

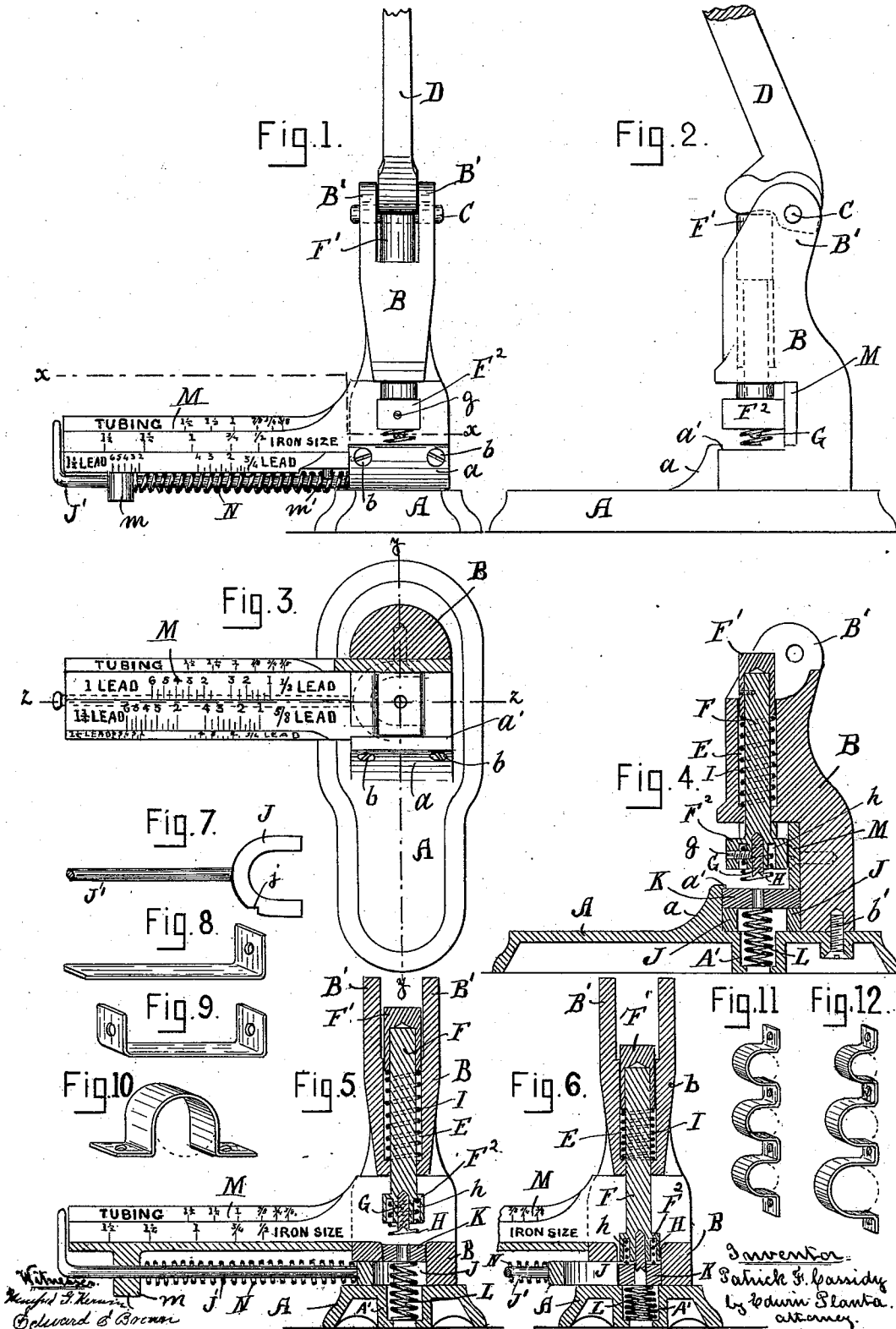
(No Model.)

P. F. CASSIDY.

MACHINE FOR PUNCHING AND FORMING CLAMPS.

No. 533,840.

Patented Feb. 5, 1895.



UNITED STATES PATENT OFFICE.

PATRICK F. CASSIDY, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO CHARLES A. BRAY, OF SAME PLACE.

MACHINE FOR PUNCHING AND FORMING CLAMPS.

SPECIFICATION forming part of Letters Patent No. 533,840, dated February 5, 1895.

Application filed March 2, 1894. Serial No. 502,053. (No model.)

To all whom it may concern:

Be it known that I, PATRICK F. CASSIDY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Punching and Forming Clamps, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of my invention is to produce a machine for punching and forming clamps for holding pipes in place.

The invention consists in the peculiar construction and operation of the machine whereby the material is first punched and then bent, as hereinafter fully described and pointed out in the claims.

Referring to the accompanying drawings: Figure 1 represents a front view of a machine for punching and forming clamps embodying my invention. Fig. 2 is a side view of same. Fig. 3 is a horizontal section taken on line x, x , of Fig. 1. Fig. 4 is a vertical section taken on line y, y , of Fig. 3. Fig. 5 is a vertical section taken on line z, z , of Fig. 3. Fig. 6 is a similar section showing the die in the lowered position. Fig. 7 is a view of the slide or rest. Fig. 8 is a view of a piece of metal with one end punched and bent. Fig. 9 is a view of a piece of metal with both ends punched and bent. Fig. 10 is a view of same after it has been bent to form a clamp. Fig. 11 is a view of a clamp for three pipes of the same size. Fig. 12 is a view of a clamp for three pipes of different sizes.

A, represents the base plate formed with a projection a , on its upper side, the upper end of which has an inwardly projecting lip a' , for holding the die as hereinafter described.

B, is the upright or body portion of the machine secured to the base plate in any suitable manner. In the drawings I have shown it attached by three screws b, b, b . The upper portion of the body B, is formed with two ears or lugs B' , provided with holes in which is inserted a pin C, upon which is fulcrumed a cam lever D.

The body B, is formed with an aperture E, in which the plunger works. This plunger consists of a main portion F, to the upper

end of which is fitted a cap F' . The lower end of the plunger is formed with a head F^2 , in which the punch G, is inserted. In the head F^2 around the punch G, is formed a recess h , in which is inserted a spiral spring H, that forms a clearer for forcing the metal off the punch after the plunger has been raised. Both the clearer H, and the punch G, are held in place by a screw g . A spiral spring I, is inserted in the aperture E, as shown to hold the plunger in the raised position.

K, is a die plate formed in its center with a hole of a size to suit the punch G. Just under the die K, is a spiral spring L, the lower end of which passes down into and rests upon the bottom of a well A' , formed in the bed plate A, the object of which spring is to raise the die into its normal position.

To the body B, is secured a scale M, which scale projects out to one side of the machine and is marked to indicate the diameter and weight of different sizes of pipes. By means of this scale the length of material required to embrace any particular sized pipe is indicated so that when punching and bending the metal strip all that is required of the operator is to set the angle of the strip on the mark on the scale indicating the diameter and weight of the pipe to be embraced by the clamp. Then when the lever D, is brought down the said strip will be bent at the proper point.

J, is a furcated slide or rest that works on the bed plate A. To this slide is connected a rod J' , that passes under the scale M, and through a lug m , formed on the under side of same. The outer end of this rod is bent up so as to project upward as shown. The slide is formed with a small notch j (see Fig. 7) which when the slide is drawn out the proper distance comes into contact with a pin m' , (see Fig. 1) on the under side of the scale M. A spiral spring N, is placed around the rod J' , between the slide J, and the lug m , to keep the slide pressed forward and when the slide is in its normal position it is under the die K, and forms a rest or bearing for the same while the metal is being punched and after the metal is punched the slide is withdrawn by pressing on the end of the rod J' , and the die is then free to be pressed down onto the bedplate A,

the ends of the slide forming a guide for that side of the die.

The operation is as follows: When forming single clamps as shown in Figs. 8 to 10 the metal is preferably cut to the required length. One end is then inserted under the punch G, the end of the plate being on a line with the end of the die K. The lever D, is then drawn down and the punch G, passes through the plate. The rod J', is then drawn back and with it the slide J. The lever D, is then pressed farther down which forces the die K, down until it rests upon the bed plate A, the plate being operated upon being held between the head F², and the die K, and as the punch G, has passed through the plate it cannot be drawn back but is carried forward by reason of the punch G, being through the same. Thus the plate is bent at the required place. After one end is thus bent, as shown in Fig. 8, the other end is bent in the same manner, and a plate as shown in Fig. 9 is produced after which it is bent in the center by pressing it over a mandrel or by other means and a complete clamp as shown in Fig. 10 is produced.

Should it be desired to produce a clamp for holding several pipes of the same size as shown in Fig. 11, or of various sizes as shown in Fig. 12, then the end of the strip of metal or plate is first punched and bent as before described. The strip of metal is then reversed and the angle set to the required mark upon the scale according to the diameter and weight of the pipe to be held. The operation before described is then repeated punching and bending the metal which is then removed from the machine and the part between the punched and bent portions is then bent by pressing it over a mandrel or by other means. Thus the clamp for the first pipe is completed. The operation is then repeated as many times as there are pipes to be held by said clamps.

It will be seen that by means of the scale a clamp for any sized pipe or tubing can be produced according to the diameter and weight of the pipe and the work is done more accurate and much quicker than by the ordinary method of making them by hand.

What I claim is—

1. In a machine for punching and forming clamps, the combination, with a frame provided with a punch and a die, of a spring and a removable rigid support for the die, and means for inserting the rigid support during

the initial portion of the stroke of the punch and for removing it during the remaining portion, substantially as set forth.

2. In a machine for punching and forming clamps, the combination, with a frame provided with a punch and a die, of a spring and a furcated slide under the die, the arms of the slide being adapted to straddle the spring and engage with the die independently of the spring, and means for moving the slide, substantially as set forth.

3. In a machine for punching and forming clamps, the combination, with a frame provided with a punch and a die, of a laterally extending scale secured to the frame, the marks upon the scale being at such a distance from the punch and die as to indicate the distance between the angled portions for enabling the clamp to encircle the pipes supported thereby, substantially as set forth.

4. In a machine for punching and forming clamps, the combination, with a frame provided with a punch and a die, of a graduated scale projecting laterally from the frame, a spring and a movable slide under the die, and a rod projecting under the scale for inserting and removing the slide from under the die, substantially as set forth.

5. In a machine for punching and forming clamps, the combination, with a frame provided with a punch and a die, of a spring and a movable slide for supporting the die, a rod for moving the slide, and a stop for limiting the movement of the slide in one direction, substantially as set forth.

6. In a machine for punching and forming clamps, the combination, with a frame provided with a punch and a die, the end of the plunger carrying the punch being provided with a cylindrical and an annular socket, a coiled spring within the annular socket and the punch in the cylindrical one, and a screw through the walls of the socket the inner end of which engages with the punch and the intermediate portion passes through one of the coils of the spring, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 23d day of January, A. D. 1894.

PATRICK F. CASSIDY.

Witnesses:

CHAS. STEERE,
EDWIN PLANTA.