2 Sheets—Sheet 1.

G. A. BOWERS.

Pan-Forming Machine.

No. 219,798. Patented Sept. 23, 1879.

Fig. 1

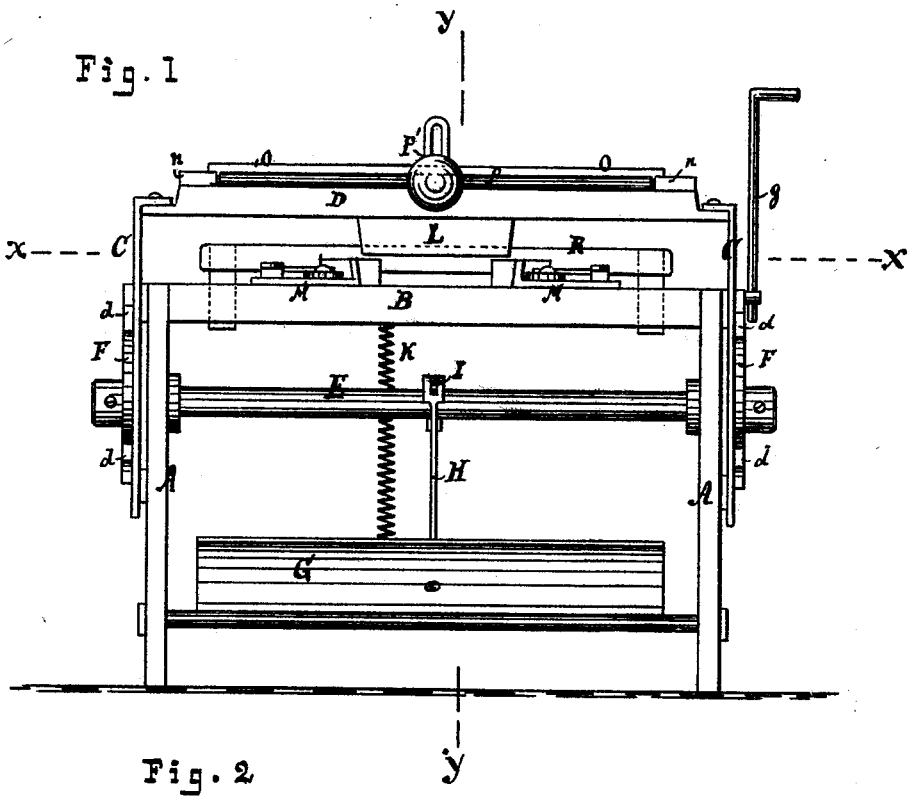
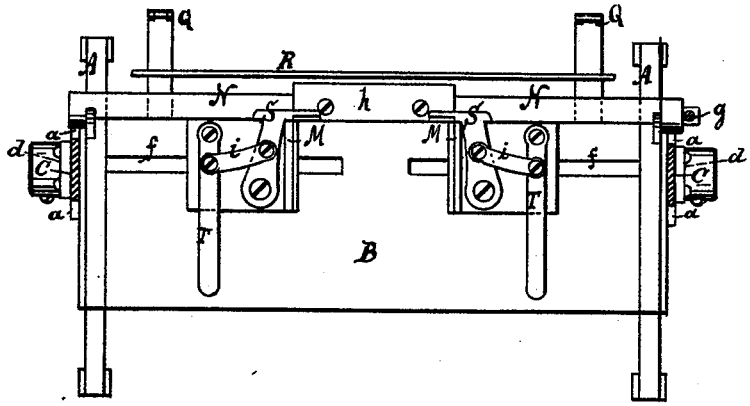


Fig. 2



WITNESSES:

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2 Sheets—Sheet 2.

G. A. BOWERS.

Pan-Forming Machine.

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Fig. 3

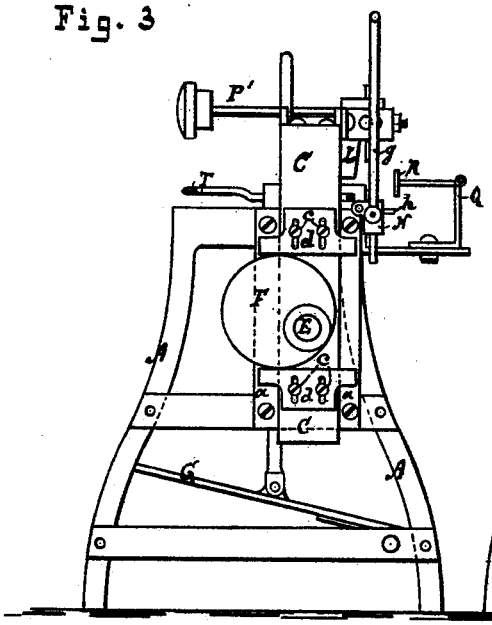


Fig. 4

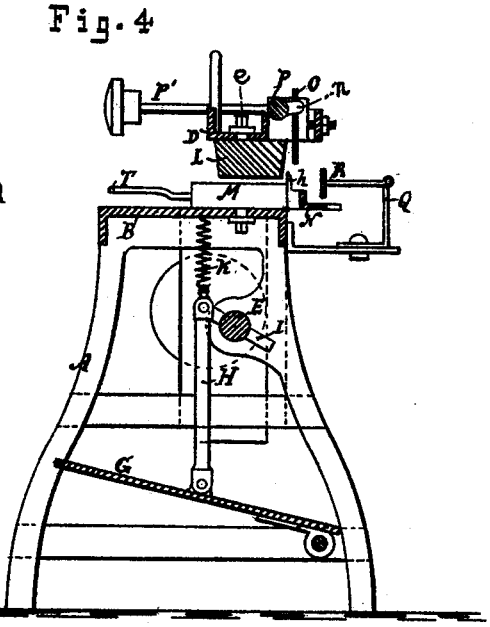


Fig. 5

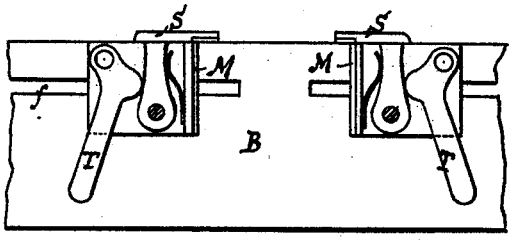
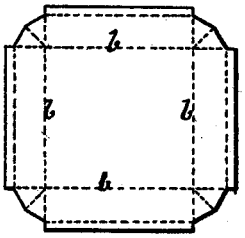
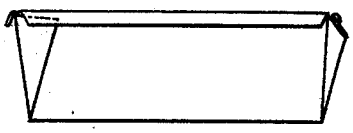


Fig. 6





WITNESSES:

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W. Sherburne.

INVENTOR:

Geo A Bowers

UNITED STATES PATENT OFFICE.

GEORGE A. BOWERS, OF CHICAGO, ILLINOIS, ASSIGNOR TO CRAGIN BROTHERS & CHANDLER, OF SAME PLACE.

IMPROVEMENT IN PAN-FORMING MACHINES.

Specification forming part of Letters Patent No. **219,798**, dated September 23, 1879; application filed December 26, 1878.

To all whom it may concern:

Be it known that I, GEORGE A. BOWERS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pan-Forming Machines; and I do hereby declare the following to be a clear, full, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a pan-forming machine embodying my said invention. Fig. 2 is a sectional plan taken on the line *x x*, drawn across Fig. 1. Fig. 3 is an end view of the machine. Fig. 4 is a vertical transverse section of the same, showing those parts which are at the left hand of the line *y y* drawn through Fig. 1. Fig. 5 is a detailed plan of the bed of the machine, showing a modification of the means employed for turning the surplus metal at the corners of the pan; and Fig. 6 is a plan of the blank when ready for being formed up.

Like letters of reference indicate like parts.

The object of my invention is to provide a machine by which the sides and ends of dripping-pans may be formed up ready to receive the wire at the top; and to that end my invention consists in arrangement of the several parts as hereinafter described and claimed.

In the drawings, A represents the frame of the machine, and B the bed, which are made of metal, as shown, or in any suitable form that will receive the operating parts.

C C are vertical uprights, which are secured within guides or stays attached to the ends of the frame. These uprights extend upward above the bed of the machine, as shown, and are so arranged within the guides or ways as to admit of a free and easy ascending and descending movement.

D is a cross-head, which is arranged longitudinally over the bed B, slightly above the same, and is permanently attached at its ends to the upper end of the uprights C C, respectively, and so as to ascend and descend with said uprights.

E is a rock-shaft, which is arranged longitudinally under the bed B, slightly below the same, and is journaled at its ends to the ends of the frame, so as to admit of a free and easy rocking movement.

The shaft passes loosely through slots formed in the respective uprights, and is provided with cam-wheels F F, eccentrically mounted upon said shaft, as shown in Figs. 1 and 3.

The cam-wheels F F are each fitted between lugs *d d* attached to the uprights, and are so arranged as to impart an ascending or descending movement to the uprights and cross-head by a rocking movement of the shaft E.

G is a treadle, which is hinged to the ends of the frame, so as to admit of a free and easy tilting movement.

H is a connecting-rod, which is attached at its lower end to the treadle, and at its upper end to an arm, I, secured to the center of the shaft E.

K is a coiled spring, which is attached at one end to the bed B, and at the other end to the treadle or to arm I. The arrangement of these parts is such that as the treadle is tilted downward the shaft E is rocked so as to move the cross-head downward, and as force is removed from the treadle the latter is moved upward by the tension of the spring K imparting a reverse movement to the shaft E, elevating the cross-head to its normal position.

L is a die-block, which is attached to the lower surface of the cross-head by means of bolts *e e*, which pass through a slot formed in the cross-head. The arrangement of these bolts is such as to allow the die-block to be removed when desired, the object of which is to allow the die-block to be changed when pans of different sizes are to be formed. The ends and rear side of this block are beveled to correspond with the desired bevel of the side and ends of the pan, as shown in Figs. 1 and 4.

M and M are die-blocks, which are beveled on their adjacent edges, and are attached to the upper surface of the bed, immediately under the cross-head, by means of suitable bolts which pass through elongated mortises *f f* formed in the bed. The arrangement of these blocks is such as to admit of their being moved to or from each other, and firmly secured at the desired point to bring their inner ends to

proper position to act on the ends of the pan, between their beveled surface and the corresponding surfaces of the block L, when the latter is moved downward with the cross-head.

N is a forming-apron, which is hinged to the side or end of the bed, and so arranged as to admit of a free and easy tilting movement. Permanently attached to one end of this apron is a lever, by which the requisite tilting is imparted to the apron. Firmly secured to the edge of this apron is a forming-plate, *h*, the outer edge of which projects slightly beyond the edge of the apron and above the same. The arrangement of this plate and this apron is such that as power is applied to the lever, imparting a tilting movement to the apron, the inner surface of the plate is brought in contact with the lower surface of the pan-blank at the outer edge thereof, sending the same upward and against the die-block L, forming the sides and ends of the pan, which are respectively pressed between the plate and the beveled side of the die-block when the same are in contact with the blank, producing the requisite pressure to insure a uniform bevel to the sides and ends of the pan.

The upper edge of the plate *h* is made round, as shown in Fig. 4, and its diameter is equal to the diameter of the wire to be used in forming the rim of the pan.

O is a forming-brake, which is fitted at its ends within guides or ways unattached to the side of the cross-head, and is so arranged as to admit of a free and easy ascending and descending movement independent of the movement of the cross-head. This brake is so located upon the cross-head that when the forming-plate *h* is in working position and the cross-head moved downward the upper edge of the plate will pass between the die-block L and the forming-brake, when the latter is moved downward, the object of which is to bend the upper edge of the sides and ends of the pan over the upper edge of the plate, so as to form the groove to receive the wire.

P is a rock-shaft, which is journaled at its ends to the guides or ways supporting the forming-brake, and is so arranged as to admit of a free and easy rocking movement.

P′ is a lever, which is attached to the rock-shaft, for imparting a rocking movement to the rock-shaft P.

Permanently attached to the rock-shaft, near each end, is an arm or cam, *n*, which passes through mortises formed in the forming-brake, by which means an ascending and descending movement is imparted to the forming-brake, independent of the movement of the cross-head, by rocking movement of the shaft P.

Q Q are vertical uprights, which are adjustably connected to the bed B, near its ends, and are so arranged as to admit of being moved to or from the bed, and firmly secured at any desired point.

R is a gage-plate, which is permanently attached to short arms *r r*, hinged to the upper ends of the uprights Q. This gage extends over the forming-apron to a point near the die-block L, the object of which is to determine the height of the sides and ends of the pan.

S S are forming-arms, which are pivoted to the respective die-blocks M M, so as to admit of a free and easy oscillating movement. One end of each of these arms is so arranged as to bear against the back of the die-block L when the ends of the arms are moved toward each other.

J J are levers, which are also pivoted to the die-blocks M M, so as to admit of an oscillating movement, and are connected to the arms S S by connecting-rods *i i*, as shown in Fig. 2. The arrangement of these parts is such that as power is applied to the ends of the levers J J, so as to move them toward each other, the opposite ends of the arms S S are moved against the upper bent portion of the side or end of the pan, so as to compress the latter against the back of the die-block L, the object of which is to bend the surplus metal at the corners of the pan, folding the same against the end of the pan.

In Fig. 5 of the drawings I have shown a modification of these parts, in which case I dispense with the connecting-rods *i i*, placing a spring so as to bear against the adjacent edges of the forming-arms, so as to move them from each other, and a cam upon each of the levers J J, for moving the arms toward each other.

It will be observed upon reference to Fig. 3 of the drawings that the lugs *d d* are secured to the uprights C C by bolts *c c*, which pass through slots in the lugs, so as to allow the latter to be raised or lowered, and firmly secured at any desired point, the object of which is to determine the height which the cross-head shall move; also to allow the lugs to be moved together so as to bear firmly against the cam-wheels should they become worn.

In using my invention the operation is as follows: The die-blocks M M are first removed, and the gage R so adjusted that when the blank is placed upon the bed B with its edge against the gage the dotted line *b* upon the blank will be in the same vertical plane with the outer edge of the die-block L. Power is then applied to the treadle G, forcing the cross-head D downward, bringing the die-block L in contact with the upper surface of the blank. Apron N is then tilted upward by means of the lever *g*, bringing forming-plate *h* against the lower surface of the blank at its outer edge; and by a further movement of the lever the edge of the blank is bent upward against the beveled side of the die-block L. Lever P′ is then elevated, imparting a rocking movement to the shaft P, which forces the forming-brake O downward against the upward-bent edge of blank; and by a further upward movement of the lever the brake is forced down, so as to bend the edge of the blank over the edge of the forming-plate, forming the groove to

receive the binding-wire. The blank is then reversed, so as to bring its opposite edge against the gage, and the operation repeated, finishing the sides of the pan. The die-blocks M M are then so adjusted as to bring their beveled ends against the sides of the pan, and the pan inserted between them, so that the unfolded edge will bear against the gage, and the operation previously described repeated. The forming-apron is then moved back to its normal position, and the outer ends of the levers J J moved toward each other, which forces the ends of the forming-arms against the surplus metal at the corners of the pan, bending the same around, forming the lap, which is compressed against the end of the pan. The pan is then reversed, so as to bring the opposite end against the gage, when the several operations are repeated as before, finishing the pan ready to receive the binding-wire.

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

1. In a pan-forming machine, the cams F F, arranged between the two adjustable lugs *d d* to raise and lower the standards C C, carrying the die-block L, substantially as described.

2. The adjustable lugs *d d*, attached to the movable standards C C, carrying the cross-head D and die-block L, in combination with the cams F F, adjusted on the rock-shaft E between the lugs, and actuated by the mechanism substantially as and for the purposes described.

3. The combination of the shaft P, provided with the arms *n* and lever P′, the plate O, adjusted to slide vertically, and the forming-plate *h* on the apron N, substantially as and for the purposes described.

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Witnesses:
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