

W. J. MULVEY.

PRESS.

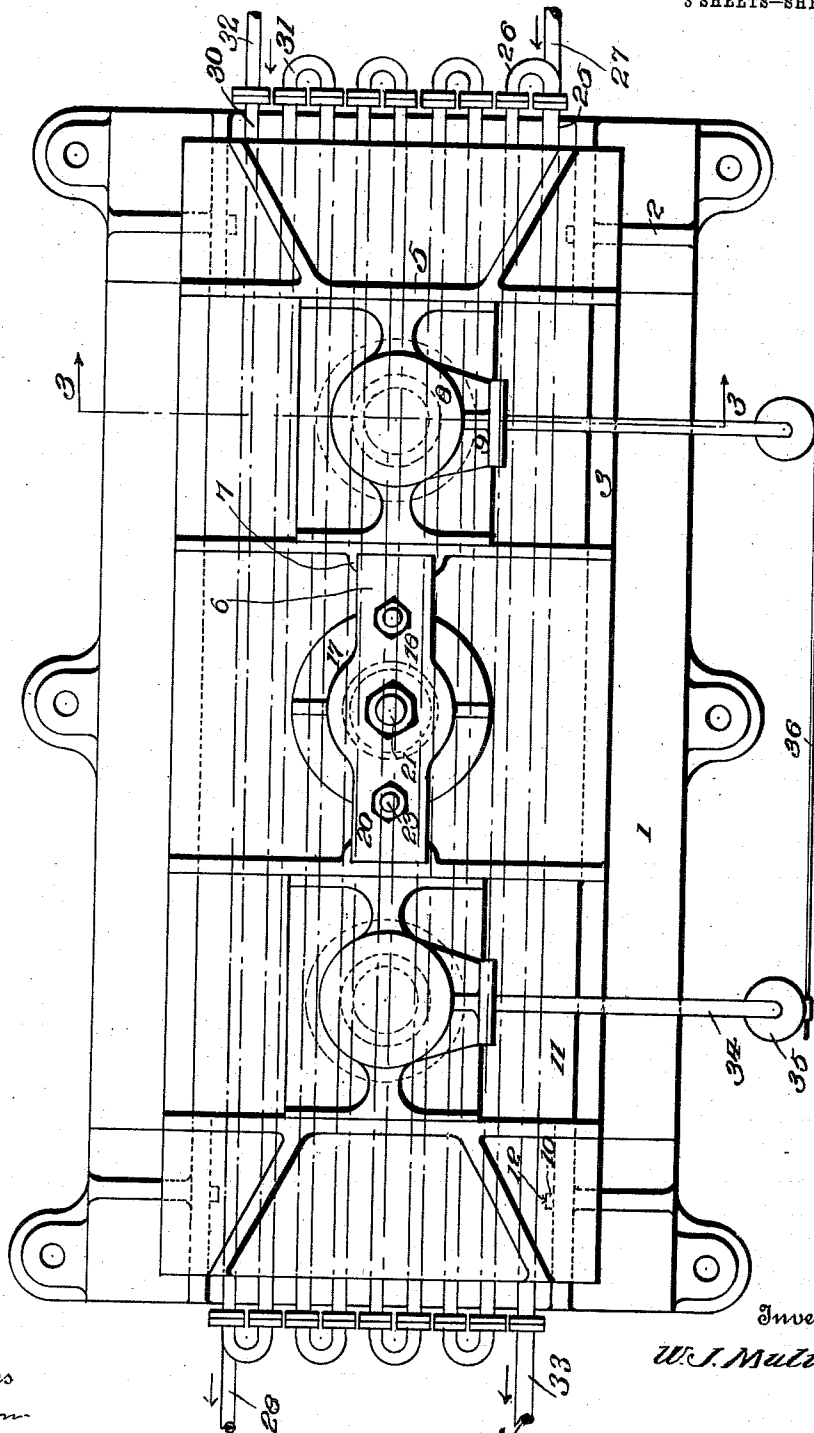
APPLICATION FILED MAY 23, 1911.

1,018,676.

Patented Feb. 27, 1912.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
W. H. Woodman

James H. Tallin

Inventor

W. J. Mulvey

By

W. J. Mulvey

Attorneys.

W. J. MULVEY.
PRESS.

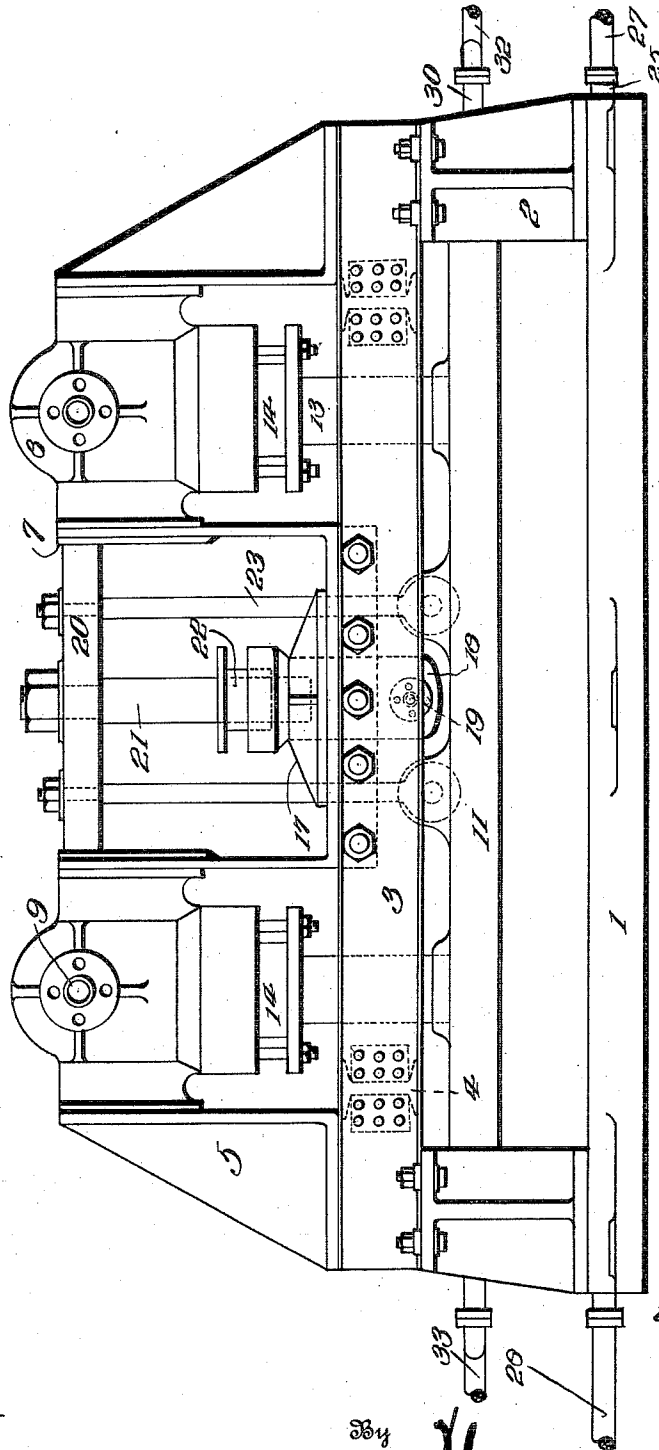
APPLICATION FILED MAY 23, 1911.

Patented Feb. 27, 1912.

3 SHEETS—SHEET 2.

1,018,676.

Fig. 2.



Witnesses
W. H. Harrison.

James H. Fallon.

By

W. J. Mulvey.

Inventor
W. J. Mulvey.

Attorneys.

W. J. MULVEY.

PRESS.

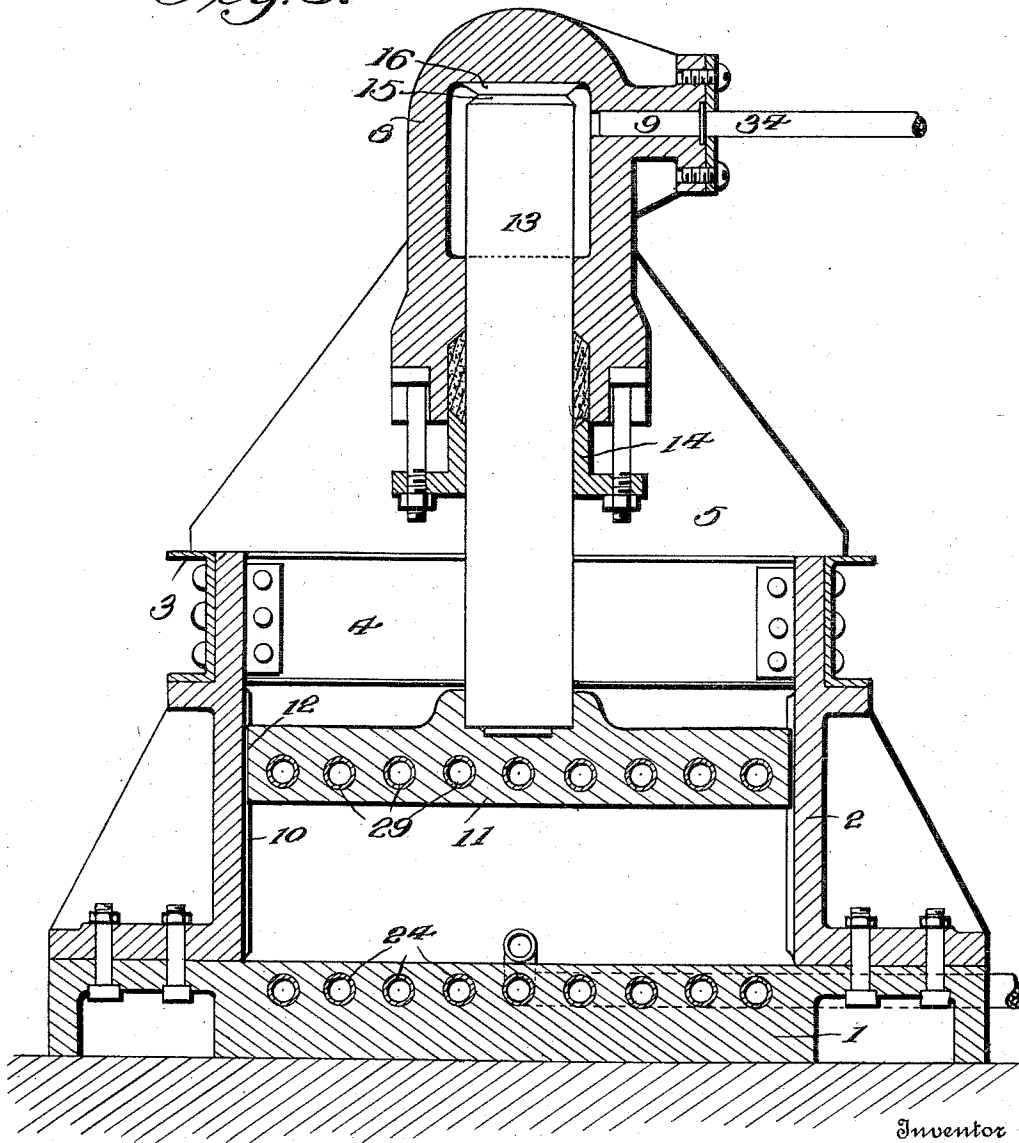
APPLICATION FILED MAY 23, 1911.

1,018,676.

Patented Feb. 27, 1912.

3 SHEETS—SHEET 3.

Fig. 3.



Inventor
W. J. Mulvey.

Witnesses
W. T. Woodson
Juana M. Tallin

By *Hammer* Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM J. MULVEY, OF YOUNGSTOWN, OHIO.

PRESS.

1,018,676.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed May 23, 1911. Serial No. 629,075.

To all whom it may concern:

Be it known that I, WILLIAM J. MULVEY, citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Presses, of which the following is a specification.

This invention has relation to fluid pressure presses, and has for its object to provide a powerful press adapted to straighten or flatten sheet metal and which may be used in conjunction with suitable dies or formers for pressing metallic pieces into desired shapes.

With this object in view the press includes a frame mounted upon a bed, and with a plate mounted for vertical movement within the frame above the bed and connected with plungers slidably mounted in cylinders, into which the fluid pressure is admitted and from which the said pressure is discharged at desired intervals. Means are provided for cooling both the bed and the plate while the press is in operation, and the specific details of these structural features will be described fully hereinafter.

For a full understanding of the invention reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a top plan view of the press; Fig. 2 is a side elevation of the same; Fig. 3 is a transverse sectional view of the press cut on the line 3—3 of Fig. 1.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

The press includes a bed 1 which may be mounted upon a suitable foundation. A frame is supported upon the said bed and includes vertical standards 2 located at the corners of the bed and which support at their upper end portions longitudinally disposed beams 3. The beams 3 are connected together by cross beams 4, and standards 5 are mounted upon the end portions of the beams 3 and the upper ends of the standards 2. A U-shaped yoke 6 is mounted upon the beams 3 midway between the end standards 5 and is provided upon the inner surfaces of its side portions with parallel guides 7. These guides are vertically disposed. Cylinders 8 are supported between the side portions of the yoke 6 and the end standards 5 and are provided in their sides and in the

vicinity of their upper ends with fluid pressure ports 9. These cylinders are of design especially adapted to perform heavy work and will be described in detail hereinafter.

The standards 2 are provided upon their inner surfaces with vertically disposed guides 10, these guides being in the form of ribs of which there is one mounted upon each of the said standards 2. A plate 11 is mounted for vertical movement between the standards 2 and above the bed 1 and is provided in its side edges with vertically disposed recesses 12 which snugly receive the ribs 10 located upon the said standards 2. Plungers 13 are fixed at their lower ends to the plate 11 at points at equal distances from the ends thereof and fit snugly and slidably in the lower ends of the cylinders 8, the said cylinders being provided at their lower end portions with packing boxes and packing box glands 14 of usual pattern. These plungers are of uniform diameter throughout the major portions of their lengths, but are slightly beveled or reduced in diameter at their upper ends, as at 15, for a purpose which will be explained later. The interior diameters of the upper portions of the cylinders 8 are greater than the diameters of the major portions of the plungers 13, and the cylinders 8 are provided at the under sides of their tops with downwardly disposed portions 16 which are shaped at their peripheries somewhat, if not exactly, similar to the reduced ends 15 of the plungers 13, and serve as abutments against which the upper ends of the plungers 13 come in contact when the said plungers and the plate 11 are elevated.

A cap 17 is carried by the yoke 6, and a cylinder 18 depends from the said cap. The cylinder 18 is provided with a fluid pressure port 19, this port being located in the vicinity of the lower end of the said cylinder and in the side thereof. A cross head 20 is received at its ends between the guides 7 at the opposite side portions of the yoke 6 and a plunger 21 is fixed at its upper end to the said cross head at a point midway between the ends thereof. The lower end of the plunger 21 is slidably and snugly received within the cap 17 and the upper end of the cylinder 18, the said cap being provided with a packing box and packing box gland 22 of usual design. Rods 23 are fixed at their upper ends to the cross head 20 at the opposite sides of and equal distances from

the plunger 21, and the said rods 23 are pivotally connected at their lower ends with the plate 11.

The bed 1 is cast with openings extending 5 longitudinally thereof and lined with pipes, as at 24, and nipples 25 are inserted in the ends of these openings with their inner surfaces flush with the inner surfaces of the pipes in the openings. The adjacent nip- 10 ples 25 are connected together by means of U-pipe connections 26 in a manner that transforms the said openings into a continuous manifold passageway throughout the bed 1. A water supply pipe 27 is con- 15 nected with one of the nipples 25 at one end of this manifold and a water discharge pipe 28 is connected with the nipple 25 at the other end of the manifold. It is through this water supply pipe and the manifold and 20 the water outlet pipe that the cooling fluid is admitted for the purpose of maintaining the bed at a desired temperature while heated metal is being operated upon. The plate 11 is also cast with a series of openings 25 lined with pipes 29, and nipples 30 are inserted in the ends of these openings with their inner walls flush with the said pipes. U-shaped pipe connections 31 connect the ad- 30 jacent nipples 30 together so that the bores 29 are transformed into a continuous manifold passageway, similar to that described in connection with the bores 24. A water supply pipe 32 connects with the nipple 30 at one end of the manifold in the plate 11 35 and a water discharge pipe 33 connects with the nipple 30 at the other end of the last said manifold. The pipes 32 and 33 have slip-joint or sliding connection with fixed pipes, the said slip-joint or sliding connection be- 40 ing of any usual or desired form. Fluid pressure pipes 34 are connected with the ports 9 provided in the cylinders 8 and the said pipes 34 are provided with valves 35, the stems of which are operatively connected 45 together by a rod 36, whereby the said valves are turned or operated simultaneously. A fluid pressure pipe (not shown) may be connected with the port 19 in the cylinder 18.

In operation the press works as follows: 50 The sheet or piece to be operated upon is placed upon the bed 1 or upon dies or formers located thereon, while the plate 11 is held in elevated position. This is accomplished by permitting the fluid pressure 55 to pass through the port 19 into the cylinder 18 below the lower end of the plunger 21. Thus the said plunger 21 is moved in an upward direction, carrying with it the cross head 20 and the rods 23 which in turn 60 elevate the plate 11 until the upper ends of the plungers 13 strike the portions 16 at the upper ends of the cylinders 8, when the upward movement of the plate 11 is checked. The plate is held in this position 65 so long as the lower end of the plunger 21

is subjected to the fluid pressure. After the object has been properly positioned upon the bed 1 the fluid pressure in the cylinder 18 is permitted to gradually exhaust, whereby the plate 11 will descend under 70 its own weight and the weight of its attachments until it rests upon the upper part of the object to be operated upon. When this occurs the rod 36 is manipulated, whereby the valves 35 are opened and fluid 75 pressure is permitted to flow through the pipes 34 and passageways 9 into the upper ends of the cylinders 8. This pressure is then exerted upon the upper ends of the plungers 13 and they are forced down, 80 moving with them the plate 11, so that the object upon the bed 1 is subjected to pressure and properly formed. This pressure may be gaged or predetermined and varied by regulating the pressure of the 85 flowing agent. After the article has been operated upon, as indicated, the pressure is permitted to exhaust from the cylinders 8 through the ports 9, pipes 34 and valves 35, when the operation above described may 90 be repeated after removing the article from the bed 1.

Having thus described the invention, what is claimed as new is:

1. A press comprising a bed, a frame lo- 95 cated thereon and consisting of standards mounted at the corners of the bed, longitudinal beams connecting the standards together, cross beams connecting the first 100 said beams together, end standards mounted upon the end portions of the longitudinal beams and the upper ends of the first mentioned standards, a yoke mounted upon the longitudinal beams at equal distances 105 from the end standards, cylinders supported between the side portions of the yoke and the end standards, a plate slidably mounted within the first mentioned standards, plungers slidably mounted in the cylinders and connected at their lower ends 110 with the plate, means for admitting and for exhausting a fluid pressure element to and from the cylinders, a cross head slidably mounted in the yoke, a cylinder supported by the yoke, a plunger attached to 115 the cross head and slidably received within the last mentioned cylinder, means for admitting and exhausting a fluid pressure element to and from the last said cylinder, and rods connected at their upper ends 120 with the yoke and at their lower ends with the said plate.

2. A press comprising a bed, standards mounted upon the corners thereof, longi- 125 tudinally disposed beams connecting said standards together, cross beams connecting the first said beams together, end standards mounted upon the end portions of the said longitudinal beams and upon the upper 130 ends of the first-mentioned standards, a

yoke supported upon the longitudinal beams midway between the end standards, cylinders supported between the side portions of the yoke and the end standards, a plate mounted for vertical movement between the first-mentioned standards, a cylinder supported by the yoke, a cross-head mounted for vertical movement in the yoke, a plunger attached to the cross-head and slidably received within the last-mentioned cylinder, and rods attached at their upper ends to the said cross head and pivotally connected at their lower ends with the said plate.

3. A press comprising a bed, standards mounted upon the corners thereof and having upon their inner faces vertically disposed ribs, longitudinal beams connecting the said standards together, cross-beams connecting the first said beams together, end standards mounted upon the end portions of the longitudinally disposed beams and the upper ends of the first-mentioned

standards, a yoke supported upon the longitudinal beams midway between the end standards, a plate mounted for vertical movement between the first-mentioned standards and having in its side edges recesses which snugly receive the said ribs, cylinders supported above the plate, plungers slidably mounted in the said cylinders and attached at their lower ends to the said plate, a cylinder supported by the yoke, a cross-head slidably mounted in the yoke, a plunger attached to the cross-head and slidably received within the last-mentioned cylinder, and rods attached at their upper ends to the cross-head and at their lower ends to the said plate.

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

WILLIAM J. MULVEY. [L. S.]

Witnesses:

H. A. ERNST,
ALICE McHALE.

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