(No Model.) 2 Sheets—Sheet 1.

M. C. HUNGERFORD.

GUTTER FORMER.

No. 475,318. Patented May 24, 1892.

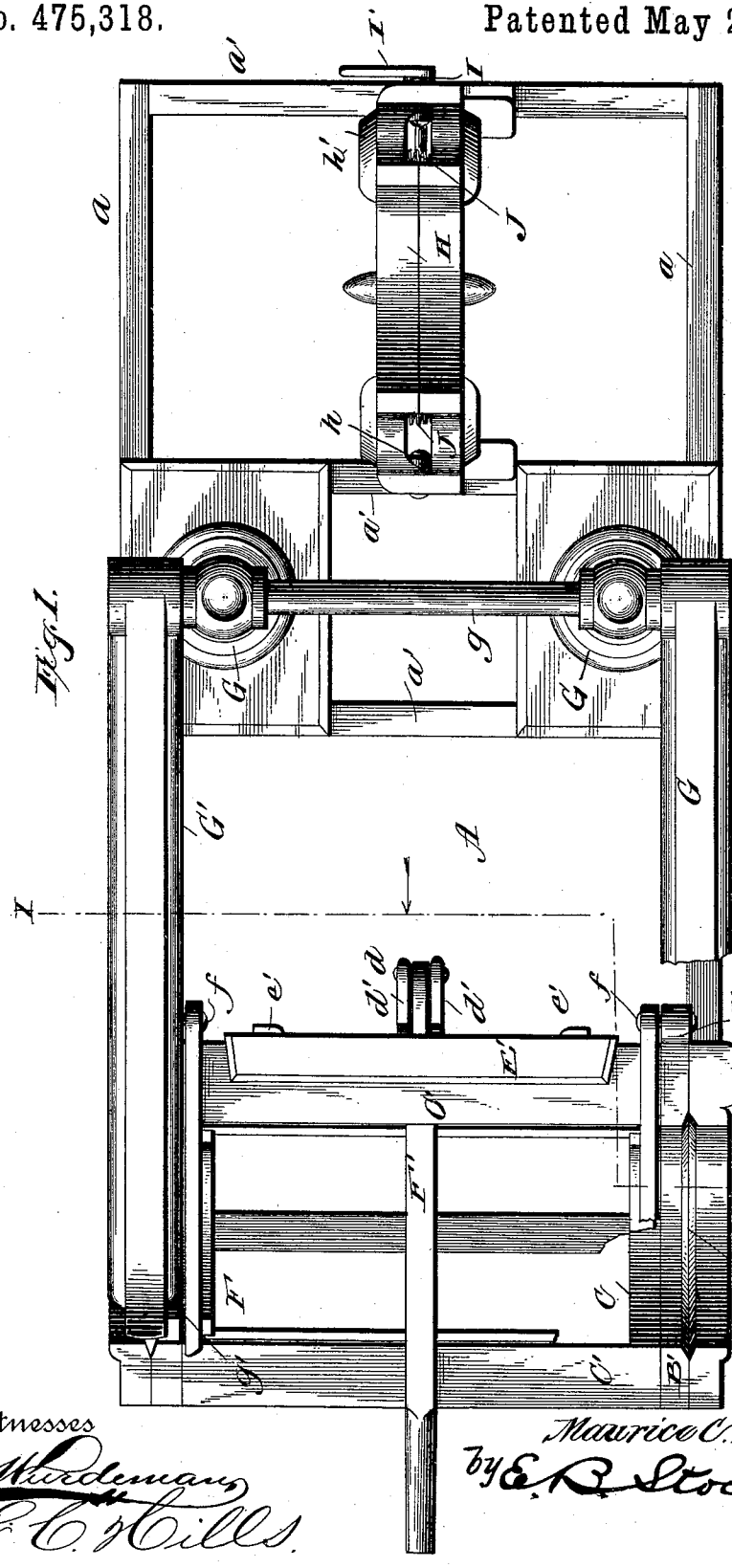

Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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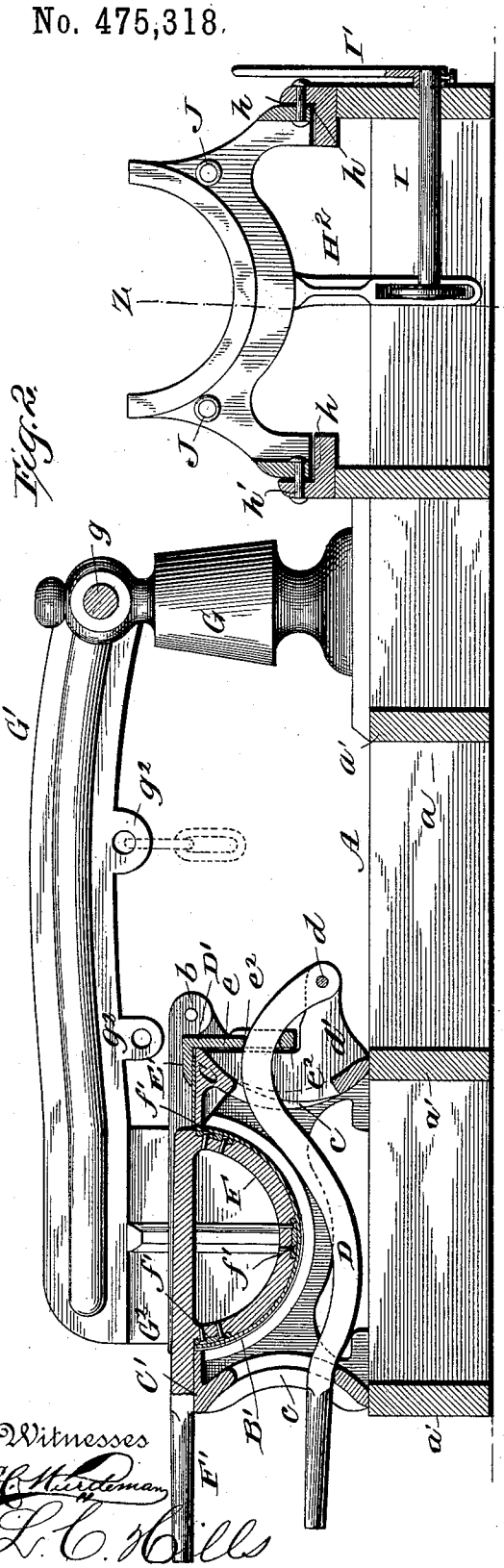

Fig. 2.

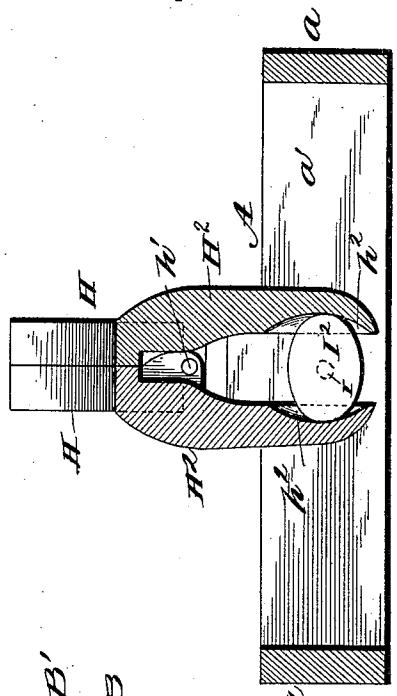

Fig. 4.

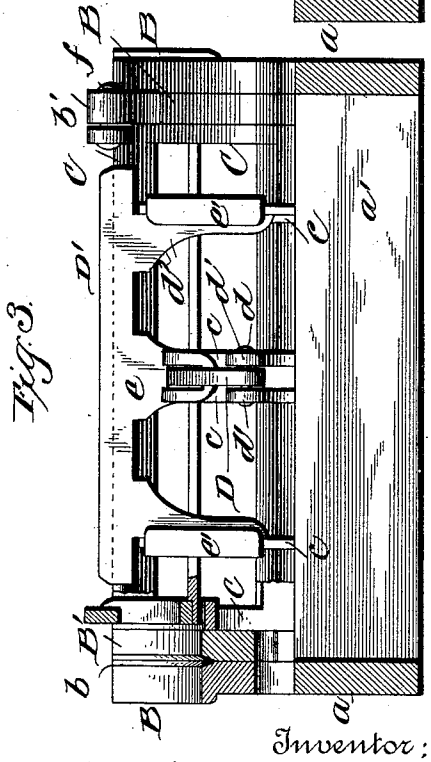

Fig. 3.

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UNITED STATES PATENT OFFICE.

MAURICE C. HUNGERFORD, OF HUNTINGTON, WEST VIRGINIA.

GUTTER-FORMER.

SPECIFICATION forming part of Letters Patent No. 475,318, dated May 24, 1892.

Application filed July 22, 1891. Serial No. 400,330. (No model.)

To all whom it may concern:

Be it known that I, MAURICE C. HUNGERFORD, a citizen of the United States, residing at Huntington, in the county of Cabell, State of West Virginia, have invented certain new and useful Improvements in Gutter-Formers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in machines or apparatus for forming guttering and for joining sections thereof together by crimping or swaging the ends thereof in such a manner that when placed together and soldered or otherwise secured they form a brace upon the under side of the gutter sufficient to hold the same in place, thus doing away with stay-braces across the top, which are obstacles in the way of cleaning and painting the gutter inside. I have a novel method of thus forming the gutter. I have devised a simple, cheap, efficient, and durable apparatus for carrying out the process. I provide a portable apparatus having provision for carrying out the several steps with a minimum of labor and with economy of material and time.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a top plan of my improved apparatus with portions broken away. Fig. 2 is a vertical longitudinal section through the same. Fig. 3 is a vertical cross-section of the same on the line $x\,x$ of Fig. 1. Fig. 4 is a vertical cross-section through the line $z\,z$ of Fig. 2.

Like letters of reference indicate like parts throughout the several views in which they occur.

Referring now to the details of the drawings by letter, A designates a substantial frame-work or support for the operating parts. It may be of any suitable or desired material and shape and size, being shown as rectangular and consisting of the longitudinal pieces a and cross-pieces a', bracing the same, as seen best from the section in Fig. 2. At one end of this frame or support there are arranged the end pieces B, which are supported thereon in any suitable manner and have their upper faces of substantially the shape which it is desired to give the gutter. B′ are like pieces arranged parallel with and in close proximity to the pieces B, with their upper faces of like contour. The adjacent edges of the concave faces of the pieces B and B′ are beveled or inclined toward each other to form a V-shaped semicircular groove or recess b, as seen in Fig. 3. The pieces B′ are formed upon their rear face or side with ears or knuckles b', which serve as supports for the pivots of the former, soon to described. The pieces B′ are connected or held at the regulated distance apart by the pieces C, which are supported upon the frame-work or support A, and having the transverse bars C′, which present a flat surface upon which the edges of the tin may be supported as it is operated upon. The bars C′ are braced by the vertical curved bars c, which are curved for strength, and the central ones of which are arranged in pairs, and between which is guided the lever which actuates the grip, which will soon be described. This lever D is pivoted, as at d, between ears or lugs d' on the rear pair of bars, as shown, and is formed upon a compound curve, as seen in Fig. 2, its forward end working between the forward set of bars, as seen in the said figure, the curve at the rear end being upward, as seen in said figure, and here it passes through an opening or slot in the vertical portion e of the grip D′, which is formed or provided with the vertical legs d^2, which are guided by the overlapping flanges e' of the vertical bars c, as seen best in Fig. 3. The grip has a horizontal portion E′, which is designed to clamp the metal down upon the flat surface of the rear transverse bar, as indicated in Fig. 2. The upper and lower walls of the slot or opening in the vertical portion of the grip are rounded, as seen at e^2 in Fig. 2, to afford ease of operation and reduce the friction.

F is the former. It is pivoted on pivots f in the ears or lugs b', as seen in Figs. 1 and 3, and is provided with a suitable handle F′, by which it is manipulated. The construction of this former may be best seen from Fig. 2.

It is shaped to conform to the shape of the concave faces of the pieces B and B′, as shown, also, in Fig. 2, having longitudinal bars f' seated and secured in recesses in the curved portions, with their outer faces flush therewith, as seen in Fig. 2.

Suitable uprights G are provided upon the frame-work, as seen in Figs. 1 and 2, and these are connected by the cross-bar g, as seen in Fig. 1. Upon suitable pivots or pintles held in these uprights are pivoted the levers G′, which at their forward ends are provided with semicircular plates G^2, which have a substantially V-shaped contour to fit the V-shaped recess in the pieces B and B′ carrying, also, an inwardly-extending semicircular flange g', as seen in Fig. 1, to bear upon the inwardly-extending flanges of the pieces B′, as will be readily understood. These levers are provided, preferably, with apertured ears g^2 for the attachment of a cord, rope, or chain, as indicated by dotted lines in Fig. 2, so that attachment may be made to a foot-lever (not shown) when desired, although it is proposed ordinarily to operate it by hand, as by a heavy blow on the desired part.

The operation of this part of the invention is as follows: A piece of tin of the required dimensions is placed in the apparatus, with its edges resting upon the flat surfaces of the bars C′, and the lever D then forced down to hold the rear edge by means of the clamp, as seen in Fig. 2. Then the former is brought down upon the tin, which is forced into the concavity therefor, when the forward edge, being not held, is free to be brought down into the mold or concavity, when the tin assumes the position in which it is shown in Fig. 2. While it is in this position the levers g' are brought down to force the ends of the tin into the V-shaped recesses b, the V-point of the semicircular plates on the levers forcing the metal into the said recesses and forming upon the ends of the tin a substantially V-shaped flange. The levers and former are then raised and the section of guttering removed. A roll or bead may be formed upon one edge in any suitable manner, if desired. In order to clamp the adjacent edges or ends of two sections of guttering thus formed, I provide the mechanism shown at the right of the drawings, and which consists of the semicircular bars H, secured to the frame-work or support A, as shown in Figs. 1 and 2, and the one provided with an offset h, within which the other is pivoted, as at h', (see Fig. 2,) each bar being formed or provided with a depending portion H^2, the adjacent faces thereof being provided with concavities h^2, as seen best in Figs. 2 and 4, and I is a shaft journaled in the frame-work and provided upon its extended end with a lever or handle I′, by which it may be operated, its inner end carrying a double cam or oval-shaped block I^2, as seen best in Fig. 4, which is designed to work in the concavities h^2, as shown in said Fig. 4. Suitable springs J should be provided to normally hold the bars H separated. The operation will be readily understood. When it is desired to clamp the joint between two sections and press it firmly together, it is placed between the adjacent faces of the bars, which are held slightly separated by the springs, and then the handle or lever is turned to force the lower ends of the depending portions apart, and consequently bringing the upper parts or bars together and pinching the joint snugly together.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as new is—

1. The combination, with the frame, of the clamp having horizontal and vertical portions, the operating-lever formed upon a compound curve and passed through an opening in the vertical portion of said clamp, the former, and the end levers for forming the crimp in the ends of the gutter-section, as set forth.

2. The combination, with the frame and the semicircular supports, with their V-shaped recesses, of the clamp and its operating-lever, the guides for the clamp, and the former pivoted in ears of the semicircular supports, as set forth.

3. The combination, with the frame and the semicircular supports, of the clamp, the operating-lever therefor passed through a hole in the vertical portion thereof, the former, the guide-bars for the said lever, and the end levers carrying semicircular plates with V-shaped edges, as set forth.

4. The combination, with the frame and the substantially semicircular clamp-plates, one of which is pivoted and each provided with depending recessed portion, of the cam working in the said recesses to actuate the plates, as set forth.

5. The combination, with the frame and the substantially semicircular clamp-plates, one of which is provided with offsets and the other pivoted thereto and each provided with depending portion having recesses, of the shaft at right angles to the depending portions, and a cam on said shaft working in said recesses, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

MAURICE C. HUNGERFORD.

Witnesses:

J. T. WILSON,

W. E. KING.