

SHEET METAL WORKING PRESSES.

Our extract from Knight's "New Mechanical Dictionary" contains several varieties of presses used in sheet metal working. In Fig. 1 a sheet of metal is inserted between the ring, *o*, and the fixed annular die, *f f'*; the intaglio die, *d*, then advances, and its edge acting against *f f'* cuts

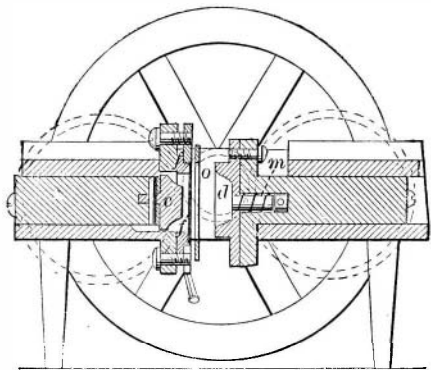


Fig. 1.—Machine for Forming Sheet-Metal Basins, etc.

out a blank, which is then struck into the die, *d*, by a forward movement of the cameo die, *c*; as *d* recedes the article is forced out by a follower, *m*.

In Fig. 2, the intaglio die, *d*, is attached to a yoke connected with the two rods, *cc*, through which it is depressed by the operation of a treadle and connecting devices; on arriving at its lowest position it is temporarily prevented from rising by a rod, *Q*, engaging over the treadle; when the rod is pushed aside springs restore the treadle to its normal position, and the die again rises. The dies are provided with lateral as well as vertical adjustment.

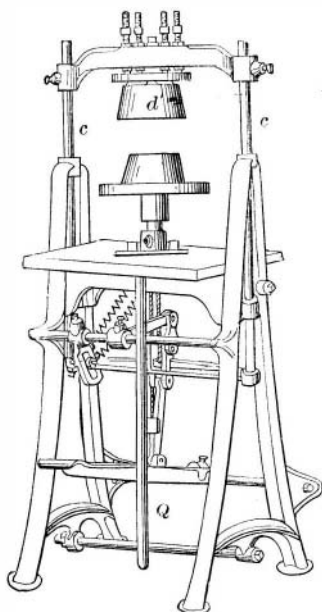


Fig. 2.—Stamping Machine.

Fig. 3 is designed for stamping forks, spoons, and similar articles. One die, as *B*, is hollowed at the part which forms the bowl or prongs, and the other, *A*, at the part which forms the handle, the object being to form as small a burr as possible, and that at the angles instead of centrally. The lower die is vertically adjusted upon wedges operated by set screws. The die holder is used in connection with an ordinary fly or other press.

Machinery for making seamless articles from sheet metal by stamping was devised in France as early as 1840. The first attempts, which were partially successful, were made with the drop press. This, however, it was thought, did not allow sufficient time for the metal to assume the required form without tearing, and the screw press was substituted for it, giving better results. The cam press has also been generally used in France, which has long maintained a pre-eminence in wares of this kind.

Vessels are manufactured from sheet iron, the depth being given at several successive pressings, depending on the depth of the article. The metal is annealed after each pressing, and is finally turned. Such articles are now manufactured in this country from tin plate, annealing being dispensed with, and the goods are prepared ready for market without re-dipping.

Fig. 4 illustrates a machine for forming pans or kettles from blanks. There are several moulds for each pan, the operation being a progressive one; deeper and deeper moulds being used successively so as to stretch the blank more and more, to avoid the tearing which would result from the attempt to stretch the thin sheet metal at a single impulse, even though very moderately and gradually performed. The hollow mould is placed on the flat table, shown in the view, and upon it is laid a blank of sheet metal, or a pile of blanks when several are to be stamped at once. The under side of the blank rests upon the flat upper surface of the hollow die, and the holder (shown with a round opening through it) is brought down upon the blank so firmly that, when the upper die descends, the metal has to expand into the hollow die, stretching out into a smooth seamless pan or kettle, without buckling or corrugating the margin. The

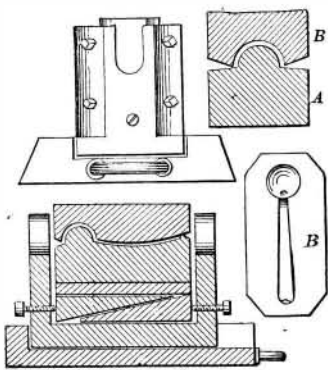


Fig. 3.—Machine for Stamping Forks, Spoons, etc.

upper or salient die is fastened to the headed screw (which is shown above), and is operated when the crosshead descends by means of the pitmen and cranks on the sides of the machine, forcing the blanks into the hollow die as far as the ductility of the metal will permit. The holder is clamped down upon the blanks by means of cams beneath the table. Metallic cartridge cases are made in the same way.

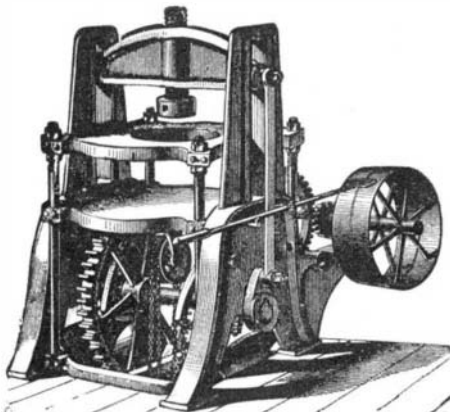


Fig. 4.—Howard's Stamping Press for Sheet Metal Ware.

Fig. 5 is a machine for shaping sheet metal. The plate to be shaped or stamped is placed upon the die, and the attendant depresses the treadle connected with the valve rod of the chest, *c*, whereupon, the water being admitted above the pistons of the four cylinders, the clamp, *b* is forced



Fig. 5.—Grimshaw's Machine for Shaping Sheet Metal.

downward, and fastens the circumferential portion of the plate between its own lower surface and the flat upper surface around the die. The other treadle is then depressed, and causes the central piston to descend and force the follower or stamp downward, so that the sheet metal is pressed

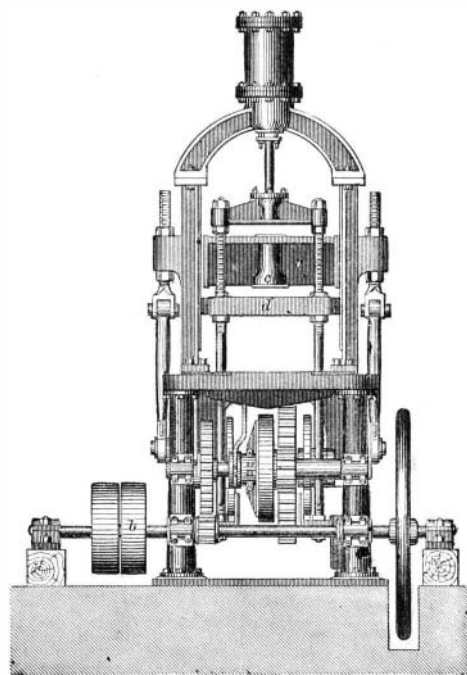


Fig. 6.—Stamping Press for Hollow Ware.

into the die and made to receive a corresponding form. As the sheet metal is thus forced into the die by the pressure of the follower or stamp, its circumferential portions are drawn out from under the clamp, and the strain or tension thus ex-

erted upon the metal effectually insures smoothness in the completed article, and also enables a deeper dish or similar piece of ware to be produced at a single operation. *a* is a casting with four cylinders, and *e* the top plate on which the receiving chests are placed.

The press (Fig. 6) for stamping hollow articles of sheet metal has a crosshead, *a*, reciprocated by connecting rods from crank arms on a horizontal shaft rotated by gearing driven from the fast pulley, *b*. The crosshead receives a convex die, *c*, which works into a counterpart concave die held by the table, *d*, which is suspended by a yoke and rod from a piston in the cylinder above. The latter has a cushion of air in its lower part, so as to give a certain degree of elasticity to the blow, the table and lower die receding slightly before the pressure of the upper die.

The sheet metal drawing press, shown in Fig. 7, consists of an upright frame with vertically reciprocating crosshead, *a*, carrying a blank holder, *b*, containing a reciprocating plunger. The blank holder and plunger are independently operated by cams on shafts driven by a worm and wheel. By the action of the plunger the blank is forced into the die, *c*, which imparts the desired shape. The blank holder is adjustable to adapt the press for drawing different thicknesses of metal.

A sheet metal forming machine is shown in Fig. 8. The

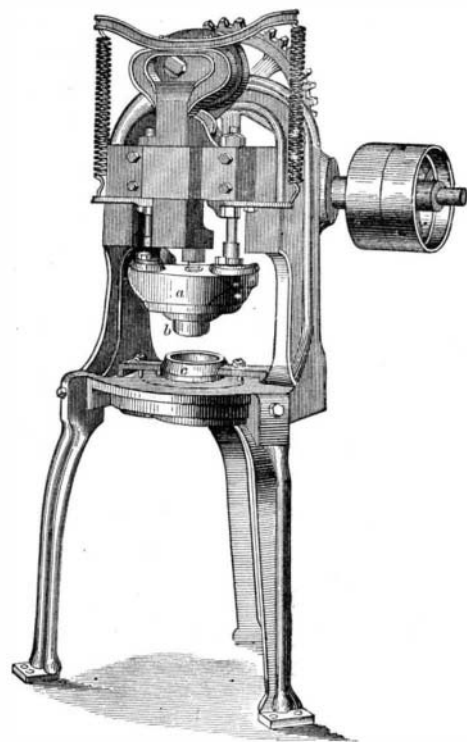


Fig. 7.—Sheet Metal Drawing Press.

upper die, *H*, is hinged to the lower die, *E*, and is lifted to place a sheet of metal in place for stamping, and then thrown over, and the arm, *G*, is secured by a catch. The central part, *F*, of the lower die has hinged side and end formers, *g*, which, when the two dies are drawn downward, descend between guides, *C D*, which throw up the formers,

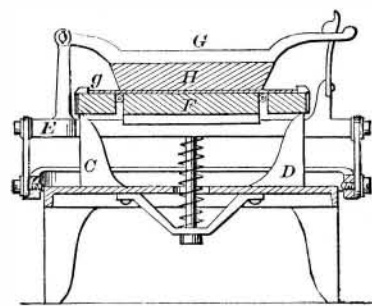


Fig. 8.—Sheet Metal Forming Machine.

g, and bend the metal to the required shape against the upper die, *H*. Square pans are thus produced.

American Institute Exhibition.

Application for space should be forwarded at once to the General Superintendent, room 22, Cooper Union building, New York, and all details arranged through him with as little delay as possible. Persons familiar with the exhibitions annually given by this Institute are aware that one of the great troubles with which the exhibitor has to contend is that of insufficient space; as all applications which comply with the rules are considered in the order of their coming, it is therefore evident that better location is secured by the early than by the late applicant. The Exhibition will open on the 11th day of September.

A Blondinian Mouse.

A correspondent gives an interesting account of a mouse that crossed from one building to another on a fire telegraph wire, over a distance of some four or five rods. Although the buildings were among the highest in Chicago, the feat was performed with perfect ease and grace. When near the observers he was frightened, when he carefully turned about and returned to the roof from which he came.