of said pusher is formed in angular shape corresponding to the edgewise shape of type 6, having a portion 8^b to engage the shank or long part 6^a of the type and an angular portion 8^c to engage the foot or short portion 6^b of the type, the pushers being so guided that they will pass through the opening 1^c, or the openings 1^c and 1^f, of the corresponding tube 1, and by engaging the corresponding edge of the lowermost type the pusher will accurately push the type from the tube, the type above then resting upon pusher part 8^a until the latter is withdrawn, whereupon the type will descend in the tube in well known manner. The pushers 8 for each tube 1 may be operated in any suitable or well known manner by the keys 10 of a key board, which keys may be suitably connected with operating levers or the like 11 by any appropriate connecting means for causing the corresponding pusher to push the lowermost type from a tube 1 upon the operation of the associate key.

In order to permit the ready insertion of the type 6 into the tubes 1 I have shown said tubes as widened at their upper parts 12, and having their upper ends freely exposed upwardly, said tubes on their outer faces being cut away to form the vertical opening 13 through which the type can be seen. A convenient means for inserting the

type in tubes 1 is to place the type of each letter in a suitable supply tube of such dimensions as to fit within the widened part 12 of tube 1, the operator meanwhile holding a pointer at the bottom of said supply tube and then allowing the pointer to travel down through the opening 13 of the tube 1, the type thereby following the finger down to the bottom of tube 1. The tubes 1 are shown provided with fingers 14 which lie over the upper ring 3 and which are each held independently in place by a screw 15 entering a threaded hole in ring 3, as illustrated in Figs. 1 and 8.

In accordance with my improvements, with tubes 1 filled with the type appropriate to each tube and the corresponding key, and the lowermost type of each tube resting as shown in dotted lines in Fig. 2, and table or disk 4 revolving in the appropriate direction, then when a key 10 is depressed its pusher 8 will advance inwardly and across the corresponding tube, and will push the lowermost type from such tube into guideway *a*, and the type will pass down such guideway and rest upon the rotating disk or table 4, with its character face downward, and thereby such type will be propelled by said table by centrifugal action to a delivery point, not necessary here to be shown but substantially the same as shown in the patents above mentioned, for assembling as set forth in said patents, the pusher meanwhile holding up the type in the tube above, and when the key is released the pusher will move outwardly allowing the type in the tube to descend, so that the lowermost type will aline with the openings 1^c, 1^f. Should a type be in the tube in the wrong position the plunger 8 will not be able to advance to push such type, and thereupon the operator will be notified of such fact and will readjust the type as required in such tube. The bottom wall 1^b by being raised above the plane of the bottom of tube 1 keeps the lowermost type so elevated with respect to the opening 1^f as to prevent a wrongly placed type from being pushed out by the pusher.

Having now described my invention what I claim is:

1. A type receiving tube having an inclined bottom and a downwardly extending part forming a pocket, and openings in opposite sides adjacent said bottom.

2. A type receiving tube having an inclined bottom and a pocket on one side thereof, and having openings on opposite sides adjacent said bottom and pocket.

3. A type receiving tube having a substantially L-shaped bottom and openings on opposite sides adjacent said bottom, the opening on the type delivery side having an edge substantially corresponding in angular position to said bottom.

4. A type supporting tube having an upwardly and inwardly inclined bottom, a pocket adjacent one end of said bottom, and openings on opposite sides adjacent said bottom, the opening in the delivery side substantially corresponding in shape to said bottom and pocket.

5. A type receiving tube having a bottom wall provided with two substantially horizontal portions and an intermediate upwardly inclined portion, and a downwardly extending part providing a pocket, said tube having openings in opposite sides adjacent said bottom wall, the delivery opening corresponding substantially along its upper edge to the inclination of said upwardly inclined portion.

6. A type receiving tube having an angularly shaped bottom wall provided with an upwardly inclined portion and having upwardly extending end members secured to the tube, said tube having openings on opposite sides at the lower part adjacent said inclined portion.

7. The combination of a type receiving tube having an inclined bottom and openings on opposite sides thereof adjacent said bottom, the edge of the opening on the type delivering side being substantially parallel with the inclined bottom with a pusher having a member at one end arranged substantially parallel to said inclined bottom and a portion at an angle to said member, and means to guide said pusher.

8. The combination of a type receiving tube having an inclined bottom and a pocket at one side of said bottom and provided with openings on opposite sides adjacent said bottom, combined with a pusher having an inclined member and a part extending at an angle thereto adapted respectively to pass over said inclined bottom and in said pocket to push out the type from said tube.

9. A type receiving tube provided with openings in its sides adjacent the lower end and a pusher arranged to push type from said tube, said tube at its upper part having a widened portion to permit the free entry of type, said tube at its upper part having an inwardly extending finger, a ring near the upper part of said tube, and means to hold said finger to said ring.

10. In a type holding tube or rack, the combination with the tube body having a longitudinal slotted opening throughout one face thereof, and oppositely located angular cuts in the lower end of said tube as described, of a fixed end plate for the tube having its transverse portion formed angular.

Signed at Columbus in the county of Franklin and State of Ohio this 27 day of April A. D. 1908.

JAMES STEEL.

Witnesses:

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J. W. FISCHER.