H. DEGENER.

MATRIX SETTING AND LINE CASTING MACHINE.

APPLICATION FILED JUNE 8, 1911.

1,067,592.

Patented July 15, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

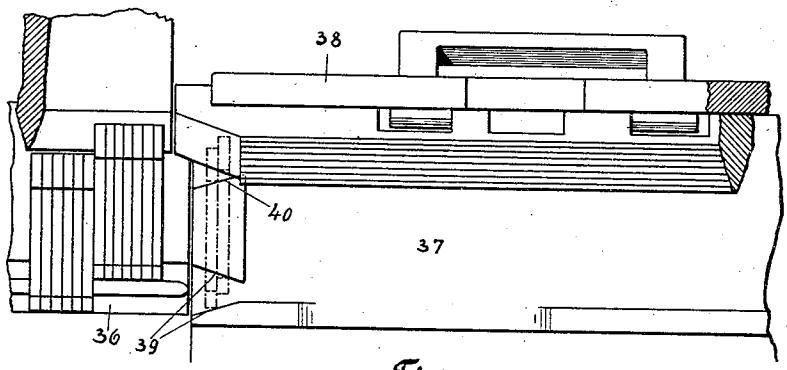


Fig. 2.

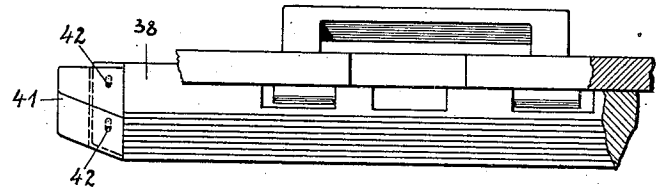


Fig. 3.

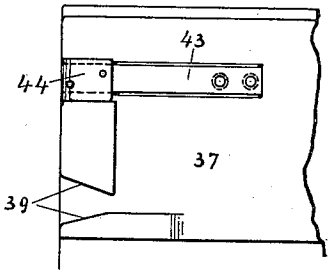
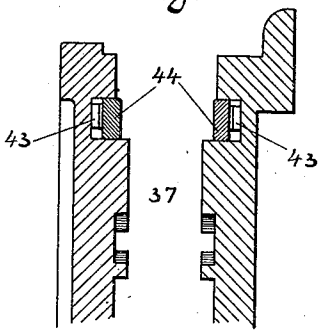


Fig. 4.



Witnesses:

Inventor:

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2 SHEETS—SHEET 2.

Fig. 5.

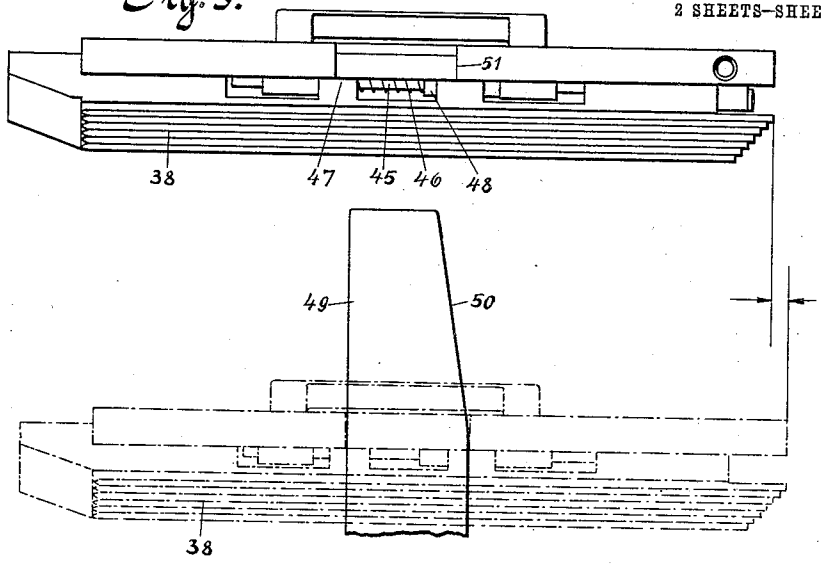


Fig. 6.

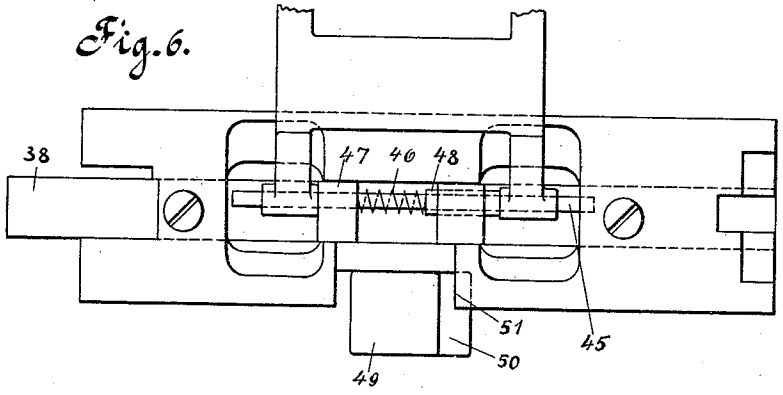
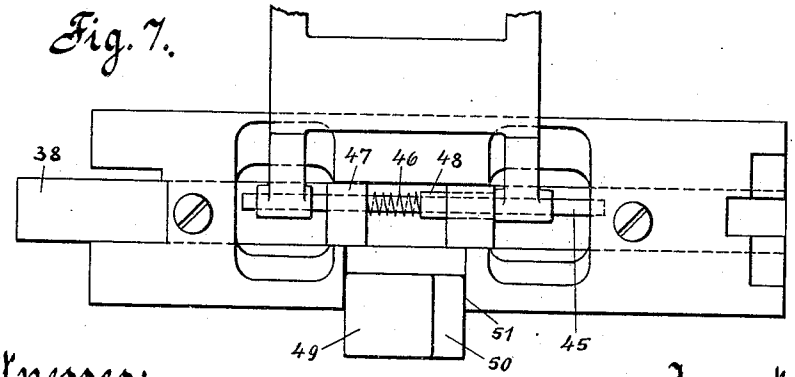


Fig. 7.



Witnesses:

Inventor:

UNITED STATES PATENT OFFICE.

HEINRICH DEGENER, OF BERLIN, GERMANY, ASSIGNOR TO MERGENTHALER LINOTYPE COMPANY, A CORPORATION OF NEW YORK.

MATRIX-SETTING AND LINE-CASTING MACHINE.

1,067,592. Specification of Letters Patent. Patented July 15, 1913.

Original application filed August 22, 1910, Serial No. 578,459. Divided and this application filed June 8, 1911. Serial No. 632,009.

To all whom it may concern:

Be it known that I, HEINRICH DEGENER, residing at 26 Hollmannstrasse, Berlin, German Empire, a subject of the King of Prussia, manager, having invented certain new and useful Improvements in or Relating to Matrix-Setting and Line-Casting Machines, do hereby declare that the following is an exact specification of the same.

This invention relates to improvements in line setting and casting machines of the known Mergenthaler system, and has particular reference to a device for bringing the matrices cast at different levels, for the purpose of distributing into one plane by their lower edge.

This application is a division of an application filed by me August 22, 1910, Serial No. 578,459.

The accompanying drawings show by way of example a construction according to this invention.

Figure 1 shows a front elevation of the device, Fig. 2 a slightly modified construction of the second elevator or lifting bar which brings the matrices to the distributer, Fig. 3 a portion of Fig. 1 of a somewhat different construction and Fig. 4 a cross-section through Fig. 3. Figs 5–7 show the well known lifting bar which conveys the matrices from the line breaking up point to the distributing point and which according to this invention is arranged in a transversely adjustable manner, in order thus to provide a greater amount of space between its front end and the casting carriage in its uppermost position. Fig. 5 shows the lifting bar as well as the stop used for shifting the same, in front elevation, Figs. 6 and 7 are plans of Fig. 5 in the two different positions of the lifting bar.

After the matrix line has been cast, the matrices standing at various levels must be brought into such position that they are all in one plane and can be pushed toward the distributer. Devices are already known in which the casting carriage is provided with fixed ledges intended to keep the matrices at different levels, and in which the matrices are brought into one plane by means of a curved guide only during the transfer to the lifting bar carrying them to the distributer. These devices have, however, the disadvantage that the matrices which must be brought into the bottom position in a short distance, are brought forward with their lugs along a steep curved guide and consequently can be easily damaged. The construction shown in Figs. 1–4 obviates that drawback by reducing by half the distance of travel in the vertical direction, by partial upward and partial downward movement of the matrices. Moreover, means are provided for protecting the matrices from turning over during the pushing of the same to the lifting bar.

The first elevator or casting carriage 36 which guides the matrices to the casting point and thence to the distributing point, is provided in the known manner with fixed ledges holding the matrices at different levels. At the beginning of the guide conduit 37, into which the lifting bar 38 is lowered from the top, is arranged a curved guide 39. Unlike former constructions, the guide is arranged in such manner that the matrices which are in the bottom position, are raised by the same, and the matrices which are in the upper position, are lowered, so that after passing through the guide, the matrices are brought from the two levels to a middle level. In that way the curves are rendered less steep, and consequently the matrices are less worn. For assisting the guide 39 acting on the bottom matrix lugs, another guide 40 may be provided engaging with the upper matrix lugs.

In order to afford the matrices a suitable guidance immediately on their entering the guide conduit 37, the means shown in Figs. 2 and 3 may be adopted. In Fig. 2, the front portion 41 of the lifting bar is arranged in a vertically adjustable manner. It is guided by means of pins 42 thereon engaging in slots in the main portion and falls by gravity into the bottom position. Owing to its lower position, the arriving matrix comes earlier into contact with the said front portion and is thus guided. In its further advance, the matrix then presses the part 41 again upward. A further means for the better guidance of matrices are the little blocks 44 shown in Figs. 3 and 4, secured to spring blades 43 and moved into the interior of the guide conduit. They are rounded off at the beginning, in order to enable the matrices to enter. On the matrices getting into the conduit they seize

them laterally and prevent them from turning over. The construction according to this invention can be carried out either without one of the safety devices shown in Figs. 2–4, or, if desired, with one or both of them.

Figs. 5–7 show other means for making the gradient of the curved guide as gradual as possible, for bringing the matrices with their foot edge into one plane. This is effected by the known lifting bar conveying the matrices from the line distributing or breaking up place to the distributing place, being made adjustable in front, and making a movement to the right, just before it reaches its lowest position, in order thus to provide a larger space between its front end and the casting carriage which is in its highest position. The lifting bar 38 itself is of known construction. It is pivoted to its operating lever by a hinge, so that it can rotate and at the same time move longitudinally on the bolt 45. A spring 46 which rests on the one side against the boss 47 of the lifting bar, and on the other side against the boss 48 of the lever for operating the lifting bar, has the tendency to press the lifting bar to the left, that is to say, into the position which it must occupy, when it arrives in its upper position at the distributer. On the side facing the compositor, the lifting bar is provided with a recess with which a stop 49 can engage, secured to the machine frame. This stop 49 is provided with a cam face 50 coöperating with the edge 51 of the recess. When the lifting bar is moved from its upper position into the position in which it receives the new matrices (shown dotted in Fig. 5), the whole lifting bar is forced to the right owing to the edge 51 sliding along the cam face of the stop 49, the spring 46 being at the same time compressed. Thus, between the casting carriage and the beginning of the lifting bar, a large clearance is formed, utilized for giving a smaller gradient to the curve bringing all the matrices into one plane. During the raising of the lifting bar, the spring 45 brings it back again to its original position, so that it adjoins the distributing bar proper.

Although the various devices referred to have been illustrated and described separately, this course having been adopted principally for purposes of clarity, it will be obvious that they do not necessarily constitute alternative or non-coöperating features. Thus it will be noted that in Figs. 5, 6 and 7 the shiftable bar is illustrated without reference to the guide or channel wherein the matrices are transferred from the casting carriage thereto. Necessarily this guide or channel may be or will be of the form illustrated in Figs. 1, 3 and 4, wherein are provided the cam surfaces for moving part of the matrices in one direction and part in the other, and also the spring blocks or supports which prevent the matrices from turning over. Similarly the shiftable bar may be, if desired, additionally provided with the vertically movable nose or portion shown in Fig. 2. In other words, these various elements may be employed separately if desired, or conjointly, and particularly in the latter instance when it is desired to secure the extreme of care in transferring the matrices to the lifting bar, or to provide a plurality of means, any one of which will effect the desired result in the event of a partial failure of one or more of the others.

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

1. In a matrix setting and line casting machine in combination an elevator transporting the matrix line to the distributing position, containing fixed ledges for holding the matrices in different levels, a lifting device transporting the matrix line to the distributer and a curved guide arranged between the elevator and the lifting device, said guide having two beveled faces raising part and lowering part of the matrices so bringing them to a middle level.

2. In a matrix setting and line casting machine in combination an elevator transporting the matrix line to the distributing position, containing fixed ledges for holding the matrices in different levels and a lifting device transporting the matrix line to the distributer and comprising a lifting bar, the portion of which immediately adjoining the arriving matrix line being vertically movable relatively to the remaining part.

3. In a matrix setting and line casting machine in combination an elevator transporting the matrix line to the distributing position, containing fixed ledges for holding the matrices in different levels, a lifting device transporting the matrix line to the distributer, a guide conduit and lateral spring supports arranged at the beginning of the guide conduit to bear laterally against the matrices.

4. In a matrix setting and line casting machine in combination an elevator transporting the matrix line to the distributing position, containing fixed ledges for holding the matrices in different levels and a reciprocating lifting device transporting the matrix line to the distributer and comprising a lifting bar, said lifting bar effecting a movement to the right during its descent.

5. In a matrix setting and line casting machine in combination an elevator transporting the matrix line to the distributing position, containing fixed ledges for holding the matrices in different levels, a lifting device transporting the matrix line to the dis-

tributer and comprising a lifting bar, said lifting bar being mounted in the lifting device in a transversely movable manner and a stop arranged on the machine frame and engaging with said lifting bar thereby shifting it to the right.

6. In a typographical machine for plural letter matrices, leveling means for the matrices comprising devices whereby part of them are moved in one direction and another part in the opposite direction in bringing them to a common level.

7. In a typographical machine for two-letter matrices, leveling means for the matrices comprising devices whereby those in the upper position are moved downward and those in the lower position are moved upward to bring them to a common level.

8. In a linotype machine, the combination of the first elevator arranged to support the matrices at different levels, the second elevator, and intermediate leveling means whereby matrices in the upper position are moved downward and those in the lower position are moved upward, to bring them to a common level as they pass from the first to the second elevator.

9. In a linotype machine, the combination of the first elevator arranged to support the matrices at different levels, the second elevator, and intermediate leveling devices comprising a guide having two beveled faces to raise the lower matrices and depress the upper matrices, to bring them to a common level in their passage from one elevator to the other.

10. In a linotype machine, the combination of the first or casting elevator, and the second or distributing elevator, the second elevator being formed with a portion in contiguity to the first elevator to receive the matrices therefrom, and the said portion being independently and relatively movable to locate it in correct receiving position.

11. In a linotype machine, the combination of the first elevator, the second elevator, and the intermediate conduit, the said conduit being provided with yielding supports to bear laterally against the matrices in their passage through the conduit.

12. In a linotype machine, the second or distributing elevator provided with means to support the matrices, the said supporting means being mounted so as to be relatively movable endwise in opposite directions to their receiving and delivering positions respectively.

13. In a linotype machine, the combination of the first elevator, and the reciprocable second elevator provided with means to receive the matrices therefrom, the said means being mounted so as to be relatively movable in an endwise direction, with a fixed stop to engage and move said means into proper receiving position with relation to the first elevator.

In witness whereof I hereunder set my hand in the presence of two witnesses.

HEINRICH DEGENER.

Witnesses:

HENRY HASPER,

WOLDEMAR HAUPT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."