

No. 713,062.

Patented Nov. 11, 1902.

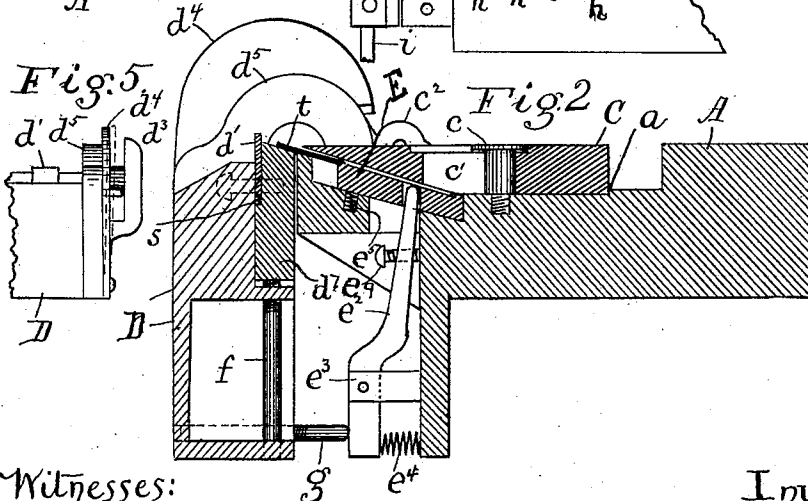
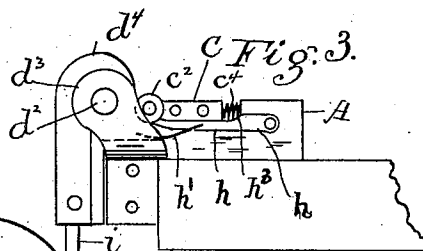
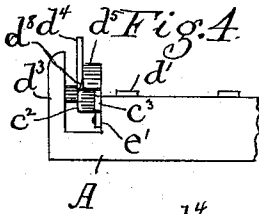
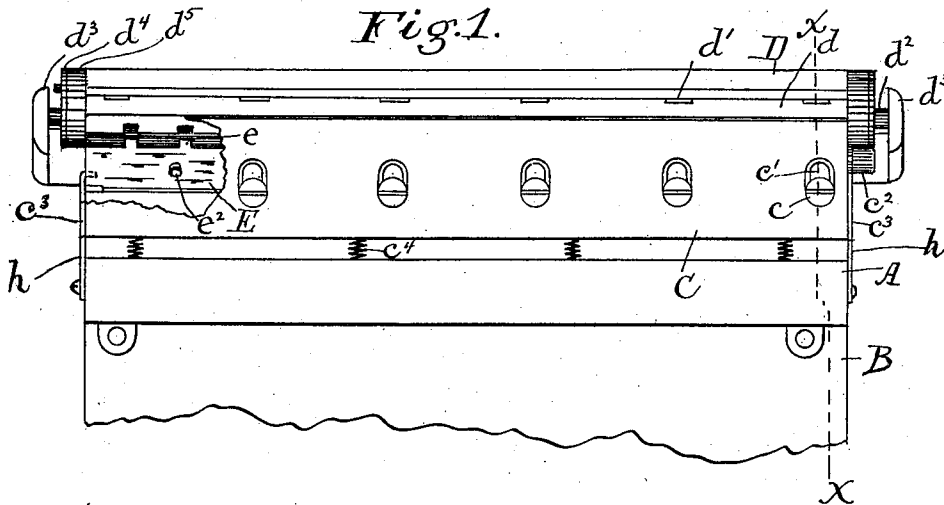
E. M. COBB.

MACHINE FOR FOLDING METAL STRIPS.

(Application filed Apr. 5, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

L. D. French
J. O. Chase

Inventor:
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by S. R. Bates
Att'y.

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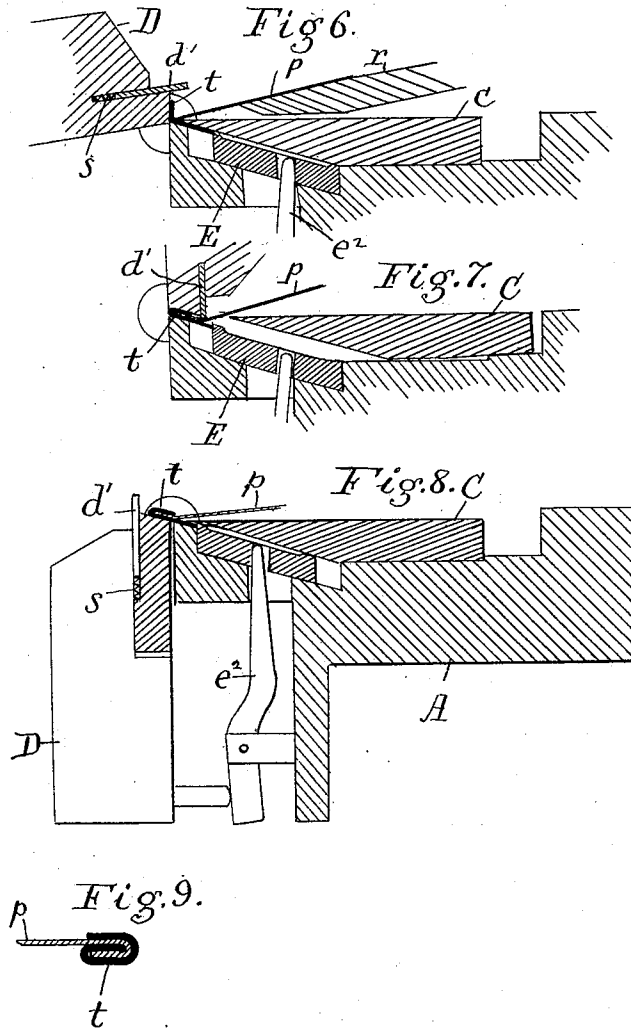
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MACHINE FOR FOLDING METAL STRIPS.

(Application filed Apr. 5, 1902.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

ELMER M. COBB, OF PORTLAND, MAINE, ASSIGNOR TO SOUTHWORTH BROTHERS, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

MACHINE FOR FOLDING METAL STRIPS.

SPECIFICATION forming part of Letters Patent No. 713,062, dated November 11, 1902.

Application filed April 5, 1902. Serial No. 101,533. (No model.)

To all whom it may concern:

Be it known that I, ELMER M. COBB, a citizen of the United States of America, and a resident of Portland, Cumberland county, State of Maine, have invented certain new and useful Improvements in Machines for Folding Metal Strips, of which the following is a specification.

My invention relates to a machine for folding metal, and particularly for applying metal strips to the edge of a sheet of paper by means of a double fold.

It is common in the manufacture of calendars, placards, and other like material intended to be hung on the wall to bind them with a narrow sheet-metal strip folded twice for the purpose of giving it a firm hold on the paper. Heretofore this has been done in several distinct and separate operations; and it is the object of the present invention to construct a machine by which the metal strip can be applied to the edge of the paper by a single operation or by several motions of a single machine and without removing the strip or the paper from the machine.

The machine consists, essentially, of a bed-piece and a folding-lever similar to what are used in machines for folding sheet metal with a folding-plate having a thin edge adjacent to the edge of the bed-piece, against which the first fold of the strip is begun, said plate being withdrawn before the first fold is complete. A feeding-guide beneath the plate feeds the strip forward for the second fold, and the plate returns in time to form an edge for the second and final fold to bend over, retiring again before the same is complete.

I illustrate my invention by means of the accompanying drawings, in which—

Figure 1 is a plan of my machine with portions cut away. Fig. 2 is an enlarged section on the line X X of Fig. 1. Fig. 3 is a partial end view. Fig. 4 is a partial rear view taken at the end. Fig. 5 is a partial front view taken at the end. Figs. 6, 7, and 8 are sections similar to Fig. 2, showing successive steps in the operation of the machine; and Fig. 9 is a section of the completed fold, showing the strip folded on the paper.

A represents the bed-piece, and B is the table to which it is secured.

Journalled to the working edge of the bed-piece by journals d^2 is the folding-lever D, which is of suitable length horizontally and is provided with a proper operating-handle i . The fold is partially made on the thin edge of a folding-plate C, which edge is normally adjacent to the working edge of the bed-piece and is in the proper position, so that the folding-lever bends the metal over the edge of said folding-plate. A space is left beneath the edge of the folding-plate for inserting the strip t to be bent, the portion making the first fold projecting beyond the edge. Means are provided for retracting the folding-plate when the fold is nearly complete. I here show for this purpose cams d^5 , formed on each end of the folding-lever, the cams acting on rolls c^3 , attached to the folding-plate by arms c^3 . The cam d^5 is so formed as to throw the plate quickly back when the lever D is nearly up and the fold nearly formed and to allow it to be forced back gradually by springs c^4 . For this purpose a cam d^4 is provided, which is secured to the side of the cam d^5 and is secured thereto with a yielding connection. As here shown, it is formed of thin metal and riveted low down on cam d^5 , so that it springs off at the top. When the lever D is raised, the edge of the cam d^4 , which is chamfered off at d^6 , adjacent to the end of the roll c^2 , slips over the end of the roll and does not act on it until the lever D reaches its upper position, when, its surface being coincident with the surface of the cam d^5 , it snaps back onto the roll, and as the lever descends and the plate C moves forward the cam d^4 permits it to come forward with a gradual motion.

Means are provided for holding the plate C in its forward position and releasing it at the time when the cam begins to act to push it backward. For this purpose I form a ledge or shoulder a in the bed-piece, against which the rear end of the plate rests to prevent it from moving backward. The plate is released by tilting down the front edge by the action of the folding-lever as it descends on completing the fold. To allow this tilting motion, the plate is supported with a tilting support bearing on the bed-piece at a central point, so as to allow a slight tilting motion, enough to release the rear edge from the shoulder a .

To permit this tilting motion, the plate is held in place by bolts *c*, loosely fitting in slots *c'*.

A guide is provided under the plate C to form a rest to support the edge of the strip *t* and to feed the same forward after the first fold has been made. For this purpose I make use of a movable guide or bar E, contained in a recess in the bed-plate. The forward edge of the bar has a series of projections *e*, forming a rest or stop for the strip *t*, and these projections fit into corresponding recesses in the bed-piece when the guide feeds forward. The guide is pressed upward against the under side of the plate C by springs *e⁵*, Fig. 2, and it is fed forward by a lever *e²*, pivoted to a stud *e³* in the lower portion of the bed-piece. The lower end of the lever is pressed outward by a spring *e⁴*, and the lever is operated by an adjustable stop *g* on the lever D, which strikes the lever *e²* and acts to throw the guide E forward. The lever D as it naturally hangs will not strike the lever *e²* and requires an extra pressure inward before it hits the lever which acts to feed the strip. The guide E is locked in its forward position by the locking-lever *h*, pivoted on the end of the bed-plate and having its forward end bent inward beneath the guide E, as shown in Fig. 1. It is pressed normally upward by a spring *h'*, Fig. 3, and when the guide moves forward the lever snaps up behind the guide and locks it in its forward position. The guide is released as follows: When the plate C is moved backward by the action of the cam *b⁴*, as explained, its lower rear corner strikes the curved portion *h³*, Fig. 3, of the lever *h*. The lever is thus depressed, releasing the guide *e* and allowing it to recede by the action of the lever *e*, which is pressed normally backward by the spring *e⁴*.

For the purpose of holding the paper, so that it will not slip out while the first fold is being made, I provide in the working edge of the lever D a series of yielding fingers *d'*, contained, as here shown, in recesses and pressed normally outward by springs *s*. They come in contact with the paper as soon as the folding-plate moves back and hold it while the lever D is forming the last part of the fold, retracting as the lever comes over and presses the fold down flat onto the paper. The working portion of the lever D is formed by a removable bar *d⁷*, made adjustable by screws *f*. The paper is shown at *p* in Fig. 6 with a suitable feed-table *r*.

The several operations of the machine are represented in Figs. 2, 6, 7, 8, and 9. The strip is first inserted beneath the working edge of the folding-plate C, as in Fig. 2, just enough projecting beyond the edge of the plates C to form the first fold. The lever D is brought up to the position of Fig. 6, bending the strip to a right angle. The paper *p* is now inserted and the movement of the lever continued to the position shown in Fig. 7, the plate C moving back and the fingers *d'* holding the paper from slipping, as shown. The first fold being

complete, the lever is swung back to its lower position and an extra push is given, which causes it to strike the lever *e²*, feeding forward the strip and locking the guide E in its forward position. The lever D is again brought up, making the second fold and forming the strip and paper, as shown in Fig. 9. It will thus be seen that the metal strip is folded onto the edge of the paper without removing it from the machine, and the whole operation is done with two motions of the machine by bringing the folding-lever up twice.

It will be seen that by the use of the adjusting-screw *g* the throw of the lever *e²* and the movement of the feeding-guide E may be regulated to make a narrower or wider fold. The stop-screw *e³* is also provided to limit the motion of the lever *e²* and to aid in the adjustment.

I claim—

1. In a machine for folding metal strips, the combination of a bed-piece, a folding-lever journaled to the edge of said bed-piece, a folding-plate slidably mounted on said bed-piece and having a thin edge beneath which the strip slides, a stop beneath said plate for holding the strip in position and a cam for retracting said plate before the first fold is completed.

2. In a machine for folding metal strips, the combination of a bed-piece, a folding-lever journaled to the edge of said bed-piece, a folding-plate slidably mounted on said bed-piece with a tilting support and having a thin edge beneath which the strip slides, a stop beneath said plate for holding the strip in position, a shoulder in said bed-piece for holding said plate in its forward position, a yielding tripping-bolt on said lever for depressing the edge of said plate to release it from said shoulder and cams for retracting said plate.

3. In a machine for folding metal strips, the combination of a bed-piece, a folding-lever journaled to the edge of said bed-piece, a folding-plate slidably mounted on said bed-piece with a tilting support and having a thin edge beneath which the strip slides, a stop beneath said plate for holding the strip in position, a shoulder in said bed-piece for holding said plate in its forward position, a yielding tripping-bolt on said lever for depressing the edge of said plate to release it from said shoulder springs for forcing said plate forward and cams for retracting said plate.

4. In a machine for folding metal strips, the combination of a bed-piece, a folding-lever journaled to the edge of said bed-piece, a folding-plate slidably mounted on said bed-piece with a tilting support and having a thin edge beneath which the strip slides, a stop beneath said plate for holding the strip in position, a shoulder in said bed-piece for holding said plate in its forward position, a yielding tripping-bolt on said lever for depressing the edge of said plate to release it from said shoulder, springs for forcing said plate forward, a cam for retracting said plate, having a surface for

retracting the plate rapidly and a surface for allowing it to return more slowly.

5 In a machine for folding metal strips, the combination of a bed-piece, a folding-lever journaled to the edge of said bed-piece, a fold-
10 ing-plate slidably mounted on said bed-piece and having a thin edge beneath which the strip slides, a cam for withdrawing said plate while the first fold is being formed and a strip-
15 feeding guide beneath said plate for feeding forward the strip for the second fold.

6 In a machine for folding metal strips, the combination of a bed-piece, a folding-lever journaled to the edge of said bed-piece, a fold-
15 ing-plate slidably mounted on said bed-piece

and having a thin edge beneath which the strip slides, a cam for withdrawing said plate while the first fold is being formed, a strip-feeding guide beneath said plate for feeding forward the strip for the second fold, a feed- 20
ing-lever for operating said guide and a stop on said folding-lever adapted to strike and operate said feeding-lever.

Signed at Portland, Maine, this 31st day of March, 1902.

ELMER M. COBB.

Witnesses:

S. W. BATES,
C. SOUTHWORTH.