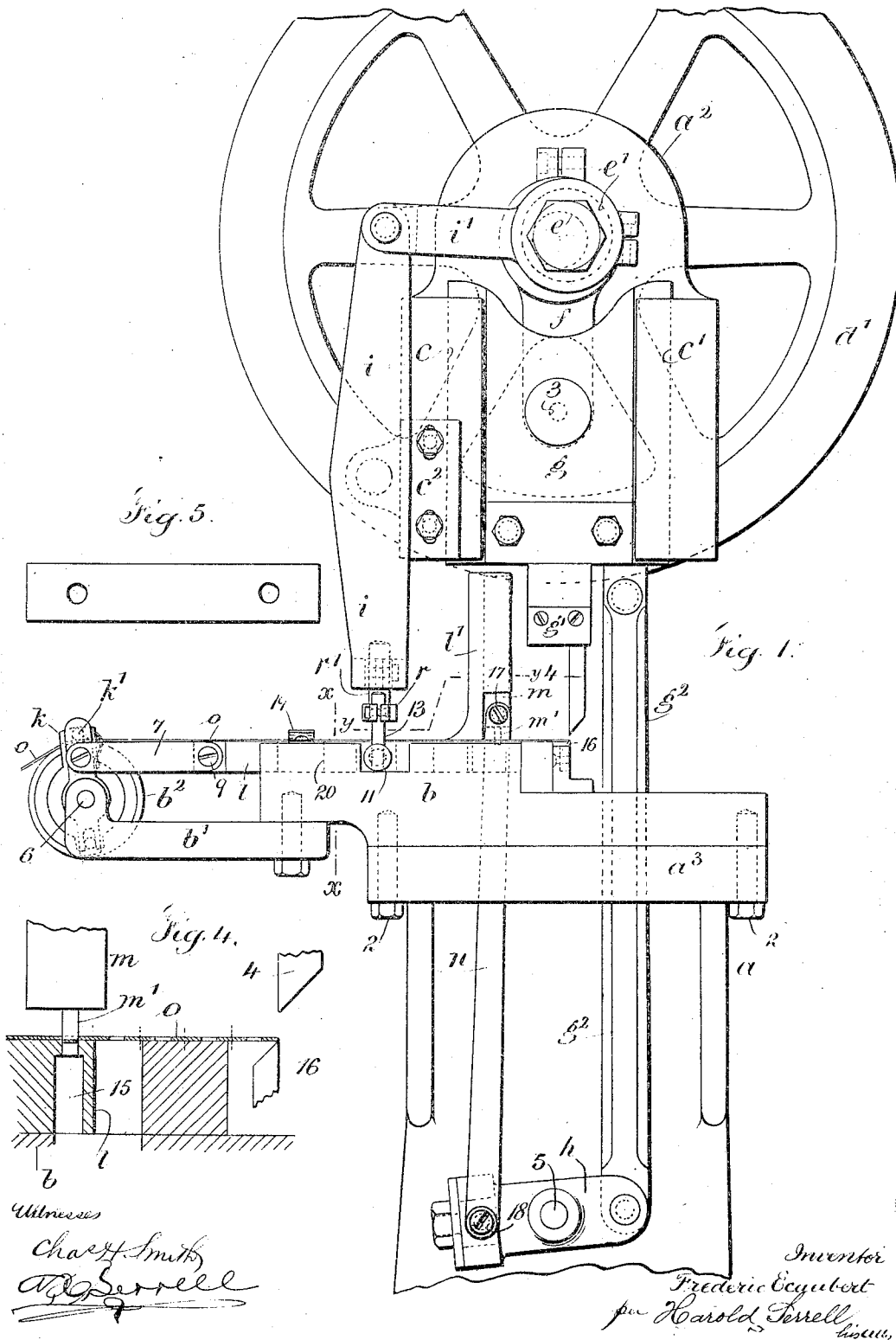


F. ECAUBERT.

PRESS FOR FEEDING AND CUTTING UP STRIPS OF MATERIAL.

APPLICATION FILED FEB. 5, 1906.

2 SHEETS—SHEET 1.



Witnesses

Charles Smith,
Harold Terrell

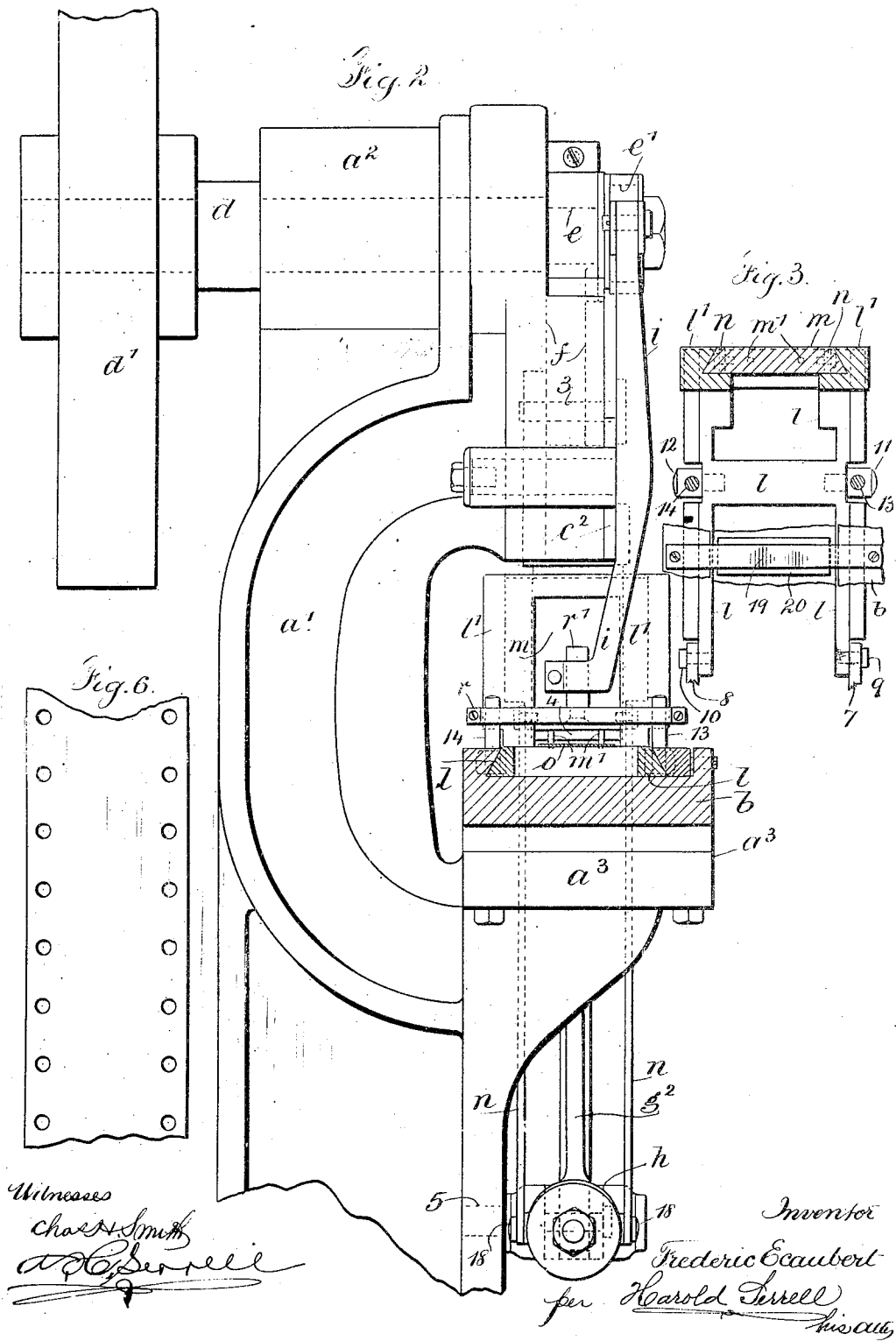
Inventor
Frederic Ecaubert
per Harold Terrell,
attorney.

F. ECAUBERT.

PRESS FOR FEEDING AND CUTTING UP STRIPS OF MATERIAL.

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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

FREDERIC ECAUBERT, OF NEW YORK, N. Y.

PRESS FOR FEEDING AND CUTTING UP STRIPS OF MATERIAL.

No. 836,020.

Specification of Letters Patent.

Patented Nov. 13, 1906.

Application filed February 5, 1906. Serial No. 299,394.

To all whom it may concern:

Be it known that I, FREDERIC ECAUBERT, a citizen of the United States, residing at the borough of Brooklyn, in the county of Kings, city and State of New York, have invented a new and useful Improvement in Presses for Feeding and Cutting Up Strips of Material, of which the following is a specification.

My invention relates to novel devices for punching and feeding along a strip of suitable material. This strip can, if desired, be cut up into pieces of predetermined and corresponding dimensions which are adapted for equivalent use in any art or manufacture in which said pieces are useful.

In carrying out my invention I provide a reciprocating frame in a slideway in the bed and a rocker-arm actuated by an eccentric upon a main power-shaft, which rocker-arm engages said frame; a cutter carried by a sliding head actuated by another eccentric from the main power-shaft; a vertical slidable head carrying punches in slideways in said reciprocating frame and actuated by a rocker and links from the cutter-head.

I also employ a fixed bed-shear and an oscillatory friction-feed of well-known type which acts to forward the strip of metal to be cut up to a slightly-greater extent than the same is positively fed by the punches of the sliding head and reciprocating frame. The strip of metal is fed up to the cutters with each corresponding movement of said parts in a forward direction. The feed effected by the punches is more regular, because the main feed is independently provided for, and the holes made by the punches in the strip of metal to insure its positive feed are so placed as to be at absolutely even distances apart and should be so placed with reference to the predetermined dimensions of the pieces as cut off that said holes do not interfere with the future usefulness of the pieces of metal.

In the drawings, Figure 1 is a general front elevation representing the devices of my improvement. Fig. 2 is a side elevation and vertical section at about the dotted line $x x$, Fig. 1. Fig. 3 is a plan and horizontal section at about the dotted line $y y$ of Fig. 1, particularly representing the oscillating two-part frame. Fig. 4 is a vertical longitudinal section through the punching devices, the strip and the complementary cutters. Fig. 5 is a plan representing one of the strips of metal, and Fig. 6 represents part of a strip with parts of spaced-apart holes. Figs. 4

and 5 are of exaggerated size over the other figures for clearness.

a represents the main upright frame of the machine; a' , the jaw portion of said frame, between the faces of which is placed the main operating features of my improvement. a^2 is the head portion of the machine, and a^3 a platform, all of said parts being integral and the platform extending out at the lower portion of the jaw-opening.

The bed-piece b is supported by a platform a^3 and secured thereto by bolts 2, and in the higher portion of this bed there is a channel formed with undercut grooves for the oscillating two-part frame hereinafter described.

The upper portion of the frame is formed with members in which are the slideways $c c'$ for the sliding head g , and secured to one of these parts is a bracket c^2 . A power-shaft d passes through the upper portion of the frame, and it is provided with a wheel or pulley d' for rotating the same.

On the opposite end of the power-shaft—that is, the end that extends beyond the face of the frame—I provide two eccentrics $e e'$. A connecting-rod f encircles the eccentric e at one end and at the other end is connected by a pivot-pin 3 to the sliding head g . On the lower end of this sliding head g is a clamp-block g' , by means of which the cutter 4 is connected to the sliding head g . A link g^2 is pivotally connected to a member secured to the lower end of the sliding head g , said link at its lower free end being pivotally connected to a rocker-arm h , said rocker being connected by pivot-pin 5 to the main upright frame a of the machine. A rocker-arm i is pivotally connected to the bracket c^2 , and a connecting-rod i' extends from the upper end of the rocker-arm i to and encircles the eccentric e' . A bracket b' is securely bolted to the left-hand end of the bed b and projects therefrom and is provided with an axis 6, upon which the roller b^2 is mounted.

I provide an oscillatory friction-feed k of well-known form, mounted upon the axis 6 and having a roller k' slightly above the surface of the roller b^2 and bearing upon the strip of the metal to be punched and fed along and which strip passes over the surface of the roller b^2 and between the same and the roller k' . This friction-feed k has connected pivotally to its opposite sides links 7 and 8, which at their other ends are connected by pivots 9 10 to the oscillating two-part frame.

A plan of this frame is shown in Fig. 3. It

comprises a horizontal member *l*, formed of parallel portions, which are adapted to be received and to slide in the bed *b*, there being transverse members between the parallel slide members and the upright member *l'*. This upright member *l'* has undercut grooves forming thereof a slideway for the head *m*.

The opposite slide members of the horizontal frame *l* are notched to receive the lugs 11 12, in which lugs are apertures for the pins 13 14. These pins in turn are received by and clamped to a horizontal bar *r*, and in the center of this bar and rising therefrom is a post *r'*, the post *r'* passing through the lower horizontally-formed or bent end of the rocker-arm *i*. To the lower end of the sliding head *m*, movable vertically in frame *l'*, are secured punches *m'*, matching with their complementary apertures 15 in a cross-bar of the frame *l*, (see Fig. 4,) and I provide links *n*, connected by pivot-screws 17 at their upper ends to the lower opposite ends of the sliding head *m*, said links at their lower ends being connected by the pivot-screws 18 to opposite sides of the rocker *h*, and 16 represents the bed-shear complementary to the cutter 4 and secured upon the bed *b*.

The rotation of the shaft *d* and its eccentrics *e e'* through the connecting-rods *f* and *i'* cause the movement of the sliding head *g* in the slideways *c c'* and of the rocker-arm *i*, pivoted to the bracket *c''*. The vertical reciprocating movement of the sliding head *g* actuates the cutter 4 and the link *g''*, and from said link swings the rocker-arm *h* and the links *n*, said parts in turn causing the vertical reciprocating movement of the cutter-head *m* and its punches *m'*.

The actuation of the rocker-arm *i* moves the post *r'*, bar *r*, pins 13 14 and by them imparts a longitudinal reciprocating movement to the two-part frame *l l'*. This performs a two-part function, first, in drawing upon the links 7 8 and causing the operation of the oscillating friction-feed *k* to grip the strip of metal *o* and move the same along with the action of said feed in one direction, and, in the second place, to move the two-part frame *l l'* in the slideways of the bed, together with the sliding head and the punches, the strip of metal *o* extending over the transverse parts of the frame *l* and beneath the punches *m'*.

A vertical movement is imparted by the action of the links *n* to the head *m* and punches *m'*, so that at predetermined points said punches pass through the strip of metal *o* and form holes therein, and so engage the strip of metal as to move the same along with the timed longitudinal movement of the two-part frame *l l'*.

The feeding action of the oscillatory friction-feed *k* is slightly greater than the distance of feed travel of the two-part frame *l l'*—that is, the width of a strip, Fig. 5. Consequently there is no strain on the strip

of metal by the feed action of the punches *m'*, because the extent of work required of them is only to move along the length of the strip *o* between the free end and the feed device *k*. Consequently the holes made in said strip of metal by the punches remain with smooth edges and without elongations. The feed of the strip of metal thus effected brings the same to and through between the cutter 4 and shear 16. Therefore with each downward movement of the cutter 4 in cutting up the strip of metal into pieces there is a corresponding upward movement by the links *n* of the sliding head *m* and its punches, and the parts are so timed that while the strip metal is being cut into pieces and while the punches are raised above the same that the rocker-arm *i* is actuated by the eccentric *e'*, is swung on its pivot moving the two-part frame *l l'* beneath the strip of metal back to an initial point of beginning preparatory to punching two additional holes and again repeating the operations performed in advancing the strip of metal for the further action of the cutters, said cutters being separated with this advance movement so that the free end of the strip may pass to a predetermined extent through and between the cutters ready for their further action in severing other pieces.

In Fig. 4, in which the parts are shown in large size for clearness, I have shown the respective positions in which the cutter 4 is making its upward movement after severing a piece from the strip and also in which the punches *m'* have started their downward movement and have just passed through the strip of metal *o*. At this point the feed of the strip begins, it being necessary before the completion of the downward movement of the punches for them to travel as far again as they have already traveled. In other words, in the position shown the punches have moved half-way down. At the completion of the downward movement of the punches and the swinging movement of the rocker-arm *i* and also the longitudinal movement of the two-part frame *l l'* the strip *o* is moved in Fig. 4, so that the first dotted line of severance comes at the edge of the fixed bed-shear 16.

The downward movement of the cutter 4 and the upward movement of the punches *m'* is simultaneous, and when the punches are completely out of the metal strip the two-part frame *l l'* is carried in the opposite direction by the rocker-arm *i* underrunning the metal strip and at the same time moving backward the friction-feed *k* as disengaged from the strip, so that with the return movement in the opposite direction the feed may be again effected.

Some means should be provided to frictionally hold the strip during the return movement of the two-part frame *l l'* and the oscillatory friction-feed so that it is not dis-

turbed by this return movement, otherwise the ratio of its feed could not be depended upon. I do not limit myself to the employment of any particular device for thus holding this strip, but I have shown a spring 19 as extending transversely of the strip with the respective ends thereof secured to the edges of the bed *b* and as resting downward upon the strip and holding the same against the part 20 of the bed. This will be sufficient to perform the desired function.

From the drawings and the foregoing description it will be apparent that the devices of my invention are adapted for punching holes or pairs of holes in strips of paper, cardboard, celluloid, or other suitable materials to insure an absolutely accurate feed in the machines in which such materials are afterward used in the arts—such as moving-picture machines and strip-music, such as used in the pianola, &c.

I claim as my invention—

1. In a device for feeding a strip of suitable material, the combination with a reciprocating frame over which the strip passes, of devices mounted upon and moving with the said frame for punching holes in said strip and so locking the strip to the frame, means for thereafter moving the frame and punches and feeding the strip along and a device for effecting a simultaneous and separate feed for relieving the strip of strain at the punched holes.

2. In a device for feeding a strip of suitable material, the combination with a power-shaft, of a reciprocating frame, devices connected therewith and extending to the power-shaft for moving the frame, devices mounted upon said frame for punching holes in the said strip to lock the same to the frame to be fed along thereby, devices for actuating the latter devices and an automatic device for effecting a simultaneous and separate feed for relieving the strip of strain at the punched holes.

3. In a device for feeding a strip of suitable material, the combination with a bed of the frame, of a reciprocating frame of two parts at right angles to one another and over which the strip passes, one of said parts being slidable in said bed and the other of said parts having a slideway therein, a device movable in said slideway and backward and forward with said frame, punches carried by said device for punching holes in said strip and so locking the strip to the said frame and means for thereafter moving the frame and punches and feeding the strip along.

4. In a device for feeding a strip of suitable material, the combination with a bed of the frame, of a reciprocating frame of two parts at right angles to one another and over which the strip passes, one of said parts being slidable in said bed and the other of said parts having a slideway therein, a device movable

in said slideway and backward and forward with said frame, punches carried by said device for punching holes in said strip and so locking the strip to the said frame, means for thereafter moving the frame and punches and feeding the strip along and a device for effecting a simultaneous and separate feed for relieving the strip of strain at the punched holes.

5. In a device for feeding a strip of suitable material, the combination with a bed of the frame, of a reciprocating frame of two parts at right angles to one another and over which the strip passes, one of said parts being slidable in said bed and the other of said parts having a slideway therein, a device movable in said slideway and backward and forward with said frame, punches carried by said device for punching holes in said strip and so locking the strip to the said frame, cutters for separating the strip into pieces, means connecting the cutter and punches for simultaneous action in opposite directions and other devices actuated by the same source of power for imparting a reciprocating movement to the said two-part frame.

6. In a device for feeding and severing a strip of metal into pieces, the combination with a bed of the frame, of a reciprocating frame of two parts at right angles to one another and over which the strip of metal passes, one of said parts being slidable in said bed and the other of said parts having a slideway therein, a device movable in said slideway and backward and forward with said frame, punches carried by said device for punching holes in said strip of metal and so locking the strip to the said frame, cutters for separating the strip of metal into pieces, means connecting the cutter and punches for simultaneous action in opposite directions, other devices actuated by the same source of power for imparting a reciprocating movement to the said two-part frame and a device for effecting a simultaneous and separate feed for relieving the strip of metal of strain at the punched holes.

7. In a device for feeding and severing a strip of metal into pieces, the combination with a bed of the frame, of a reciprocating frame of two parts at right angles to one another and over which the strip of metal passes, one of said parts being slidable in said bed and the other of said parts having a slideway therein, a device movable in said slideway and backward and forward with said frame, punches carried by said device for punching holes in said strip of metal and so locking the strip to the said frame, cutters for separating the strip of metal into pieces, means connecting the cutter and punches for simultaneous action in opposite directions, other devices actuated by the same source of power for imparting a reciprocating movement to the said two-part frame, an oscilla-

400y friction-feed for engaging the strip of metal, a roller over which the strip of metal passes and devices connecting the said friction-feed to the said two-part frame by which the movement of the frame automatically actuates the friction-feed.

8. In a device for feeding a strip of suitable material, the combination with a reciprocating frame over which the strip passes, devices mounted upon and movable with said frame for punching holes in said strip, of a power-shaft, an eccentric thereon, a rocker-arm pivotally mounted upon the machine, a link connecting one end thereof to said eccentric and devices connecting with the other end of said rocker-arm and with the said reciprocating frame, at its opposite sides for effecting the movement of said frame.

9. In a device for feeding and severing a strip of metal into pieces, the combination with a reciprocating frame over which the strip of metal passes, devices mounted upon and movable with said frame for punching holes in said strip and devices for severing the strip into pieces, of a power-shaft, an eccentric thereon, a rocker-arm pivotally mounted upon the machine, a link connecting one end thereof to said eccentric and devices connecting with the other end of said rocker-arm and with the said reciprocating frame at its opposite sides for effecting the movement of said frame.

10. In a device for feeding and severing a strip of metal into pieces, the combination with a power-shaft and a cutter device actuated thereby for cutting up a strip of metal into pieces, of a reciprocating frame, devices

connected therewith and extending to the power-shaft for moving the frame and devices mounted upon said frame for punching holes in said strip of metal to lock the same to the frame to be fed along thereby.

11. In a device for feeding and severing a strip of metal into pieces, the combination with a power-shaft and a cutter device actuated thereby for cutting up a strip of metal into pieces, of a reciprocating frame, devices connected therewith and extending to the power-shaft for moving the frame, devices mounted upon said frame for punching holes in the said strip of metal to lock the same to the frame to be fed along thereby and an automatic device for effecting a simultaneous and separate feed for relieving the strip of metal of strain at the punched holes.

12. In a device for feeding a strip of suitable material, the combination with a reciprocating frame over which the strip passes, of devices mounted upon and moving with the said frame for punching holes in said strip and so locking the strip to the frame, means for thereafter moving the frame and punches and feeding the strip along, a device for effecting a simultaneous and separate feed for relieving the strip of strain at the punched holes, and means for frictionally holding the strip in position during the return movement of the two-part frame.

Signed by me this 31st day of January, 1906.

FREDERIC ECAUBERT.

Witnesses:

GEO. T. PINCKNEY,
E. ZACHARIASEN.