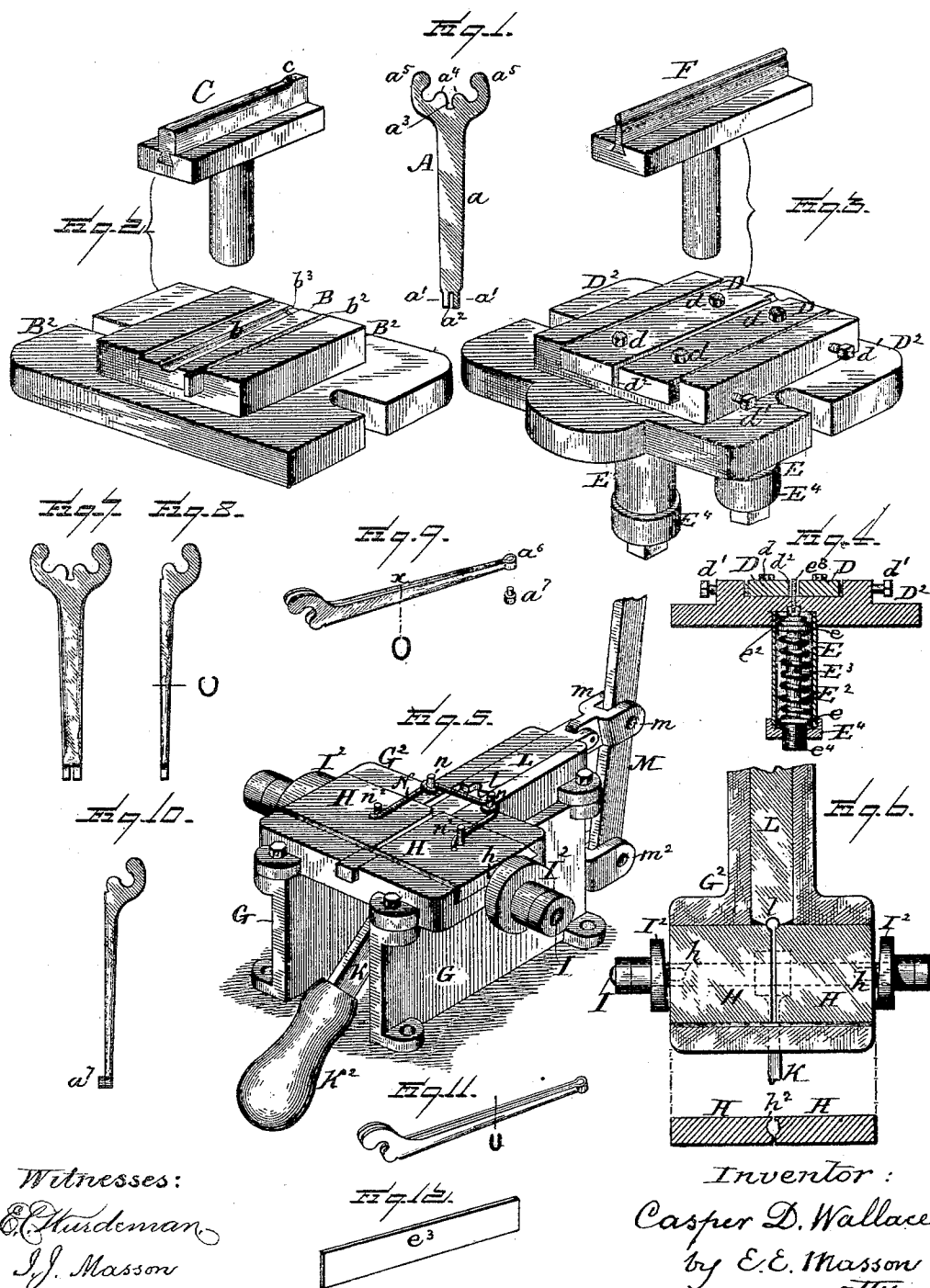


(No Model.)

C. D. WALLACE.
DIE FOR MAKING TYPE WRITER TYPE BARS.

No. 461,100.

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UNITED STATES PATENT OFFICE.

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DIE FOR MAKING TYPE-WRITER TYPE-BARS.

SPECIFICATION forming part of Letters Patent No. 461,100, dated October 13, 1891.

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To all whom it may concern:

Be it known that I, CASPER D. WALLACE, of Brooklyn, Kings county, New York, have invented Improvements in Mechanism for Folding Sheet-Metal Blanks and Producing Therefrom Type-Bars for Type-Writing Machines, of which the following is a specification.

The nature of the invention is in the mechanism for making type-bars for type-writing machines out of light sheet metal; and it is illustrated by the accompanying drawings and the following description thereof.

In the drawings, Figure 1 represents a top view of a sheet-metal blank for a type-bar in accordance with the invention; Fig. 2, a perspective view of a bed-plate and die and plunger to fold slightly the long straight edges of said blank; Fig. 3, a perspective view of another bed-plate and die and plunger to fold the long straight body of said blank in the middle on its longitudinal axis into a trough-like hollow bar; Fig. 4, a sectional view of the second bed-plate and die and of the inclosing case, spiral springs, and holding-blade; Fig. 5, a perspective view of another bed-plate and die and plunger and working levers to fold the hollow trough-like bar into a tubular form and to fold the bifurcated projection from the narrow end into a circular socket; Fig. 6, a top view of the third bed-plate and die and plunger; Fig. 7, a top view of said blank after the first folding, after folding the long straight edges slightly; Fig. 8, a side and sectional view of said blank after the second folding, after folding it in the middle on its longitudinal axis into a hollow trough-like bar; Fig. 9, a perspective view of said blank or bar after the third and final folding, after folding it into tubular form; Fig. 10, a side and sectional view of the tubular type-bar with its type in place; Fig. 11, a perspective and sectional view of the hollow trough-like bar after only two foldings, after one folding of the body of said blank and after folding the bifurcated projection into a circular socket; and Fig. 12, a view of the holding-blade used with the second die.

In the drawings, also, A represents a sheet-metal blank, in form desired, made by a com-

mon die and punch; a , the main tapering body of said blank A; a' , a projection extended from the narrow end of said blank A; a^2 , a slit or bifurcation in the projection a' ; a^3 , a like slit or bifurcation in the wide end of said blank A; a^4 , a projection on each side of the bifurcation a^3 at the wide end of said blank A; a^5 , another projection on each side of and extended laterally and longitudinally from each inner projection a^4 at the wide end of said blank A; a^6 , a circular socket at the narrow end of the body a at the completion of the type-bar, and a^7 a type in the socket a^6 of the completed type-bar from said blank A.

In the drawings, also, B represents a die to fold slightly the two straight edges of the body a of said blank A; B^2 , a bed-plate to hold the first die B; b , a shallow longitudinal groove in the first die B, slightly narrower than the body a of said blank A; b^2 , a key to fasten and hold the first die B in its bed-plate B^2 ; b^3 , a recess in the narrow end of the groove b of the first die B; C, a plunger to work in the groove b of the first die B, and c a protuberance on the narrow end of the first plunger C to work in the recess b^3 of the groove b of the first die B.

In the drawings, also, D represents a die in two parts to fold the body a of said blank A into a narrow bar with a trough-like hollow longitudinally through it; D^2 , a bed-plate to hold the two parts of the second die D; d , a series of screw-bolts to fasten the second die D to its bed-plate D^2 . The screw-bolts pass through holes larger than the bolt-bodies to allow the die to be adjusted to position. d' , is a set-screw extending laterally through each end of each shoulder of the second die D to adjust the die to position; d^2 , a space or opening between the two parts of the second die D; E, a round vertical case or tube attached to the bottom of the second bed-plate D^2 at each end of and across the opening d^2 between the two parts of the second die D; E^2 , a spiral spring within each case E; E^3 , a spindle passing through the coil of the spiral spring E^2 within each case E^3 ; E^4 , a cap on the bottom of each case E; e , a collar on each end of each spindle E^3 and against the spring E^2 , each upper one tight on the spindle and

each lower one loose and resting on its respective case-cap E^4 ; e^2 , a slot through the upper end of each spindle E^3 ; e^3 , a stiff blade on the two spindles E^3 within the slots e^2 to work up and down in the opening d^2 between the two parts of the second die D, and e^4 a hollow set-screw up against each loose collar e within each case-cap E^4 to regulate the tensions of the springs E^2 , and thereby that of the stiff blade e^3 .

In the drawings, also, G represents two side plates; G^2 , a bed-plate on and across the two side plates G; H, a die or pair of dies in a lateral groove in the front part of the bed-plate G^2 to fold the hollow bar a of said blank A into a tubular form; h , a wearing shoulder or projection on the outer edge of each part of the third die H; h^2 , a circular or elliptical groove longitudinally in the inner edge of each part of the die H; I, an axle in bearings through the two side plates or bed-frame G; I^2 , a cam on each end of the axle I to work against the contiguous part of the die H; K, a lever attached to the cam-axle I to work up and down between the side plates G under the bed-plate G^2 ; K^2 , a handle on the outer end of the cam-lever K; L, a plunger in a longitudinal groove in the rear part of the bed-plate G^2 ; l , a circular slot vertically through the front end of the plunger L; m , a link pivoted to the rear end of the plunger L; m^2 , a forked support attached near the bottom to the bed-frame G directly under the upper link m ; M, a vertical lever hinged to said support m^2 and pivoted to the upper link m at the rear of the bed-frame G G^2 ; n , a vertical pin in the top of the bed-plate G^2 on each side of the longitudinal groove of the plunger L and in rear of the groove of the die H; n^2 , a like pin in the top of each part of the die H, and N a stiff spring-wire looped around each rear pin n , with a loose end pressed against the inner side of each front pin n^2 .

The operation of the invention may be described as follows: The sheet-metal blank A is made by a common die and punch, an old and familiar device, and the term "blank" in this specification means a flat thin piece of metal, of any desired form, cut out of a larger sheet of such metal by a common die and punch. Then to form said blank A into a tubular type-bar the first operation is to lay it on the first die B longitudinally over its groove b , drive the plunger C against it, force the body a into the groove, and thus fold the long straight edges slightly, as shown in Fig. 7. The second operation is to lay said blank A, thus slightly folded, on the second die D longitudinally over the opening d^2 and blade e^3 therein, drive the second plunger F against it, force the body a into the opening, and thus fold it into a trough-like hollow bar, as shown in Fig. 8. The function of the blade e^3 with the springs E^2 under it, combined with the plunger F, is to make a vise to grip and hold the body a of said blank A firmly and securely in position, and the third

and final operation is to lay the trough-like hollow bar with its edges slightly folded inwardly on the third bed-plate G^2 between the two parts of the third die H, drive the two parts of said die together, force the body a close into the groove h^2 , and thus fully fold it into the round or elliptical tubular bar, as shown in Figs. 9 and 10.

In the last operation at the same time that the two parts of the third die H are driven together drive the third plunger F against the narrow end of the body a , force the bifurcated projection a^4 into the circular slot l , and thus fold the two parts into the round socket a^6 , as shown in Fig. 9.

The first and second operations are better done with the aid of a power-press; but the third operation can be done conveniently by hand. With one hand lift the cam-lever K K^2 , which will turn the axle I and cams I^2 , and thereby drive together the two parts of the third die H, force the body a into the groove h^2 , and thus fold it into tubular form, and with the other hand at the same time pull forward the vertical lever M, which will drive the third plunger L against the end of the bar a , and thereby force the two parts of the bifurcated projection a^4 into the circular slot l and thus fold them into the socket a^6 . Then reverse these movements, push the vertical lever M back to place, which will draw the third plunger L with it, drop the cam-lever K K^2 , which will turn back the cams I^2 , and release the two parts of the third die H, when the two ends of the spring N will push the die parts back to place, and all will be ready for repeated operation.

To form said blank A simply into a trough-like hollow type-bar, the first operation herein described is dispensed with, and what is herein called the "second" operation becomes the first, and the third becomes the second, which latter in that case is confined simply to folding the two parts of the bifurcated projection a^4 of the body a into the socket a^6 . Simply, in that case, the first die and plunger B C and first operation herein described are not used, and the second die and plunger D F become the first, and the third die and plunger G^2 L, modified to the requirements, become the second, which are all that are needed.

And now, having thus fully described the invention, I claim—

1. For the manufacture of type-writing-machine type-bars, the several dies—to wit, the dies B in connection with the plunger C, the dies D in connection with the plunger F, and the dies H in connection with the plunger L, as shown and described.

2. For the manufacture of type-writing-machine type-bars, the combination of a die in two parallel parts provided with screw-bolts and set-screws to adjust and fasten said parts so as to have a given opening between them, a plunger adapted to work in such opening, and a holding-blade in said open-

ing resting on springs so as to make a tight vise with the plunger and yet to yield to the greater force of the latter.

3. For the manufacture of type-writing-machine type-bars, the combination of a die in two parallel parts adapted to move laterally and provided with an elliptical or circular groove longitudinally in the inner edges thereof, half in one and half in the other, a
10 plunger adapted to move in the line of such

groove and provided with a vertical circular groove in the working end thereof, cams and mechanism to drive the die parts together to form a blank, and mechanism to press them apart when released.

Brooklyn, New York, March 17, 1887.

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Witnesses

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HARRY W. COLLOM.