

H. T. HALLOWELL.
COPYING PRESS.
APPLICATION FILED APR. 25, 1904.

980,248.

Patented Jan. 3, 1911.

2 SHEETS-SHEET 1.

Fig. 1.

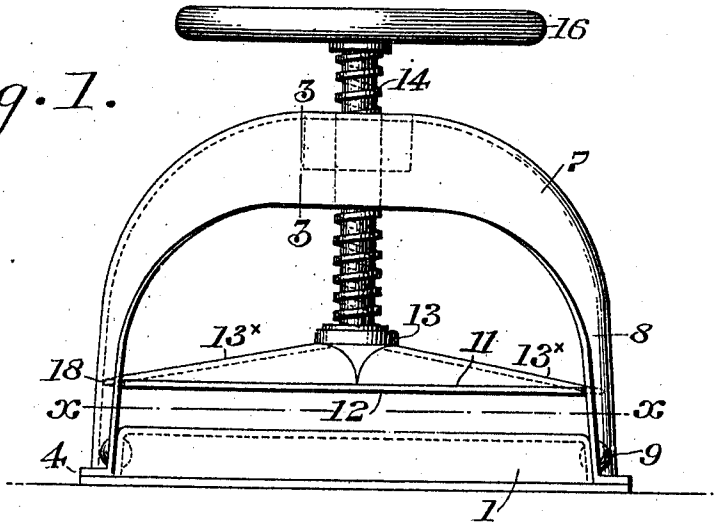
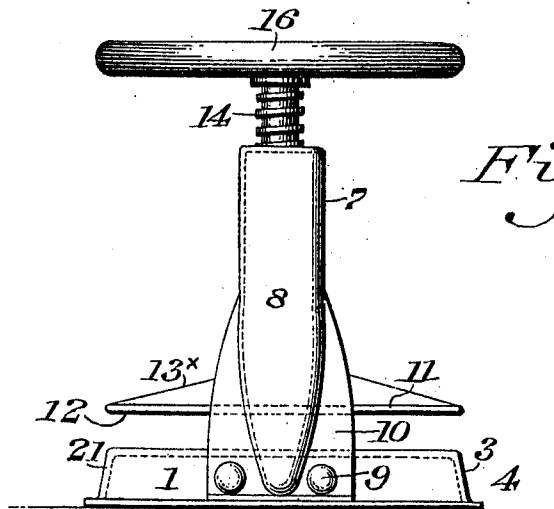


Fig. 2.



Witnesses
P. F. Hagler.
L. Hauville

Inventor
Howard T. Hallowell.
By Niederstein & Fairbanks.
Attorneys

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2 SHEETS-SHEET 2.

Fig. 3.

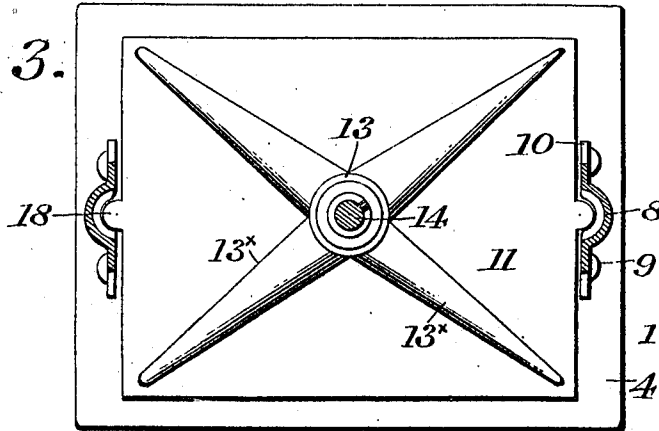


Fig. 4.

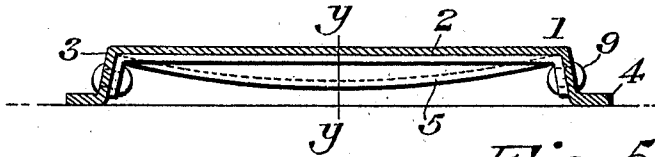


Fig. 5.

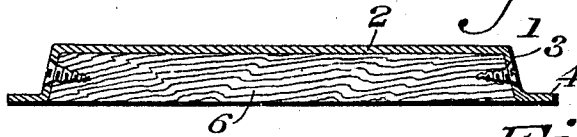


Fig. 6.



Fig. 8.

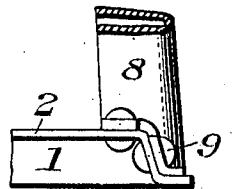


Fig. 7.

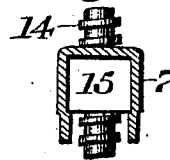
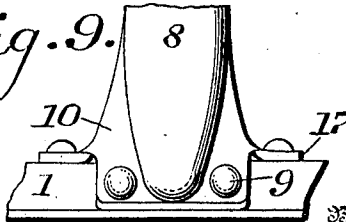


Fig. 9.



Witnesses

O. F. Stagle.
L. Douville

Inventor

Howard T. Hallowell.

By Wiedersheim & Finkbeiner
Attorneys

UNITED STATES PATENT OFFICE.

HOWARD T. HALLOWELL, OF HALLOWELL, PENNSYLVANIA, ASSIGNOR TO STANDARD
PRESSED STEEL COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION
OF PENNSYLVANIA.

COPYING-PRESS.

980,248.

Specification of Letters Patent.

Patented Jan. 3, 1911.

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To all whom it may concern:

Be it known that I, HOWARD T. HALLOWELL, a citizen of the United States, residing at Hallowell, Montgomery county, State of Pennsylvania, have invented a new and useful Improvement in Copying-Presses, of which the following is a specification.

My invention relates to copying presses in which an arch is supported over a bed frame and a platen is guided between the legs of such arch, and in which such platen is moved up and down by means of a screw having suitable means for actuating it and threaded in a nut in the apex of the arch.

It has for its object the construction of such a press, the majority of the parts of which are formed from suitably punched and stamped or otherwise shaped sheet metal, whereby lightness of the structure is combined with strength.

The invention consists in the shaping and forming of the several sheet metal parts and in the means for securing such parts together to obtain a maximum of structural strength with a minimum of weight, and in a structurally simple and economical form.

Figure 1 represents a front elevation of my improved copying press. Fig. 2 represents an end elevation of the same. Fig. 3 represents a horizontal section on the line $x-x$, Fig. 1. Fig. 4 represents a longitudinal section of the bed frame. Fig. 5 represents a longitudinal section of another form of bed frame. Fig. 6 represents a fragmental section of the bed frame on the line $y-y$, Fig. 4. Fig. 7 represents a transverse section of the yoke on the line $z-z$, Fig. 1. Fig. 8 represents a fragmental detail view of the lower end of one leg of the arch and a portion of the bed frame, illustrating another form for connecting said parts, different from that shown in the other figures. Fig. 9 represents a fragmental detail view of the same parts and viewed from a point at a right angle to the view point of Fig. 8.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings: The press has a bed frame 1, cut out and stamped or otherwise shaped out of sheet metal to have a flat and level bed plate 2, and outwardly flaring sides 3, terminating in foot flanges 4, with which the bed frame may rest upon a table or other flat surface and by which it may,

if desired, be secured to such support by screws, clamps or otherwise.

For the purpose of bracing and reinforcing the flat sheet metal bed plate, trusses or braces 5 are secured beneath the plate, and said trusses are cut out and stamped out of sheet metal to be U-shaped in cross section with lateral flanges on their side edges to bear against the under side of the bed plate, as seen in Fig. 6, and are preferably shaped to have their greatest depth or thickness at their middles, tapering toward their ends, as seen in Fig. 4, being thus arched to obtain the greatest strength with the least amount of metal. In the modified form illustrated in Fig. 5, wooden bars 6, secured with their ends in the sides of the bed frame, are employed. An arch, 7, is formed from a strip or plate of sheet metal and is bent by stamping or otherwise shaped to be substantially U-shaped in cross-section with flat side-flanges at and about the apex, as seen in Fig. 7, of the drawings. The edges of the side-flanges are bent outward from about the points where the upper portion of the arch curves and merges into the substantially vertical legs 8, so as to form lateral flanges which increase in width toward the lower ends of the legs, as seen in Figs. 1, 2 and 3, to form foot-flanges, 10, secured to the ends of the bed-frame by bolts or rivets, 9. A platen 11 slides vertically between the legs of the arch and has lugs 18 upon the middles of its end edges, which lugs engage and slide in the segmental or semi-circular grooves formed by the concave sides of the legs of the arch, serving to vertically guide the movements of the platen and to prevent horizontal displacement of the same when actuated by the screws. A boss 13 is provided at the center of the platen to receive and hold against vertical displacement the lower end of a screw 14, while permitting said screw to be revolved by a hand wheel 16, or other suitable means. This screw is threaded through a nut or female-threaded block 15, which is inserted and firmly held against revolving between the side flanges at the apex of the arch. The under side 12 of the platen is substantially level and the upper side of the platen is braced by outwardly tapering truss ribs 13*, extending from the boss and radiating toward the four corners of the platen. The platen is formed from sheet metal and the ribs are likewise

cut and stamped or otherwise formed from sheet metal, either integral with or separate from but secured to the platen.

In Fig. 9 is disclosed a modified form of attachment for the legs of the arch to the base frame, the lower ends of the lateral flanges being partly cut or slitted and the free portions being laterally bent and secured by bolts or rivets to the top of the bed plate.

It will thus be seen that substantially the entire press, with the exception of the screw, its nut and its hand wheel, is constructed from stamped or similarly shaped sheet metal, whereby a very light structure is obtained while great strength of construction is attained by the arched cross sectional shaping and flanging of parts subjected to transverse strains, and trussing or bracing of parts subjected to strains against their flat surfaces.

It will be noticed that the side-flanges of the arch are of the greatest width at or near the apex of the same, where the strain from the screw, acting upon the platen, is greatest in a vertically transverse direction, and that such flanges thereupon are bent outward at their edges to form the laterally extending flanges of increasing width, so as to form gradually increasing braces for the legs to strengthen them against the horizontally transverse strain from the turning of the screw by its hand-wheel in screwing down the platen. A minimum of metal and, consequently, of weight is thus attained in this structure, coupled with a maximum of strength where this is required.

Heretofore, copying presses have generally been constructed from cast metal (iron or steel) with the arch and bed frame usually cast in one piece. Cast metal requires proportionately considerable thickness to possess the necessary strength under strain. This has resulted in such presses being excessively heavy. If any part of the integral arch and bed frame breaks, the entire integral structure is useless and makes scrap.

In my improved press, any part damaged or injured may be renewed while the re-

mainder of the press structure is retained, and the tensile strength and elasticity of rolled and stamped or drawn sheet metal are such that breaking of parts by blow or strain is well nigh impossible.

When wrought metal (iron or steel) has been employed in presses of this character, such metal has been used only for columns, arches and braces, heavy in structure and without the simplicity, lightness and structural strength inherent to pressed, stamped or drawn sheet metal.

In my present construction from suitably shaped sheet metal, the three main structural elements, the bed frame, arch and platen, are constructed from said metal, whereby the structural and economic advantages heretofore pointed out are attained.

I am fully aware that various articles and mechanical structures have been made from pressed, stamped or drawn sheet metal, and patented as such, where corresponding articles or structures had previously been made from cast, drop-forged or otherwise wrought metal, and I make no broad claim for the substitution of sheet metal for cast or wrought metal, but

What I particularly point out and claim as my invention is:—

In a copying press, a bed frame consisting of an integral piece of sheet metal shaped to form a flat bed-plate and downwardly bent and slightly flaring sides and ends, and an arch formed from an integral piece of sheet-metal substantially U-shaped in cross-section and having flat and wide side-flanges at and near the apex and curved downward to form substantially vertical legs, said side-flanges being bent outward from the merging points of the arch and the legs to form laterally projecting bracing flanges of downwardly increasing width upon said legs and secured at their wide lower ends to the ends of the bed frame.

HOWARD T. HALLOWELL.

Witnesses:

HARALD F. GADE,
W. M. STOKES.