No. 864,349. PATENTED AUG. 27, 1907.

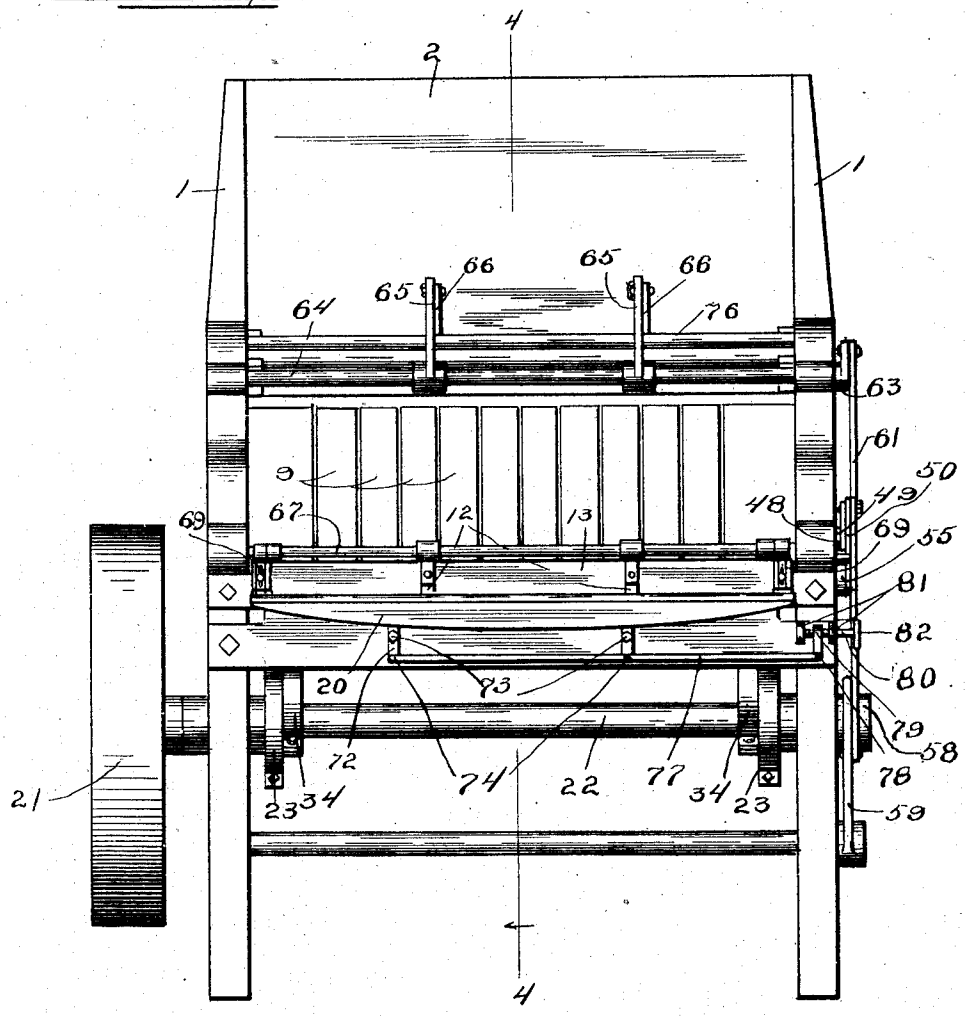
F. W. YAGER.

MACHINE FOR MAKING METAL BINDING STRIPS.

APPLICATION FILED JULY 25, 1906.

5 SHEETS—SHEET 1.

Fig. 1



Witnesses
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5 SHEETS—SHEET 2.

Fig. 2

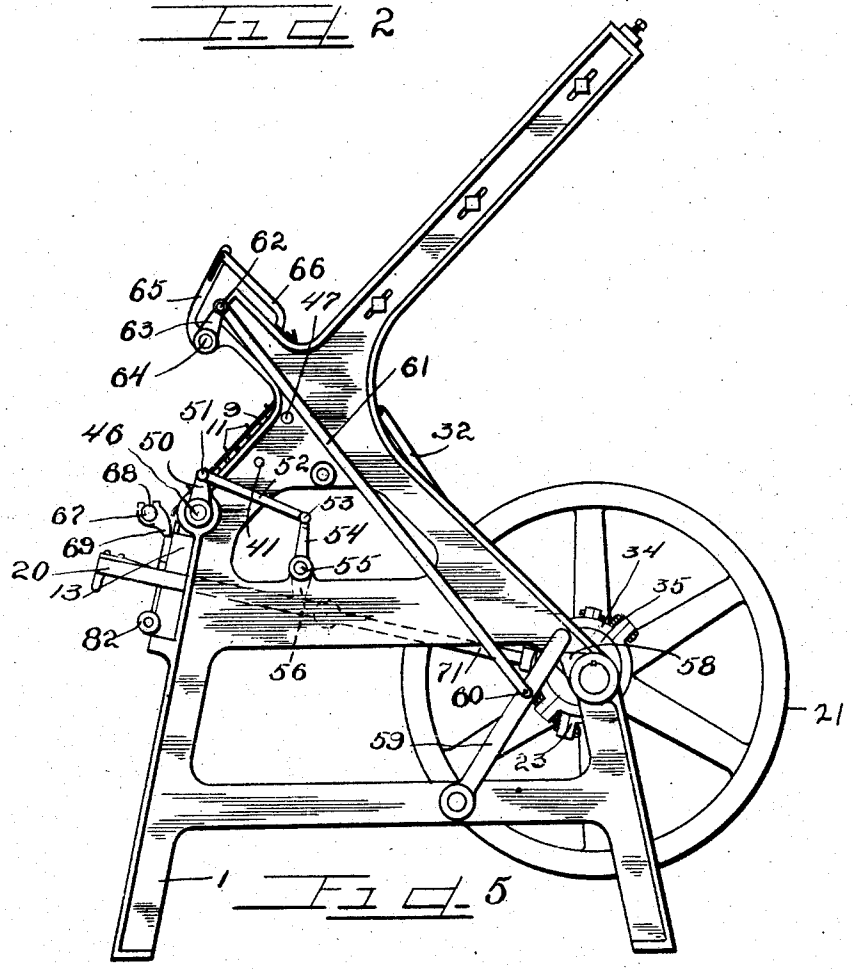
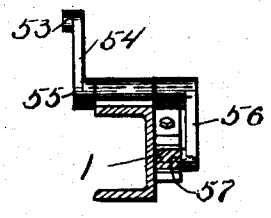


Fig. 5



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5 SHEETS—SHEET 3.

Fig. 3

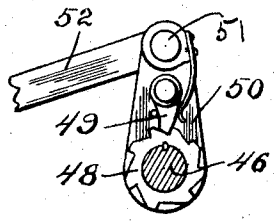
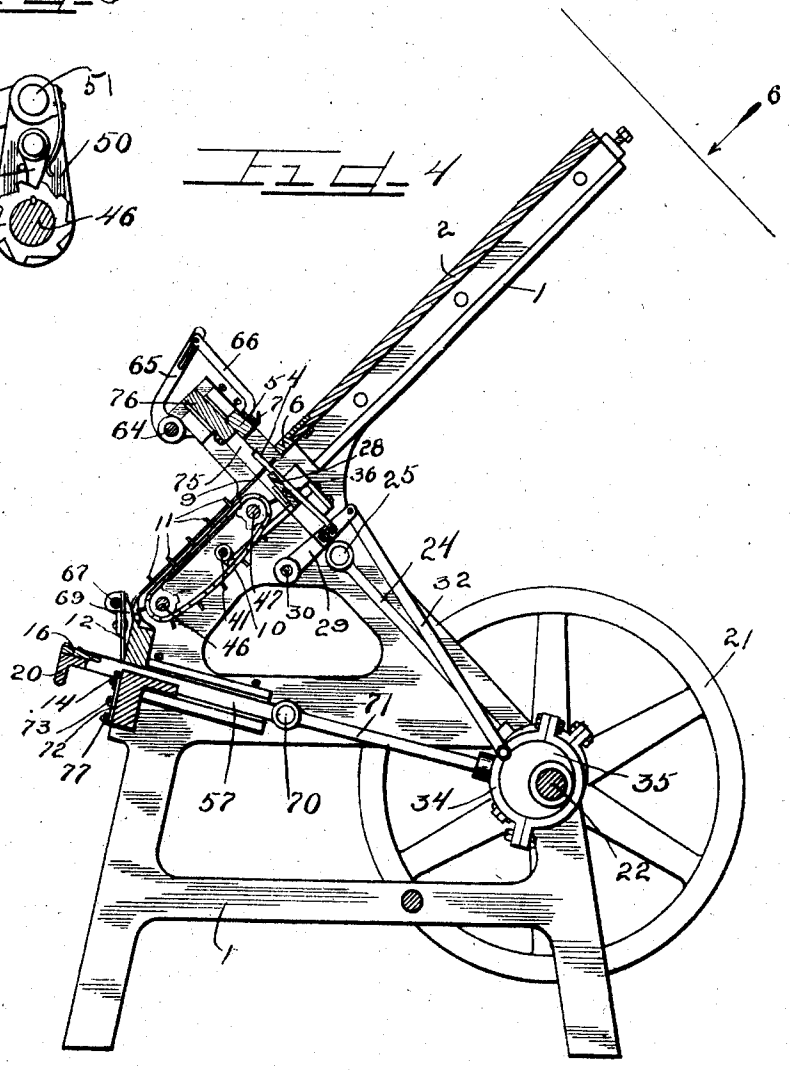


Fig. 4



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5 SHEETS—SHEET 4.

Fig. 6

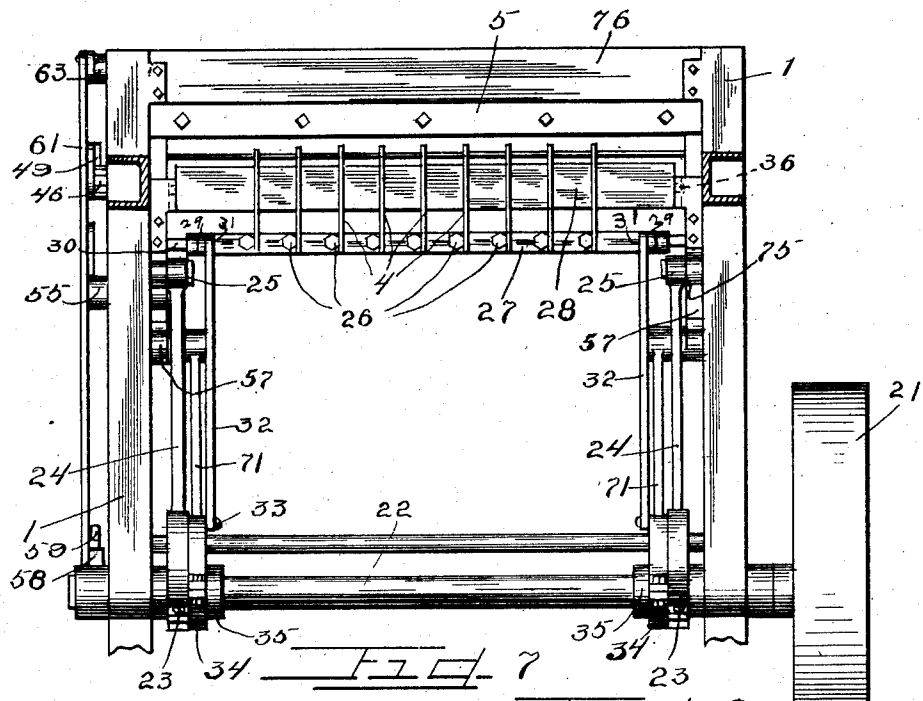


Fig. 7

Fig. 8

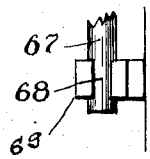
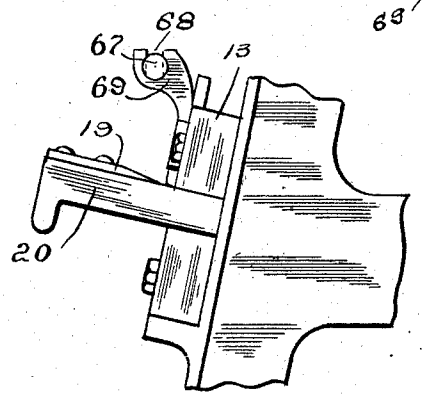
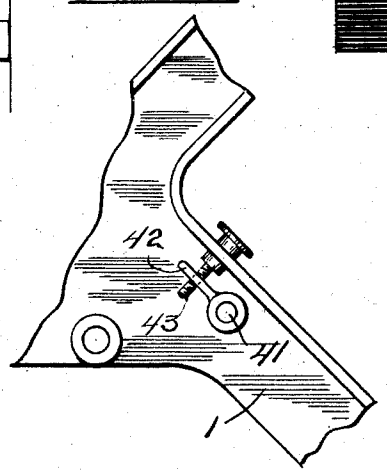


Fig. 9





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5 SHEETS—SHEET 5.

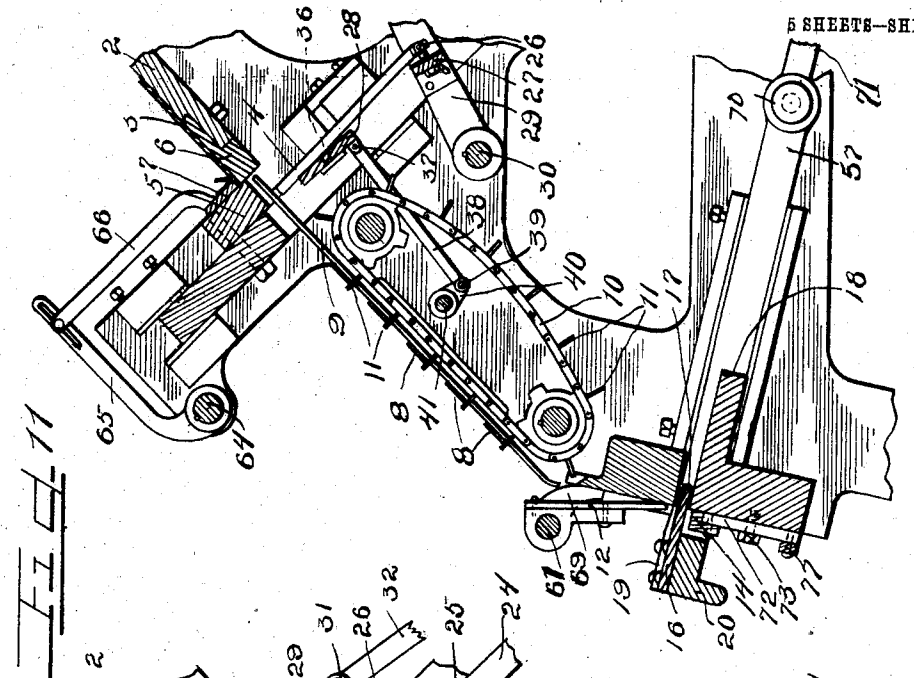

Fig. 11

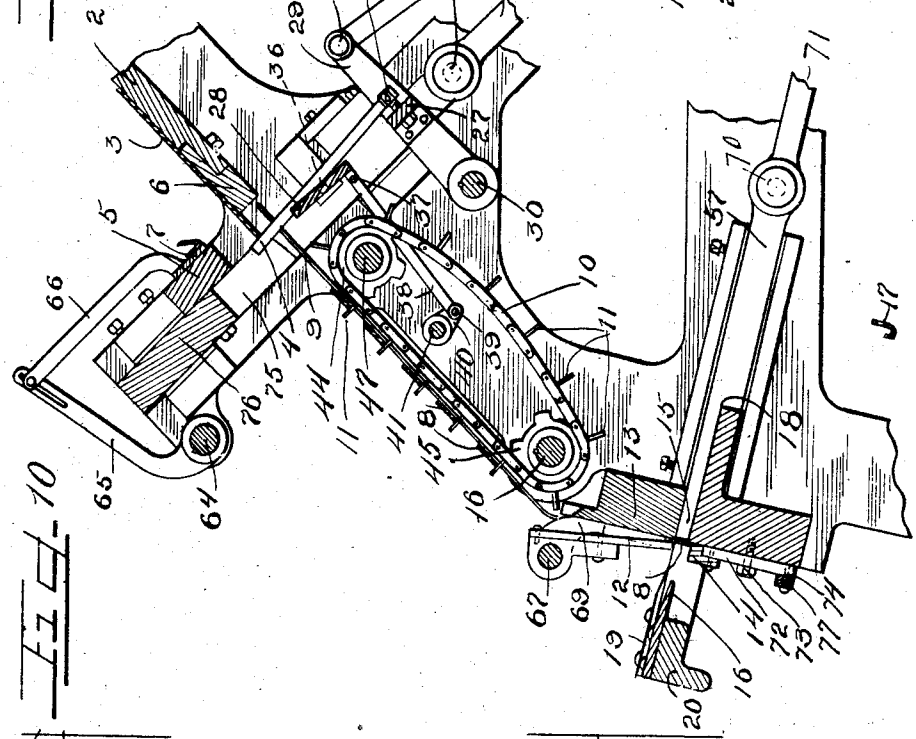

Fig. 10

Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK WILLIAM YAGER, OF CHICAGO, ILLINOIS.

MACHINE FOR MAKING METAL BINDING-STRIPS.

No. 864,349. Specification of Letters Patent. Patented Aug. 27, 1907.

Application filed July 25, 1906. Serial No. 327,737.

To all whom it may concern:

Be it known that I, FREDERICK WILLIAM YAGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Machines for Making Metal Binding-Strips, such strips as are used for binding the edges of paper calendars, display-cards, and similar articles, of which the following is a specification.

The object of my invention is to produce a machine that will automatically cut from a stock sheet of metal suitable width of strips and bend them for binding purposes in the simplest and most desirable way that will insure rapid and good work, with the ordinary commercial sheet metal that is used for such purposes.

Some machines that will operate on good stock metal are failures, because they will not operate right along on the common average stock.

The invention consists in the devices and combinations thereof as set forth in the claims.

Reference will be had to the accompanying drawings, in which

Figure 1 is a front view of the machine, being the side at which the operator stands. Fig. 2 is an end elevation at the right side of Fig. 1. Fig. 3 is a detail. Fig. 4 is a sectional elevation on line 4 of Fig. 1. Fig. 5 is a detail. Fig. 6 is an inclined-plane view, looking in the direction of arrow 6, Fig. 4. Figs. 7, 8, and 9 are details. Figs. 10 and 11 are sectional elevations.

In the drawings, 1 indicates the cast-iron frame of the machine, 2 indicates an inclined table upon which the operator places the sheet of metal (3) that is to be made into binding strips and that slides by gravity down to rest with its lower edge against the stop fingers (4) (see Fig. 10), the adjustment of which determines the width of strips to be cut off the plate by a reciprocating shear (5) working with a fixed shear (6).

During the cutting off of the strips the fingers (4) are withdrawn below the shear (5), and the sheet of metal (3) is retained in position during the movement of the fingers (4) and shear (5) by a reciprocating clamping bar (7). (See Fig. 11). The strips (8) after being cut off fall down upon guide bars (9), below which there move, intermittently, carrier chains (10) having pins (11) which project through spaces between the guide bars, engage the strips (8) and carry them along at definite intervals. Several strips are, at all times, in the carriers, giving time for the strips to assume a normal shape for themselves after being cut from the sheet, there being generally some new strains developed in the strip after it is cut from the sheet which buckles or distorts the newly cut strip; and if the buckling is sufficient to make the strip useless, the operator picks it out before it is discharged by the carrier. As the strips are discharged by the carrier they fall by gravity edgewise between the vertically-moving guide fingers (12) and the block (13) and come to rest on the adjustable block (14) (see Fig. 10), in front of a slot (15) in position in front of a reciprocating former bar (16) which, upon its forward movement, engages the strip (8) and forces it through the slot (15), thereby bending it over the former bar (16) as it passes into slot (15), and the finished bent strip (17) falls out at the point (18) into a receptacle (not shown) or upon the floor; meanwhile, the fingers (12) have been lifted by cam plates (19) fixed to bar (20) which carries the former (16).

The several parts are all operated by power applied to belt wheel (21) driving a cam shaft (22) from which all movements are produced.

The shear (5) is operated by the eccentrics (23) connected by links (24) to the pivots (25) on arms (75) fastened to the block (76) that carries the shear (5).

The fingers (4) rest near their free ends, upon a fulcrum bar 28, and at their opposite ends are pivoted to threaded studs 26, respectively, working in a bar 27 and by their adjustment raising and lowering the free ends of the fingers. Bar 27 is carried by arms (29) upon a rocker shaft (30) and the arms (29) are connected by pins (31) to links (32) connected by pins (33) to eccentric blocks (34) of eccentrics (35) on shaft (22), whereby the fingers (4) are withdrawn as the shear (5) descends. The adjustment of the fingers (4) to and from the shear blade (6) whereby, usually, the width of strips (8) are determined, is effected by the bar (28) which is mounted on centers (36) and is connected at (37) to links (38) connected at 39 to arms (40) on shaft (41), adjusted radially by an arm (42) and a screw (43) in frame (1) of machine (see Fig. 8); which mechanism permits the operator to adjust the width of strips as desired.

The carrier for the strips may be any suitable means or mechanism, but I prefer to use sprocket chains (10) provided with pins (11) which chains are mounted upon sprockets (44) and (45) mounted upon shafts (47) and (46). The shaft (46) being driven by a ratchet 48 and pawl (49) carried by an arm (50) connected at (51) to link (52), connected at (53) to arm (54) on a stud (55); carrying arm (56) connected to the slide (57) which carries the former bar (16), which as the latter moves, moves also the pawl arm (50) giving the desired intermittent movement to the carrier chains (10).

The clamping bar (7) and its connected parts fall by gravity to clamp the plate (3) on to the table (2), and it is lifted at the desired time by a cam (58) (see Fig. 2) acting against an arm (59) connected at 60 to a link (61); connected at 62 to an arm (63) on a rocker shaft (64) carrying slotted arms (65) connected to links (66) connected to the bar (7) whereby the latter is moved as described. The guide fingers (12) are fixed to a bar (67) held in slots (68) of brackets (69) whereby it falls by gravity to its lowest position and is lifted by the cam plates (19) fixed to movable bar (20) thereby freeing

the upper edge of the strip so that it may swing down, under the action of the former. Bar 20 is provided with arms (57) which are connected at 70 with rods (71) connected to eccentric strap (34) of eccentric (35) whereby bar (20) and its former (16) are moved as described. Block 14 is adjusted to position strip (8) in front of slot (15) by means of links (72) pivoted at 73 to frame (1) and connected at (74) to a bar (77); connected at 78 to a nut (79) of an adjusting screw (80), journaled in brackets (81) of frame and provided with a hand wheel (82); which adjustment permits the operator to locate at any point desired the bend across strip (8).

What I claim is:

1. In a machine of the class described, the combination of a table for receiving a sheet of metal, a shear for cutting it into strips, a carrier for the severed strips, a block for registering the position of the strips in front of a former as the strips are delivered by the carrier, with a bending former and a slot through which the former acts in bending the strips.

2. In a machine of the class described, the combination of a table for receiving a sheet of metal, fingers or stops for registering the position of the sheet in relation to a shear, a clamp for holding the sheet after it is registered, a shear for cutting it into strips, a carrier for receiving the strips from the shear, guides for directing and holding the strips as delivered by the carrier, a stop for registering the strips in position to be formed, with a slot and a reciprocating former for forcing the strips through the slot as described.

3. In a machine of the class described, the combination of an inclined table upon which a sheet of metal is placed and the inclination of which is sufficient to feed by gravity the said sheet to a shear, adjustable stops for registering the edge of the said sheet in relation to a shear, a shear for cutting off strips from the sheet, a carrier receiving the strips as cut by the shear, said carrier carrying a plurality of strips in clear view of the operator, a registering stop for registering the strips as delivered by the carrier, with a reciprocating former acting in connection with a slot whereby the strips are bent by being forced through the slot.

4. In a machine of the class described, a table for receiving a sheet of metal, a shear for cutting rectilinear strips off the edge of the sheet as it is fed over the table, a carrier for receiving the strips as cut by the shear, said carrier carrying the strips in full view of the operator, a receiving and registering device for receiving the strips as delivered by the carrier, a reciprocating former approximately parallel to the longer edges of the strips for bending the strips by forcing them through a slot as described.

5. In a machine of the class described, a table for receiving a sheet of metal, adjustable stops for registering the sheet in relation to a shear, a clamping bar for clamping the sheet upon the table, a shear for cutting strips from the sheet, means for withdrawing the stops while the shear is cutting, a carrier for receiving the strips as cut, a receiving device for the strips as delivered from the carrier, and a reciprocating former bar for forcing the strips through a slot and thereby bending them.

6. In a machine of the class described, the combination of an inclined table for receiving a sheet of metal, the inclination of which is sufficient to feed the sheet by gravity, a shear for cutting off strips from the sheet, a carrier for the strips, a receiving device wherein the strips fall by gravity from the carrier, and a reciprocating bending punch and die for bending the strips.

7. In a machine of the class described, the combination of a table for receiving a sheet of metal, a shear for cutting the sheet into a succession of long parallel strips, a bending device composed of a die and a reciprocating punch adapted to act upon the whole length of the strip, an intermittently moving carrier for delivering the strips in succession in position to be bent substantially parallel to their longer edges by said bending device and means for at will adjusting the distance of the bend from the lateral edges of the strips.

8. In a machine of the class described, the combination of a carrier for the strips, a die and a reciprocating punch for bending the strips, a registering device and clamping fingers for holding the strips when delivered by the carrier in position to the die.

9. In a machine of the class described, the combination of a carrier for the strips, of a bending-die and punch therefor, an adjustable registering device for registering the strips in relation to the die, and clamping fingers for holding the strips in position over the die, and means for moving said fingers out of the path of the punch as the punch engages the strips.

10. The combination of an inclined table arranged to carry and feed by gravity a sheet of metal, an intermittent clamping device for clamping the sheet on the table, a shear for cutting strips from the sheet, a carrier carrying the several strips from the shear to a bending device, a bending-die and a reciprocating punch coacting therewith to bend the strips, with a cam shaft carrying eccentrics and cams for moving the several parts as described.

11. The combination of a cutter for cutting strips from a sheet, a carrier for carrying a number of strips along in positions accessible to the operator, a horizontally arranged die and horizontal reciprocating bending-punch in position to receive and bend the strips as they fall by gravity from the carrier.

12. The combination of a cutter for the strips, a carrier for carrying the several strips along in view of the operator, a horizontally arranged die and bending-punch located to receive the strips as they are delivered by the carrier with vertically moving clamping fingers for holding the strips in position over the die.

In witness whereof I have hereunto signed my name in the presence of two witnesses.

FREDERICK WILLIAM YAGER.

Witnesses:

H. WALRATH,

D. SMITH.