

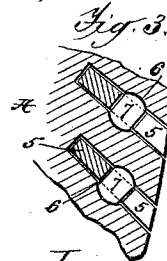
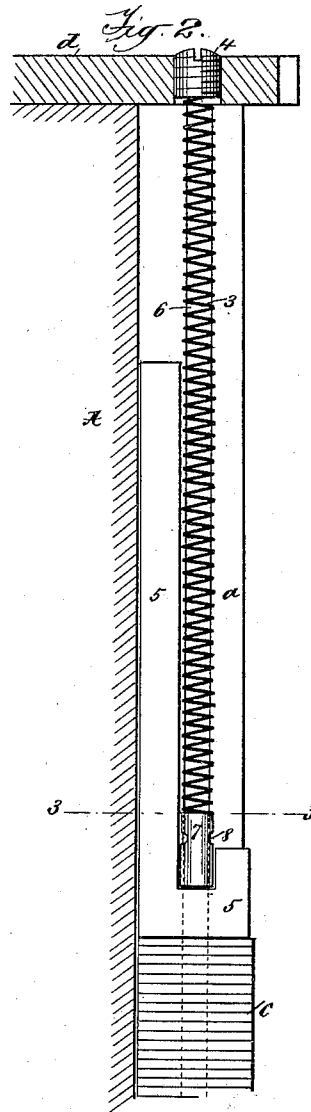
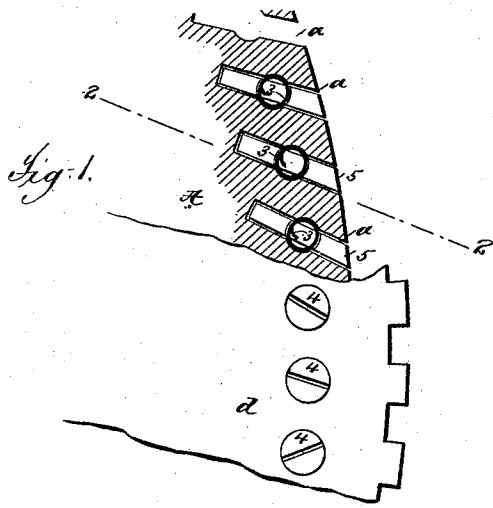
(No Model.)

3 Sheets—Sheet 1.

R. W. NELSON.  
TYPE DISTRIBUTING MACHINE.

No. 417,074.

Patented Dec. 10, 1889.



Attest:  
 Geo. H. Botts.  
 J. J. Kennedy

Inventor  
 Robert W. Nelson  
 By Philip Phelps Hooper  
 Atty

(No Model.)

3 Sheets—Sheet 2.

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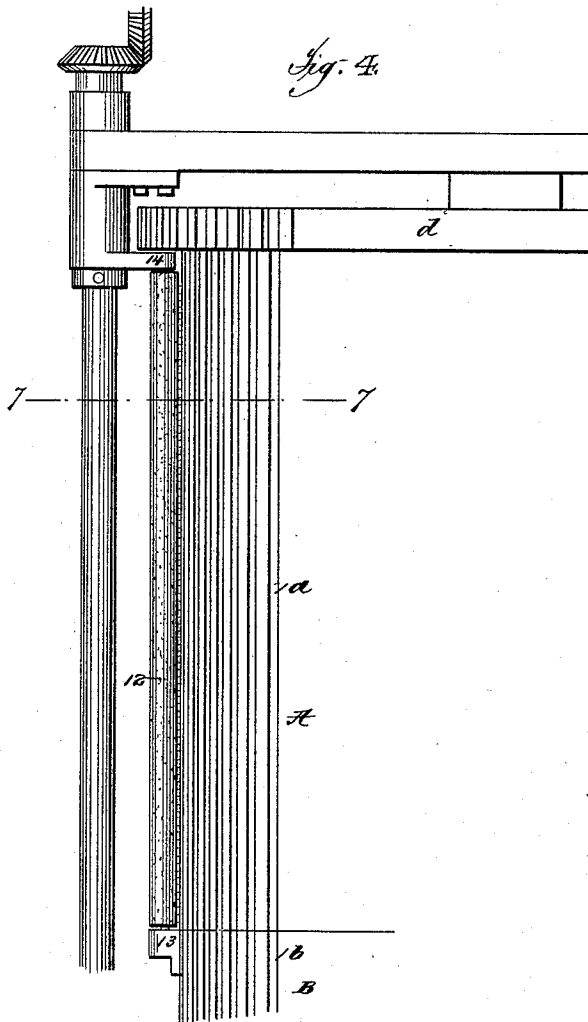
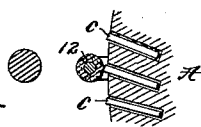


Fig 5.



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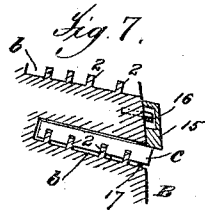
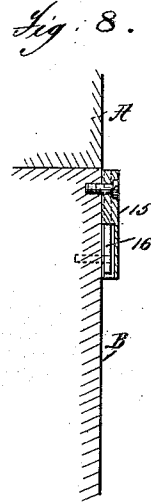
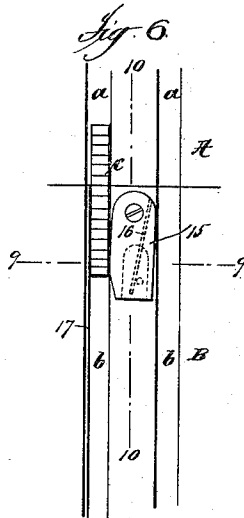
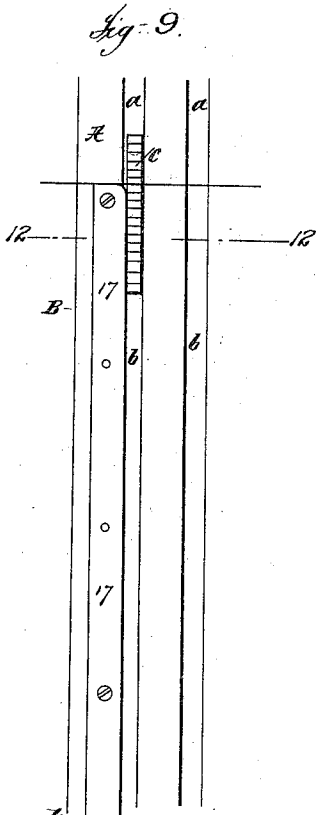
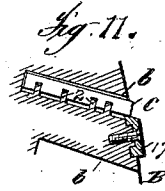
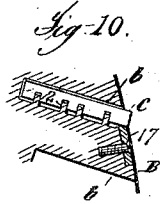
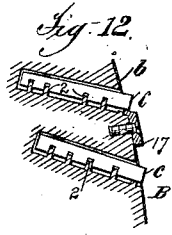
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Robert W. Nelson.  
By  
Philip Phelps Hooper  
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# UNITED STATES PATENT OFFICE.

ROBERT W. NELSON, OF HARTFORD, CONNECTICUT.

## TYPE-DISTRIBUTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 417,074, dated December 10, 1889.

Application filed March 30, 1889. Serial No. 305,379. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. NELSON, a citizen of the United States, residing at Hartford, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Type-Distributing Machines, fully described and represented in the following specification and the accompanying drawings forming a part of the same.

This invention relates to improvements in type setting and distributing machines, said improvements being especially applicable to machines of the class shown and described in United States Letters Patent Nos. 232,157, 283,934, 372,186, and 372,187.

The improvements constituting the present invention relate especially to the distributing part of the mechanism.

One feature of the present invention relates to a means for feeding the lines of matter to be distributed downward in the channels of the distributing-cylinder, and is designed as a supplement or aid to the followers shown in the Letters Patent before referred to.

Another feature of the invention relates to a means for preventing the type from working outward in the channels of the distributing-cylinder, thereby enabling the fenders shown in the Letters Patent before referred to to be dispensed with.

Another feature of the invention relates to a means for sustaining the distributed type for a certain length of time at the upper ends of the channels of the composing-cylinder, in order to afford a support for the incoming type until they are presented squarely above the channels and in register with the wards thereof.

Another feature of the invention relates to a means for preventing the thinner type from turning as they enter and pass downward in the channels of the composing-cylinder, thereby dispensing with the foot-nicks and wards heretofore employed for that purpose, and at the same time insuring a more certain descent of the type without danger of their becoming tilted so as to bind in the channels.

In order to convey a full and accurate understanding of the several improvements constituting the present invention, they will now be described more in detail, reference being

had to the accompanying drawings, in which—

Figure 1 is a plan view, partly in section, of a portion of the distributing-cylinder of a machine of the class referred to, illustrating the present improvement for causing the type to descend in the channels of the cylinder. Fig. 2 is a vertical section taken on the line 2 of Fig. 1. Fig. 3 is a horizontal section taken on the line 3 of Fig. 2. Fig. 4 is a side elevation of a part of the composing-cylinder and illustrating the second improvement before referred to. Fig. 5 is a horizontal section taken on the line 7 of Fig. 4. Fig. 6 is a side elevation showing the lower portion of one of the channels of the distributing-cylinder and the upper portion of a corresponding channel of the composing-cylinder, illustrating the third and fourth improvements, hereinbefore referred to. Fig. 7 is a horizontal section taken on the line 9 of Fig. 6. Fig. 8 is a section taken on the line 10 of the same figure. Fig. 9 is a view similar to Fig. 6, illustrating the fourth improvement, hereinbefore referred to in another form. Fig. 10 is a horizontal section of the same, taken on the line 12 of Fig. 9; and Figs. 11 and 12 are views similar to Fig. 10, showing slight modifications in the same improvement, which will be hereinafter referred to.

Referring to said drawings, it is to be understood that A represents the distributing-cylinder, and B the composing-cylinder, of a type setting and distributing machine of the class referred to, the composing-cylinder being stationary and the distributing-cylinder moving. The distributing-cylinder is provided with vertical channels *a*, into which the lines of matter to be distributed are introduced in the manner described in said Letters Patent. The composing-cylinder is provided with channels *b*, which register with the channels *a* after each step of the movement of the cylinder A. The type operated upon are nicked in their sides, and the channels of the composing-cylinder are provided with wards 2, corresponding to the nicks in the type, which determine the distribution by causing the type to enter the proper channels and no others. The type *c* tend by reason of their gravity to fall to the bottoms of the channels of the distributing-cylinder, thereby causing the lines of type to settle in

the channels as the successive type are distributed from the lower ends of the lines.

It has been found in practice that when the channels of the distributing-cylinder are full or nearly full the weight of the line of type is sufficient to cause it to pass downward as the successive type are removed from its lower end; but as the line decreases in height it is correspondingly decreased in weight, so that at the time a line is partly or nearly distributed the weight of the type in the line is not sufficient to cause them to move downward with the required degree of certainty. An attempt was made to overcome this difficulty in the organization shown in one of the Letters Patent hereinbefore referred to by providing auxiliary followers, which could be inserted after the line of type in the channels of the distributing-cylinder had been partly distributed, and thus increase the weight above said lines, so as to cause them to pass downward with certainty. This arrangement was not, however, altogether desirable in practice, and it has been found that better results can be accomplished and in a manner much more desirable by subjecting the lines of type in the distributing-cylinder to a yielding spring-pressure, which tends constantly to force them downward in the channels. For this purpose (see Figs. 1 to 3) the channels *a* are cored out, so as to provide lateral recesses for the reception of long spiral springs 3, which are inserted through openings in the head-plate *d* of the cylinder, and are held in position by means of screw-plugs 4, which are inserted into said openings after the springs are in position, or by a plate or plates covering the openings, or in any other suitable manner. Interposed between the lower ends of the springs 3 and the type *c* are followers 5, which rest upon the type and receive the pressure of the springs, and also, by reason of their weight, serve to aid the springs in forcing the type downward. The followers 5 consist of flat pieces of metal, which substantially fill the channels in cross-section and are of such length that when raised to the tops or near the tops of the channels there will be sufficient room beneath them for a line of type of the desired maximum length.

It is of course necessary to provide means for preventing the type and the followers from working out of the channels of the distributing-cylinders, and this, in the organizations shown in the Letters Patent before referred to, has been accomplished by means of fenders, which were arranged around the distributing-cylinder and extended downward in front of the several channels. These fenders were somewhat objectionable in practice because they added to the complication of the machine and because it was necessary to remove them in order to introduce the lines of matter into the channels of the distributing-cylinder. These fenders are dispensed with in the present organization, and the upper sides of the followers are provided with re-

cesses, into which fit cylindrical or substantially-cylindrical blocks 7, which are interposed between the springs 3 and the followers and are of a width sufficient to extend into the recesses 6 in the sides of the channels, as shown in Fig. 3, and thus prevent the followers from moving outward in the channels. The followers may also extend upward behind the springs.

In order to permit the followers 5 to be removed from the channels when it becomes necessary to do so for any purpose, the blocks 7 are provided with openings 8, into which a rod or pin can be inserted from the front of the channel, so as to raise the blocks upward against the tension of the springs to a position above the followers. The followers can then be removed from the channels without obstruction.

When the followers, supplemented by the springs 3, are employed in the channels of the distributing-cylinder, as just described, the type will have very little tendency to move outward in the channels, and therefore the use of the fenders for retaining the type in the channels can readily be dispensed with. In some cases, however, the type will have a tendency to move outward and may sometimes move sufficiently outward to prevent their nicks from properly registering with the wards of the channels of the composing-cylinder, and thus prevent proper distribution. To counteract this tendency and to restore the type to their proper positions in the channels of the distributing-cylinder in case they should move outward, I provide a yielding presser-roll 12, (see Figs. 4 and 5.) which extends vertically at the side of the distributing-cylinder and in such proximity thereto that as the cylinder is revolved and the vertical line of type contained in each of its channels is carried past the roll it will act upon the faces of the type and force inward any which have moved outward beyond the proper position, and thus restore them into position to register with the wards of the channels of the composing-cylinder.

The roll 12 may be made of any suitable yielding material which will not mar the faces of the type, and will preferably be of a length equal or about equal to three-fourths the height of the distributing-cylinder, although it may be longer or shorter. This roll will be journaled in bearings arranged in any suitable manner, the lower bearing 13 being secured to the upper end of the composing-cylinder or to a stationary part of the framework, and the upper bearing 14 being formed in a bracket projecting from any convenient part of the frame-work.

It is found in practice that as the type contained in the channels of the distributing-cylinder are carried over the channels of the composing-cylinder there is a tendency on the part of the lower type in the line to drop slightly at its advance edge before it has been brought entirely into register with the chan-

nel of the composing-cylinder, and when this occurs the type is liable to wedge in the upper end of the channel of the composing-cylinder, and thus may impede the operation of the machine, or, if the type is a very thin one, it is liable to turn and fall downward in the channel of the composing-cylinder edgewise. To obviate this tendency it is desirable to retain one or more type in the upper ends of many channels of the composing-cylinder, the upper surface of the last type which has entered the channel being maintained flush with the top of the cylinder until the next type is ready to enter the channel. By this means a bridge is formed which prevents the tilting of the type as they pass over the channels, as before stated. To accomplish this I provide the upper end of the composing-cylinder with a series of yielding friction holders or fingers 15, which are pivoted upon the outside of the cylinder between the channels *b* and are provided with springs 16, the tendency of which is to rock the holders 15 across the channels. The blocks are so arranged that as they are thus rocked they engage with the sides of the type where they project from the channels at a short distance below the upper end of the cylinder, as shown in Figs 6, 7, and 8. The pressure thus exerted against the sides of the type is sufficient to arrest them and prevent them from falling to the bottoms of the channels. By this means several type are retained in the upper end of each channel of the composing-cylinder, the upper side of the last type which enters the channel being flush with the top of the cylinder, so as to afford a bridge for the next type passing over the channel. As soon, however, as the proper type arrives above the channel the weight of the line of type above it in the channel of the distributing-cylinder, together with the force of the follower 5 and springs 3, will overcome the friction of the holder 15 and force said type and the ones beneath it downward in the channel of the composing-cylinder. As the type are thus forced downward in the channel of the composing-cylinder they are successively released from the friction of the holder 15 and fall to the bottom of the channel, the holder 15 being properly formed upon its bearing edge to release the type at the proper time.

It is obvious that the construction of the holders may be varied considerably without departing from the invention so long as they provide yielding frictional surfaces to support the type.

In machines of this class it has heretofore been found desirable, in order to prevent the thinner type from being turned and either binding or falling edgewise in the channels of the composing-cylinder, to provide the type with a foot-nick and to provide the channels of the composing-cylinder with a corresponding ward, which entered the nick, and thus prevented the type from turning. This has been found objectionable in practice for sev-

eral reasons, and I have found that the necessity for the foot-nick and foot-ward can be obviated and better results secured by providing those channels of the composing-cylinder which are designed to receive the thinner type with a rib or projection 17, arranged to bear against the side of the type, as indicated in Figs. 6, 7, and 9 to 12. The projecting ribs 17 extend nearly the entire length of the channels in the composing-cylinder, but terminate a sufficient distance from the bottom of the channels to permit the type to be ejected. These ribs are constructed with great nicety, so as to leave exactly sufficient space between them and the opposite sides of the channels to receive the width of the type and permit them to descend squarely without permitting them to tilt or turn edgewise. The ribs 17 retreat very slightly at their upper ends, so as to permit the type to enter the channels readily; but for the remainder of their length they hold the type snugly against the opposite walls of the channels. These ribs may be constructed in a variety of ways. One form, and that which in many cases will be preferable, is that illustrated in Figs. 6 and 7, in which the rib is formed just within the channel in the same manner as the wards 2. The ribs may, however, be formed of plates set into recesses in the side of the composing-cylinder, as indicated in Figs. 9 and 10, or they may be secured to the cylinder in the manner indicated in Fig. 11 or in the manner indicated in Fig. 12. The constructions illustrated in Figs. 9 to 12 are substantially the same and are the equivalent of the construction illustrated in Figs. 6 and 7.

What I claim is—

1. The combination, with the stationary composing-cylinder and the rotating distributing-cylinder, each having vertical type-channels, of the spiral springs 3, located in the channels of the distributing-cylinder and extending into lateral recesses in the sides of said channels, and the followers 5, recessed or cut away, so as to extend upward behind the springs, substantially as described.

2. The combination, with the stationary composing-cylinder and the rotating distributing-cylinder, each having vertical type-channels of the spiral springs 3, located in the channels, of the distributing-cylinder and extending into lateral recesses in the sides of said channels, the followers 5, recessed or cut away upon their upper sides, and the blocks 7, interposed between the springs and followers, substantially as described.

3. The combination, with the stationary composing-cylinder and the rotating distributing-cylinder, each having vertical type-channels, of the followers 5, recessed upon their upper sides, the blocks 7, entering said recesses and lateral recesses 6 in the type-channels, and the spiral springs 3, seated in said recesses 6 and acting upon the followers through the blocks 7, substantially as described.

4. The combination, with the stationary composing-cylinder and the rotating distributing-cylinder, of the vertically-arranged yielding roll 12, located at the side of the distributing-cylinder and extending the length of the lines of type in the cylinder and acting to force the lines of type back into the channels of the cylinder as the latter revolves, substantially as described.
5. The combination, with the composing and distributing cylinders, each having vertical type-channels, of the yielding holders 15, located on the composing-cylinder and acting against the sides of the type to retain them temporarily in the upper ends of the channels, substantially as described.
6. The combination, with the composing and distributing cylinders, each having vertical type-channels, of the pivoted spring-pressed holders 15, located on the composing-cylinder and acting against the sides of the type to retain them temporarily in the upper ends of the channels, substantially as described.
7. The combination, with the composing and distributing cylinders, each having vertical type-channels, of the ribs 17, located to act against the sides of the type to prevent them from turning as they pass downward in the channels of the composing-cylinder, substantially as described.
8. The combination, with the composing and distributing cylinders, each having vertical type-channels, of the ribs 17, located at or near the fronts of the channels of the composing-cylinder and arranged to act against the sides of the type to prevent them from turning as they pass downward in said channels, substantially as described.
9. The combination, with the channels which receive the distributed type, of the ribs 17, located to act against the sides of the type to prevent them from turning as they pass downward in said channels, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ROBERT W. NELSON.

Witnesses:

J. J. KENNEDY,  
T. H. PALMER.