No. 827,229. PATENTED JULY 31, 1906.

H. A. GIBBS.

MACHINE FOR FORMING EAVES TROUGH HANGERS.

APPLICATION FILED MAR. 10, 1905. RENEWED APR. 11, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

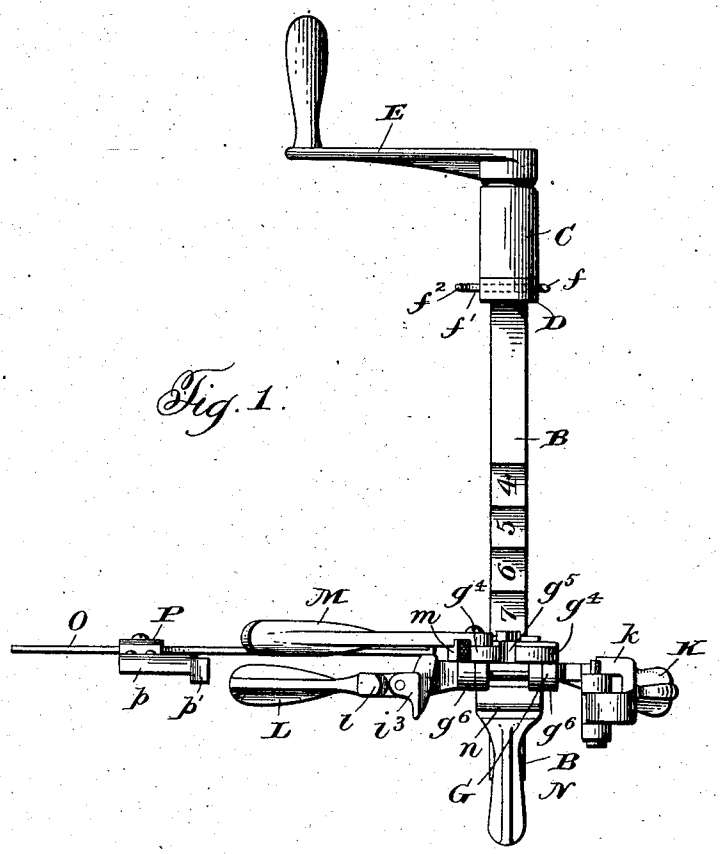
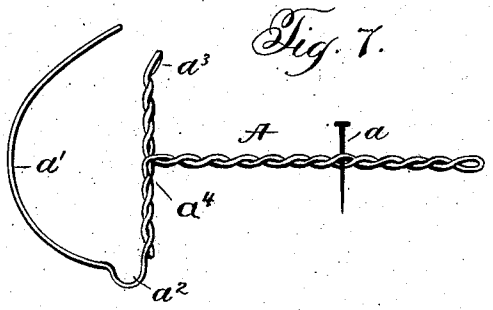


Fig. 7.



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3 SHEETS—SHEET 2.

Fig. 2.

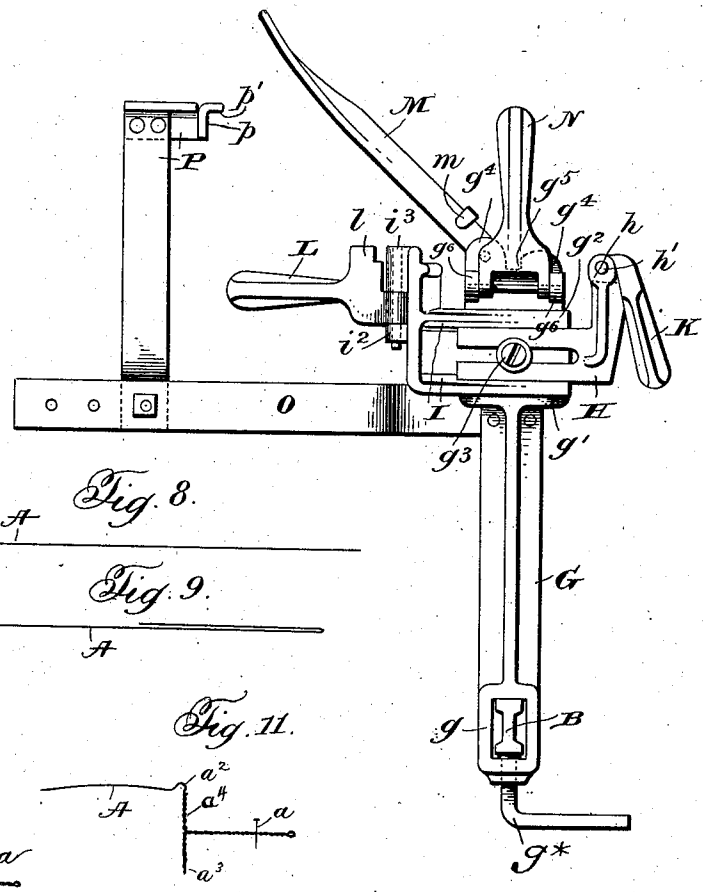


Fig. 8.

Fig. 9.

Fig. 10.

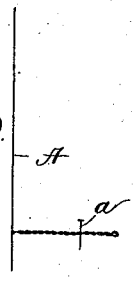
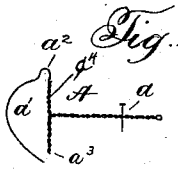


Fig. 11.

Fig. 12.



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3 SHEETS—SHEET 3.

Fig. 3.

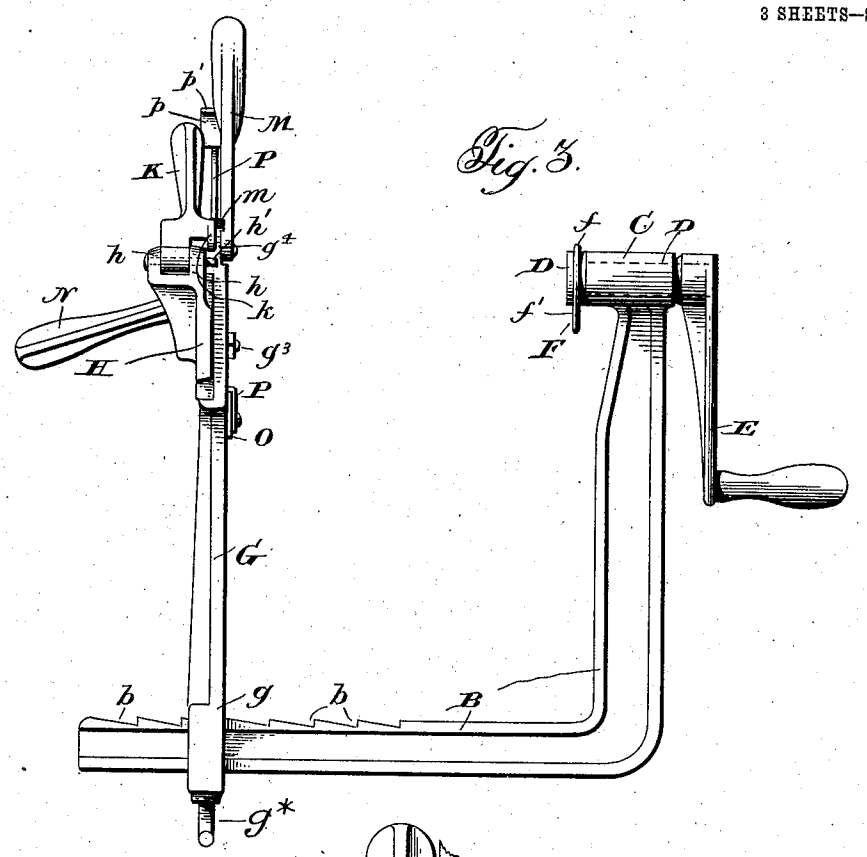


Fig. 4.

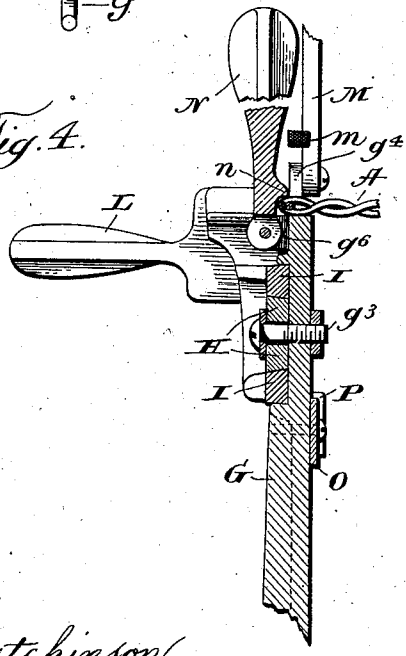


Fig. 5

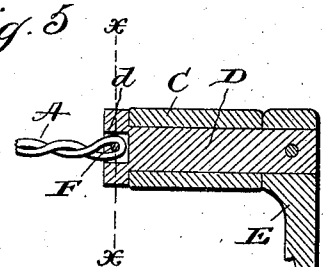
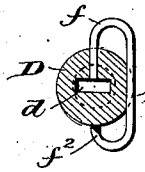


Fig. 6.



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UNITED STATES PATENT OFFICE.

HARRY A. GIBBS, OF PRINCETON, ILLINOIS.

MACHINE FOR FORMING EAVES-TROUGH HANGERS.

No. 827,229. Specification of Letters Patent. Patented July 31, 1906.

Application filed March 10, 1905. Renewed April 11, 1906. Serial No. 311,130.

To all whom it may concern:

Be it known that I, HARRY A. GIBBS, of Princeton, in the county of Bureau, and in the State of Illinois, have invented a certain new and useful Improvement in Machines for Forming Eaves-Trough Hangers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a machine embodying my invention. Figs. 2 and 3 are respectively side and end elevations of the same. Fig. 4 is a partial vertical sectional view of the same. Fig. 5 is a longitudinal sectional view of the twister-shaft. Fig. 6 is a sectional view on the line $x\,x$, Fig. 5. Fig. 7 is a plan view of a hanger that is adapted to be made on the machine illustrated in Figs. 1 to 6, and Figs. 8 to 12 are views showing the various steps of forming the hanger illustrated in Fig. 7.

The object of my invention has been to provide a machine by which hangers for eaves-troughs can readily and cheaply be formed; and to such ends my invention consists in the hanger-forming machine hereinafter specified.

The hanger which the machine illustrated herein is adapted to make is shown in Fig. 7 and comprises a shank A, formed of twisted wire and preferably having a nail a twisted into the wire, so that the hanger may be fastened in place with the greatest facility. The wires of the shank A merge into a loop a', that is to support the eaves-trough. An offset a^2 is provided to receive the bead on the edge of the eaves-trough. From the offset a^2 the loop extends in substantially semicircular form, and the free end of the wire, forming the curved portion of the loop, is received in a hook a^3, formed in the other wire of the shank. The cross-piece a^4 of the hanger is, like the shank, formed of twisted wire.

In carrying my invention into practice I provide a frame consisting of a shank B, that rises at one end to support a journal C, in which is mounted a twister-shaft D, the latter having upon its outer end a crank E, by which it can be turned. The twister-shaft is provided with a hole d for the reception of a loop of the wire to be twisted, a latch F being provided to secure the said loop in the said hole. The latch is in the form of a bent wire, having one strand f passing through a hole intersecting the hole d and having its other strand f' extending across to the opposite side of the shaft, where its end f^2 is bent around to prevent escape of the end f from its hole. The shank B is provided with ratchet-teeth b, extending away from the twister-shaft, and a head G is mounted upon the said shank, the head having a loop g embracing the said shank, the loop being large enough so that the head can be moved over the ratchet-teeth, the head, however, catching on the ratchet-teeth when it is tipped toward the twister-shaft. A screw g^* may be threaded into the loop to clamp the head in adjusted position. Slides H and I are mounted between horizontal guiding-ribs g' and g^2 on the head, the slides having forked shanks which are clamped in place by a screw g^3 threaded into the head. The forks of one slide lie between those of the other, but have a bearing thereon, by being provided with a dovetail fit, as shown in Fig. 4.

The slide H is provided with vertical ears h, in which a pin h' is mounted, the said pin projecting beyond the said ears parallel to, but in the direction of, the twister-shaft D. A hand-lever K is mounted on the pin between the ears, and said lever is provided with a lug k in the plane of the projecting end of the pin, but spaced away from said pin a distance at least equal to the diameter of the wire to be used. A hand-lever L is pivoted between horizontal ears i^2 and i^3 on the slide I, the upper lug i^3 being elongated and of a diameter corresponding to that of the bend a^2 to be formed in the hanger. The lever is provided with a lug l, that stands parallel to the lug i^3, but separated therefrom a distance equal to the diameter of the wire to be used. The head G projects upward above the slides to form vertical ears g^4, parallel to the plane of the slides, between which ears is a notch g^5 of sufficient width to receive the twisted shank of the hanger. A hand-lever M is pivoted to one of the ears g^4 and has a lug m, that is adapted to pass into the notch g^5 to clamp the wires of the hanger-shank against the bottom of the notch, so that they will be securely held for twisting. Ears g^6 are formed on the head G below the notch g^5, and a hand-lever N is pivoted between them. The lever N is provided with a rib or shoulder n, which when the lever is folded up against the face of the head will stand a distance above the bottom of the notch equal to

the diameter of the twisted shank of the hanger. The lug *k* in its lowest position, the bottom of the notch, and the lower limits of the working surface of the lug *l* are all at substantially the same level.

A horizontal gage-support O is formed on or secured to the head G, and a gage-arm P is adjustably mounted on said support, as by a bolt passing through said parts, the arm being prevented from turning, as by a bend formed therein to bear on the upper edge of the support. The gage preferably has both a vertical surface *p* and a horizontal surface *p'*, the two forming a corner in which the end of the wire is adapted to be received when the wire has been passed under the pin *h'*.

In the use of the foregoing machine for making the hanger illustrated in Fig. 7 a section of wire of proper length is provided, as illustrated in Fig. 8. The wire is passed beneath the pin *h'* and is engaged in the corner formed by the surfaces *p p'*. The hand-lever K is then swung from the position indicated in Fig. 2 to its upper position, causing the lug *k* to bend the wire about the pin *h'*, thus doubling the wire upon itself, as illustrated in Fig. 9. The loop thus formed is inserted in the slot *d* in the twister-shaft, and the latch F is passed down through the loop, thus securing it in the twister-shaft, the two strands of the wire being laid in the notch g^5. The free ends of the wire are bent against the face of the head G, and the lever N is swung to the position illustrated in Fig. 4, where its rib or shoulder *n* stands over the bent ends of the wire and holds the partially-formed hanger down in the notch g^5. The twister-shaft is then rotated to twist the shank of the hanger, and the nail is inserted at the proper time to be twisted into the shank. The hanger is thus brought to the condition illustrated in Fig. 10. The longer untwisted end of the wire is now passed under the pin *h'* and is bent upon itself by means of the hand-lever K, as in the original operation. The loop thus formed is engaged in the twister-shaft, as in the first operation, and the two ends of the cross-piece a^4 are laid in the notch *g*. The lever M is swung down, so that its lug *m* bears upon and firmly holds the wires in the notch. The twister-shaft is then rotated to form the twisted cross-piece a^4. The lever N is then raised out of the way, and the hanger while still engaged in the twister-shaft is moved to bend the loop a^3 in the cross-piece while it is still held in the twister-shaft, the loop being bent into the position indicated in Fig. 7. The shank of the hanger is then again laid in the notch g^5, and the untwisted end of the wire is passed between the lug *l* and the ear i^3, the lever L, carrying the said lug, standing at this time substantially parallel to the twister-shaft. The lever L is then swung to cause the lug *l* to sweep the wire around the ear i^3 to form the bend a^2, that is to receive the bead on the eaves-trough. The free end of the wire *a'* is then bent to conform to the bottom of the eaves-trough, and the hanger is finished.

The adjustability of the head with reference to the twister-shaft permits of the formation of shanks of different lengths. The adjustability of the slides H and I permits of the formation of cross-pieces of different lengths, and the adjustability of the gage enables the bend to be formed in the proper places for hangers of different size.

It is obvious that various changes can be made in the above-illustrated construction which will be within the scope of my invention, and I desire not to be limited beyond the terms of my claims and the requirements of the prior art.

Having thus described my invention, what I claim is—

1. In a machine for forming eaves-trough hangers, the combination of a frame, a twister-shaft mounted in said frame, a head having a notch opposite said twister-shaft, means for clamping the wire in said notch, and means at one side of said notch for forming bends transverse to the axis of said twister-shaft.

2. In a machine for forming eaves-trough hangers, the combination of a frame, a twister-shaft mounted in said frame, a head having a notch opposite said twister-shaft, means for clamping the wire in said notch, and means at each side of said notch for forming bends transverse to the axis of said twister-shaft.

3. In a machine for forming eaves-trough hangers, the combination of a frame, a twister-shaft mounted in said frame, a head having a notch opposite said twister-shaft and having bending means for the wire at each side of such notch.

4. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft mounted therein, a head having a notch opposite said twister-shaft, means for clamping the wire in said notch, said head having a former on one side of said notch, and a lever adapted to sweep the wire about said former.

5. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft mounted therein, a head having a notch opposite said twister-shaft, said head having a former on each side of said notch, and levers adapted to sweep the wire about said formers.

6. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft mounted therein, a head on said frame, said head being provided with a notch opposite said shaft, formers on either side of said notch, and levers pivoted within the forming-surfaces of said formers and provided with shoulders adapted to swing across said forming-surfaces.

7. In a machine for forming eaves-trough

hangers, the combination of a frame having a twister-shaft pivoted therein, said twister-shaft having an axially-arranged opening to receive a wire loop, and having a latch that is provided with a movable arm which is adapted to intersect said first-mentioned opening.

8. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft pivoted therein, said twister-shaft having an axially-arranged opening to receive a wire loop, and having a latch that is provided with a movable arm which is adapted to intersect said first-mentioned opening, said latch also having an arm extending across to the opposite side of said shaft and being provided with a bent end to contact with the shaft and act as a stop.

9. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft journaled therein, said frame having a shank with ratchet-teeth formed thereon, a head having a loop adapted to embrace said shank, said head being adapted to engage said teeth, said head also having a plate-like portion rising therefrom and provided with a wire-receiving notch opposite said twister-shaft, said head also carrying wire-forming devices on opposite sides of said notch.

10. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft journaled therein, a head adjustably mounted on said frame, said head being provided with a wire-receiving notch opposite said shaft and with a forming device upon one side of said notch, and an adjustable slide mounted upon said head and provided with a wire-forming device upon the opposite side of said notch.

11. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft journaled therein, a head adjustably mounted on said frame, said head being provided with a wire-receiving notch opposite said shaft and with a forming device upon one side of said notch, and a slide mounted upon said head and provided with a wire-forming device upon the opposite side of said notch, said slide being adjustable to move its former nearer to or farther from the former on said head.

12. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft journaled therein, a head adjustably mounted on said frame, said head being provided with a wire-receiving notch opposite said shaft, and forming devices upon each side of said notch, said forming devices being mounted upon slides to permit their adjustment nearer to or farther from the said notch.

13. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft journaled therein, said frame having a head, said head being provided with a wire-receiving notch opposite said shaft, and a lever pivoted on said head below said notch, said lever having a rib that is adapted to lie against the face of said head which is away from said twister-shaft, said rib when in said position being above the bottom of said notch a distance substantially equal to the thickness of the wire of which the hanger is formed.

14. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft journaled therein, said frame having a head, said head being provided with a wire-receiving notch opposite said shaft, and a lever pivoted upon said head and having a lug that is adapted to enter said notch.

15. In a machine for forming eaves-trough hangers, the combination of a frame having a twister-shaft journaled therein, said frame having a head, said head being provided with a wire-receiving notch opposite said shaft, a lever pivoted on said head below said notch, said lever having a rib that is adapted to lie against the face of said head which is away from said twister-shaft, said rib when in said position being above the bottom of said notch a distance substantially equal to the thickness of the wire of which the hanger is formed, and a lever pivoted upon said head and having a lug that is adapted to enter said notch.

In testimony that I claim the foregoing I have hereunto set my hand.

HARRY A. GIBBS.

Witnesses:
CHAS. A. PRIETSMAN,
ROBERT HURLBURT.