

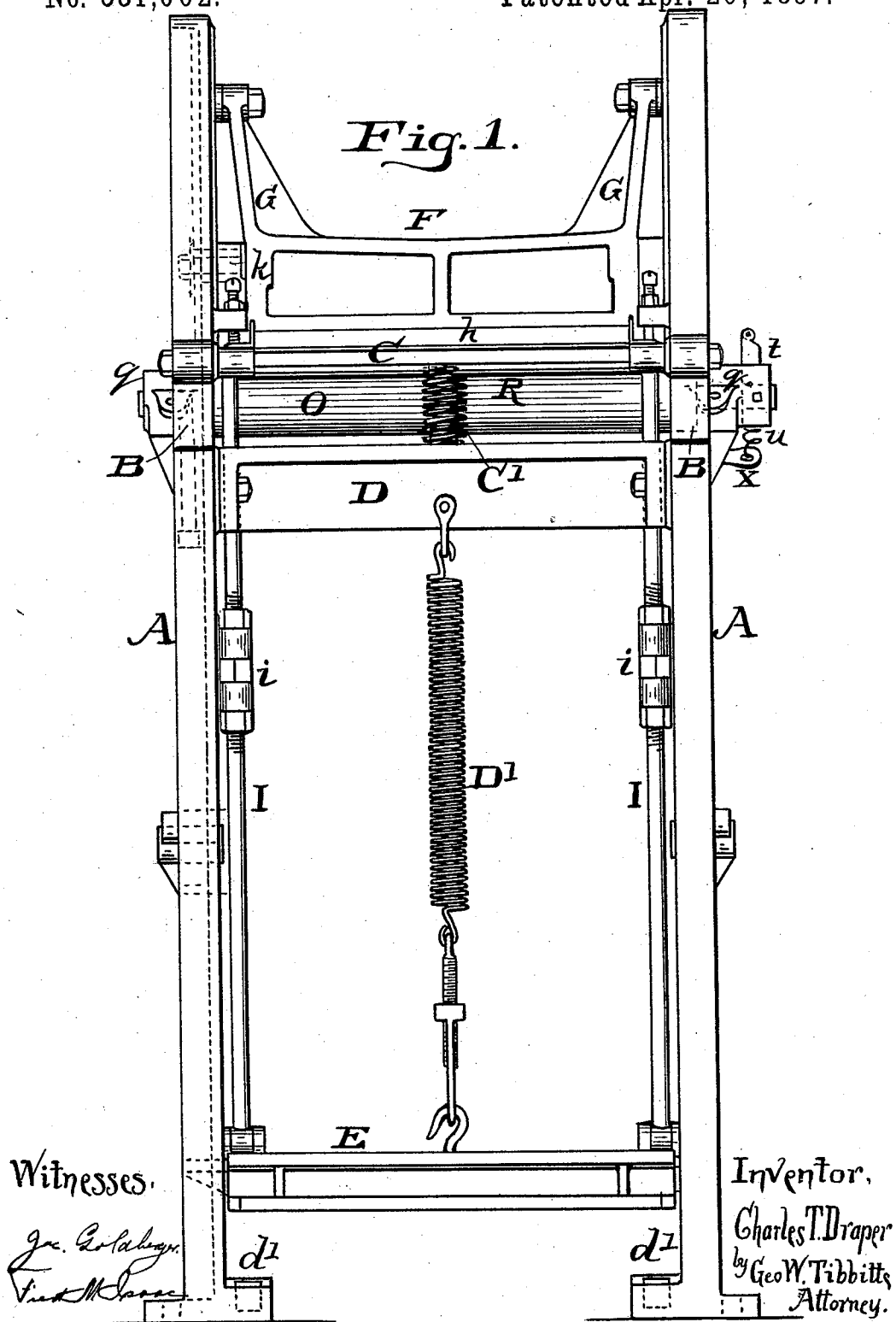
(No Model.)

3 Sheets—Sheet 1.

C. T. DRAPER.
METAL BENDING MACHINE.

No. 581,002.

Patented Apr. 20, 1897.



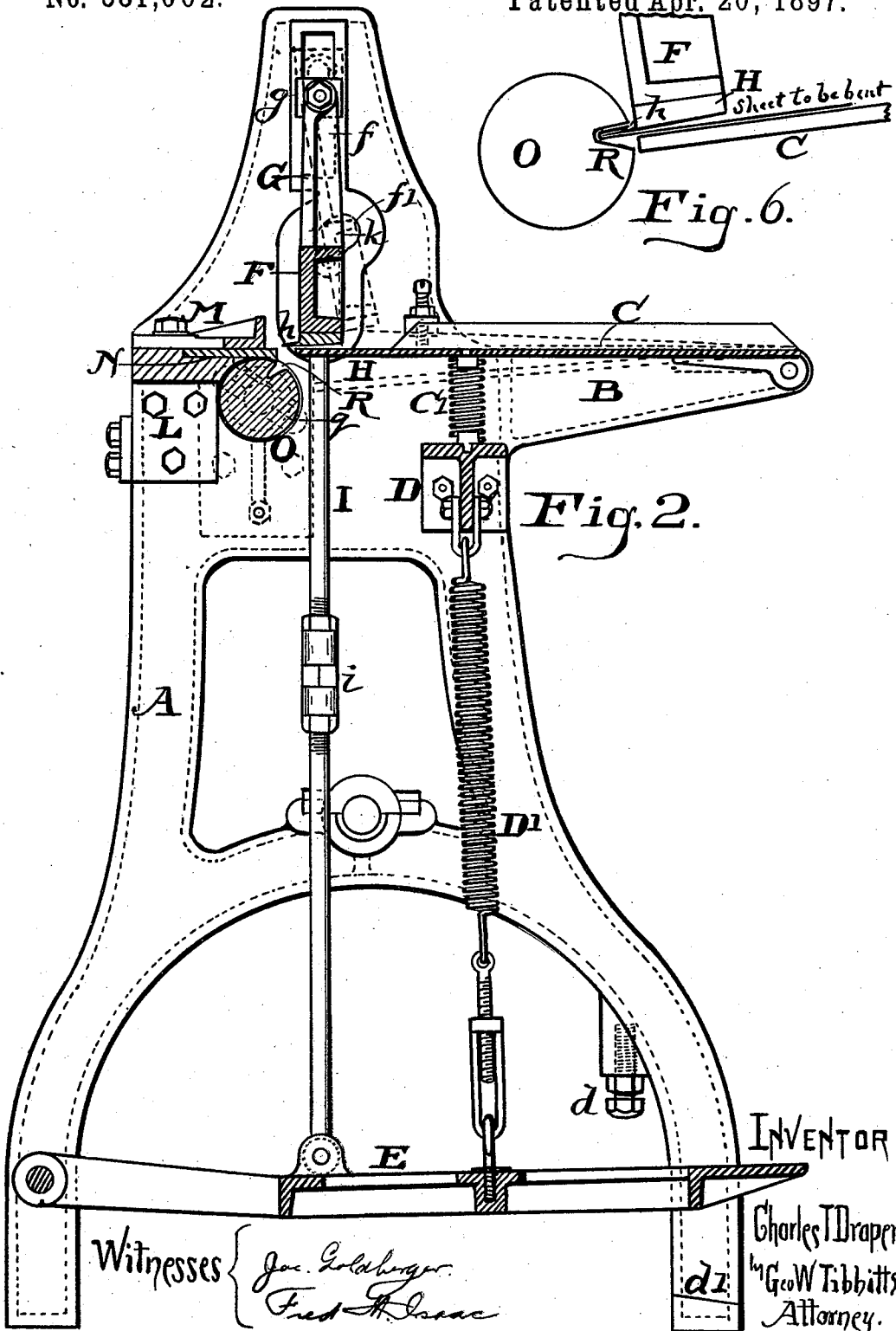
(No Model.)

3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

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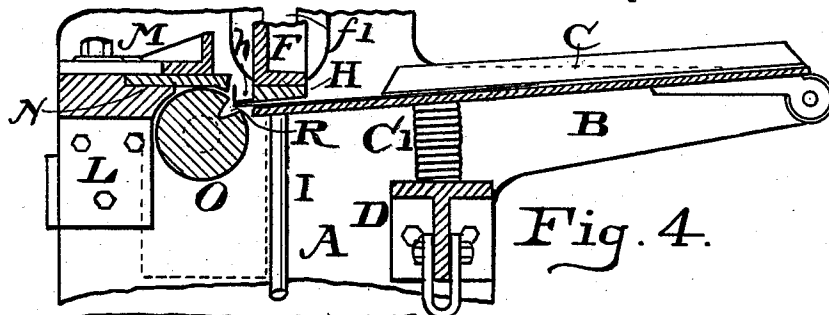


Fig. 4.

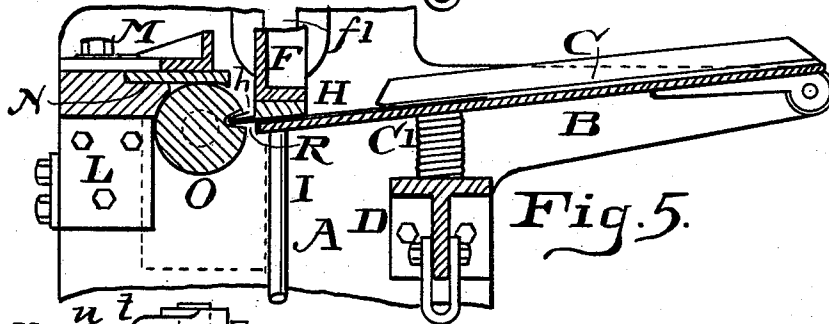


Fig. 5.

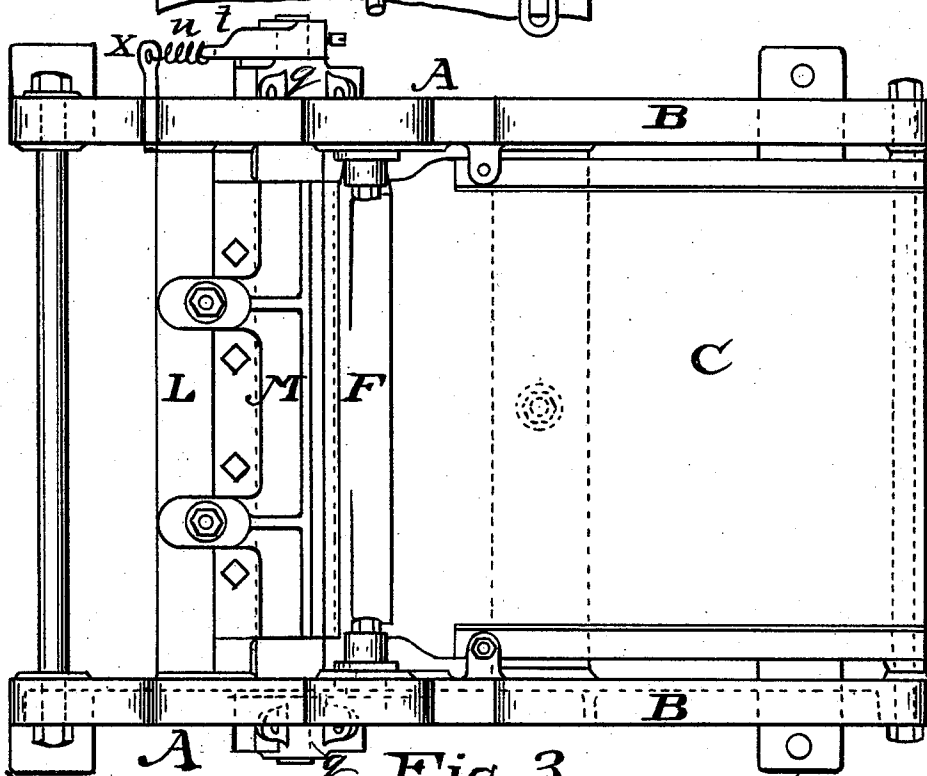


Fig. 3.

Witnesses,

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Frank W. Isaac

Inventor,

Charles T. Draper,

By Geo. W. Tibbitts, Attorney

UNITED STATES PATENT OFFICE.

CHARLES T. DRAPER, OF CLEVELAND, OHIO.

METAL-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 581,002, dated April 20, 1897.

Application filed February 23, 1897. Serial No. 624,740. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. DRAPER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Metal-Bending Machines, of which the following is a specification.

This invention relates to metal-bending machines of that class designed for bending and folding over the edges of sheets of metal, in which is provided a reciprocating sheet-holding table and a reciprocating clamp for holding the sheet down upon the table while being operated upon. Said clamp is provided with a lip over which the edge of the metal is bent and folded and a grooved roller adapted for automatically engaging with the said lip and completing the fold of the metal in its downward movements, the object of the invention being to accomplish the work expeditiously and uniformly by one operation.

In the accompanying drawings, Figure 1, Sheet 1, is a front elevation of the machine. Fig. 2, Sheet 2, is a vertical section through the center line of the machine. Fig. 3, Sheet 3, is a top or plan view of the machine. Fig. 4, same sheet, is a cross-section through the table, the clamp, and the folding-roll, showing the first step in bending the edge of the metal. Fig. 5, same sheet, is a like cross-section showing the next and completing step in folding the edge of the metal. Fig. 6, Sheet 2, is a diagram, on a larger scale, showing the fold on the edge of the sheet of metal at the completion of the operation.

A is a frame or stand for supporting all the working parts of the machine.

B B are arms or brackets extending forward from the front legs of the stand.

C is a work-holding table pivotally attached to the outer ends of said arms or brackets.

D is a cross-bar of the stand underneath the table.

C' is a spring between the cross-bar and the table, which serves to support and carry the table upward.

E is a treadle-frame pivotally attached to the rear legs of the stand.

D' is a spring suspended from the cross-bar D and is connected by a toggle-joint with the treadle-frame, designed for holding it up.

d d are adjustable bolts fixed in lugs on the

forward legs of the stand above the treadle, forming stops to limit the upward movement of the treadle, and d' d' are foot projections on the forward legs for limiting the downward movements of the treadle.

In the upper part of the sides of the stand-frame and above the table are made two vertical slots f f'. The lower slots f' f' may have curved upper ends.

F is a clamping-frame supported in the said slots, the upright arms G G of the frame being pivotally attached to sliding blocks g g, fixed in the upper slots f f'.

k k are journal-pins on the ends of the clamping-frame F, which play in the lower slots f' f'.

H is a steel plate having a lip h fixed to the under edge of the frame F. To the journals k k are attached vertical pull-rods I I, which connect the clamping-frame F with the treadle-frame E. In the middle portion of said rods I I are provided sleeve-nuts i i, whereby the rods may be adjusted as to length.

L is a rear cross-bar of the stand-frame on a level with the table C, on which is placed an adjustable guide-plate M, against which the sheet of metal to be operated upon is held, the distance between said guide-plate and the lip h being determined by the width of fold to be made on the sheet.

N is a steel plate fixed upon the cross-bar L and under the guide-plate M, over the edge of which the sheet is bent when it is first moved downward. Directly under said plate N is located the folding-roller O, having its journal-bearings p p in the boxes q q, attached to the outsides of the stand-frame A.

R is a longitudinal V-shaped groove in the side of the roller, located just below the edge of the plate N, into which the bent edge of the sheet is carried by the downward movements of the table, and which causes the roller to turn. This forces the lip to carry the upturned edge of the sheet into the groove and fold it over the top side of the lip, thus completing the fold, as seen in Figs. 5 and 6.

On one of the journals of the roller O is fixed a crank-arm t, connected by a spring u with a bracket x on the stand-frame A, the purpose of which is to retain the roller in position after being turned up again by the upward movement of the table, which also with-

draws the folded sheet from the groove. This also releases the sheet from the clamp and withdraws the lip from the fold.

Having described my invention, what I claim is—

1. In a machine for bending metal, the combination with a depressible sheet-holding table, of a roller having a longitudinal V-shaped groove adapted to receive and fold the edge of the sheet by the downward movement of the table turning the roller, substantially as described.

2. In a machine for bending metal, provided with a spring-actuated and depressible work-holding table, a vertically-moving clamp, having a lip over which the bend and fold of the metal are made, and in operative connection with the table, an adjustable guide and bending plate opposite the moving end of the table and clamp, a grooved rotatable roller journaled under said guide and bending plate, and means substantially as described for depressing said table and clamp, the arrangement of the roller being such that as the table and clamp descend the roller will be turned and the edge of the sheet be folded over the

lip by their forcible entrance into the groove in said roller.

3. In a machine for bending metal, provided with a depressible work-holding table, a vertical and laterally-moving clamp in operative connection with the table, and provided with a lip over which the sheet is to be bent and folded, an adjustable sheet-guide and bending-plate opposite to the table and clamp, a grooved and rotatable roller journaled under said guide and bending-plate, means substantially as described for operating the table and clamp, the arrangement of the roller being such relative to the table and clamp, that as they descend the roller will be turned and the edge of the sheet be folded over the lip by their forcible entrance into the groove in said roller, and as the table again ascends the roller will be returned, the clamp lifted and moved laterally, releasing the sheet and withdrawing the lip from the fold.

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Witnesses:

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