(No Model.) 2 Sheets—Sheet 1.

C. C. ECHOLS.

SHEARING AND PUNCHING MACHINE.

No. 385,662. Patented July 3, 1888.

Fig. 1.

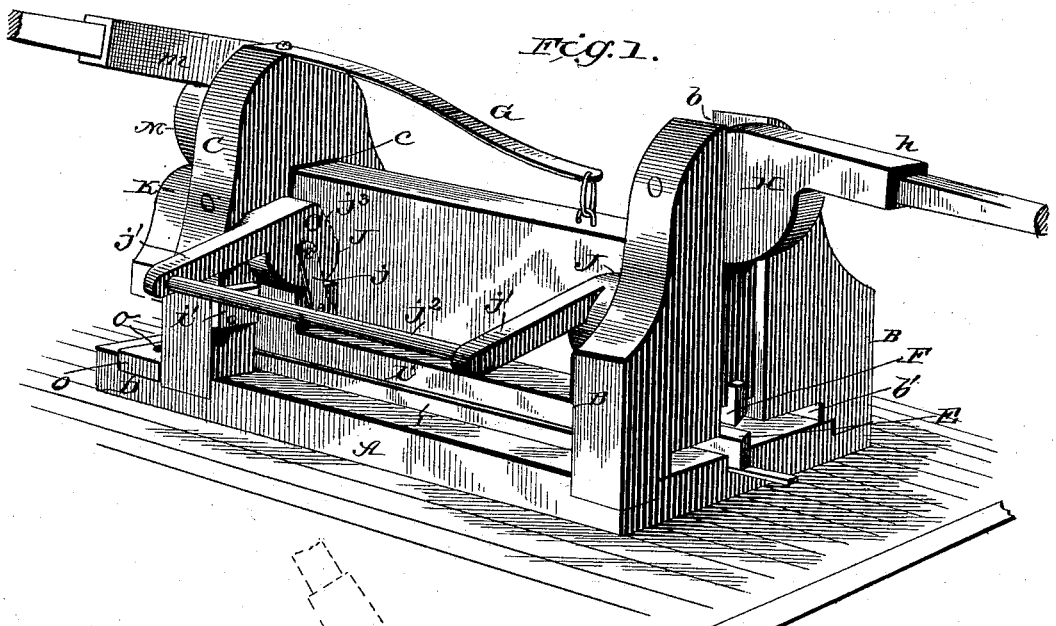
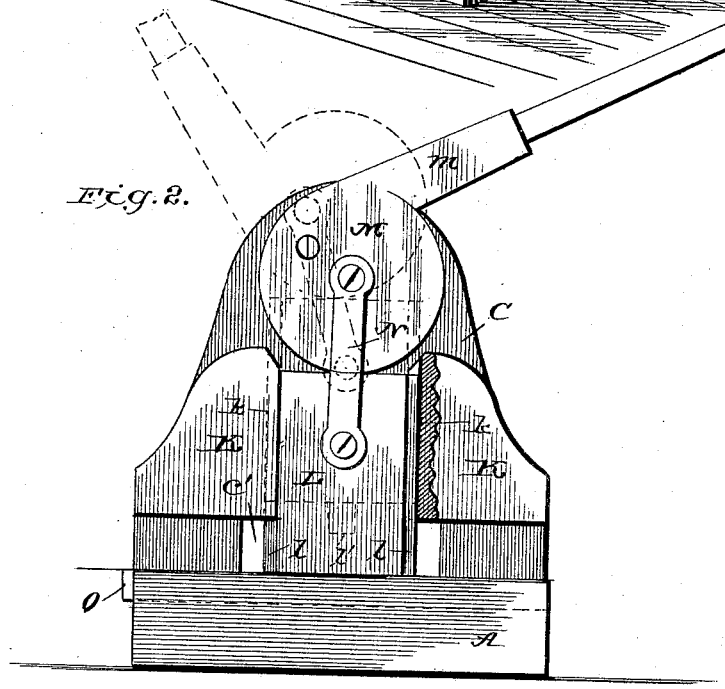


Fig. 2.



Witnesses.

Joseph A. Ryan,

J. H. Diggers,

Inventor,

Christopher Columbus, Echols,

By his Attorneys

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

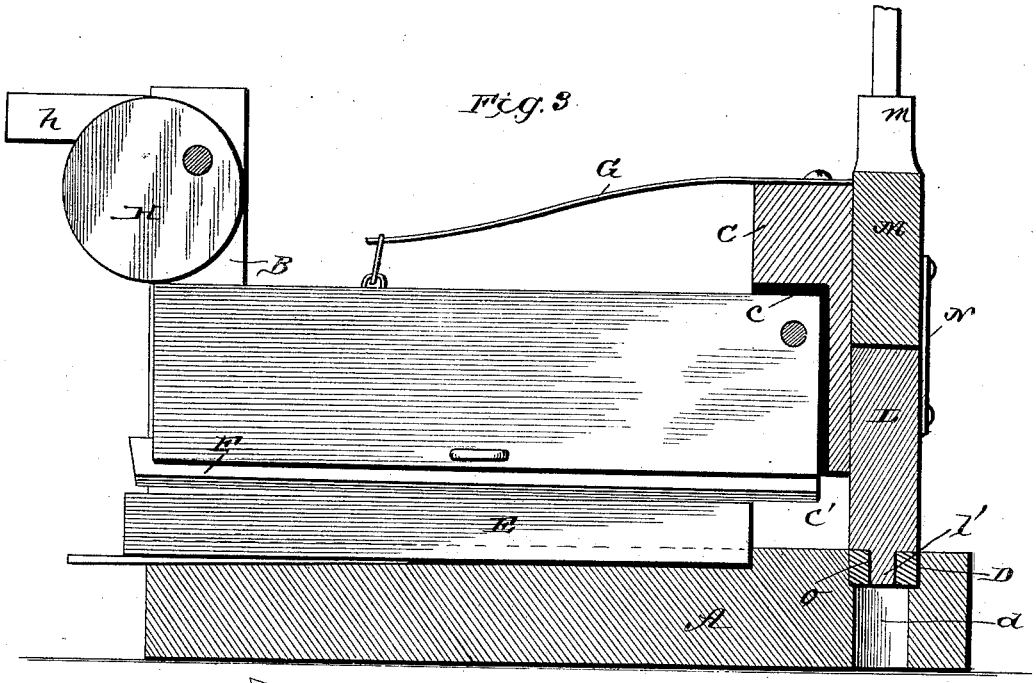
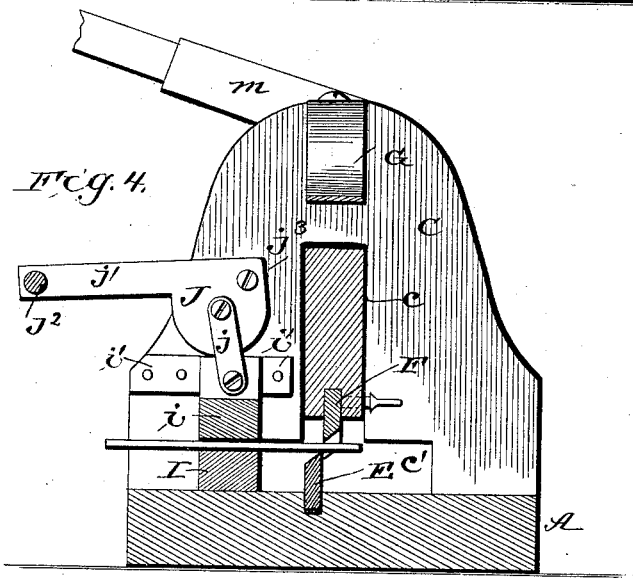


Fig. 4.



Witnesses.
Joseph A. Ryan.
J. N. Diggers.

Inventor,
Christopher Columbus. Echols.

By his Attorneys.
C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

CHRISTAPHOR COLUMBUS ECHOLS, OF GRANGER, TEXAS.

SHEARING AND PUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 385,662, dated July 3, 1888.

Application filed April 13, 1888. Serial No. 270,536. (No model.)

To all whom it may concern:

Be it known that I, CHRISTAPHOR COLUMBUS ECHOLS, a citizen of the United States, residing at Granger, in the county of Williamson and State of Texas, have invented new and useful Improvements in a Combined Shears and Punch for Metal, of which the following is a specification.

The invention relates to improvements in combined shears and punches for metal, the main object being to cut plates or bars of metal longitudinally with rapidity and economy of force; and it consists in the construction and novel combination of parts, hereinafter described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a machine embodying the invention. Fig. 2 is an end view showing the punching mechanism thereof. Fig. 3 is a central vertical longitudinal section through the same. Fig. 4 is a vertical cross-section.

Referring to the drawings by letter, A designates the base-block of the machine, having the standards B B rising from the opposite edges of one end thereof, and the standard C rising from a point near the opposite end. The standards B have between them the central vertical rectangular open space, *b*, and the horizontal transverse open space *b'* adjoining the base-block, their feet being secured in square notches in the upper corners of the corresponding end of the said block. The standard C has a vertical open space, *c*, and a horizontal open space, *c'*, between its opposite legs, and its feet are similarly secured at the corners at the opposite end of the base-block.

D is a transverse groove in the upper surface of the base-block, outside of the standard C, and rectangular in cross-section, and provided centrally in its floor with a circular opening, *d*.

E is a steel blade set in a longitudinal groove in the face of the base-block, and rising therefrom toward the spaces *b* and *c* at one side thereof.

f is a long head-block pivoted at one end in the space *c*, and with its free end passing into the space *b*, and F is a steel blade, similar to the blade E, set in a groove in the lower edge of the said block, and held therein by set-screws. The blades E and F coact in shearing metal, and the former may have its outer portion raised to adjust it for thinner metal by driving long wedges under its outer end in the groove in which it is seated.

G is a spring, strong enough to lift the head-block on its pivot, which spring has one end secured to the standard C and the other end attached by a staple and link to the upper edge of said block.

H is a cam-disk pivoted between the standards B above the adjacent end of the head-block, and provided with an outstanding arm, *h*, having a socket in its end for the insertion of an actuating-lever.

I is a longitudinal resting-block secured to the base-block between the feet of the standards B and C to which the blade E is nearest, and about the height of said blade, which is beveled downwardly toward said resting-block.

i is a longitudinal bar, having its ends bent at right angles upward, and sliding up and down vertically above the resting-block between the guide-pieces *i' i'*, secured to the inner sides of the adjoining standards B C.

J J are similar curved cams pivoted at corresponding points to said standards above said upturned ends, upon which they bear and to which they are attached by the pivoted links *j*. The said cams have the upstanding handles *j'*, connected at their ends by the bar j^2, by means of which the cams can be moved similarly and simultaneously, and are provided with the flat edge portions j^3, which, when the handles are turned vertically upward, lifting the bar *i* to its highest point above the resting-block I, bear on the upturned ends of the said bar and prevent the bar from rising higher or the handles from turning inward.

The above constitutes the shearing portion of the device, which is operated as follows: The bar *i* is raised by the means described, the metal plate pushed over the resting-block till its inner edge is the proper distance beyond and parallel to the edge of the blade E, and the bar *i* brought downward by the cams J on said plate to hold it steady and prevent its slipping laterally from the shears. The blade F is then moved downwardly on the plate by means of the cam-disk H and the operating-lever thereof, cutting said plate through from

end to end, the portion sheared off falling on the base block on the side of the blades away from the resting-block, whence it can be easily removed.

If it is desired to operate the machine by steam or other motor, the pivotal pin of the cam-disk H is replaced by a shaft having upon it equal-sized fast and loose pulleys, to which the belt from the pulley of the motor extends, and to one or the other of which the said belt is shifted, according as it is desired to operate the machine or not.

The punching mechanism is as follows:

K K are similar guide-blocks, secured to the outer surfaces of the standard C and provided on their inner facing edges with the guide-grooves *k*.

L is a die-block having the ribs *l l* on its side edges moving in the guide-grooves *k*, and the depending stem or stud *l'* for insertion in the corresponding socket of a punching-die.

M is a cam-disk pivoted to the standard B above the said die-block and provided with an arm, *m*, having a socket at its end for the insertion of the operating-lever. The said disk bears upon the upper end of the die-block and is connected to said block by the pivoted link-bar N, so that the block rises and falls with the cam-disk.

O is a bed-block fitting and sliding in the groove D, and provided with openings *o*, having contours similar to those of the cross-sections of the dies used. The proper one of these openings is moved to register with the opening *d*, and the punching-die brought down by the means described upon the metal resting on the bed-block O, the punchings falling through the openings *o* and *d*.

If desired, the punching-die may be operated by a motor by means of mechanism similar to that described to operate the shears.

Having described my invention, I claim—

1. The combination of the base-blocks, the standards B B, rising from opposite edges of one end thereof, the standard C, rising from the opposite end of said block, the blade resting in a groove in the upper side of the bed-block and having its outer end rendered vertically adjustable by means of long wedges inserted in the groove under the same, the head-block pivoted at one end between the legs of the standard C and with the other end between the standards B B, the spring secured at one end to the standard C and having its other end attached to the upper edge of the head-block by a link and staple, and the cam-disk pivoted between the standards B and provided with an arm socketed at its end for the attachment of an operating-lever, substantially as specified.

2. The combination, with the base-block A, the standards B B and C, the adjustable blade E, the head-block *f*, having the blade F attached, the spring G, lifting the head-block, and the cam-disk H, moving the head-block downward, of the resting-block I, secured to the base-block A, and the bar *i*, moved by mechanism, substantially as described, between guide-pieces attached to the standard for the purpose of clasping the metal plate to be operated on between itself and the resting-block, as specified.

3. The combination, with the pivoted head-block, the spring lifting the same, the cam-disk depressing said block, the blade attached to the bed-block, and the blade attached to the head-block, of the resting-block I, the bar *i*, having its ends turned up at right angles, the guide-pieces *i'*, secured to the standards, the curved cams J, having the flat edge portions j^3 and the arms *j'*, the bar j^2, connecting the ends of said arms, and the links *j*, connecting said curved cams and the bar *i*, substantially as specified.

4. The combination, with the bed-block having the groove D, and the opening *d* in said groove, and the standard C, rising from said block, of the guide-blocks K, having the guide-grooves *k*, the die-block L, having the guide-ribs *l* and stem or stud *l'*, for attachment of the die, the cam-disk M, provided with the arm *m*, socketed at its end for the attachment of an operating-lever, the link-bar N, and the bed-block O, resting in the groove D and provided with the openings *o*, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my name in presence of two witnesses.

CHRISTAPHOR COLUMBUS ECHOLS.

Witnesses:
W. T. FARMER,
JNO. DENSON.