

E. J. HEARST.
 DEVICE FOR STRAIGHTENING MATRICES.
 APPLICATION FILED-AUG. 20, 1908. RENEWED APR. 25, 1911.

997,811.

Patented July 11, 1911.

2 SHEETS-SHEET 1.

Fig. 7.

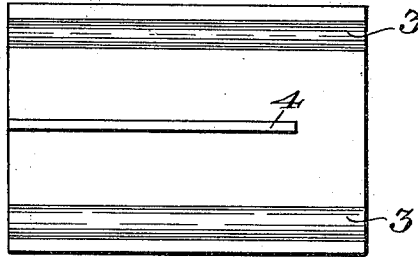


Fig. 1.

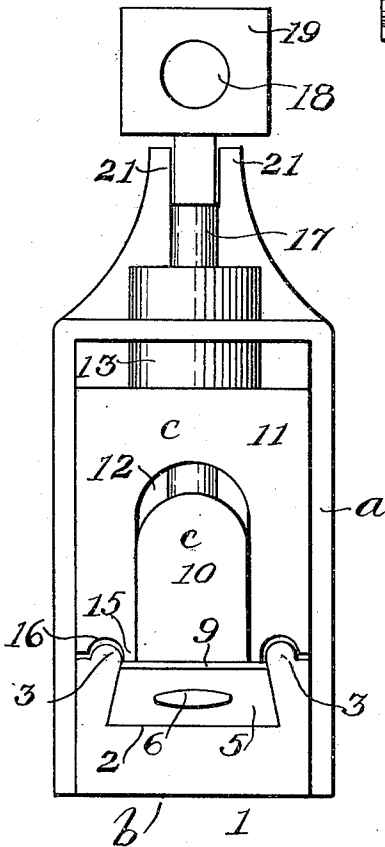
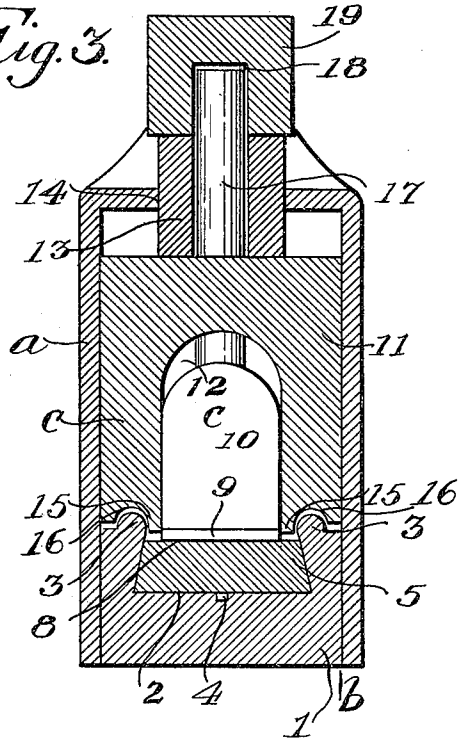


Fig. 3.



Witnesses

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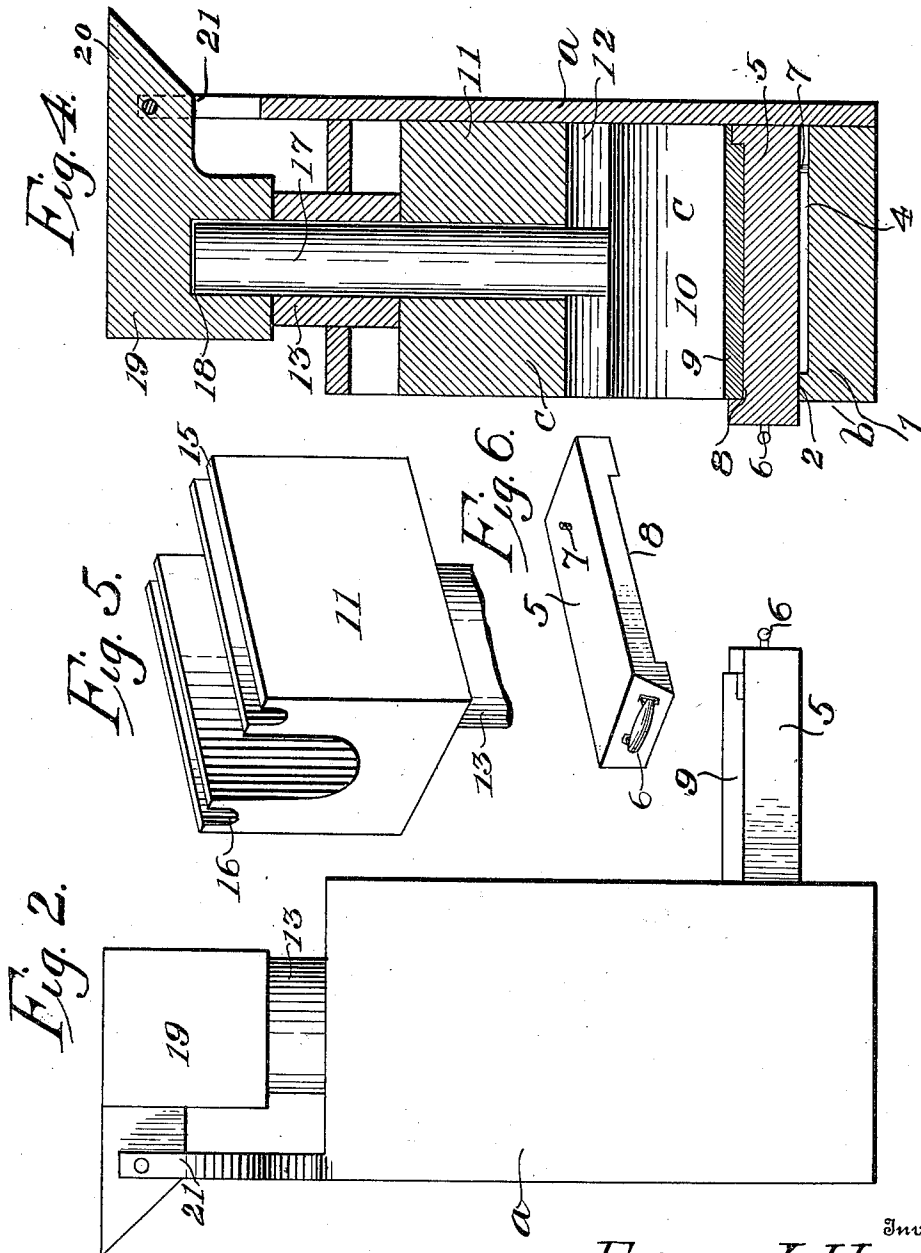
By *[Signature]*
 Attorney

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2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

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DEVICE FOR STRAIGHTENING MATRICES.

997,811.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWIN J. HEARST, a citizen of the United States, residing at High Point, in the county of Guilford, State of North Carolina, have invented certain new and useful Improvements in Devices for Straightening Matrices; and I 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 has reference to devices for straightening matrices.

The matrices used at present in connection with the Mergenthaler and other linotyping machines have an exceedingly short life as is generally known by those familiar with the workings of that class of machines, owing to the fact that they become bent very easily, this being particularly true both of the letters and of the punctuation marks most commonly used, since by reason of their incessant use they become worn, and in consequence, thinner than the matrices for the letters and other symbols whose use is less frequent. When bent, the matrices will stick in the channels of the magazines. Attempts have frequently been made to straighten the bent matrices with a hammer or similar implement, but owing to the fact that this method demands absolute accuracy in handling the implement, such attempts have generally failed, the matrix having been spoiled completely in most instances, by a misdirected blow.

The object of this invention therefore is to provide an exceedingly simple, inexpensive and effective device by means of which a bent matrix, whether thick or worn may be quickly and accurately straightened, to which end the invention, briefly described, comprises an incased anvil and a hammer movable toward and from the same, the hammer consisting of two separately-operated members, the inner of which is designed to straighten the body of the matrix, while the ears of the latter are straightened by the outer member.

The invention further resides in the particular construction of the anvil, which includes as a member a slide movable in a seat formed in the bed of the anvil into and out of position to receive the matrix, and to permit the removal of the same therefrom when straightened.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which corresponding parts or features, as the case may be, are designated by the same reference numerals throughout the several views.

Of the said drawings, Figure 1 is a front elevation of the complete invention, the cap being shown in raised position. Fig. 2 is a side elevation showing the cap lowered and the slide in its projected position. Figs. 3 and 4 are vertical sections taken at right angles to each other. Figs. 5 and 6 are inverted perspective views respectively of the outer member of the hammer, and of the slide. Fig. 7 is a plan view of the anvil bed.

Referring more particularly to the drawings, *a* designates generally the casing of the device, *b* the anvil located within the casing and *c* the hammer which is movable within the casing toward and from the anvil. The anvil comprises a bed portion 1 in the upper face of which is formed a longitudinal seat 2 extending from end to end thereof, the side walls of the seat converging toward each other, the bed being further provided with a pair of rounded longitudinal ribs 3 which are disposed parallel with each other and coincide at their inner edges with the upper edges of the side walls of the seat, the bottom wall of which latter has a longitudinal groove 4 formed therein coextensive with the seat. In this seat is fitted a slide 5 terminating at its front end in a handle 6 by means of which its movements inwardly and outwardly of the casing are effected, the outward movement being limited by means of a pin 7 which is set into the bottom wall of the slide and projects into the groove 4 above referred to. The side walls of the slide likewise converge so as to fit flush against the side walls of the seat. The upper face of the slide has formed therein a seat 8 which, however, terminates short of the ends of the slide, said seat being designed to receive the matrix 9, whose dimensions are virtually the same as those of the seat in question, the side edges of the matrix being disposed in spaced relation to the adjacent ribs 3, owing to the formation of the front and rear pairs of ears with which the matrix is provided.

The hammer by means of which the matrix is straightened comprises separate inner and outer members 10 and 11 each of

which includes a reduced stem portion. The head of the outer hammer member fits loosely within the casing and has formed in the lower portion thereof a longitudinal cavity 12 which extends from end to end thereof, opening through the front and rear faces of said head, the width of the cavity being virtually the same as that of the body portion of the matrix. The upper wall of the cavity communicates intermediate its ends with the lower end of the bore of the stem 13 of said member, the upper end of the stem projecting upwardly through an opening 14 formed in the top wall of the casing, as shown in Figs. 3 and 4. The lower face of the hammer head is provided with a pair of longitudinal shoulders 15 whose inner walls coincide with the adjacent side walls of the cavity above referred to, said shoulders being adapted to extend between the corresponding side edges of the matrix and the adjacent ribs 3, and to rest upon the ears of the matrix, each rib fitting in a longitudinal groove 16, one wall of which coincides with the outer wall of the adjacent shoulder. The inner hammer includes a head portion which fits loosely within the cavity 12 and has a height somewhat less than the latter, to permit its movement within said cavity toward and from the body portion of the matrix. The stem portion 17 of said inner member fits loosely within the bore of the stem of the outer member of the hammer, projecting at its upper end some distance above that of the last-mentioned stem, as shown in Fig. 1, its projecting end fitting loosely in an upwardly-extending opening 18 formed in the end face of a cap 19 whose stem portion 20 is pivoted between a pair of vertical ears 21 formed upon the upper end of the rear wall of the casing. The cap in its normal position rests upon the projecting upper end of the stem 13 of the outer member of the hammer, the extent of the opening 18 in the cap being greater than the length of the projecting portion of the stem 17, the free end of which latter is therefore normally out of contact with the top wall of said opening when the cap is in its lowered position.

It will be understood from the foregoing that when a bent matrix has been placed in the seat 8 in the slide, and the latter returned to its normal or retracted position with respect to the anvil bed, the head of the inner member of the hammer will rest upon the body portion of the matrix, while the shoulders 15 with which the head of the outer member is provided will rest upon the ears of the matrix, the ribs 3 formed upon the upper face of the bed being disposed directly beneath and in alinement with the grooves 16. The cap is then swung downwardly so as to receive the projecting upper end of the stem 17 in its opening 18 and

to rest upon the projecting upper end of the stem 13. If, then, the cap be struck by a mallet or similar implement, it will be apparent that both the body portion and the ears of the matrix will be straightened by the two hammers, the straightening of the ears being effected prior to that of the body portion, owing to the fact that, as above stated, the projecting upper end of the stem 17 has a length somewhat less than the depth or extent of the cap opening. In instances, however, where it is desired to straighten the body portion of the matrix before the ears are straightened, the cap may be raised and the blows of the mallet directed against the projecting end of the last-mentioned stem.

The slide is held both against lateral and vertical movement owing to the beveled formation of its side walls, while the matrix which rests upon the slide is held against endwise movement by the end walls of the seat 8 in which it fits, and against sidewise movement by the shoulders 15 which latter fit in the spaces between the side edges of the matrix and the adjacent ribs 3.

The various parts of the device may be constructed of steel or other material, and the device itself may be made in various sizes.

Further description of the invention and its operation is deemed unnecessary in view of the foregoing, modifications being obviously possible within the scope of the appended claims.

What is claimed is:

1. A matrix straightener comprising, in combination, a member provided with a seat adapted to receive a matrix, a movable member arranged for action upon the ears of the matrix, to hold the latter in place in said seat and to straighten said ears; and a separate movable member cooperating with the first-named movable member and arranged for action upon the body of the matrix, to straighten said body.

2. A matrix straightener comprising, in combination, a member provided with a seat adapted to receive a matrix, a movable member arranged for action upon the ears of the matrix, to hold the latter in place in said seat and to straighten said ears; and a separate member cooperating with and movable independently of the first-named member, and arranged for action upon the body of the matrix, to straighten said body.

3. A matrix straightener comprising, in combination, a member provided with a seat arranged to receive a matrix, and a hammer comprising a movable member arranged for action upon the ears of the matrix, to hold the latter in place in said seat and to straighten said ears, and a separate movable member cooperating with first-named movable member and arranged for action upon

the body of the matrix, to straighten said body.

4. A matrix straightener comprising, in combination, a member provided with a seat arranged to receive a matrix; and a hammer comprising an outer member arranged for action upon the ears of the matrix, to hold the latter in place in said seat and to straighten said ears; and a separate inner member cooperating with the outer member and arranged for action upon the body of the matrix, to straighten said body.

5. A matrix straightener comprising, in combination, a member provided with a seat arranged to receive a matrix; and a hammer comprising an outer movable member arranged for action upon the ears of the matrix, to hold the latter in place in said seat and to straighten said ears; and an inner member movable independently of and cooperating with the outer member and arranged for action upon the body of the matrix, to straighten said body.

6. A matrix straightener comprising, in combination, a member provided with a seat arranged to receive a matrix, and a hammer comprising a hollow outer movable member arranged for action upon the ears of the matrix, to hold the latter in place in said seat and to straighten said ears; and an inner member cooperating with and movable within the outer member and arranged for action upon the body of the matrix, to straighten said body.

7. A matrix comprising, in combination, a member provided with a seat arranged to receive a matrix; and a hammer movable toward and from said member, said member consisting of an outer member formed with a cavity and with a hollow stem having its bore communicating with said cavity, and being arranged for action upon the ears of the matrix, to hold the latter in place in said seat, and to straighten said ears; and an inner member movable within said cavity and provided with a stem fitting in the bore of said hollow stem, said inner member cooperating with said outer member and being arranged for action upon the body of the matrix, to straighten said body.

8. A matrix straightener comprising, in combination, a casing; an anvil located therewithin and adapted to support a matrix; a non-pivoted hammer movable within said casing toward and from the anvil; and a percussive member connected with the casing and arranged for contact with said hammer.

9. A matrix straightener comprising, in combination, a casing; an anvil located therewithin and adapted to support a matrix; a non-pivoted hammer movable within said casing toward and from the anvil; and a percussive member pivotally con-

nected to the casing and arranged to rest upon the stem of said hammer.

10. A matrix straightener comprising, in combination, a casing; an anvil located therewithin and adapted to support a matrix; a hammer movable within said casing toward and from the anvil; and a cap pivotally connected with the casing and arranged for contact with said hammer.

11. A matrix straightener, comprising, in combination, an anvil adapted to support the matrix; a hammer movable toward and from the matrix, said hammer comprising an outer member provided with a cavity and with a hollow stem having its bore communicating with said cavity, and an inner member movable within said cavity and provided with a stem fitting in said bore and projecting beyond the same; and a cap arranged to rest upon the first-mentioned stem and having an opening formed therein to receive the projecting end of the last-mentioned stem.

12. A matrix straightener comprising, in combination, a casing having one wall thereof provided with an opening; an anvil located within the casing directly opposite the opening and adapted to support the matrix; and a hammer movable within the casing toward and from the anvil, said hammer being provided with a stem portion projecting through said opening.

13. A matrix straightener comprising, in combination, a casing having one wall thereof provided with an opening; an anvil located within the casing directly opposite the opening and adapted to support the matrix; and a hammer movable within the casing toward and from the anvil, said hammer comprising an outer member provided with a cavity, and with a hollow stem having its bore communicating with the cavity, said stem projecting through said opening, and an inner member movable within said cavity and provided with a stem fitting in the bore of the first-mentioned stem.

14. A matrix straightener comprising, in combination, a casing having an opening formed in its top wall; an anvil located within the casing directly opposite the opening and adapted to support the matrix; a hammer movable within the casing toward and from the anvil, said hammer comprising an outer member provided with a cavity, and with a hollow stem having its bore communicating with the cavity, and an inner member movable within said cavity and having a stem fitting in said bore and projecting above the same; and a cap pivoted to one of the walls of the casing and arranged to rest upon the upper end of the first-mentioned stem, said cap having an opening formed therein, to receive the projecting end of the last-mentioned stem.

15. A matrix straightener comprising, in

combination, an anvil provided with a seat; a matrix-supporting member slidably fitted in said seat and movable outwardly thereof into position to receive the matrix; and a hammer movable toward and from said member.

16. A matrix straightener comprising, in combination, a casing; an anvil disposed within the casing, and provided with a seat; a slide fitted in said seat and adapted to support the matrix, said slide being movable outwardly of the casing, to receive the matrix; a hammer movable within the casing toward and from the slide; and means for limiting the outward movement of the slide.

17. A matrix straightener, comprising in combination, a casing; an anvil disposed within the casing and provided with a seat having a groove formed in its bottom wall; a slide fitted in said seat and adapted to support the matrix, said slide being movable outwardly of the casing, to receive the matrix; a hammer movable within the casing toward and from the slide; and a pin carried by the slide and extending into said groove, for limiting the outward movement of said slide.

18. A matrix straightener comprising, in combination, a casing; an anvil located within the casing and provided with a seat having beveled side walls, one wall of the seat having a longitudinal groove formed therein; a slide fitted in said seat and adapted to support the matrix, said slide being movable outwardly of the casing to receive the matrix; a hammer movable within the casing toward and from said slide; and a pin carried by the slide extending into said groove, for limiting the outward movement of said slide.

19. A matrix straightener comprising in combination, an anvil provided with a seat; a matrix-supporting member slidably fitted in said seat and arranged for movement outwardly thereof into position to receive the matrix; and a hammer movable toward and from the said member, said hammer comprising separate members for straightening the ears and the body portion of the matrix.

20. A matrix straightener comprising in combination, an anvil provided with a seat; a matrix-supporting member slidably fitted in said seat and arranged for movement outwardly thereof into position to receive the matrix; and a hammer movable toward and from the said member, said hammer comprising separate inner and outer members for straightening the body portion and the ears of the matrix.

21. A matrix straightener comprising in combination, an anvil provided with a seat; a matrix-supporting member slidably fitted in said seat and arranged for movement outwardly thereof into position to receive the

matrix; and a hammer movable toward and from said member, said hammer comprising an outer member provided with a cavity alining with said slide, and with a hollow stem having its bore communicating with the cavity, and an inner member movable within said cavity and having its stem fitting in said bore.

22. A matrix straightener comprising in combination, an anvil provided with a pair of longitudinal ribs arranged in spaced relation to and parallel with each other, the matrix being adapted to fit in the space between said ribs; and a hammer movable toward and from the anvil and provided with a pair of depending longitudinal shoulders disposed parallel with and in spaced relation to each other, and arranged to fit between the side edges of the matrix and the adjacent grooves, for straightening the ears of the matrix.

23. A matrix straightener comprising in combination, an anvil provided with a pair of longitudinal ribs arranged in spaced relation to and parallel with each other, the matrix being adapted to fit in the space between said ribs; and a hammer movable toward and from the anvil, said hammer comprising an inner member for straightening the body portion of the matrix, and an outer member provided with a pair of depending longitudinal shoulders arranged in spaced relation to and parallel with each other, and adapted to fit between the side edges of the matrix and the adjacent grooves for straightening the ears of the matrix.

24. A matrix straightener comprising in combination, an anvil provided with a longitudinal seat, and with a pair of longitudinal ribs arranged in juxtaposition to the side walls of the seat; a member fitted in said seat and adapted to support the matrix; and a hammer movable toward and from said member, said hammer comprising an inner member for straightening the body portion of the matrix, and an outer member provided with a pair of depending longitudinal shoulders arranged in spaced relation to and parallel with each other and adapted to fit in the spaces between the side edges of the matrix and the adjacent ribs, for straightening the ears of the matrix.

25. A matrix straightener comprising in combination, an anvil provided with a longitudinal seat and with a pair of ribs arranged in juxtaposition to the side walls of the seat; a slide fitted in said seat and adapted to support the matrix; and a hammer movable vertically toward and from the slide, said hammer comprising an inner member for straightening the body portion of the matrix and an outer member provided with a pair of depending shoulders arranged in spaced relation to and parallel with each other and adapted to fit in the spaces be-

tween the side edges of the matrix and the adjacent ribs, for straightening the ears of the matrix, the members of the hammer being movable independently of each other.

5 26. A matrix straightener comprising in combination, a casing; an anvil located within the casing and provided with a longitudinal seat and with a pair of longitudinal ribs arranged in juxtaposition to the side
10 walls of the seat; a slide fitted in said seat and adapted to support the matrix, said slide being movable outwardly of the casing to receive the matrix; and a hammer movable vertically within the casing toward
15 and from the slide, said hammer comprising an inner member for straightening the body portion of the matrix, and an outer member provided with a pair of depending longitudinal shoulders arranged in spaced relation to and parallel with each other and
20 adapted to fit in the spaces between the side edges of the matrix and the adjacent ribs for straightening the ears of the matrix.

25 27. A matrix straightener comprising, in combination, a member provided with a seat adapted to receive a matrix, a movable member arranged for action upon the ears of the

matrix to hold the whole in place in said seat and to straighten said ears and a separate movable member cooperating with the
30 first named movable member and engaged for action upon the body of the matrix, to straighten said body and means for utilizing a force to be applied at a single point to actuate both of said members.

35 28. A matrix straightener comprising, in combination, a member provided with a seat adapted to receive a matrix, a movable member arranged for action upon the ears of the matrix, to hold the latter in place in said
40 seat and to straighten said ears; a separate member cooperating and movable independently of the first named member and arranged for action upon the body of the matrix to straighten said body, and means
45 for utilizing a force applied at a single point to actuate both of the aforementioned members.

In testimony whereof, I affix my signature, in presence of two witnesses.

EDWIN JOHN HEARST.

Witnesses:

WM. P. BYNUM, Jr.,
JOHN J. PARKER.

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