

(No Model.)

2 Sheets—Sheet 2.

M. CULLEN.

SHEET METAL BENDING MACHINE.

No. 328,387.

Patented Oct. 13, 1885.

Fig. 2

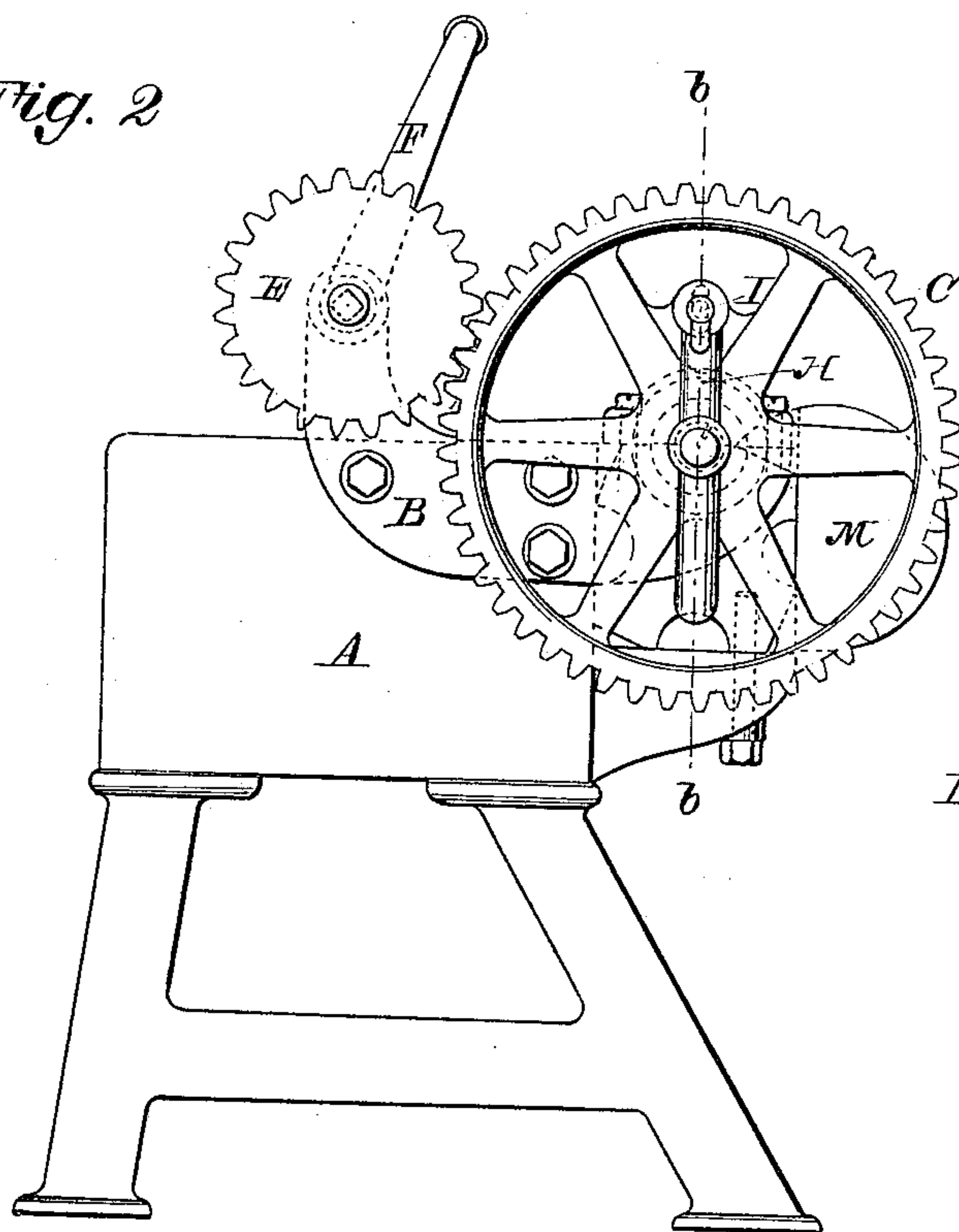


Fig. 4

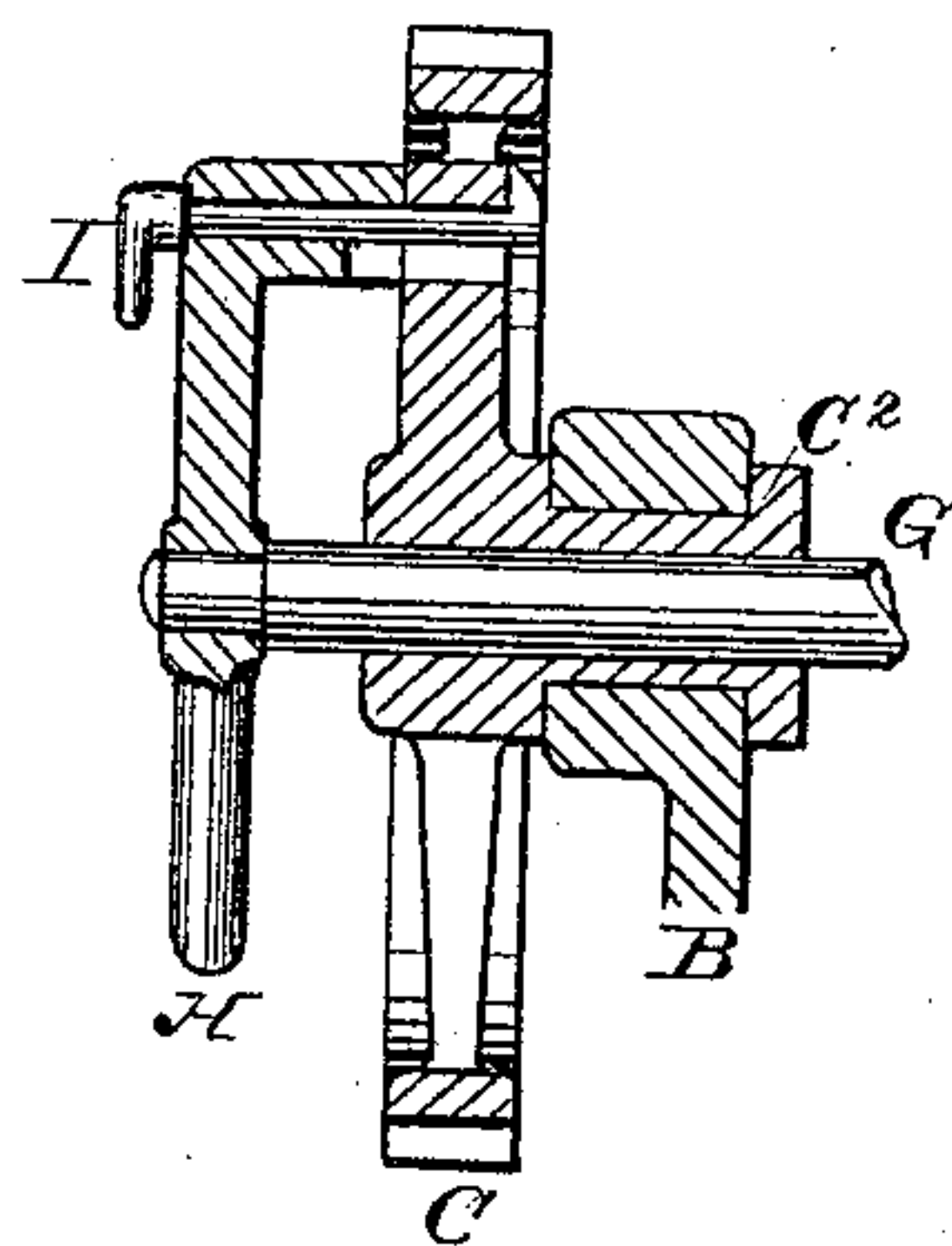


Fig. 5

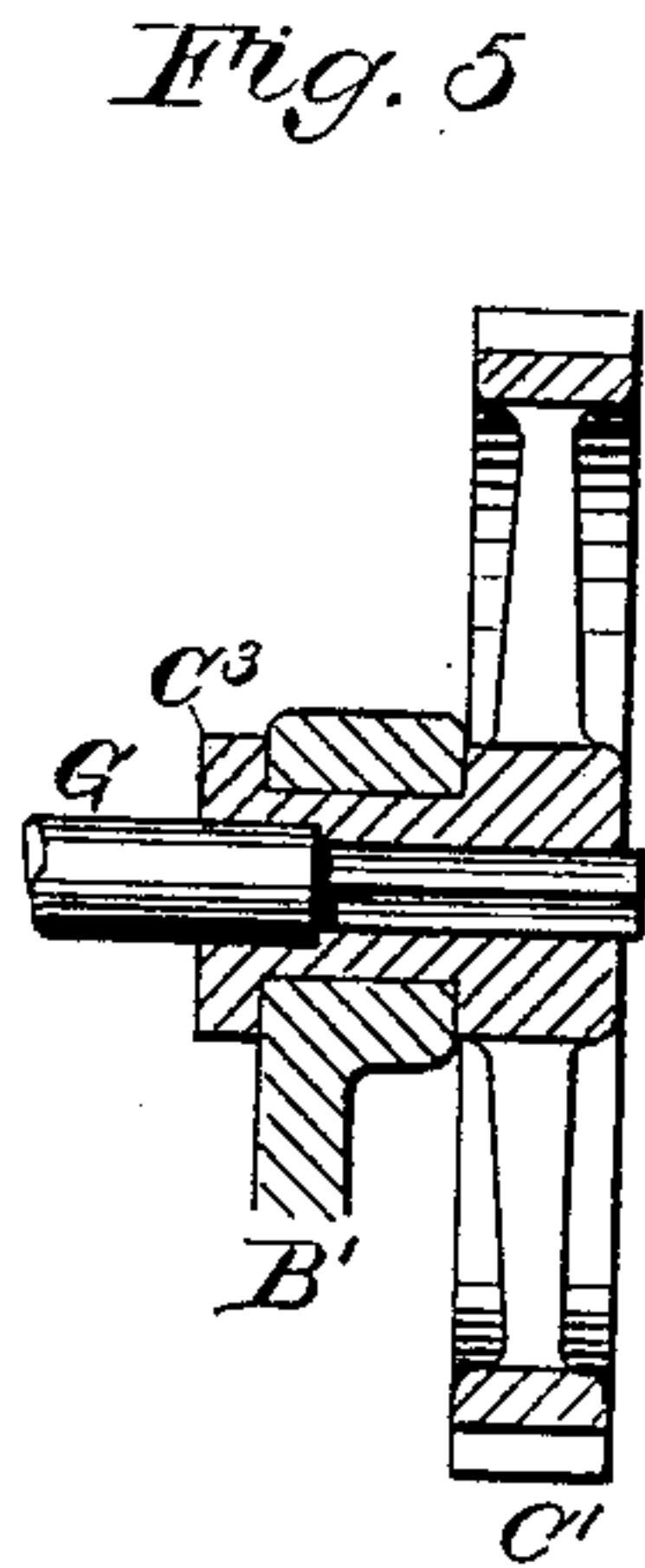
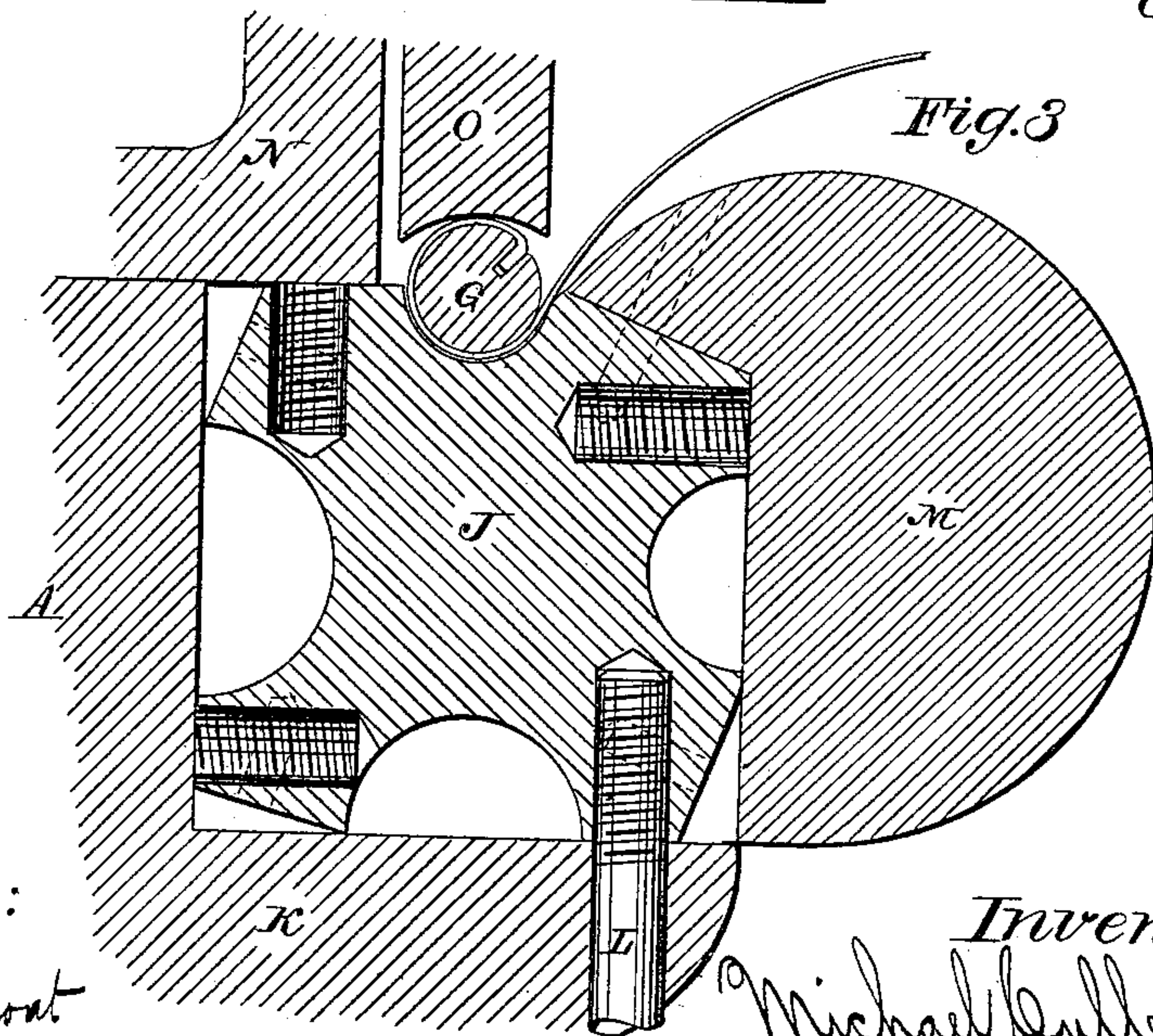


Fig. 3



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

MICHAEL CULLEN, OF HARTFORD, CONNECTICUT.

SHEET-METAL-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 328,387, dated October 13, 1885.

Application filed March 9, 1885. Serial No. 158,136. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL CULLEN, of Hartford, Connecticut, have invented a new and useful Sheet-Metal-Bending Machine, of which the following description and claims constitute the specification, and which is illustrated by the accompanying two sheets of drawings.

This machine is adapted to bend the edge of a sheet of metal into a tubular form, and then to give the residue of the sheet a reverse bend into the form of a trough; or it may be used for bending the whole of a sheet of metal into a tube having a circumference somewhat less than the width of the sheet.

Figure 1 of the drawings is a front elevation of the machine. Fig. 2 is a view of the left-hand end, looking to the right. Fig. 3 is a fragmentary vertical cross-section on the line *a a* of Fig. 1. Figs. 4 and 5 are fragmentary cross-sections of the left and right hand ends of the machine, respectively, on the line *b b* of Fig. 2. Fig. 6 is a view, looking to the right, of the lever *O* swinging on the bracket *N* and worked by the rod *R*. The levers *O O O O* are all alike. Fig. 7 is a view of the lever *P*, looking to the right-hand end of Fig. 1.

A is the bed of the machine. *B* and *B'* are brackets bolted to the left and right hand ends of the machine, respectively. The forward horns of these brackets furnish bearings for the hubs *C²* and *C³*, respectively, of the gears *C* and *C'*, while the rear horns of the brackets furnish bearings for the shaft *D*. The gear *E* is keyed to the left-hand end of the rod *D*, and a corresponding gear is keyed to that rod near its right-hand end and adjacent to the crank *F*. The grooved rod *G* has its square end inserted loosely in a square hole in the axis of the gear *C'*, and its left-hand end passes loosely through a hole in the axis of the gear *C*, and has the cross-bar *H* fixed to its left-hand extremity. The latch *I* is adapted to fix one end of the cross-bar *H* directly over a hole in the left-hand side of the gear *C*. The long block *J* extends from end to end of the machine, resting upon the brackets *K* thereof, and held in place by the set-screws *L*. The block *J* has four series of threaded holes for the reception of those set-screws, so that either side of the

block, and thus either one of its four variant longitudinal concavities, may be placed upward. The long block *M* also extends from end to end of the machine, and is supported by being hung upon either of the diagonal flat surfaces of the block *J* by means of a set of dowel-pins fixed to the block *M*, and adapted to loosely enter a series of dowel-sockets in either of the diagonal flat surfaces of the block *J*. The brackets *N* are bolted to the upper side of the bed *A*. The levers *O* oscillate upon pivots extending horizontally from those brackets, while the lever *P* oscillates upon a pivot extending horizontally from the bracket *N'*. The lever *P* may be fixed at any desired inclination by the set-screw *Q*. All the levers are connected by the rod *R*, and all are worked by the handle of the lever *P*. The lower ends of all the levers have suitable surfaces to press upon the rod *G* whenever the handle of the lever *P* is pressed as far to the left as it will go.

The mode of operation of this machine is as follows: One edge of the sheet of metal to be bent is inserted in the groove of the rod *G*. The handle of the lever *P* is carried to the left till the lower ends of the levers *O* and *P* are pressed hard down upon the rod *G*, and those levers are fixed in that position by the set-screw *Q*. The crank *F* is then turned in the direction of the arrow in Fig. 2 till the rod *G* has made somewhat more than one revolution, and has thus bent the edge of the sheet metal into the form of a tube having the same diameter as the rod *G*, and having an inward flange projecting into the groove of that rod. Then the sheet of metal is bent by the operative around the block *M*, and the bending is thus completed. The operative then loosens the set-screw *Q*, and carries the handle of the lever *P* to the right, so as to release the tube from being held between the lower ends of the levers and the rod *G*. He then unlatches the cross-bar *H* from the gear *C*, and by pulling on the cross-bar he removes the rod *G* from the machine, thus releasing the tube and allowing the bent metal to be withdrawn. Then he replaces the rod *G* in the machine, latching it in place, as before.

For making tubes of different diameters the

different concavities on the block J are used, and other rods, corresponding in diameter therewith, are substituted for the rod G.

When simple tubes only are to be made, the block M may be omitted; and in any event a plain bar adjustable to various positions relatively to the axis of the block J may be substituted for that block.

I claim as my invention—

10 1. The combination of a series of levers connected by the rod R and adapted to be operated by the movement of either of them, and to be fastened in position by the set-screw Q, and to press downward upon the rod G, all
15 substantially as described.

2. The combination of the rod G, having a groove for the reception of one edge of a sheet

of metal, with the block J, having a longitudinal concavity of somewhat larger radius than that of the rod G, and with the block M, 20 having a dowel system for attachment to the block J, all operating together to bend the edge of a sheet of metal into a tubular form, and to bend the body of the same sheet into the form of a reverse curve, all substantially as de- 25 scribed.

3. The block J, provided with longitudinal concavities of variant sizes, and adapted to be rigidly held in different positions, substantially as described.

MICHAEL CULLEN.

Witnesses:

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