(No Model.) 2 Sheets—Sheet 1.

S. Y. BUCKMAN.

MACHINE FOR BENDING SHEET METAL.

No. 404,164. Patented May 28, 1889.

Fig. 1.

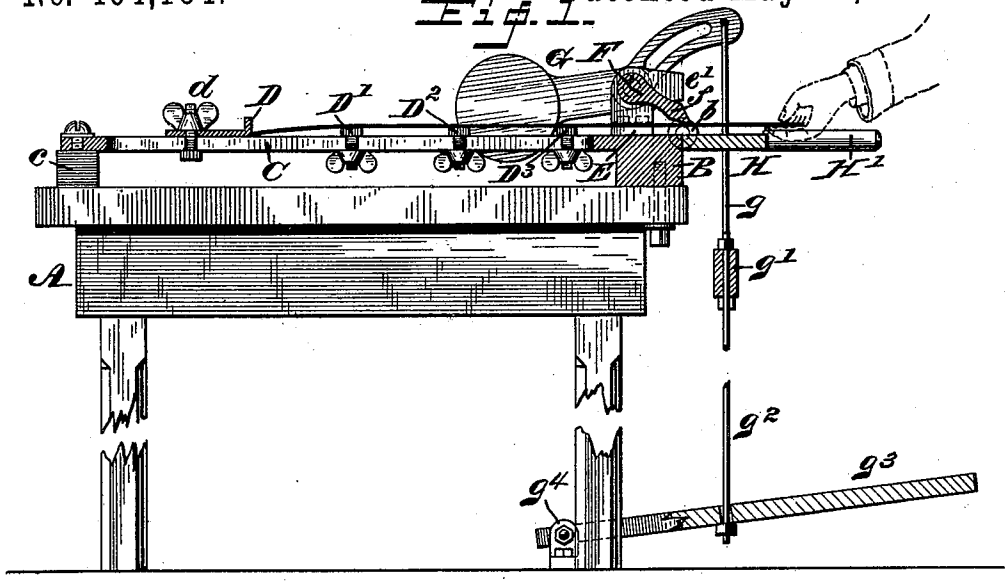
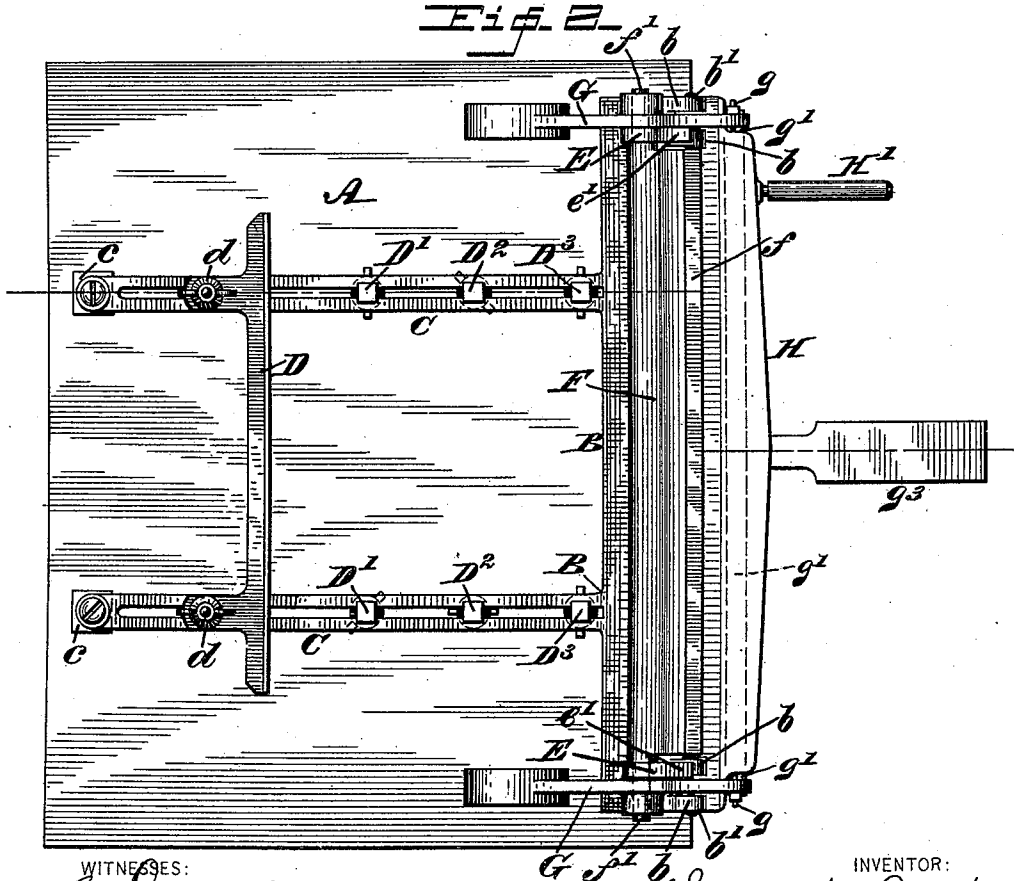


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

S. Y. BUCKMAN.

MACHINE FOR BENDING SHEET METAL.

No. 404,164. Patented May 28, 1889.

Fig. 3.

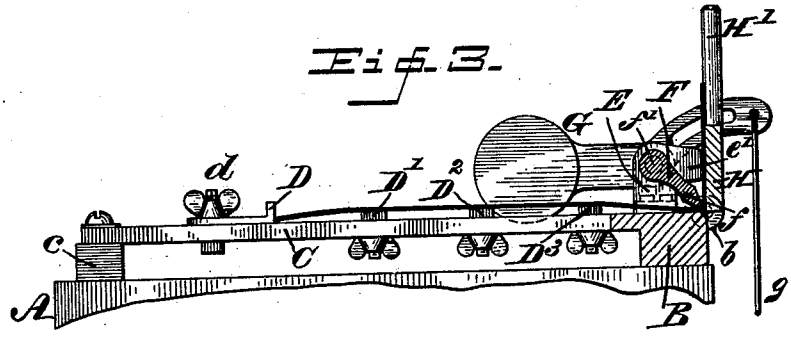


Fig. 4.

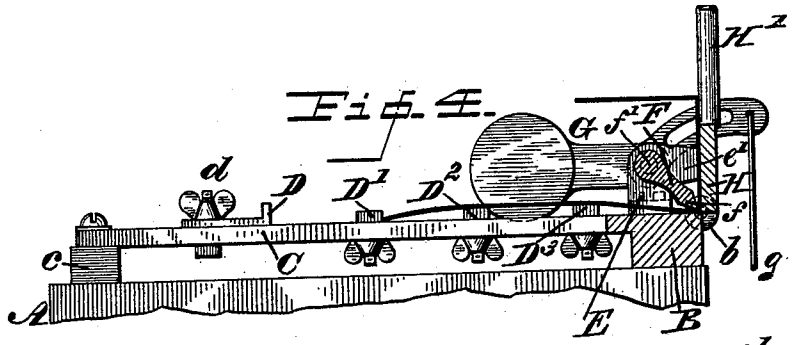


Fig. 5.

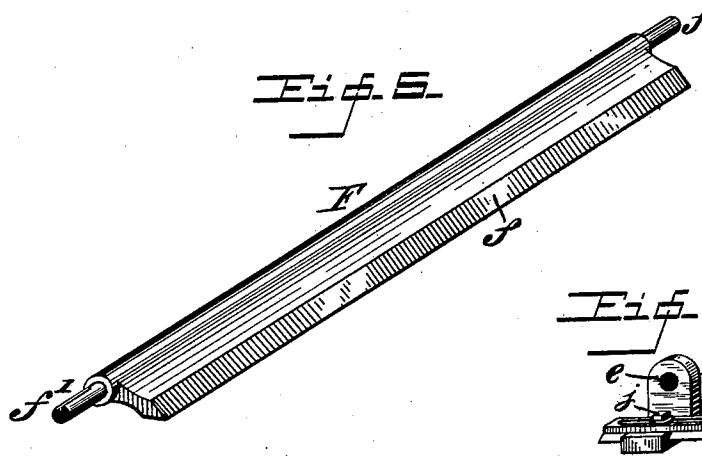


Fig. 8.

Fig. 6.

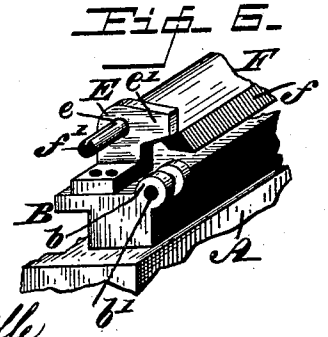
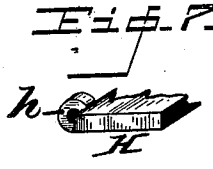


Fig. 7.



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UNITED STATES PATENT OFFICE.

SAMUEL Y. BUCKMAN, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR BENDING SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 404,164, dated May 28, 1889.

Application filed April 21, 1888. Serial No. 271,432. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL Y. BUCKMAN, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Machines for Bending Sheet Metal, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in machines for bending sheet metal, and has especial reference to a machine for bending sheet metal into a square or rectangular shape for forming boxes or pipes.

The object of the invention is to provide a machine by means of which the sheet metal may be formed into a square or rectangular shape with ease and rapidity; further, to provide a machine capable of forming the sheet metal into square or rectangular shape of any desired size; further, to provide a machine which will be the embodiment of simplicity, strength, and durability, and which can be produced at very small cost.

To attain these objects the invention consists of the combination of parts as herein set forth and claimed.

Figure 1 represents a side elevation, partly sectional, of a sheet-metal-bending machine embodying my invention. Fig. 2 represents a top plan view thereof. Fig. 3 represents a side elevation, partly sectional, of the machine, the sheet metal being in the machine and the first bend being made. Fig. 4 represents a similar view, the metal being given the second bend. Fig. 5 represents a view of the creaser detached from the machine. Figs. 6 and 7 represent detail views of parts of the machine to more clearly illustrate their construction. Fig. 8 represents a detail view of an attachment for causing the metal to be formed or bent into an octagonal or other shape.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a table of the common and well-known or of any preferred construction, in connection with which I employ my invention.

B designates the bed of the machine, which is firmly secured to the top of the table and has secured to or formed with it the slotted arms C, which are supported at their outer ends on blocks or uprights *c*, and is provided with the ears *b*, having aligned openings *b'*, the purpose of which will presently appear.

D designates a guide capable of being held in adjustable position in the slot of the arms by means of set-screws *d*, which pass through the slots and guide.

D', D^2, and D^3 designate sets of adjusting and guide screws or bolts arranged in the slots of the arms C, and which are also capable of moving in the slots.

E designates ears secured to the bed B, provided with openings *e* and extensions *e'*, which form stops, as will presently be seen, the front face of said extension *e'* being vertical and in the same plane as the front face of the bed B, as shown in Fig. 1.

F designates the creaser or clamp, which consists of a bar or plate of metal provided with a sharp lower edge, *f*, for creasing the metal to form the corner, and also provided with the journals *f'*, which have their bearings in the openings *e* of the ears E. To the outer end of the journals *f'* are keyed the weighted arms G. To the outer ends of the weighted arms G are secured rods *g*, which are connected at their lower ends to the bar or strip *g'*, and to the center portion of the bar or strip *g'* is secured a rod, g^2, which connects with a treadle, g^3, pivoted to an upright, g^4, secured to the floor.

The creaser or clamp is constructed of a comparatively thin piece of metal, and is pivoted to the ears at a less distance above the bed than the distance from its back to its front edge, so that when brought into contact with the sheet metal on the bed it is at an angle of about forty-five degrees, and as the binder is pressed against the sheet the clamp is more firmly held in place, thus securing the sheet in position and preventing springing of the same.

H designates the bender, which consists of a bar or strip provided with lugs *h*, which are pivotally secured between the ears *b* of the bed, and thus hinge the bender to the bed, and the bender is provided with an operating-handle, H'.

The device illustrated in Fig. 8 is a gage to

facilitate bending the metal into an octagonal or other shape, as it is sometimes desired to use pipes of such shapes; and the device consists of a slotted plate, J, through which the screws *j* pass, and which screws serve as adjusting-screws for the plate, allowing the same to be adjusted to any desired horizontal adjustment to cause the bender to incline the metal to any desired degree, the plate serving the same purpose as the extensions or stops on the uprights, as will be readily understood.

The operation is as follows: The parts of the machine being in the position shown in Fig. 1 of the drawings, the metal is passed under the creaser until its inner edge engages the guide D. The treadle is then depressed, causing the creaser to crease the metal and form the corner, and almost simultaneously with the operation of creasing the bender is elevated until it strikes against the stops *e'*, and the parts are then in the position shown in Fig. 3, it being noticed that the pressure of the bender against the sheet of metal and the edge of the creaser behind the same serves to bind the creaser in fixed position, thus clamping the sheet in place, and thereby preventing its slipping or springing during the operation of bending, and thus permitting the operator to readily construct pipe of small dimensions. The first bend having been formed, the metal is then moved to the first set of adjusting and stop nuts, and the operation repeated, forming the second bend, the metal being moved to the second set of stop-nuts, and so on until the square has been formed, the operation of the machine being the same at each bend of the metal, as will be readily understood.

It will be seen that by making the guide and stops adjustable the metal may be formed into boxes or pipes of any desired size, both the guide and stops, the latter between the guide and creaser, being placed in position and not removed during the entire operation of bending a pipe. It will also be seen that I provide a machine of very simple, strong, and durable construction which is thoroughly efficient in operation, and can be operated by an unskilled person, and can be produced at a very small cost, thus possessing all the necessary requirements which are calculated to commend the machine as a practical and money-saving invention.

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

1. A machine for bending metal, having a bed with slotted arms, a bender, and a creaser, a guide having its ends adjustably secured in said slots, and adjustable stops secured in said slots between the guide and creaser, said parts being combined substantially as and for the purpose set forth.

2. In a machine for bending metal, the bed B, with ears therein, having the extension *e'*, the front face of which is vertical and in the same plane as the front face of the bed, a creaser with sharp front edge and journaled so as to be at an acute angle when in contact with the bed, and a bender adapted to bear against the vertical front face of the extension *e'*, said parts being combined substantially as described.

3. In a machine for bending metal, the combination, with the bender, of the adjustable slotted plate, substantially as and for the purpose described.

4. In a machine for bending sheet metal, a bed having slotted arms, a series of adjustable stops arranged in said slotted arms, ears having extensions or stops carried by the bed, a creaser pivoted to the ears and having weighted arms for returning the same to its normal position, and a bender adapted to contact with the extensions on the ears carried by the bed, said parts being combined and operating substantially in the manner and for the purpose described.

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Witnesses:
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