H. A. GRIMM.

SHEARING MACHINE.

APPLICATION FILED FEB. 23, 1916.

1,250,858.

Patented Dec. 18, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

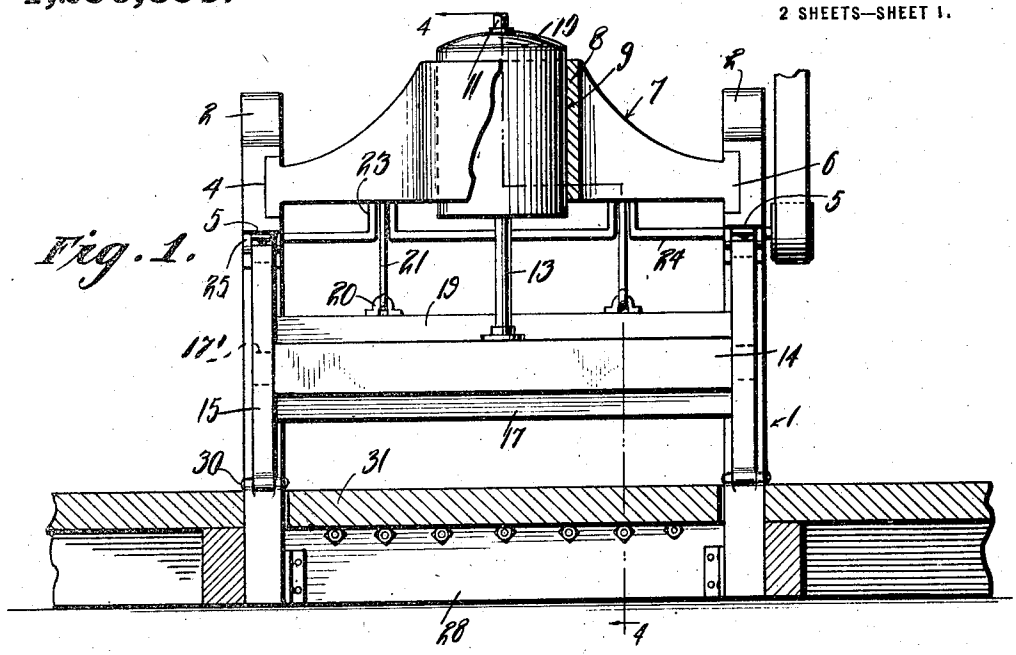
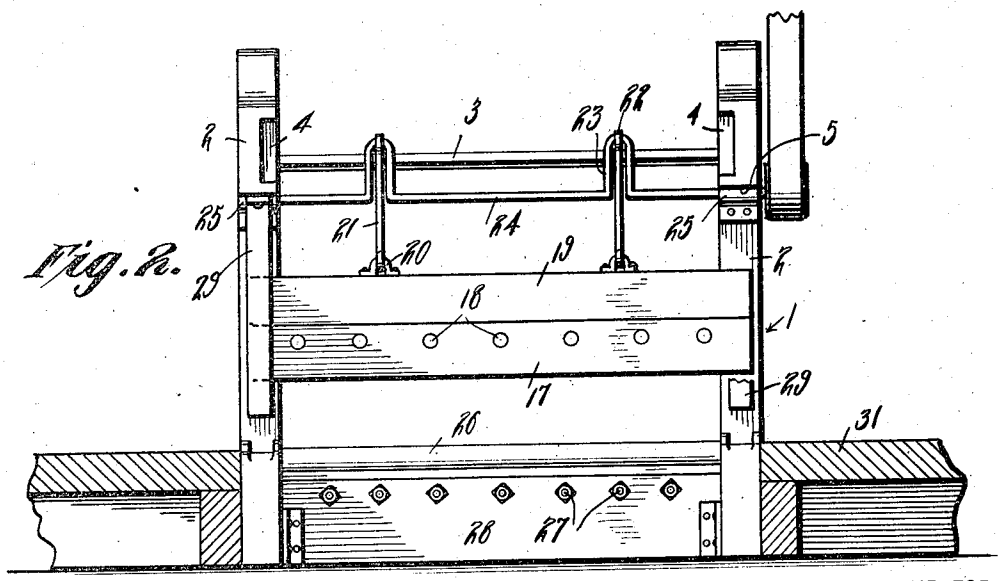


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

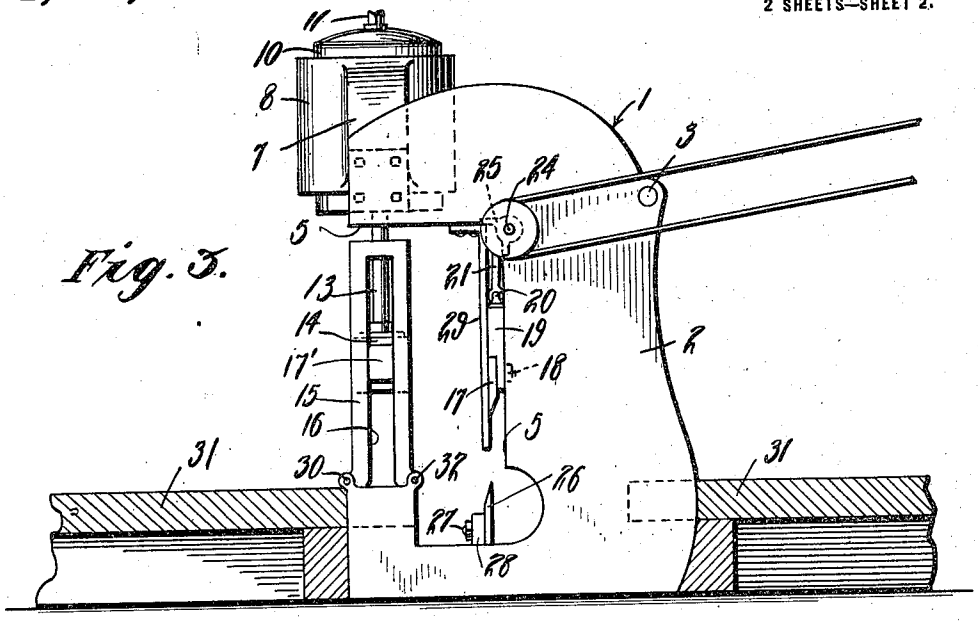
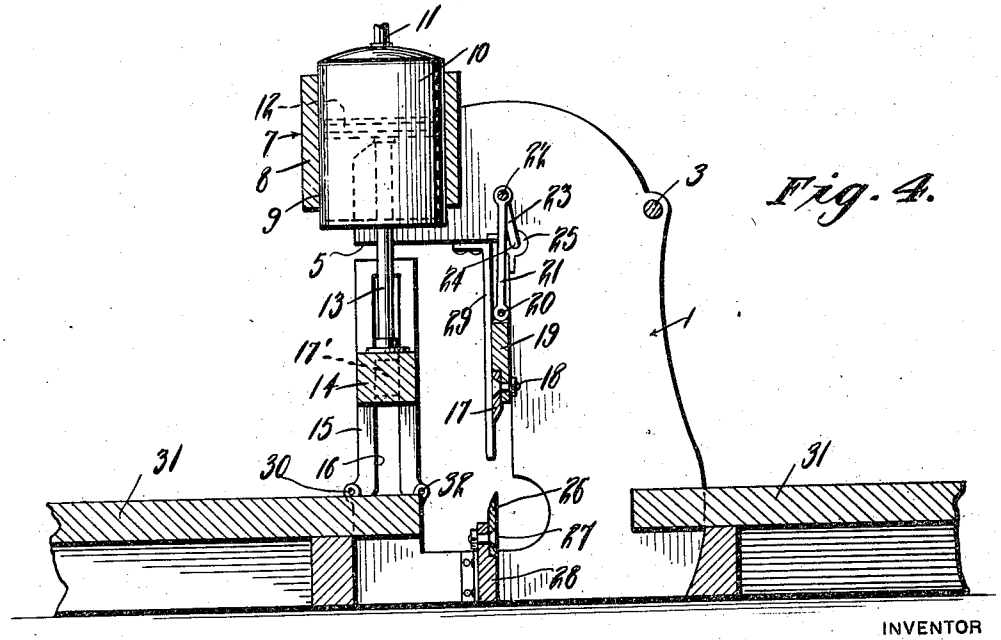


Fig. 4.



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HARRY A. GRIMM, OF YOUNGSTOWN, OHIO.

SHEARING-MACHINE.

1,250,858. Specification of Letters Patent. Patented Dec. 18, 1917.

Application filed February 23, 1916. Serial No. 80,006.

To all whom it may concern:

Be it known that I, HARRY A. GRIMM, a 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 Shearing-Machines, of which the following is a specification.

My invention relates to doubling shears and contemplates primarily an improved construction, combination and arrangement of parts whereby sheet metal may be pressed, and cut with accuracy, security and ease.

In describing my invention in detail reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which;

Figure 1 is a front elevation of my improved doubling shears, partly broken away;

Fig. 2 is a side elevation, the pressing head having been removed;

Fig. 3 is a side elevation of the device, as illustrated in Fig. 1; and

Fig. 4 is a section on the line 4—4 of Fig. 1.

Referring now to the drawings by numerals, 1 designates as an entirety an upright frame, the sides 2—2 of which extend vertically in parallelism. A rod 3 is extended from one to the other of the said side sections 2 whereby to brace and maintain the said sections parallel. Each section 2 is recessed as indicated at 4 and cut away as indicated at 5, the former, recesses 4, receiving complemental extensions 6 formed upon the terminals of a pressing head frame designated as an entirety by the numeral 7. Said frame 7 is enlarged midway its length as indicated at 8, which enlargement is provided with a vertical cylindrical opening 9 in which is fitted a cylinder 10 having a fluid supply pipe 11 leading thereto. A piston 12 is mounted to operate in the cylinder 10, the mentioned piston having connection by means of a piston rod 13 with the pressing head 14 reciprocal for a purpose subsequently to appear. Fluid, under pressure, is utilized as the power means whereby the pressing head 14 may be reciprocated.

Guides 15 are arranged, one at each side or end of the pressing head 14, each guide being equipped with a vertical slot 16. Extensions 17′ formed upon the pressing head 14 at the ends thereof engage in said slot in order that the pressing head may reciprocate in a true vertical plane.

A vertically reciprocating knife 17 is mounted to operate between the side sections 2. Said knife 17 is detachably secured as indicated at 18 to a reciprocatory knife block 19, which is fastened as indicated at 20 to a link 21 connected at its opposite end as indicated at 22 to a crank 23 formed on a crank shaft 24, the latter, the crank shaft 24, extending from one to the other of the side sections 2. Bearings 25 support the shaft 24 for rotation. Any suitable power element may be connected with said shaft.

Upon reference to Fig. 4 it will be noted that the reciprocatory knife 17 is mounted to operate in a true vertical plane directly behind the pressing head 14 in order that the sheet metal acted on may be moved into the path thereof subsequent to depression by said head. A coacting fixed blade 26, fastened as indicated at 27, to a knife 28, is so positioned with respect to said reciprocatory knife as to act therewith in cutting and trimming the sheet metal work thereto. Guide strips 29 depend vertically from the frame and are spaced from the side members 2—2 to direct movement of the reciprocatory knife block 19.

If desired, the bracket 15 may be hingedly connected as indicated at 30 to the bed or floor 31 of the device that the maul attachment in its entirety may be moved to an inoperative position should occasion demand. Any suitable fastening means such as I have indicated at 32 may be utilized to maintain the bracket 15 in an operative position and fixed with respect to the machine frame 1.

In operation, the sheet metal acted on is laid flat upon the bed or floor 31 of the machine, doubled, and thereafter moved to position the creased or folded portions of the sheet metal directly beneath the pressing head 14. When so positioned, fluid under pressure is admitted to the cylinder 10, whereby the pressing head 14 is forced into engagement with the said sheet metal causing the folded portion thereof to be pressed and creased. Subsequent to compression, the fluid pressure on the piston 12 is released whereupon the pressing head is returned to its normal elevated position and the sheet metal moved to a position in the path of the reciprocatory blade 17 in which event the blade is reciprocated by rotation of the crank shaft 24, causing the creased portion of the

said sheet metal to be severed and removed. The sheet metal having been thus cut, it may again be doubled or folded, compressed and cut without necessitating a removal from the bed of the machine.

From the foregoing, taken in connection with the accompanying drawings, it is evident that material, labor and time, incident to the production of completed work is reduced; that the pressing head 14 will so compress the double sheet metal as to permit of subsequent cutting thereof with a resulting minimum waste; and that by confining the mauling and cutting devices into a single organization, labor, as above specified, incident to the working of sheet metal is reduced.

Having thus fully described my invention, what I claim as new and desire to obtain by Letters Patent, is;—

A shearing machine including a frame comprising a pair of substantially C-shaped plates, a pair of apertured lugs formed on the lower terminal of each plate, a pair of vertical guides having apertured lower ends, pins extending through said lugs and guides, a pressing head mounted in the guide for vertical movement of a length corresponding to the distance between the plates, means for reciprocating said head, a vertical guide mounted within each plate, a knife blade mounted within the guides for vertical movement, a stationary knife blade supported between the plates and adjacent the lower portion thereof, a transversely extending crank shaft journaled in the plates, said shaft having offset portions, pitmen connecting the offset portions, to the knife blade, a pulley mounted on the shaft, a bed plate mounted between the forward ends of the frame plates, and a second bed plate in horizontal alinement with the first mounted between the frame plates at the rear portions thereof.

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

HARRY A. GRIMM.

Witnesses:
SAM ENGLANDER,
P. A. KUHN.

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