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 MEANS FOR LEVELING MATRICES IN TYPOGRAPHICAL COMPOSING MACHINES.  
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952,271.

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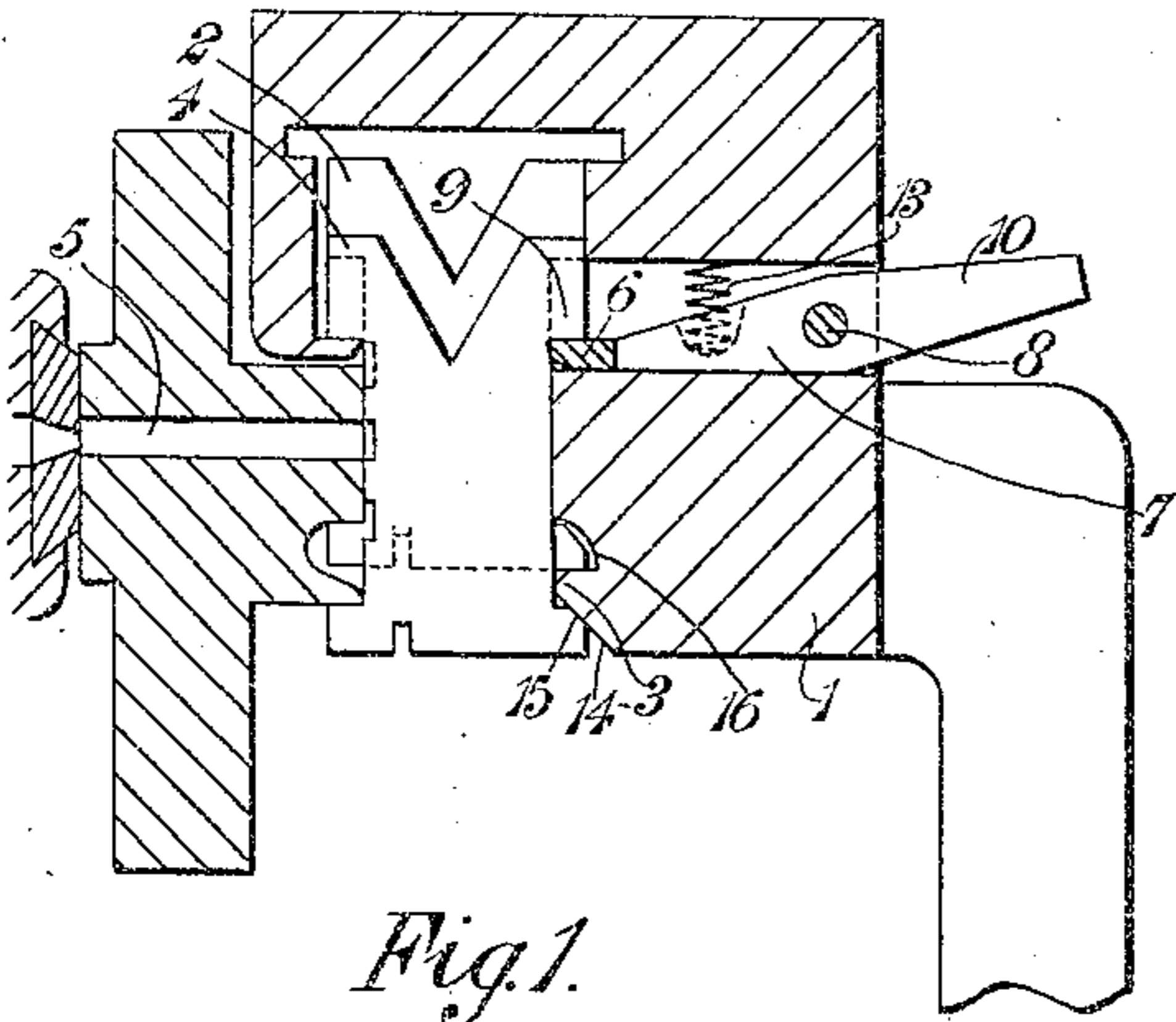


Fig. 1.

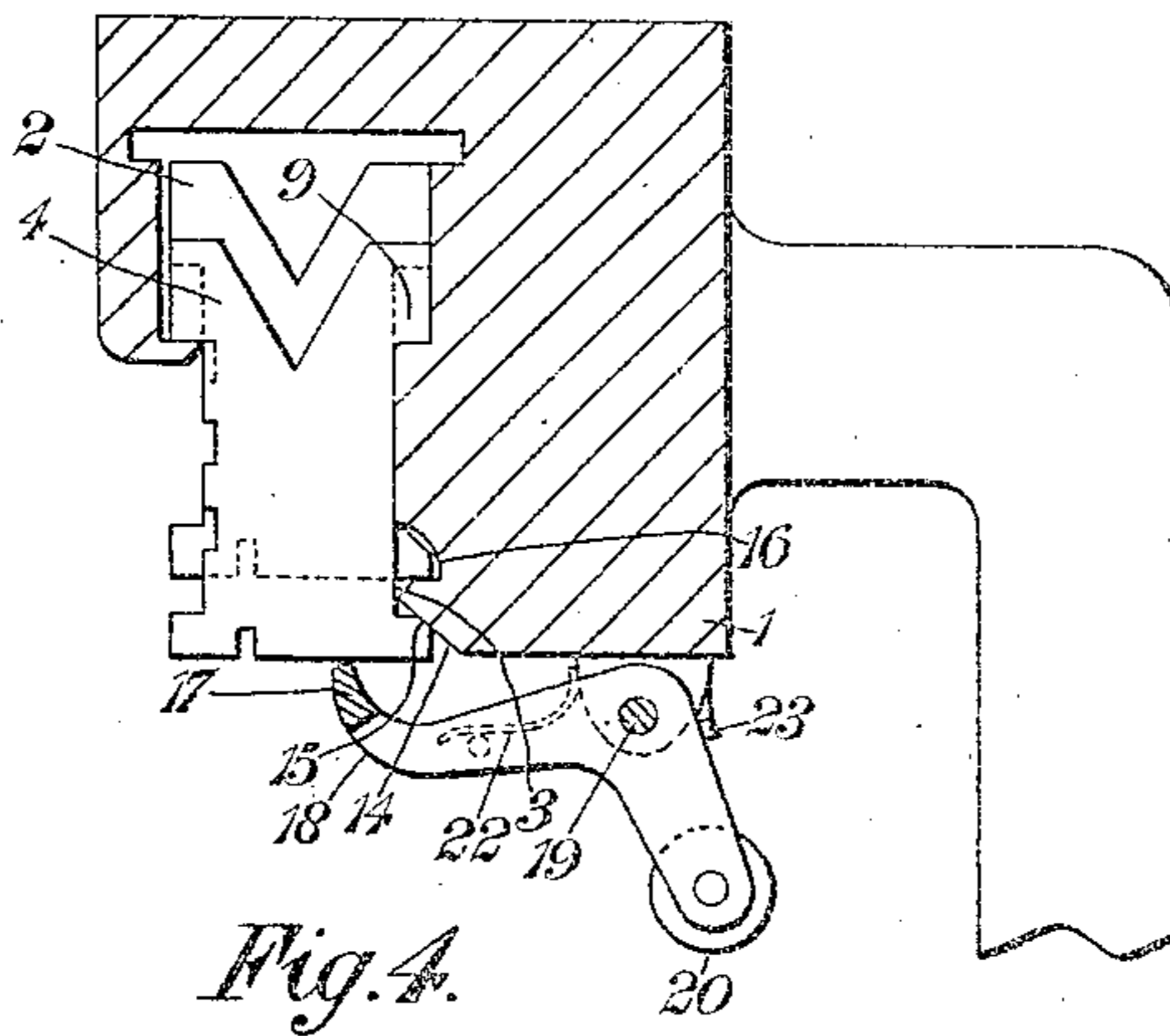


Fig. 4.

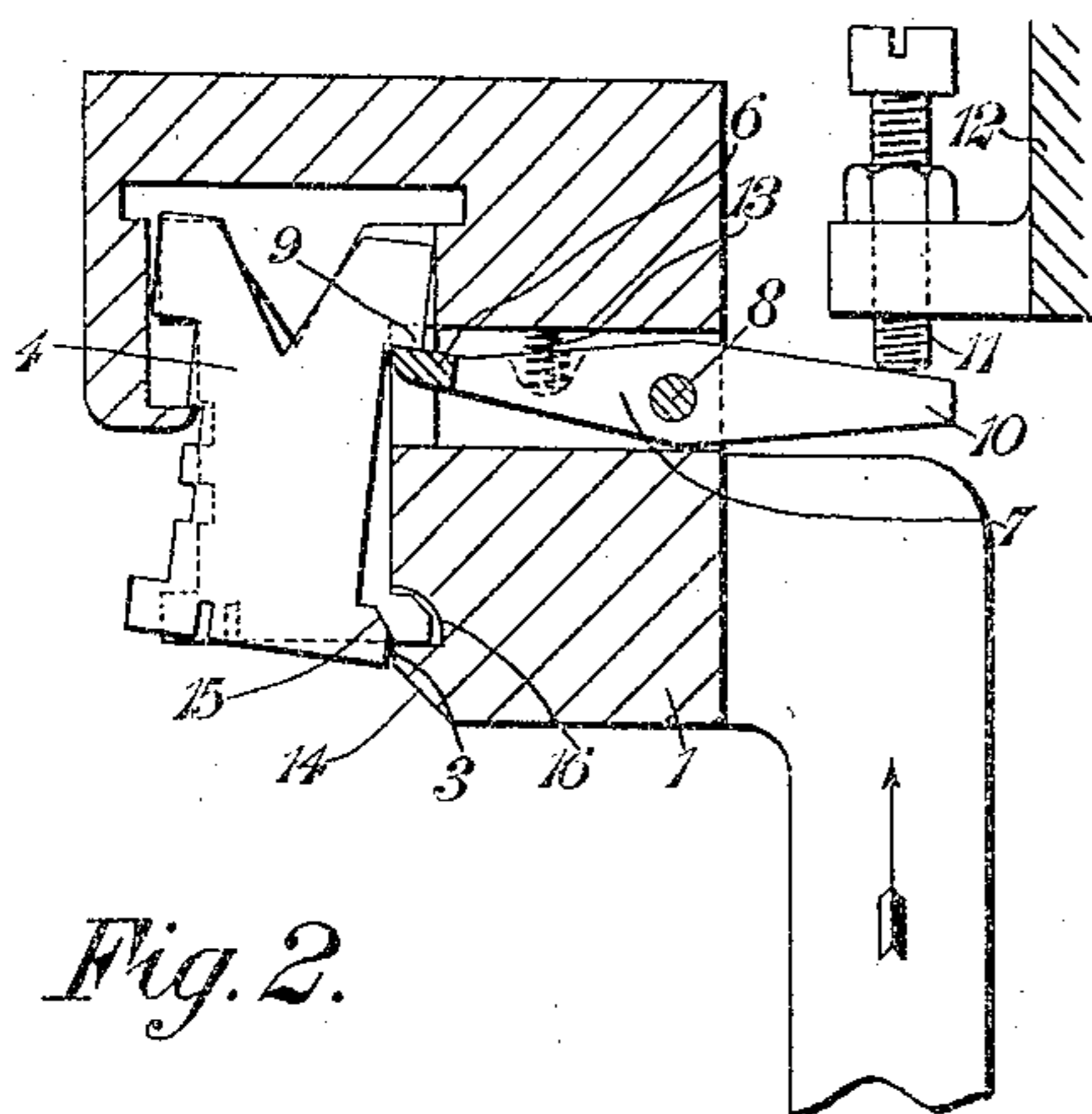


Fig. 2.

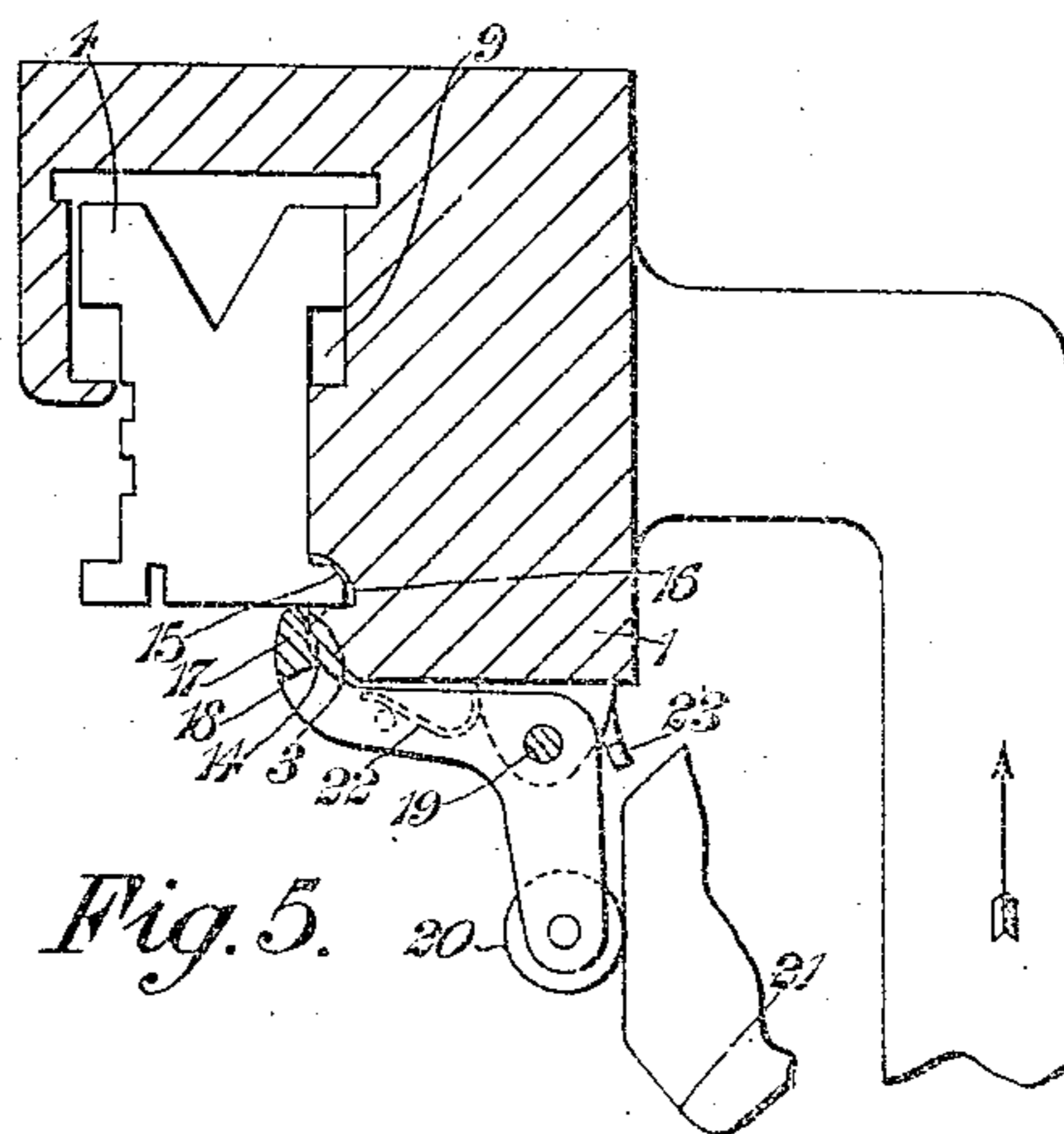


Fig. 5.

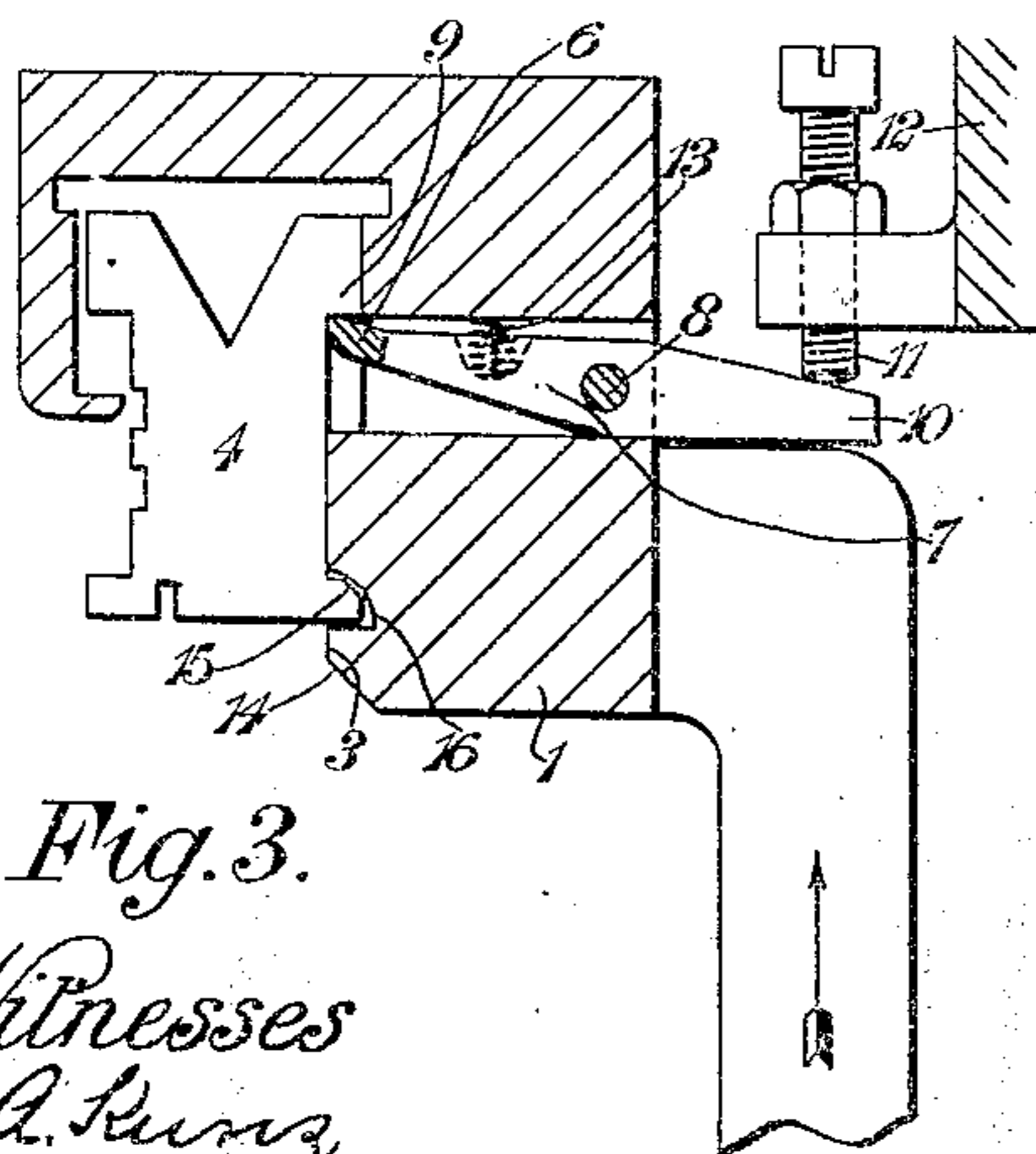


Fig. 3.

Witnesses  
 A. Runz  
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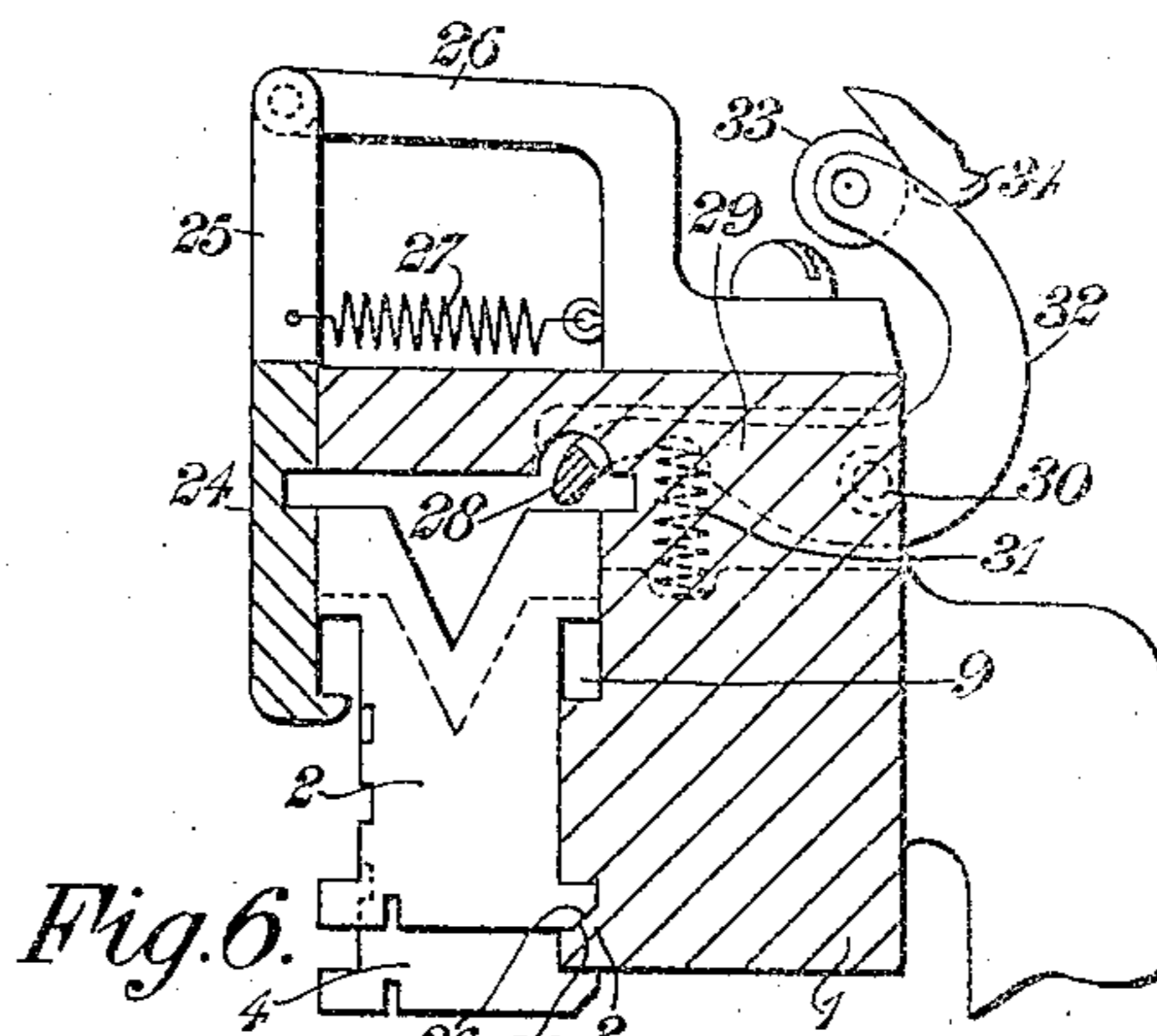


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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MEANS FOR LEVELING MATRICES IN TYPOGRAPHICAL COMPOSING-MACHINES.

952,271.

Specification of Letters Patent.

Patented Mar. 15, 1910.

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To all whom it may concern:

Be it known that I, CARL MUEHLEISEN, a citizen of the United States of America, residing at 88 Chausseestrasse, Berlin, N. 4, in the Empire of Germany, have invented new and useful Improvements in Means for Leveling Matrices in Typographical Composing-Machines, of which the following is a specification.

10 The present invention relates to improvements in means for leveling multiple face matrices in typographical composing machines, after casting therefrom and preparatory to distributing them. It is especially applicable to the Mergenthaler linotype machine described in the specification of Letters Patent 436,532 dated September 16th 1890 when equipped with the alternative face devices of either Patent 547,633 dated 15 October 8th 1895 or 615,909 dated December 13th 1898. For that reason, the application of it to that machine has been chosen for illustration and specification as to details.

25 When the matrices in the composed line have two or more faces (which are then one above the other) they are supported in the so-called first elevator of the machine at as many different levels, and this difference in level must be maintained until the respective linotype has been cast. After it has been 30 cast, the matrices must all be restored to a common level in order that they may be transferred from the first elevator to the second elevator, the latter having only one level and being the first organ of the distributing mechanism. The cooperation between these two elevators, excepting as to difference in level, is described in the specification of Patent 436,532 dated September 16th, 1890.

40 The state of the art at the date of the present invention, in respect of means for restoring the matrices to a common level, is shown by the specifications of Letters Patent 615,909 dated December 13th 1898 above mentioned and 880,264 dated February 25th 1908. In both of these patents, the matrices 45 that are required to present their lower faces to the casting mechanism, are supported, at a higher level than those that are required to present their higher faces thereto, by a ledge under their feet, which ledge is automatically withdrawn between the casting of the linotype and the meeting of the two elevators, the direction of such withdrawal being in the plane of the ledge,

whereby the matrices at the higher level, being then unsupported, drop vertically to the common level. That is, the respective inventions intend them to drop. But they do not always do this—they sometimes stick, 60 remaining at the higher level, thereby balking distribution and stopping the machine.

According to the present invention, the matrices to be leveled (*i. e.*, restored to the common or normal level) are positively 65 swung edgewise clear of the supporting ledge, the latter being relatively stationary instead of being retractable; the leveling may be either up or down; the respective cooperating faces of the supporting ledge and 70 matrices being beveled according to the direction in which this leveling takes place, or the swinging impulse is applied.

The invention is not limited in respect of its constructional details, because these are 75 variable to any extent so long as the positively effected edgewise swing is secured.

Among the possible embodiments of the invention the following three have been 80 chosen for illustration.

In the accompanying drawings:—Figures 1 to 3, are vertical sections illustrating one embodiment of the invention; Figs. 4 and 5, are vertical sections illustrating a second embodiment; and Fig. 6 is a vertical section 85 illustrating a third embodiment.

Referring to Figs. 1 to 3, 1 is the first elevator; 2, one of the matrices in the higher or normal position; 3, their supporting ledge fast to the elevator 1; 4, one of the matrices 90 in the lower or variant position; 5, the mold against which the said elevator 1 is holding the composed line, and both, therefore, in the casting position; 6, a bar or matrix lifter in a cavity in the elevator 1 and held by a 95 lever 7 fulcrumed at 8 in said cavity, under the adjacent top lugs 9 of the matrices 4, the opposite arm 10 of the said lever projecting beyond the front of said elevator; 11, a stop adjustable in the frame 12 of the machine 100 and standing in the path taken by the arm 10 as the elevator 1 moves from the casting position to meet the second elevator; 13, a spring to return the bar 6 to its normal position; 14, a bevel or cam on the bottom edge 105 of the ledge 3; and 15, a bevel upon each of the cooperating lugs of the matrices. This embodiment acts as follows:—After the elevator has moved away from the casting position in which it is represented in Fig. 1, 110

and as it approaches the second elevator, the arm 10 of the lever 7, engages with the stop 11 as shown in Fig. 2, whereby the leveling bar or matrix lifter 6 is raised from the position shown in Fig. 1 to that shown in Fig. 3, passing through that of Fig. 2. As the said matrix lifter rises, it raises the matrices 4, the engagement of their bevels 15 with the cam 14, causing the lower ends of the matrices to swing edgewise to the rear. When the matrix lifter 6 has completed its rise as in Fig. 3, it has raised the matrices 4 to the common or normal level, the beveled lugs of the matrices 4 entering the well-known groove 16 in which also are the corresponding lugs of the matrices 2. The mold 5 moves to the rear immediately after the linotype is cast, and the matrices have a little play in the elevator 1, so that there is nothing to prevent their swinging in the way described. The groove 16 may be rectangular in cross section as heretofore, or it may be of the cross-section shown, the matrices 2 having their corresponding lugs correspondingly shaped. As the elevator 1 descends to its original position, the arm 10 moves out of contact with the stop 11, and the spring 13 depresses the matrix lifter 6, into its normal position.

Referring to Figs. 4 and 5, the former shows the relative positions of the respective parts included in those figures, when they are in the casting position, and the latter, the like, when the elevator 1 has completed its rise. The embodiment now under review, differs from the one previously described in that the leveling bar or matrix lifter engages with the feet of the matrices 4 instead of with one of the top lugs thereof, and the leveling lever is under the elevator 1 instead of within it. Thus, 17 is the matrix lifter; 18, the leveling lever fulcrumed at 19, and carrying 17; 20, a roller on the lever 18; 21, a projection or cam on the machine frame with which the roller 20 engages to make the lever 18 raise the matrices 4; and 22, the spring to return the lever. 23 is a stop operatively fast to the first elevator 1 and serving to limit the downward movement of the lever 18 relatively to the said elevator, as shown in Fig. 4.

The embodiment illustrated in Fig. 6, differs from that illustrated in Figs. 1 to 3, in that the rear wall of the elevator 1 is movable to allow of the matrices 4 swinging edgewise, instead of the play above mentioned, being relied on for that purpose, and further in the variant position of the matrices being above, instead of below, the normal one; and the leveling being downward. Thus, 24 is the rear wall of the elevator 1 separate from it and fast to bars 25 (only one of which is shown) pivoted by their top ends to the rear end of a bracket 26 fast upon the elevator 1. 27 is a spring

pulling on the said wall 24 from the said bracket, to hold it in its working position. 28 is a leveling bar or matrix depressor overhanging the top rear lugs of the higher matrices 2. 29 is the leveling lever fast to the bar or depressor 28; 30, its fulcrum and 31, its returning spring. The outer end 32 of the lever 29 is curved upward and rearward, and carries a roller 33, into the path of which extends a projection 34 on the machine frame, so that, during the ascent of the first elevator 1, the said end is pushed to the rear and downward. 35 is a bevel or cam on the top edge of the ledge 3, and 36, a bevel upon the bottom edges of the cooperating lugs of the matrices. As the bar 28 is depressed in the manner above indicated, it engages and carries with it the elevated matrices, which are simultaneously swung outward to clear the ledge 3 because of the engagement of the bevel-surfaces just described, this swinging movement being permitted and facilitated by the pivoted mounting of the rear wall 24.

If desired the before mentioned bar or matrix lifter 17 and bar or matrix depressor 28 may be provided with, or substituted by, rollers, to reduce the friction at the time at which they are caused to raise or lower the matrices. If desired, also, and although not so shown, the projection or cam 21 may be adjustable relatively to the machine frame by which it is supported.

The terms "matrix" and "matrices" are to be read as including type dies; and the term "elevator," as including any conveyer or means for moving the composed line toward the distributing mechanism, irrespective of its direction of motion.

Having described my invention, I claim and desire to secure by Letters Patent:—

1. In a typographical composing machine, the combination with a supporting ledge adapted to support a series of matrices at a variant level above the normal level, of a matrix depressor adapted to lower the matrices from said variant level to the normal level, and a device adapted to swing the matrices edgewise clear of the ledge while they are being depressed by the said depressor.

2. In a typographical composing machine, the combination with a supporting ledge adapted to support a series of matrices at a variant level above the normal level, a matrix depressor adapted to lower the matrices from said variant level to the normal level, and a device adapted to swing the matrices edgewise clear of the ledge while they are being lowered by the depressor, of a relatively stationary cam with which the matrix depressor makes operative contact for causing it to make its matrix-depressing stroke.

3. In a typographical composing machine, the combination with a conveyer adapted to convey matrices toward the distributing

mechanism, a supporting ledge stationary in such device, adapted to support the matrices out of their normal level therein, and a movable device for moving the matrices to their normal level in the conveyer during their movement toward the distributing mechanism, of a cam on the conveyer adapted to cooperate with the matrices so as to swing them edgewise during such movement.

4. In a typographical composing machine, the combination with a conveyer adapted to convey matrices toward the distributing mechanism, a supporting ledge stationary in such conveyer, adapted to support the matrices at a variant level above the normal level, and a matrix depressor adapted to lower the matrices from said variant level to the normal level, during their movement toward the distributing mechanism, of a cam on the ledge adapted to cooperate with the matrices being lowered, to cause them to swing edgewise clear of the ledge.

5. In a typographical composing machine, the combination with a conveyer adapted to convey matrices toward the distributor and having a pivoted rear wall capable of turning on its pivotal axis to allow of the matrices being swung edgewise in the conveyer,

of a ledge in the conveyer adapted to support a series of matrices at a variant level above the normal level, a matrix depressor adapted to lower the matrices from the variant level to the normal level, and a device adapted to swing the matrices edgewise clear of the ledge while they are being lowered by the matrix depressor.

6. In a typographical composing machine, the combination with a conveyer adapted to convey matrices toward the distributor and having a pivoted rear wall capable of turning on its pivotal axis to allow of the matrices being swung edgewise in the conveyer, of a ledge in the conveyer adapted to support a series of matrices at a variant level above the normal level, a matrix depressor adapted to lower the matrices from the variant level to the normal level, and a cam surface on the ledge adapted to cooperate with the matrices so as to swing them edgewise clear of the ledge.

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

CARL MUEHLEISEN.

Witnesses:

HENRY HASPER,  
WOLDEMAR HAUPT.