No. 659,322. Patented Oct. 9, 1900.

# F. J. RENZ & L. COLLINS.

## CHUTE SPRING FOR MATRIX ASSEMBLING MACHINES, &c.

(Application filed June 9, 1900.)

(No Model.) 2 Sheets—Sheet 1.

*Fig. 1.*

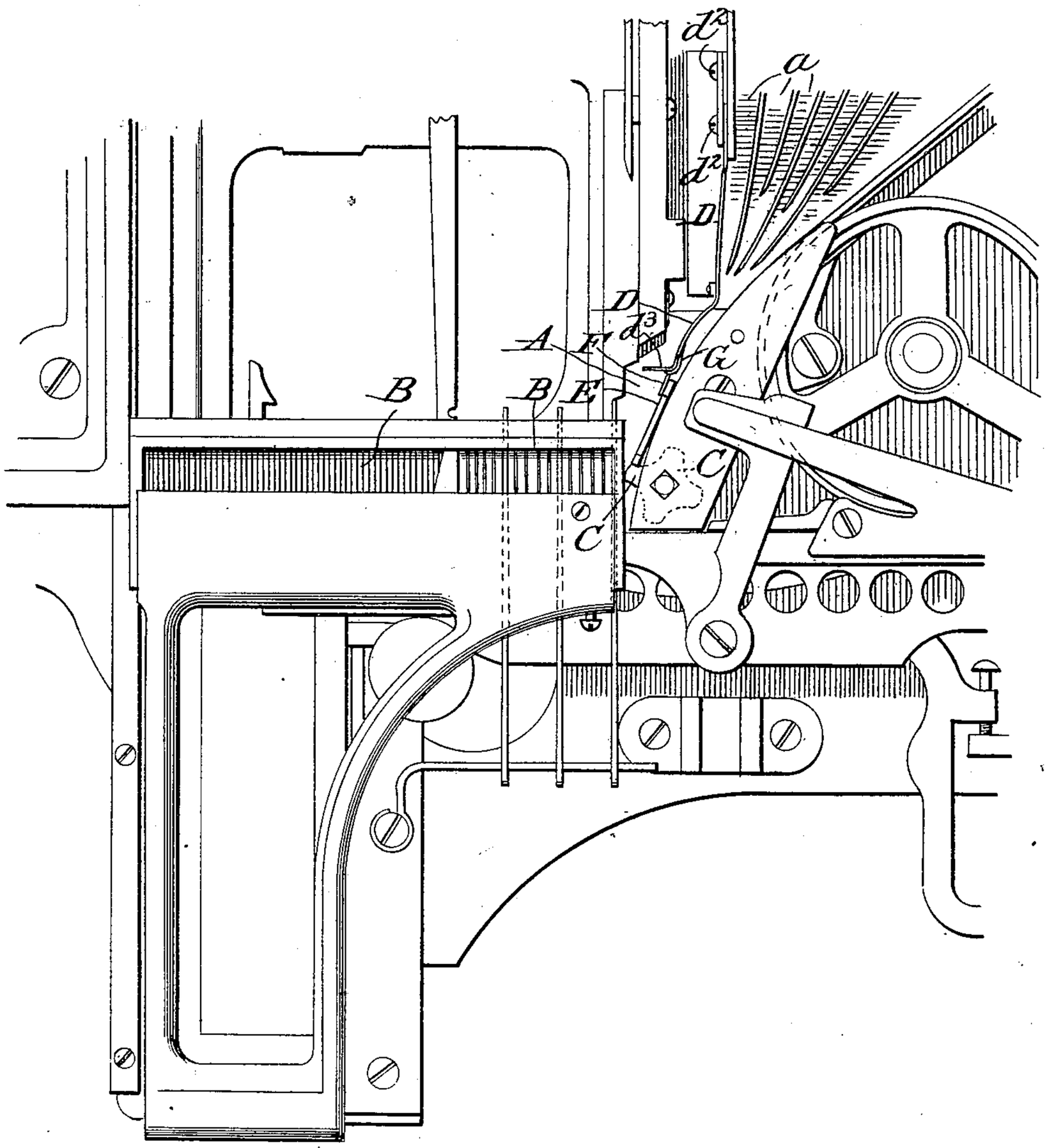


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Fig. 2.

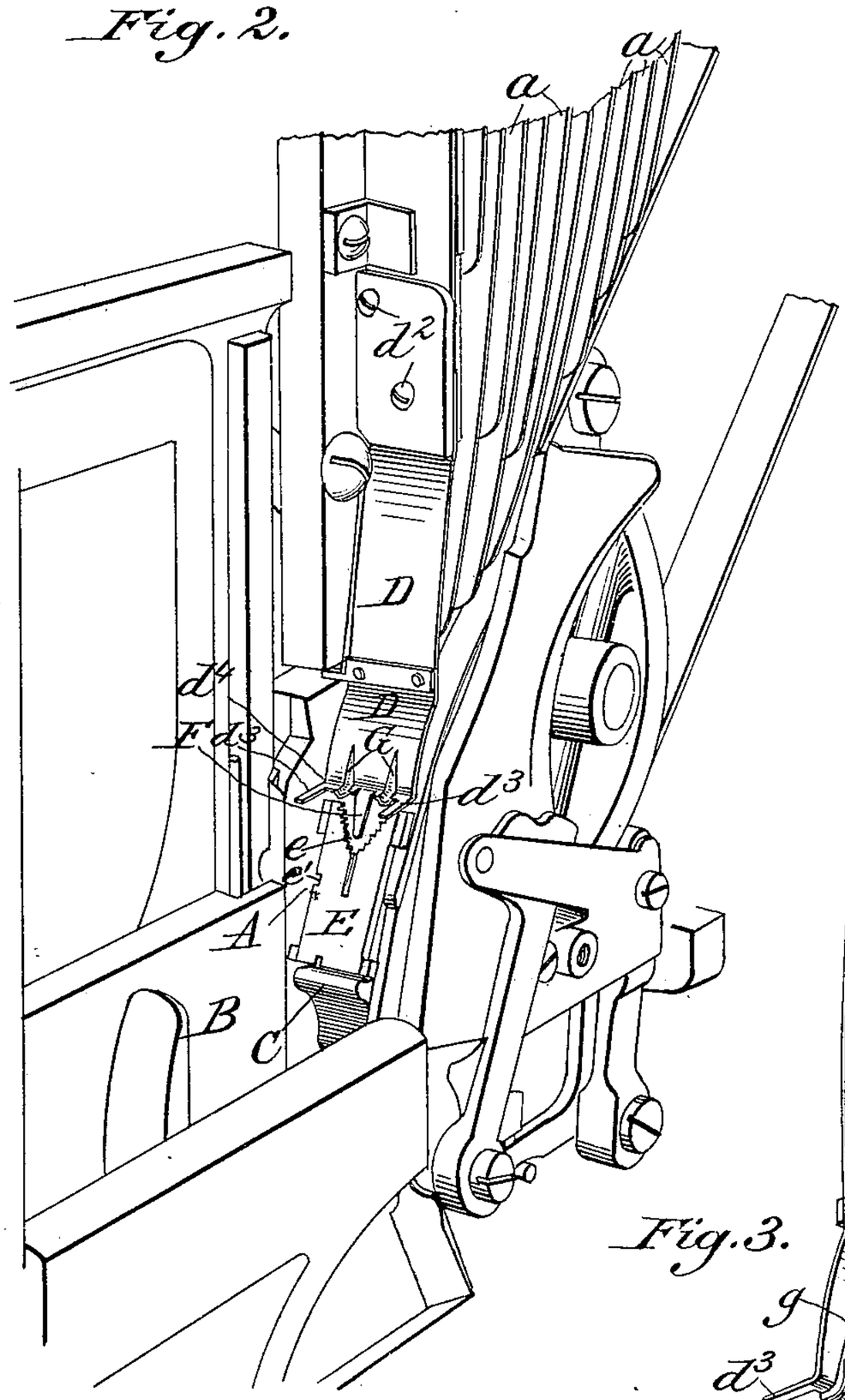



Fig. 3.

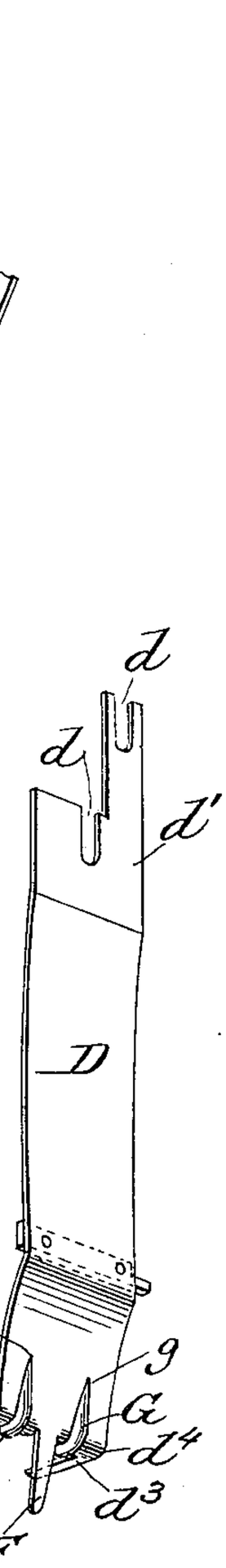



Fig. 4.

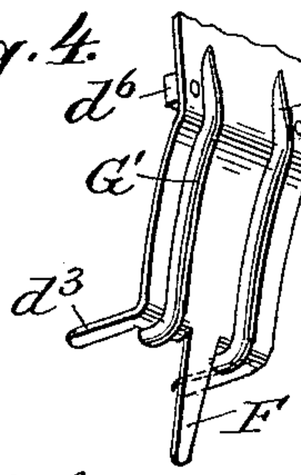



Fig. 6.

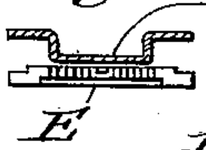
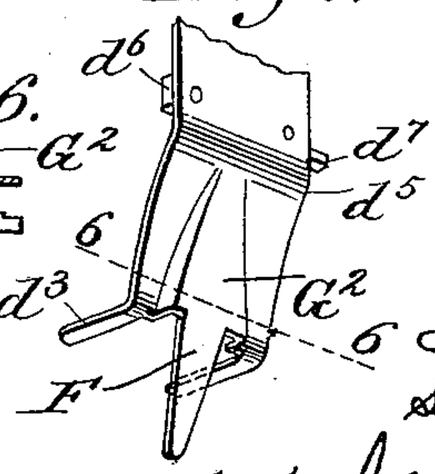



Fig. 5.

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## CHUTE-SPRING FOR MATRIX-ASSEMBLING MACHINES, &c.

SPECIFICATION forming part of Letters Patent No. 659,322, dated October 9, 1900.

Application filed June 9, 1900. Serial No. 19,704. (No model.)

*To all whom it may concern:*

Be it known that we, FRANK J. RENZ and LYNNE COLLINS, citizens of the United States of America, residing at St. Paul, State of Minnesota, have invented certain new and useful Improvements in Chute-Springs for Matrix-Assembling Machines, &c.; and we 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.

The present invention relates to matrix or type assembling machines, and is particularly useful in connection with what are known as "circulating linotype-machines," in which the usual form of matrices or of type having notches or V-shaped recesses at their tops are caused to descend through channels converging to a common throat or assembling-chute, at the bottom of which they are successively urged forward into the usual assembling-galley by a suitable pusher until a line of matrices or type is completed, from which the usual type-bar is cast or otherwise prepared.

This invention is particularly directed to the assembler-chute spring—that is, the spring which forms a portion of the forward walls of the assembler-chute and extends down to within a short distance of the top of the matrices in the assembling-block and which there terminates in a forked horizontal shoulder for guiding the upper edges of the matrices or the like at the beginning of their advance into the assembling-galley.

It is one object of our invention to provide this spring with means whereby the matrices, &c., are prevented from turning in their course and assuming a position transverse to the assembling-chute, whereby they would clog the assembling-chute and interfere with the operation of the machine, and whereby the travel of the matrices, &c., in the correct path from the channels to the assembling-block will be insured with certainty and positively.

Another object of the invention is to prevent injury to the sides of the matrix or type at the point where the character is located, there being a danger under the old form of chute-spring of pressing or indenting the sides of the character by striking the sharp bend back of the fork in the old style of spring.

With the above objects in view a chute-spring embodying our invention is provided with a tongue arranged between the two prongs of the forked shoulder of the spring and extending downward below the same. This tongue effectually prevents the turning of the matrices or the like above referred to and at the same time does not prevent the advance of the said matrices, &c., into the assembling-block, by virtue of the fact that these matrices in their usual form are provided with notches or V-shaped recesses at their tops into which the tongue extends, thereby permitting the said matrices to clear the tongue. At the same time this tongue prevents the matrices from striking against the sharp bend of the fork, whereby the character on the same may receive injury. The latter result is, moreover, aided under this invention by longitudinal ribs or other raised portions arranged at the end or lower part of the spring, as will be hereinafter set forth.

In the accompanying drawings, Figure 1 represents a front elevation of so much of the matrix-assembling portion of a linotype-machine with an assembler-chute spring embodying our invention in position as necessary to illustrate its functions; Fig. 2, a perspective view of these parts; Fig. 3, a perspective view of the chute-spring removed; Figs. 4 and 5, similar views of somewhat-modified forms of chute-springs under our invention; and Fig. 6, a transverse section on line 6 6, Fig. 5.

In the drawings, *a* represents the guideways of a machine for assembling matrices, &c., through which the latter pass on their way from the magazines to the throat or assembler-chute A. At the bottom of the throat A is arranged the usual assembling-block B and pusher—in the present instance in the shape of a star or cam wheel C—which pusher serves to force the matrices or the like into the assembling-block as they successively enter the space between the said pusher and assembling-block, the arrangement, construction, and operation of these parts being well known.

The forward wall of the assembler-chute is in part formed by the assembler-chute spring D, which is the particular subject-matter of our invention.

As seen from Figs. 2 and 3 the assembler-

chute spring D consists of a piece or strip of spring metal—such as brass, steel, or the like—which may be provided in the usual manner with the slots $d\,d$ at its shank portion $d'$ for securing it to the matrix-delivering portion—*e. g.*, by screws $d^2\,d^2$, Figs. 1 and 2. The lower portion of the same is suitably shaped in the usual manner to form one wall of the assembler-chute and is provided with the usual forked shoulder, consisting of the two prongs or shoulders $d^3\,d^3$ at the edges of the chute-spring, which are bent transversely to the direction of the said spring—*i. e.*, in a direction substantially the same as the line of feed of the matrices E as they are pushed forward in the assembling-block B.

Thus far the chute-spring described does not differ from the spring in use. Our invention consists in providing the lower end of the chute-spring with a downwardly-extending tongue F, which is so arranged that it will extend into the V-shaped notch or recess *e*, with which the matrices E are usually provided. Under the present arrangement of matrices this tongue is therefore arranged centrally on the end of the chute-spring, as shown. The object of this tongue is to prevent the matrices E from turning or tilting as their forward or lower ends pass the fork $d^3\,d^3$ and before they reach the proper place in front of the line of matrices in the assembling-block, where they are compelled to maintain their proper position prior to being advanced into the assembling-block. Such turning or tilting of the matrices would block the further delivery of the following matrices and cause delay or result in transposition of matrices. This tongue holds the matrices in their proper position until the pusher C begins to act on them, and at the same time it does not prevent their being turned into the vertical position and advanced into the assembling-block B, because when they have reached the proper point in their descent the tongue F clears the recess *e* of the matrix. Moreover, the said tongue prevents the side walls of the character $e'$ from being pressed, dented, or otherwise injured by rubbing or striking against the bend $d^4$ of the fork $d^3\,d^3$, since said tongue holds the matrix away from such bend or corner at the time the character $e'$ passes such bend. This is a very important function, since the side walls of the characters stamped on the edges of the matrices are very delicate and any indentation of them would in casting allow the metal to flow between the matrices at the point where such indentation was made, thus forming sprues or fins. Besides this, the appearance of the cast and printed letter would suffer.

The latter function of the tongue may be considerably aided in many cases by providing the lower end of the chute-spring D with a raised portion or boss, which may be in the form of longitudinal ribs G G, preferably arranged one on each side of the tongue, as shown in Figs. 2 and 3, such ribs extending from a sufficiently-elevated point *g* on the lower portion of the spring, where they preferably merge in the surface of the spring, down around the lower bend $d^4$ to the lower end of the spring These ribs may be formed in the spring by stamping, embossing, or in any desired manner. The ribs are arranged in such a manner that the character $e'$ on the matrix E extends laterally beyond the same, so as not to come into contact therewith. Another arrangement of the ribs is shown in Fig. 4, where these ribs G′ are represented as extending upward beyond the second bend $d^5$, where the usual cross-bar $d^6$, terminating in the usual stud $d^7$, is secured to the spring, as is well understood. Under this arrangement the danger of wear or injury to the sides or walls of the character on the matrix, which also exists to some extent at the bend $d^5$, is still further reduced. Another modification of the reducing-boss is represented in Figs. 5 and 6, where the middle longitudinal portion $G^2$ of the lower part of the chute-spring is represented as elevated or raised above the surface of the spring, the tongue F forming a prolongation of this raised portion.

By referring to Fig. 6 it will readily be seen how the part of the matrix E bearing the character is held away from the bends in the spring.

It will thus be seen that the device embodying our invention may be considerably modified without departing from the said invention.

The boss or raised portion at the lower part of the spring may have many forms and arrangements, and it may consist of one or several elevations. Such elevations may or may not be formed at the second bend $d^5$, the latter being the preferred arrangement.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In machines for assembling matrices, type and the like, an assembler-chute spring provided with a tongue extending from the end thereof.

2. In machines for assembling matrices, type and the like, an assembler-chute spring provided with a lower forked shoulder in combination with a tongue extending below said fork.

3. In machines for assembling matrices, type and the like, an assembler-chute spring provided with a lower forked shoulder in combination with a central longitudinal tongue extending below said fork.

4. In machines for assembling matrices, type and the like, an assembler-chute spring provided with a raised portion at its lower end.

5. In machines for assembling matrices, type and the like, an assembler-chute spring provided at its lower end with longitudinal ribs.

6. In machines for assembling matrices, type and the like, an assembler-chute spring provided at its lower end with a forked shoulder in combination with a raised portion.

7. In machines for assembling matrices, type and the like, an assembler-chute spring provided at its lower end with a forked shoulder in combination with longitudinal ribs arranged at said lower end.

8. In machines for assembling matrices, type and the like, an assembler-chute spring provided at its lower end with a terminal tongue in combination with a raised portion.

9. In machines for assembling matrices, type and the like, an assembler-chute spring having a bend at $d^4$, and a second bend at $d^5$; provided at the second bend, $d^5$; with a raised portion.

10. In machines for assembling matrices, type and the like, an assembler-chute spring having a lower bend and a lower forked shoulder and a second bend, $d^5$, and provided with a raised portion at the second bend, $d^5$, and at forked shoulder.

11. In machines for assembling matrices, type and the like, an assembler-chute spring provided with longitudinal ribs extending from the forked shoulder beyond the second bend.

12. In machines for assembling matrices, type and the like, an assembler-chute spring provided at its lower end with a terminal tongue in combination with longitudinal ribs.

13. In machines for assembling matrices, type and the like, an assembler-chute spring provided at its lower end with a forked shoulder in combination with a terminal tongue and longitudinal ribs.

14. In machines for assembling matrices, type and the like, an assembler-chute spring provided at its lower end with a terminal tongue in combination with two longitudinal ribs arranged one on each side of the tongue.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK J. RENZ.
LYNNE COLLINS.

Witnesses:
JAMES E. TRASK,
EDITH RICE.