(No Model.)

# T. C. BELDING.

## MACHINE FOR BEADING EAVES TROUGHS.

No. 428,549. Patented May 20, 1890.

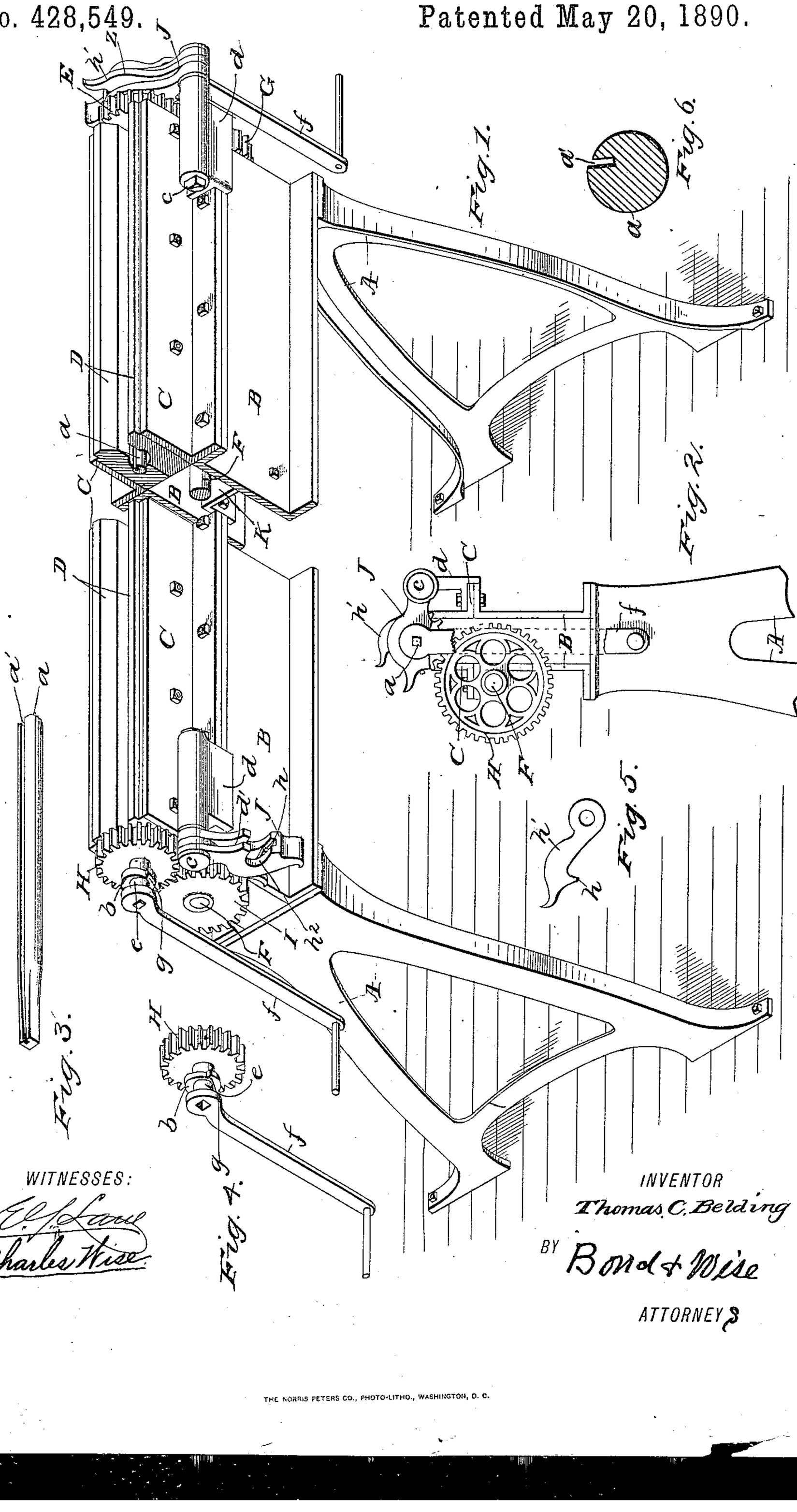


Fig. 1.

Fig. 6.

Fig. 2.

Fig. 5.

Fig. 3.

Fig. 4.

WITNESSES:

E. L. Law

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# UNITED STATES PATENT OFFICE.

THOMAS C. BELDING, OF CANTON, OHIO, ASSIGNOR TO THE CANTON STEEL ROOFING COMPANY, OF SAME PLACE.

## MACHINE FOR BEADING EAVES-TROUGHS.

SPECIFICATION forming part of Letters Patent No. 428,549, dated May 20, 1890.

Application filed February 1, 1890. Serial No. 338,885. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS C. BELDING, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Machines for Beading Eaves-Troughs; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a perspective view showing the body of the machine parted in transverse section to better illustrate its general construction. Fig. 2 is an end view showing a slight modification. Fig. 3 is a detached view showing a portion of the beading-shaft. Fig. 4 is a detached view of the handle, showing its shaft, gear, and cam-collar. Fig. 5 is a detached view of one of the detents. Fig. 6 is a transverse section of the beading-shaft, showing the same enlarged.

The present invention has relation to machines designed and calculated to form beads upon eaves-troughs; and it consists in the different parts and combination of parts hereinafter described, and particularly pointed out in the claims.

Similar letters of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, A represents the legs or standards, which may be of the form shown in the drawings, or they may be of any other desired form, reference being had to properly attaching the different parts to said legs or standards. The side bars B are preferably formed of channel-iron—such as illustrated in the drawings—and are securely attached to the top or upper ends of the legs or standards A in any convenient and well-known manner.

To the top or upper edges of the channel-irons B are securely attached the angle-iron bars C, which are located substantially as illustrated in Fig. 1.

To the inner sides of the angle-bars C and to the vertical portions of said bars C are attached the casing-bars D. The top or upper edges of these casing-bars D are beveled for the purpose of forming an opening to receive the edge of a sheet of metal upon which the bead is to be formed and to easily enter a sheet of metal, as hereinafter described. The inner faces of the casing-bars D are concaved. The concaves formed in these casing-bars D are arcs of a circle having a greater diameter than the diameter of the beading-shaft, so as to allow the metal which forms the bead to pass or move between the casing-bars D and the beading-shaft. The beading-shaft *a* is substantially of the form shown in Figs. 1, 3, and 6, and, as shown, is provided with the longitudinal groove *a'*, which groove extends the entire length of the beading-shaft *a*. The beading-shaft is located between the casing-bars D, as illustrated in Fig. 1, and is held in proper lateral adjustment by the concave casing-bars D.

To one end of the beading-shaft *a* is securely attached the gear-wheel E, which communicates rotary motion to the shaft F by means of the gear-wheel G. To the opposite end of the beading-shaft is removably attached the gear-wheel H, which communicates rotary motion to the shaft F by means of the gear-wheel I.

The object and purpose of connecting the beading-shaft *a* at each end with the gear-wheels to the shaft F is to prevent any twisting of the beading-shaft in case power is applied at one end only, or in the event more power is applied at one end than at the other. The shaft F is made of sufficient size and strength to prevent any twisting of this shaft, thereby causing the beading-shaft *a* to rotate even and uniform from end to end while the bead is being formed.

For the purpose of locking the beading-shaft endwise a cam-collar *b* is attached to the end of shaft *e*, with which engages a locking-lever J, and there is also located at the other end of the machine on the beading-shaft *a* a similar cam-collar and locking-lever operating in the same manner.

The locking-levers J are located substantially as shown in the drawings, and, as shown, are attached to the bolts *c*, which bolts are securely held in proper position by means of the brackets *d*, which brackets are securely attached to the machine proper at any de-

sired place, reference being had to the proper adjustment of the locking-levers. These locking-levers are each provided with longitudinal grooves or openings $d'$, which openings receive the cam-collars, thereby securely locking the beading-shaft and preventing any end movement of the beading-shaft $a$. Detents $h'$ are also located in the grooves or openings $d'$. These detents are pivotally attached to the bolts $c$ and move independently of the locking-levers J. For the purpose of causing the levers J to better embrace and hold cam-collars $b$ the transverse recesses $h^2$ are provided.

In use, when it is desired to form a bead upon the edge of a sheet of metal designed and calculated to form a section of an eaves-trough, the hollow shaft $e$, together with its gear-wheel H, cam-collar $b$, and handle $f$, are removed from the angular portion of the beading-shaft $a$, at which time the edge of the sheet metal is slid or placed in the groove $a'$, when the hollow shaft $e$ is placed in the position shown in Fig. 1 and the locking-lever placed over the cam-collar $b$, when the beading-shaft is rotated a sufficient distance to bring the notch or stop $g$ beyond a point of engagement with the extension $h$ upon the detent $h'$, at which time the detent $h'$ is placed in the position so as to come on the top or upper side of the cam-collar $b$, both detents $h'$ being placed in the position shown at Z, Fig. 1, at which time power is applied and the beading-shaft rotated until the extension $h$ engages the stop $g$, at which time the bead will be properly formed and located around the beading-shaft $a$, when the hollow shaft $e$, together with its different parts, is removed and the sheet metal is free to be slipped from the beading-shaft.

It will be understood that the locking-lever J, located at the end of the shaft $a$, provided with the fixed gear-wheel E, and holding the fixed cam-collar, always remains in the position shown in Fig. 1 unless it is desired to remove the beading-shaft.

It will be seen that by gearing the beading-shaft $a$ to the heavy shaft F at each end said heavy shaft F will prevent the twisting of the beading-shaft or one end of the beading-shaft rotating in advance of the other end.

In Fig. 1 the shaft F is shown located between the channel-bars B; but, if desired, this shaft may be located outside of the channel-bars, as shown in Fig. 2, without departing from the nature of my invention.

It will be understood that the handles $f$ are each to be attached to the beading-shaft $a$, one of said handles being attached directly to the beading-shaft and the other handle removably attached at the opposite end by means of the hollow shaft $e$. It will also be seen that the hollow shaft $e$ will be securely locked in proper position upon the beading-shaft $a$ by means of the cam-collar $b$ and the locking-lever J.

For the purpose of properly supporting the shaft F and preventing any sagging of said shaft the support K is provided, which support is located so that shaft F will rest upon the top surface thereof, which support is located substantially as shown in Fig. 1.

It will be understood that the shaft F is to be properly journaled at its ends by means of suitable cross-bars provided with bearings.

It will be seen that the handles $f$ may be attached to the shaft F, if desired; but I prefer to attach said handles as shown. The longitudinal groove $a'$ is formed at an angle to the radial line of the beading-shaft $a$, and a part or portion of said beading-shaft upon one side of this longitudinal groove is cut away, as illustrated in Fig. 6, thereby bringing one corner of the groove $a'$ a short distance below the opposite corner or edge of the groove.

The object and purpose of cutting away a portion of the beading-shaft $a$ is to provide sufficient room between the casing-bars B and said shaft to allow the metal to be properly folded without forming a sharp bend, and also to prevent any shearing of the metal.

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

1. In a beading-machine, the combination of the legs or standards A, the side bars B, the angle-iron bars C, the concave casing-bars D, beveled at their top or upper edges, the grooved beading-shaft $a$, located between the casing-bars D, the removable hollow shaft $e$, fitted to the shaft $a$, and provided with the cam-collar $b$, the locking-levers J, and the detents $h'$, substantially as and for the purpose specified.

2. In a beading-machine, the combination, with the beading-shaft $a$, having groove $a'$, the hollow shaft $e'$, fitted thereon, and the casing-bars D, of a shaft F, and the gearing E G H I, connecting the shafts at both ends, and means for imparting motion thereto, substantially as described.

3. In a beading-machine, the combination of the beading-shaft $a$, provided with the longitudinal groove $a'$, the casing-bars D, the locking-levers J, provided with the longitudinal grooves or openings $d'$, the cam-collars $b$, provided with the stop $g$, and the detents $h'$, provided with the extension $h$, adapted to engage the said stop $g$, substantially as and for the purpose specified.

4. In a beading-machine, the combination of the beading-shaft $a$, provided with the longitudinal groove $a'$, the casing-bar D, the hollow shaft $e$, having located thereon the cam-collar $b$, and the handle $f$, and a locking-lever pivotally attached to the bolt $c$, said bolt being located in the bracket $d$, the detent $h'$, pivoted to said bolt $c$, adapted to be received in the groove or opening $d'$ of the locking-lever, and having the extension $h$, adapted to engage the stop $g$, substantially as and for the purpose specified.

5. In a beading-machine, the beading-shaft $a$, provided with the longitudinal groove $a'$,

the casing-bars D, the cam-collars *b*, the locking-levers J, provided with the grooves *d'*, and the notches or recesses $h^2$, adapted to embrace said cam-collars *b*, substantially as and for the purpose specified.

6. In a beading-machine, the combination of the beading-shaft *a*, provided with the longitudinal groove *a'*, and having attached thereto the gear-wheel E, the removable attached gear-wheel H, the casing D, the shaft F, having attached thereto the gear-wheels G and I, said gear-wheels meshing with the gear-wheels E and H, and means for rotating the beading-shaft, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

THOMAS C. BELDING.

Witnesses:

ALICE FALOR,

F. W. BOND.