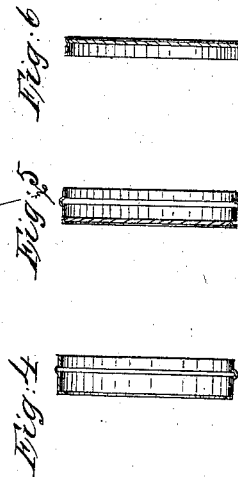
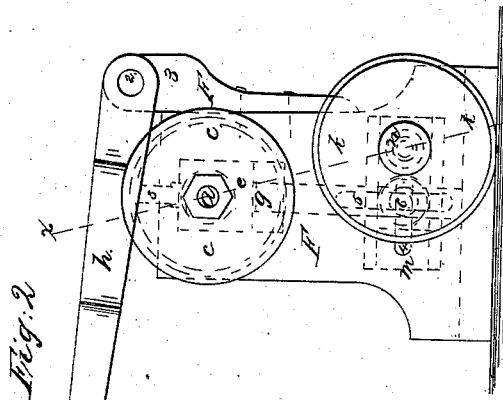
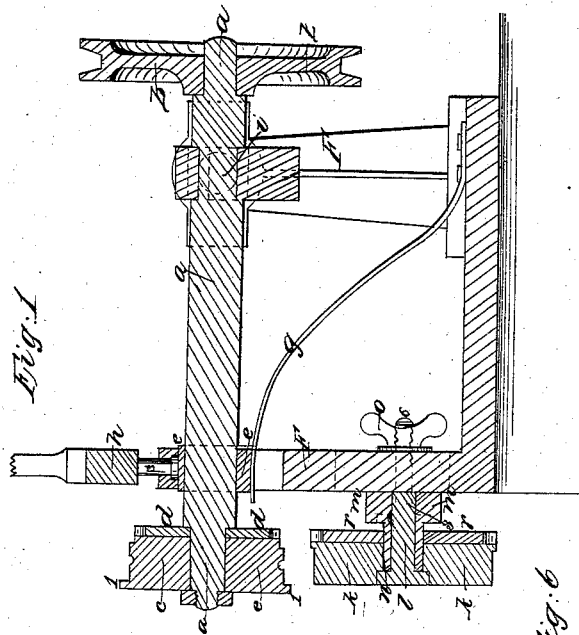


G. W. Bentley,
Making Metal Boxes.

N^o 47,892.

Patented May 23, 1865.



Witnesses:
Geo. H. Redding
Edw. J. Hines

Inventor:
George W. Bentley

UNITED STATES PATENT OFFICE.

GEORGE W. BENTLEY, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
CHAS. S. HINE, OF SAME PLACE.

IMPROVED MACHINE FOR MANUFACTURING BOXES OF SHEET METAL.

Specification forming part of Letters Patent No. 47,892, dated May 23, 1865.

To all whom it may concern:

Be it known that I, GEORGE W. BENTLEY, of the city, county, and State of New York, have invented, made, and applied to use a new and useful machine for making boxes of tin or other sheet metal with heads formed of wood or other suitable material, for the purpose of holding blacking or other oily or semi-fluid substances; and I do hereby declare the following to be a full, clear, and correct description of the same, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a longitudinal section of my improved machine; Fig. 2, front view of my improved machine, showing the burr-wheels, their bearings and connections; Fig. 3, sectional view of the burr-wheels *p* and *q*. Fig. 4 shows the body of the box, ready to receive the head. Fig. 5 shows the body of the box after the head has been inserted. Fig. 6 shows the head of the box-cover in position.

In the drawings the same letters and figures of reference designate like parts of the invention.

The nature of my invention consists (a) in combining with the frame *F*, provided with the shafts *a* and *i* and lever *h*, the burr-wheels *c*, *k*, *p*, and *q*, constructed and operated as shown, for the purposes hereinafter fully described; (b) in the use or employment of the movable bearing *m*, combined with its adjuncts, as hereinafter specified, for the purposes described.

To enable others skilled in the art to make and use my invention, I will speak of its construction and operation.

F shows an oblong frame, of wood or iron, provided with the bed and fixed uprights, receiving and supporting the shafts, gearing, and fixtures of the machine.

a shows the main shaft, placed longitudinally at or near the center of the frame *F*, its back or right-hand end passing through the transverse rock-shaft *i*, supported by the uprights *F*² upon the frame *F*. Upon the outer end of this shaft *a*, and beyond the rock-shaft *i*, is keyed the driving-pulley *b*, by which the machine is connected to any suitable motor. The opposite end of this shaft *a* passes through the movable bearing *e* in the upright *F*², and

has placed upon it the burr-wheel *c*, provided with the flange *I* and gear-wheel *d*.

g shows a spring of metal or suitable material, placed beneath the bearing *e*, and attached to the bed of the frame, which spring *g* is employed to keep the shaft *a* and burr-wheel *c* in proper position when the machine is in operation.

5 shows an opening in the left-hand upright, *F*², through which opening 5 the projecting end of the bolt 6 is inserted to receive the nut *o*, by which the bolt 6 is firmly held in position upon the upright *F*². This bolt 6 also passes through the longitudinal opening 4 in the adjustable bearing *m*, the square head upon the bolt 6 bearing directly upon the bearing *m* and retaining the same in any desired position. This adjustable bearing *m* is provided with the journal *n* for supporting the lower burr-wheel, *k*, held upon the same by means of the bolt *l*, passing through it and through the bearing *m*, and held in position by the pin *s*, inserted in the bearing *m* and the bolt *l*. The burr-wheel *k* is provided with the gear-wheel *r*, gearing into the gear-wheel *d* upon the burr-wheel *c* when the machine is in operation.

3 shows an upright for supporting the lever *h*, said lever *h* being attached to the upright 3 by the journal 2.

p shows a second upper burr-wheel, provided with the bead 7 and gear-wheel *d*.

q is a second lower burr-wheel, provided with the matrix 8, and gear-wheel *r*, gearing into the gear-wheel *d* upon the burr-wheel *p* when the wheels are operated. The shaft *a* has cut upon its left-hand end a screw-thread, over which a nut is screwed for the purpose of holding either of the upper burr-wheels, *c* or *p*, firmly upon the same when in use.

My improved machine being thus constructed, the operation is as follows: The tin or other sheet metal of which the body of the box is to be formed is first cut up into strips the exact length and breadth for the size of the box to be made, and is run upon a beading-machine, by which it is rolled in hoop form. The strip, having been rolled into hoop form, has its ends accurately joined by solder or otherwise.

The burr-wheels *c* and *k* having been placed upon my improved machine in their proper

positions, the operator places the hoop or soldered strip of metal upon the lower burr-wheel, *k*, its back edge resting against the shoulder upon the same, the presence of this shoulder causing a certain portion of the metal to project beyond the face of the wheel *k*, sufficient to form, when turned in at a right angle all round, a seat or shoulder for the head of wood or other suitable metal to rest against when inserted. By depressing the lever *h*, attached to the upright 3, upon the movable belting *e*, the burr-wheel *c*, held upon the shaft *a*, is brought to bear upon the metal placed upon the burr-wheel *k*, by which operation the flange 1 comes in contact with the projecting portion of the said metal, and by the rotation of the shaft *a*, to which is attached the pulley *b*, this projecting portion is turned in all round in a right angle, (the turned-in portion of the metal resting upon the face of the wheel *k*,) and forms a true and accurate seat or shoulder upon the hoop or soldered strip, now taking the form of a box, to receive the head of wood or other suitable material previously prepared. The lever *h* being elevated, the burr-wheel *c* is removed from contact with the hoop or soldered strip, which is now removed from its position upon the burr-wheel *k*. The burr-wheels *c* and *k* are now removed from the machine, and the burr-wheels *p* and *q* placed upon the same, occupying their positions. The head of wood or other suitable material, having been previously prepared, is inserted from the inside of the hoop or soldered strip, resting against the seat or shoulder just formed upon the same. In this condition the hoop or soldered strip, with the head of wood or other suitable material inserted within it, is placed upon the burr-wheel *q*. The lever *h* is again depressed, and the burr-wheel *p* is brought to bear upon the hoop or soldered strip, and by the united action of the bead 7 upon the wheel *p* and the matrix 8 upon the wheel *q* a crease is formed in the metal, by the formation of which crease the head of wood or other suitable material is pressed up to the seat or shoulder and there firmly and substantially held in its proper position. The box may now be removed from the burr-wheel *q*.

In order that the wheel *q* may adapt itself to any irregularities or unevenness in the marginal surface of the head of wood or other suitable material, and thereby form a perfect joint by the operation of creasing the metal, a little lateral play may be given to the burr-wheel *q* by means of a spring coiled round the sleeve *u*, directly behind the burr-wheel *q*, throwing any unevenness in the head of wood upon the inside of the box.

When desirable, the gear-wheels upon the burr-wheels *c*, *k*, *p*, and *q*, may be dispensed with, and the rotation of the lower wheels be

effected by the upper ones, sufficient friction resulting from their contact for this purpose.

By the use or employment of the adjustable bearing *m* and its adjuncts, as shown, the lower burr-wheels, *k* and *q*, may be placed relatively to the upper burr-wheels, *c* and *p*, at any desired point around them to allow any peculiar shape of box to be made, and by extending this adjustable bearing to its full extent any sized box within its compass may be made, while the machine as a whole may be made of any size required.

This machine possesses the merit of cheapness, economy in construction, and effectiveness in operation, while the boxes made by the same are preferable on many accounts to those made by other machines.

I am fully aware of the patent granted Horace Thayer for a machine for the same purpose, but am also aware that my machine differs essentially from his. The Thayer machine is so constructed that the hoop or soldered strip with the head of wood or other suitable material inserted within the compass of the same is placed upon the head of a mandrel, and by operating the mandrel is brought into position between two pressing wheels, where the metal is indented or bent around the head and a crease formed in the same. By this mode the head of wood or other suitable material is subjected to a great pressure, which has a tendency to draw the outer edge of the metal irregularly, and an imperfect article is the result, as during the operation described by him the machine is attempting to press the outside edge of the metal over the wood and the crease or croze inward, thus drawing the metal so that the outside edge is but imperfectly turned down at best.

I am also fully aware of the Peck patent for an improved mode of bending tin and sheet metal. The Peck machine is in common use among tinmen, and is so constructed that the metal is bent outward and not inward, as in my machine, and, as at present constructed, the Peck machine does not admit of the metal being turned in at a true right angle.

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

1. In combination with the frame *F*, provided with the shafts *a* and *i* and lever *h*, the burr-wheels *c*, *k*, *p*, and *q*, when the same shall be constructed and operated substantially as shown, for the purposes specified.

2. The adjustable bearing *m*, with its adjuncts, when the same shall be combined substantially as shown, for the purposes specified.

GEORGE W. BENTLEY.

Witnesses:

GEO. H. REDDING,
EDWARD HINE.