No. 754,941. PATENTED MAR. 15, 1904.

J. F. ROSS.

MACHINE FOR BORDERING CALENDARS OR SIMILAR SHEETS.

APPLICATION FILED JUNE 15, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

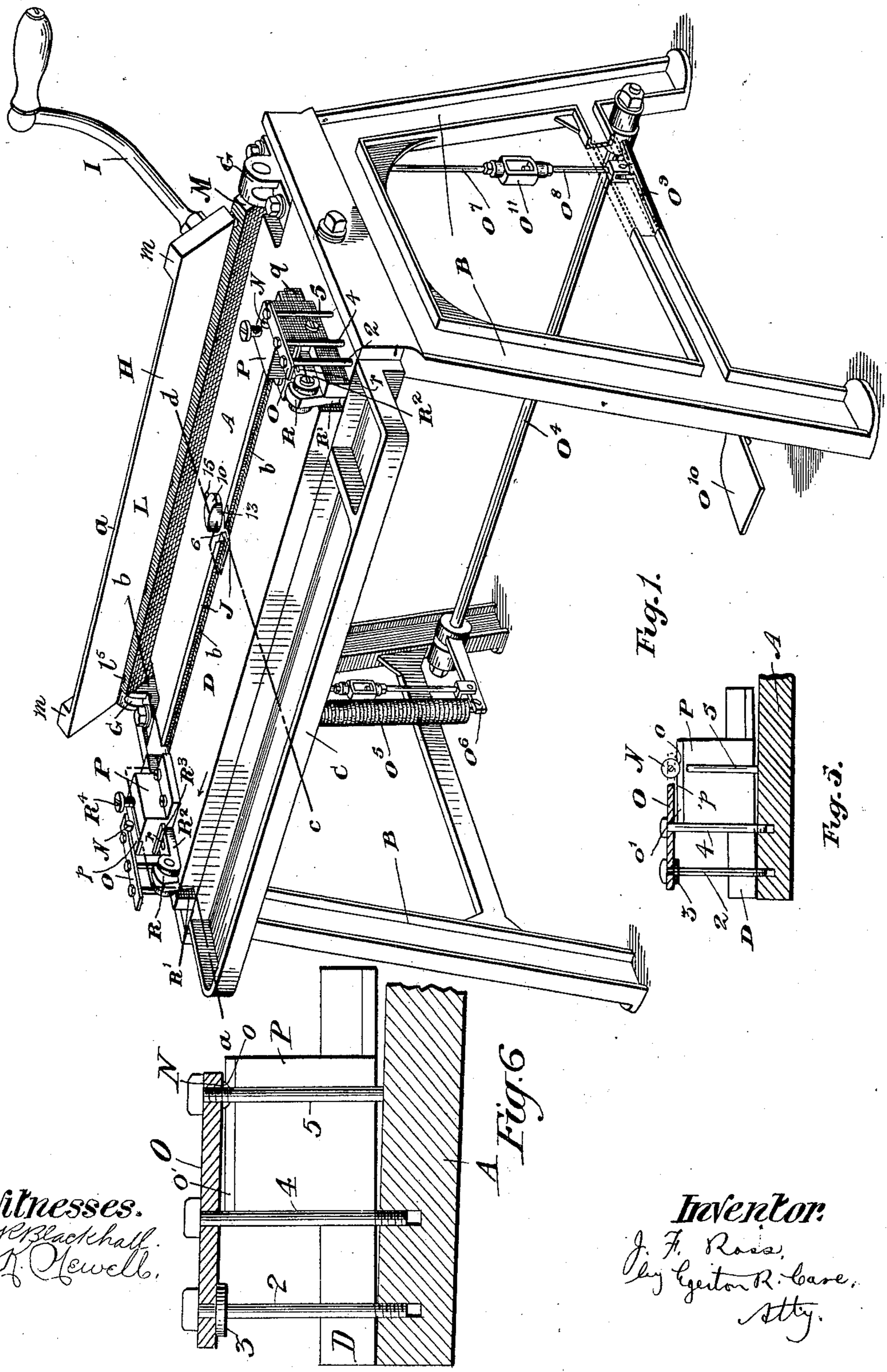

Fig. 1.

Fig. 3.

Fig. 6

Witnesses.
W. E. Blackhall.
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NO MODEL. 2 SHEETS—SHEET 2.

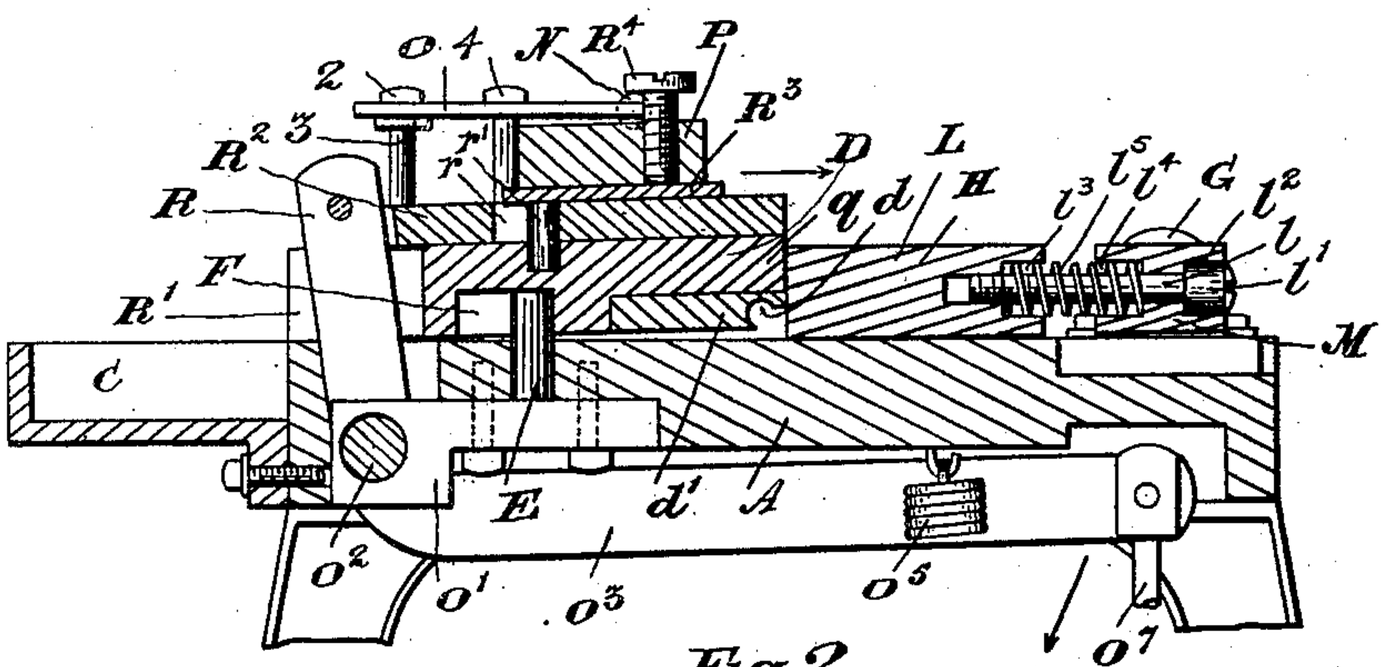

Fig. 2.

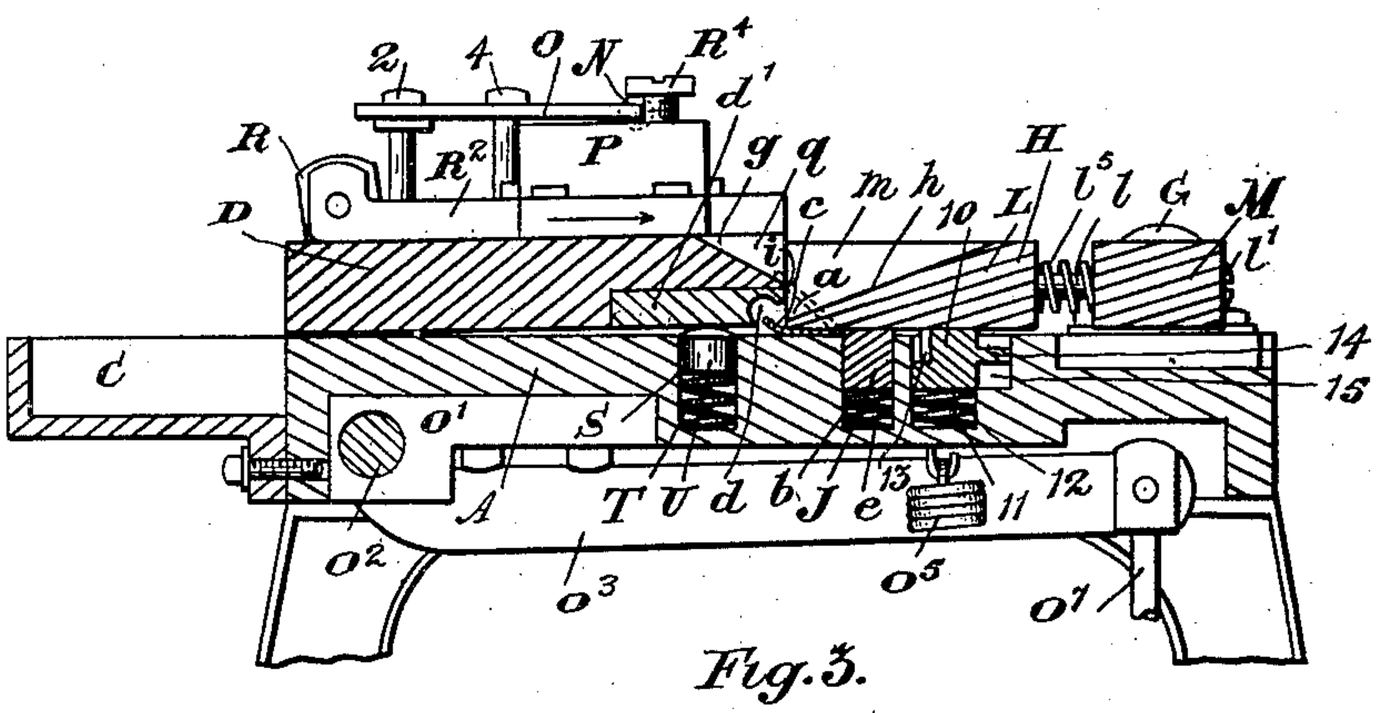

Fig. 3.

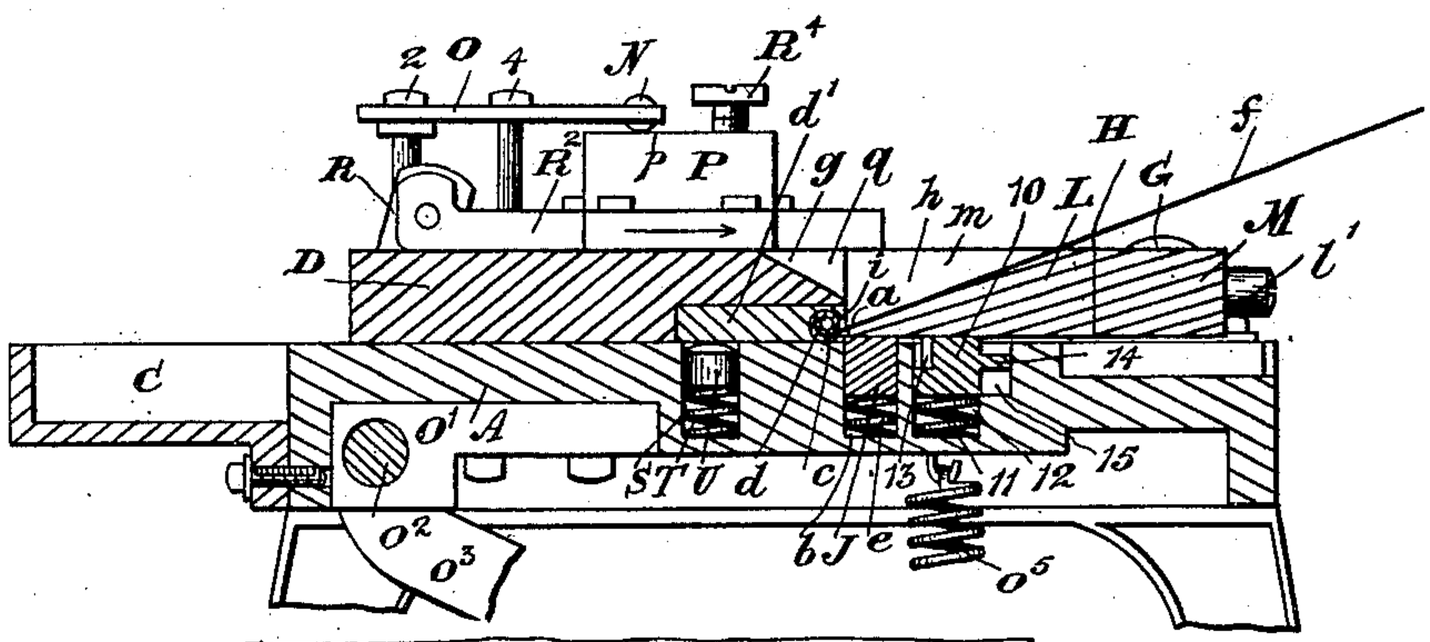

Fig. 4.

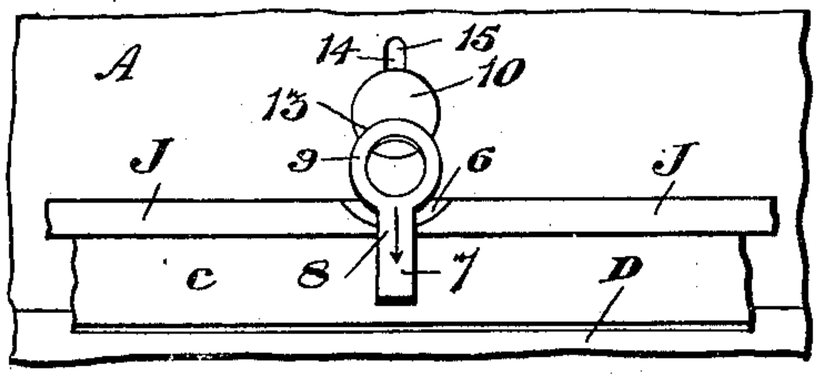

Fig. 7.

Witnesses.
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No. 754,941. Patented March 15, 1904.

UNITED STATES PATENT OFFICE.

JOHN FORSTER ROSS, OF TORONTO, CANADA.

MACHINE FOR BORDERING CALENDARS OR SIMILAR SHEETS.

SPECIFICATION forming part of Letters Patent No. 754,941, dated March 15, 1904.

Application filed June 15, 1903. Serial No. 161,502. (No model.)

To all whom it may concern:

Be it known that I, JOHN FORSTER ROSS, manufacturer, a subject of the King of Great Britain, residing in the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Machines for Bordering Calendars or Similar Sheets, of which the following is a specification.

My invention relates to improvements in machines for bordering calendars and similar sheets; and the objects of my invention are, first, to provide a simple, light, and compact machine by means of which a strip of metal may be readily attached to calendars, show-cards, maps, and similar sheets; secondly, to construct my machine so that the eyelet may be attached to the sheet to be bordered during the same operation of bordering the same; thirdly, to hold the metal strip firmly in place, so as to prevent same from buckling, and, fourthly, to release the firmly-held bordered edge of the sheet, so that same may be quickly removed from the machine; and it consists, essentially, of a horizontally-reciprocating former provided with a concave edge, working in combination with a pivoted beveled bender which recedes at the same rate of speed that the former advances.

The invention further consists in providing means for releasing the bordered edge of the calendar, so that same may be removed from the machine.

The preferred construction and operation of my machine will be hereinafter fully described.

Figure 1 is a general perspective view of my machine. Fig. 2 is an enlarged section on the line *a b*, Fig. 1, looking in the direction indicated by arrow. Figs. 3 and 4 are enlarged cross-sections on the line *c d*, Fig. 1, showing the former in a retracted and advanced position, respectively. Fig. 5 is a detail view, partly in section, of means for depressing the former. Fig. 6 is an enlarged detail view, partly in section, of the plate and threaded posts for same, by means of which the former is depressed; and Fig. 7 is an enlarged plan view showing the eyelet held in operative relation to the metal strip.

In the drawings like characters of reference indicate corresponding parts in each figure.

A is any suitable bed to which I suitably secure the standards B.

C is any suitable tray in which the metal strips and eyelets may be placed.

D is the former, which has reciprocating movement upon the bed A. The said former is suitably constructed, so that when it advances and recedes same will be guided in a straight line. My preferred form of construction for guiding the said former comprises studs E, fixed in the bed A and operating in the elongated slots F, formed in the said former. Near each end of the former D the above-described construction is provided.

Pivoted in suitable bearings G, secured to the bed A, is a bender H, which is provided with a beveled surface *h*, which terminates in a knife-edge *a*.

I is any suitable handle by means of which the bender H is operated.

Operating in the elongated slots *b*, formed in the bed A and upon the springs *e*, held therein, are two stop-strips J, against which one edge of the metal strip *c* abuts. These spring-held stop-strips provide positive means for preventing the metal strip *c* moving out of place. If metal strips of the same gage were used all the time, it would not be necessary to make the stop-strips J spring-held; but as different gages of metal are designed to be used in my machine I preferably construct the stop-strips adjustable.

The metal strip *c* to be curled round the edge of the sheet is placed in position (shown in dotted lines in Fig. 3) against the front of the former and held in that position by abutting against the stop-strips J, and the bender is then moved from the position shown in Fig. 1 down into the position shown in Fig. 3, thus bending the said metal strip into the shape shown. The bender being locked in this position firmly holds the metal strip in place.

The following preferred means operate the former. Held in suitable bearing-blocks O′,

suitably secured to the under side of the bed A, is a rod O^2, on which is held the bell-crank levers O^3,

O^4 is a rod suitably journaled on the standards B.

O^5 is a spring secured at its upper end to the bed A and at its lower end to the lever O^6, secured to or forming part of the rod O^4.

There is a bell-crank lever at each end of the former, and both are connected to the rod O^4 by the same construction, so the description of one will do for both.

O^7 is a rod secured at its upper end to the bell-crank levers O^3.

O^{10} is a foot-plate for depressing the foot-rod O^9, which is secured to the rod O^4. The rod O^8 is pivoted at its lower end to the foot-rod O^9. The adjacent ends of the rods O^7 and O^8 are threaded and are secured together by a turnbuckle O^{11}, by means of which the distance of movement of the former D is regulated.

The upper portions R of the bell-crank levers O^3 operate in the slots R′, formed in the former D, and have pivoted at their upper ends the locking-plates R^2, which operate within the guide-blocks P.

R^3 represents friction-plates.

R^4 represents set-screws held in the guide-blocks P.

By means of the set-screws and friction-plates it will of course be understood that the freedom of movement given the locking-plates R^2 can be regulated. When the bender H has been moved into the position shown in Fig. 3, I lock same firmly in position before I fully advance the former D. When the bell-crank levers O^3 are moved in the direction indicated by arrow, the locking-plates R^2 are advanced before the former D and overlap the ends *m* of the bender H, as shown in Fig. 4, so that simultaneously as the former D advances they are pinched down upon said ends *m* and lock the bender firmly down upon the metal strip. The length of the slot *r*, formed in the locking-plates R^2, permits this previous movement of the said locking-plates. Immediately after the said locking-plates have been moved to the limit of their locking movement they abut the studs *r*′, secured in the former D and operating in the said slots *r*, thus enabling the bell-crank levers O^3 to slightly advance the former D, so that its concave edge *d* will slightly curl the strip *c* before the sheet *f* is placed in position shown. As soon as the strip *c* has been slightly curled the sheet *f* is placed in position and the former D moved to the limit of its forward movement by said bell-crank levers, thus bordering the sheet. As the said former advances it moves back the bender H. I preferably provide the former D with a beveled surface *g*, so that the metal strip *c* can be held at the most convenient angle to be operated on. It will be noticed that the height of the knife-edge *a* is such as to permit the sheet *f* being placed in position and yet leave sufficient clearance between the same and the front edge *i* of the former D, so that the said sheet will not be damaged. I construct each end *q* of the former so that the ends *m* of the bender H will abut thereagainst, thus enabling the former D to push the bender H backwardly and maintain the required clearance at all times between the knife-edge *a* and the front edge *i* of the former D. It will be noticed from the drawings that the concave edge *d* is set back from the front edge *i* and given the required curve, so that the metal strip will be positively curled. It will be noticed from Figs. 2 and 3 that the former D in its normal position does not rest upon the bed A for its whole width. Immediately the former D is slightly advanced in the direction indicated by arrow, preparatory to bordering the sheet *f*, same is pinched down upon the bed A, as shown in Fig. 4, by the preferred following means: N represents rollers journalled in plates O, secured to the bed A, as hereinafter described. Formed in the upper surface of the guide-blocks P, suitably secured to the former D, is a depression *o*, in which the said rollers N rest when the former D is in its normal position. Immediately the said former is advanced the guide-blocks P are moved forward, thus passing the flat surface *p* underneath the rollers N and so forcing the said former down into the position shown in Fig. 4. In order to prevent unnecessary wear, I preferably construct the depression *o* in a strip of steel *o*′ and secure same to the guide-blocks P. Simultaneously the former advances the said bender is constructed to be moved backward by same. so as to permit the metal strip *c* to be curled round the edge of the sheet *f*. My preferred form of construction of the bender for this purpose consists in making the same of a yielding portion L and a portion M, which is pivoted in the bearings G, secured to the bed A. Held in the pivoted portion M, so that same may have free movement thereon, are a series of screws *l*, which are screwed into the yielding portion L. The heads *l*′ of the said screws operate in the chambers l^2 and thus limit distance of movement of the portion L from the portion M. Surrounding the screws *l* and resting in the chambers l^3 and l^4 are springs l^5. The chambers l^3 and l^4 are of sufficient size so as to completely house the springs l^5 during the movement of the yielding portion L. The distance of movement of the yielding portion L from the former D, it will be understood, can be easily regulated by the construction before described. As soon as the sheet *f* has been bordered the pressure exerted against the bell-crank levers O^3 is released, and the springs l^5 and O^5 return the former D and bender H and their connected parts into position shown in Figs. 2 and 3.

My preferred means for raising the former

D from the bed A as soon as the sheet *f* has been bordered is as follows: Operating in the recesses S and upon the springs T therein are studs U. It will be noticed that when the rollers N are in their normal position the said spring-held studs U raise up the former D for the purpose before described. As soon as the parts have been returned to normal the bender H is moved up into the position shown in Fig. 1 and the bordered sheet removed from the machine.

In order to lengthen the life of my machine, I preferably construct the concave edge *d* in a steel plate *d'* and suitably secure same in position shown.

I preferably secure the plates O to the bed A by the following construction: 2 is a post passing through the said plate and threaded into the said bed. The said post is preferably provided with a shoulder 3, so that the said plate may be held thereon. 4 is another post passing through the said plate O and threaded at its lower end in the bed A. 5 is another post threaded where it passes through the plate O (see Fig. 6) and merely resting upon the bed A. When I wish to adjust the plate O to regulate the releasing movement of the former D, I loosen the post 4 and screw in or out the post 5. After the required adjustment has been obtained the post 4 is tightened up.

As before mentioned, by means of my machine I can secure the ordinary eyelet to the sheet *f* at the same time a metal border is being secured thereto. For this purpose I construct the machine with the two separate stop-strips J. When the metal strip *c* has been placed in the position shown in dotted lines in Fig. 3, the tongue 7 of the eyelet is loosely placed thereon and in the space 8 between said stop-strips. The head 9 of the said eyelet is placed upon the eyelet-stud 10, which operates upon the spring 11, held in the slot 12, formed in the bed A. The said eyelet-stud is constructed concave, as shown at 13, so as to receive portion of the head 9 of the eyelet. In order to prevent the eyelet-stud from turning, I construct same with a lug 14, which operates in the slot 15, also formed in the bed A. When the strip *c* and eyelet have been placed in the position described, the bender H is moved down from the position shown in Fig. 1 into the position shown in Fig. 3 upon said strip and eyelet-tongue and gives same the requisite bend. The said strip *c* and tongue 7 are then curled round the edge of the sheet *f*. A throat 6 is formed by cutting away portions of the inner ends of the stop-strips J, so as to allow of the movement in the direction indicated by arrow of the eyelet-head 9, so that same will not be injured when the former and bender return to normal.

Although the bender H must essentially recede as the former D advances, I do not confine myself to the construction shown for this purpose.

I do not confine myself to means shown for operating the former D nor for keeping same in alinement nor for moving same up so as to release the bordered edge of the sheet, nor do I confine myself to the means shown for depressing the former down upon the bed A.

I hereby claim that I may make such changes in the construction of my machine as will not depart from the spirit of the invention.

What I claim as my invention is—

1. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge, and means for operating said former, of a bender pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip; the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward.

2. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former, from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip; the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward,

3. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former, from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender pivoted to said bed constructed with a beveled portion which terminates in a knife-edge designed to oper-

ate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip; the said beveled bender designed to be moved backward by the forward movement of said former, and being locked down upon said metal strip before the former advances, by said operating means for said former, and means for enabling said bender to move backward.

4. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender, pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; spring-held stop-strips held in said bed and against which said metal strip abuts to prevent its backward movement; the said beveled bender designed to be moved backward by the forward movement of said former, and being locked down upon said metal strip before the former advances, by the operating means for said former, and means for enabling said bender to move backward.

5. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former, from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender comprising a yielding portion constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the pivoted portion of said bender pivoted on said bed; means for yieldingly connecting the said portions of the bender together; the said yielding portion of said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; spring-held stop-strips held in said bed and against which said metal strip abuts to prevent its backward movement; the said yielding portion of the bender designed to be moved backward by the forward movement of said former, and being locked down upon said metal strip before the former advances, by said operating means for said former.

6. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender comprising a yielding portion constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the pivoted portion of said bender pivoted on said bed; means for yieldingly connecting the said portions of the bender together; the said yielding portion of said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; two spring-held stop-strips held in said bed and against which said metal strip abuts to prevent its backward movement, the inner ends of said stop-strips being separated and constructed to form a throat to permit of the advance of the eyelet whose tongue rests therebetween, a suitably-constructed eyelet-stud spring-held in said bed and situated so as to support the head 9 of said eyelet in proper position; the said yielding portion of the bender designed to be moved backward by the forward movement of said former, and being locked down upon said metal strip before the former advances; by said operating means for said former.

7. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to be operated adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; two spring-held stop-strips held in said bed and against which said metal strips abut to prevent their backward movement, the inner ends of said stop-strips being separated and constructed to form a throat to permit of the advance of the eyelet whose tongue rests therebetween and upon said metal strips; a suitably-constructed eyelet-stud spring-held in said bed and situated so as to support the head 9 of said eyelet in proper position; the said bender being locked down upon said metal strip and eyelet before

the former advances by said operating means for said former and designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward.

8. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed, and provided with a concave lower edge which is normally held free of the surface of said bed, and means for horizontally moving said former, of means, at a slight forward movement of said former, for pinching its concave lower edge down upon said bed so that the metal strip cannot pass between same and said bed.

9. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed, and means for horizontally moving said former, of means, at a slight forward movement of said former, for pinching its concave lower edge down upon said bed so that the metal strip cannot pass between same and said bed, and means for raising the concave lower edge of said former free of the surface of said bed when said former is returned to normal so as to release the bordered edge of the calendar.

10. In a machine of the class described, the combination with a bed; a bender pivoted thereto and designed to be moved down upon said bed and bend the metal strip resting thereon, and then move backward; means for enabling said bender to move backward, and means, against which said metal strip is bent, for moving said bender backward, of means for locking said bender down upon said metal strip during the whole of its backward movement.

11. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge; means for releasing the bordered edge of the sheet from said former, and means for operating said former, of a bender, pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip; the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling the said bender to move backward.

12. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed, and means, at a slight forward movement of said former, for pinching its concave lower edge down upon said bed, of means for horizontally moving said former.

13. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating thereon and provided with a concave lower edge; means for operating said former; a bender pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge *a* designed to operate adjacent the concave lower edge of said former so as to always be the required distance from the front edge *i* of said former, the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward, of means for maintaining the required distance of the knife-edge *a* of the bender from the front edge *i* of the former.

14. In a machine of the class described, the combination with a bed; two spring-held stop-strips held in said bed and against which the metal strip to be operated upon abuts, the inner ends of said stop-strips being constructed to form a throat to permit of the advance of the eyelet whose tongue rests therebetween and upon said metal strip, and a suitably-constructed eyelet-stud spring-held in said bed and situated so as to support the head of said eyelet in proper position, of a bender pivoted to said bed and designed to be moved down upon said stop-strips and eyelet-stud which are depressed so that the said bender will press upon the eyelet and strip.

15. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge, and means for operating said former, of a bender, pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward.

16. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge, and the ends *q*, and means for operating said former, of a bender, pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former, the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip, the said beveled bender being constructed with the ends *m* so that the ends *q* of said former

will abut thereagainst and move backward said beveled bender during the forward movement of said former, and means for enabling said bender to move backward.

17. In a machine of the class described, the combination with a bed, and a horizontally-reciprocating former operating on said bed provided with a concave lower edge; of bell-crank levers pivoted to said bed having their upper portions R operating in the slots R′ with which said former is provided; a locking-bar pivoted to the upper portions of said bell-crank levers and provided with slots *r;* studs secured in said former and operating in the said slots in said locking-bars, and suitable guides for said locking-bars, all arranged to operate as set forth and for the purpose specified.

18. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed at a slight forward movement of same; a bender pivoted to said bed and constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former, of bell-crank levers pivoted to said bed having their upper portions R operating in the slots R′ with which said former is provided; a locking-bar pivoted to the upper portions of said bell-crank levers and provided with slots *r;* studs secured in said former and operating in the said slots in said locking-bars, and suitable guides for said locking-bars, all arranged to operate as set forth and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN FORSTER ROSS.

Witnesses:

EGERTON R. CASE,

WILMOT R. BLACKHALL.