

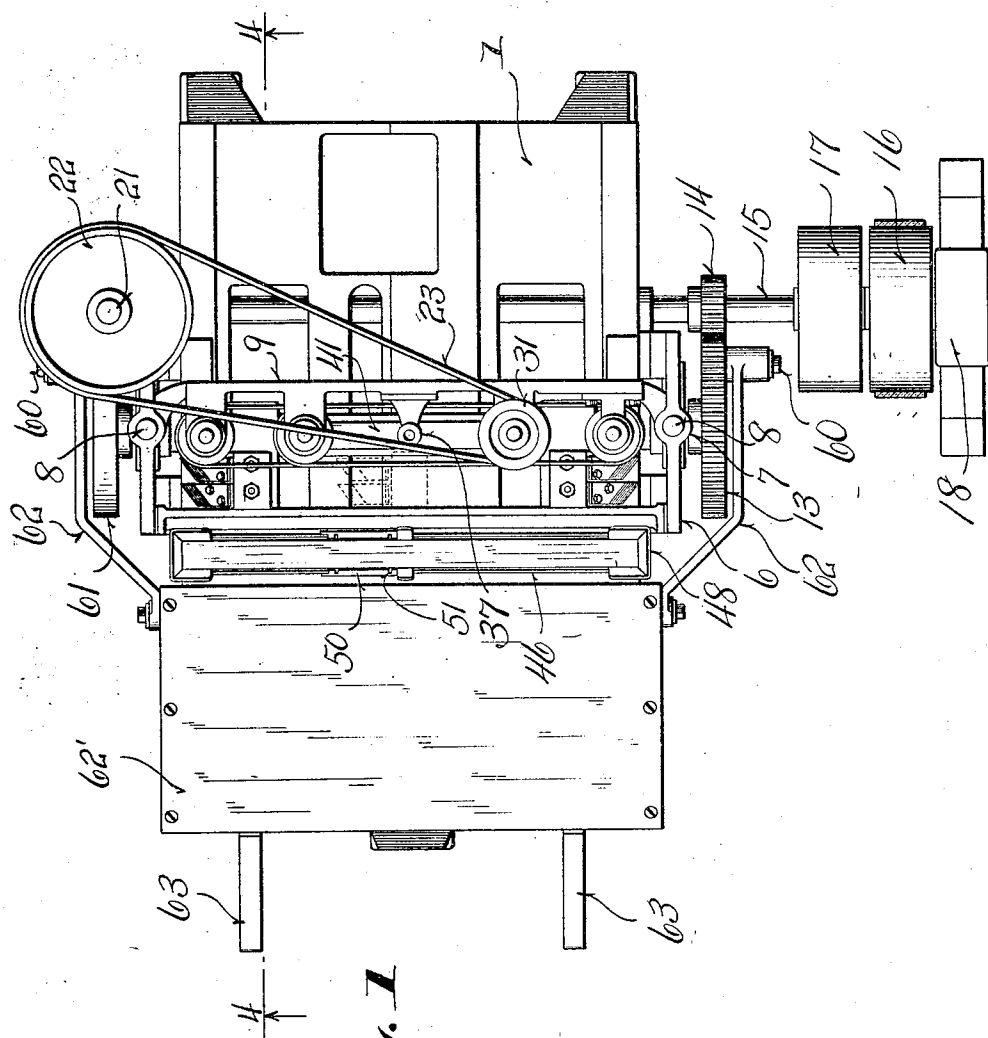
May 22, 1928.

1,670,731

A. N. MILLER
WOODWORKING MACHINE

Filed Oct. 17, 1925

5 Sheets-Sheet 1



Inventor:
Adolph N. Miller
By *[Signature]*
Attorney

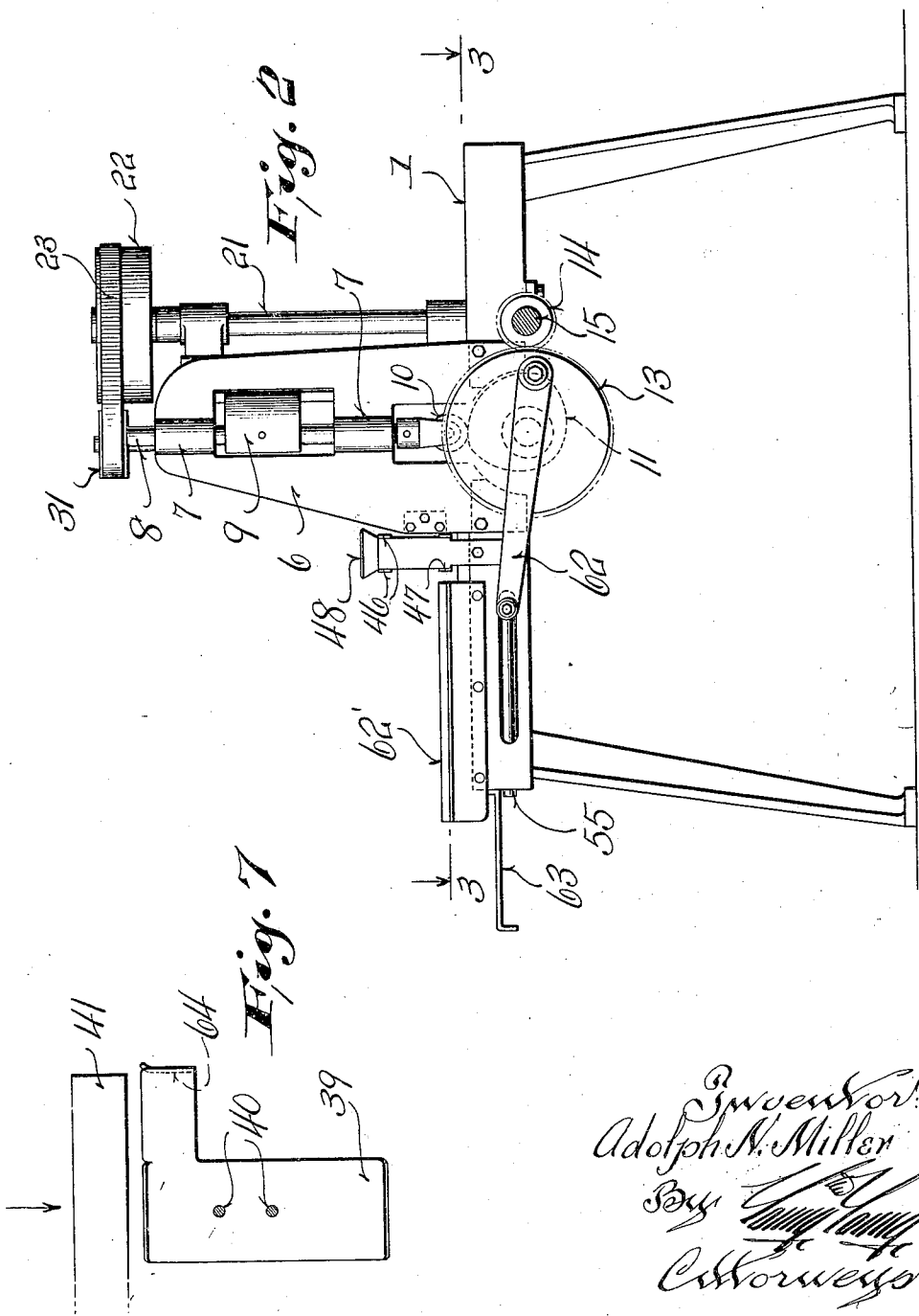
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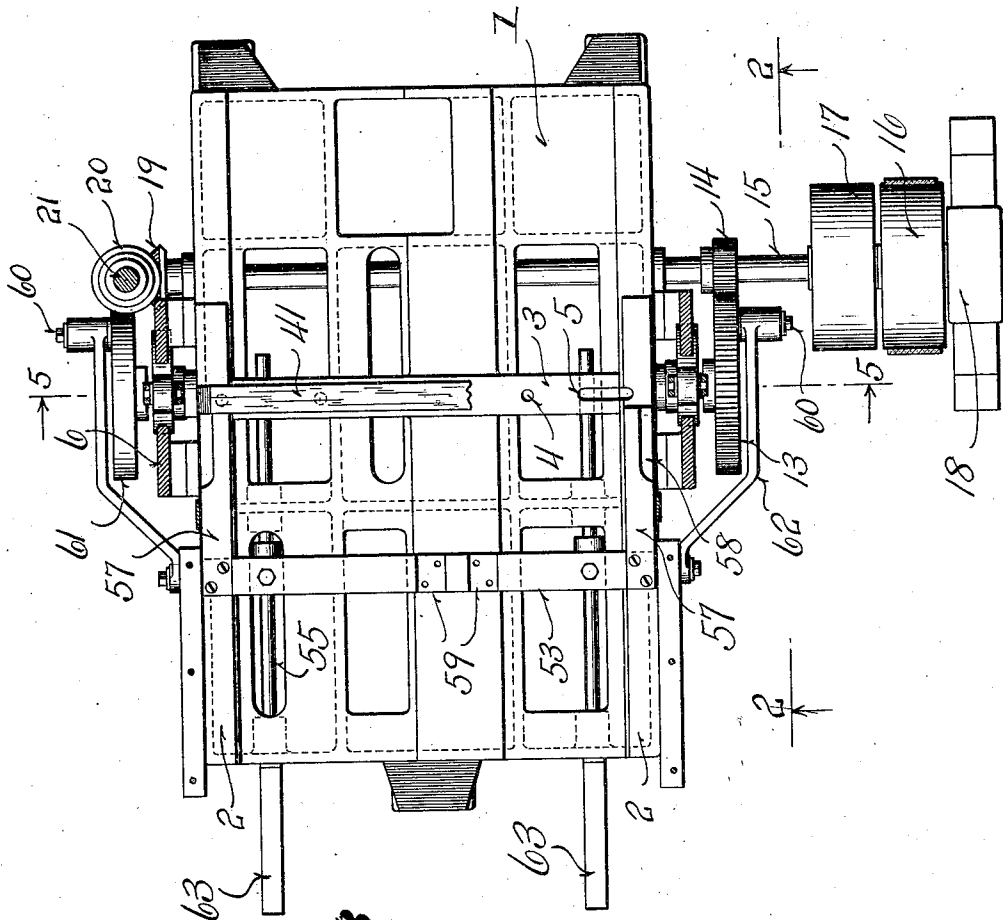


Fig. 3

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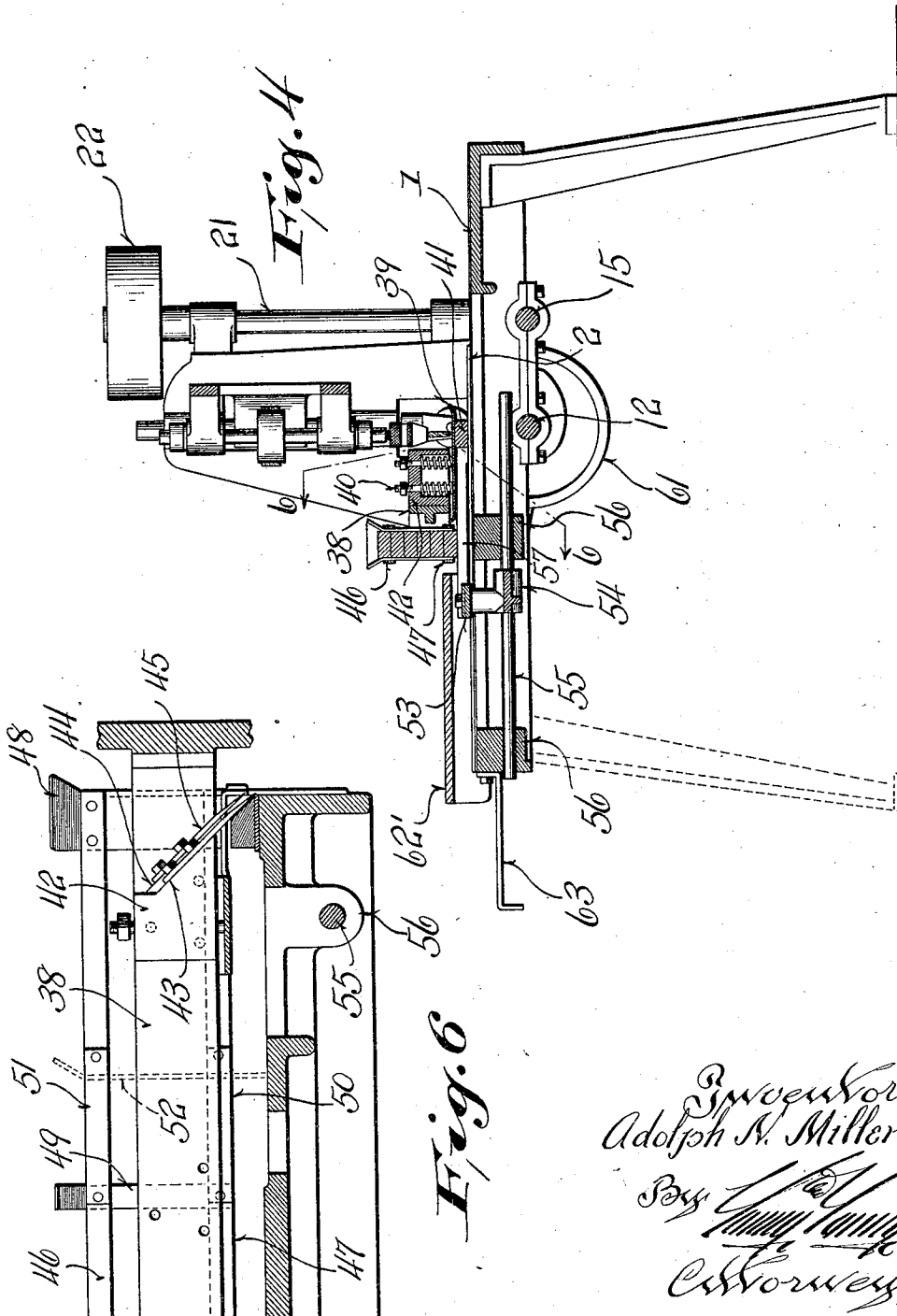
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5 Sheets-Sheet 5

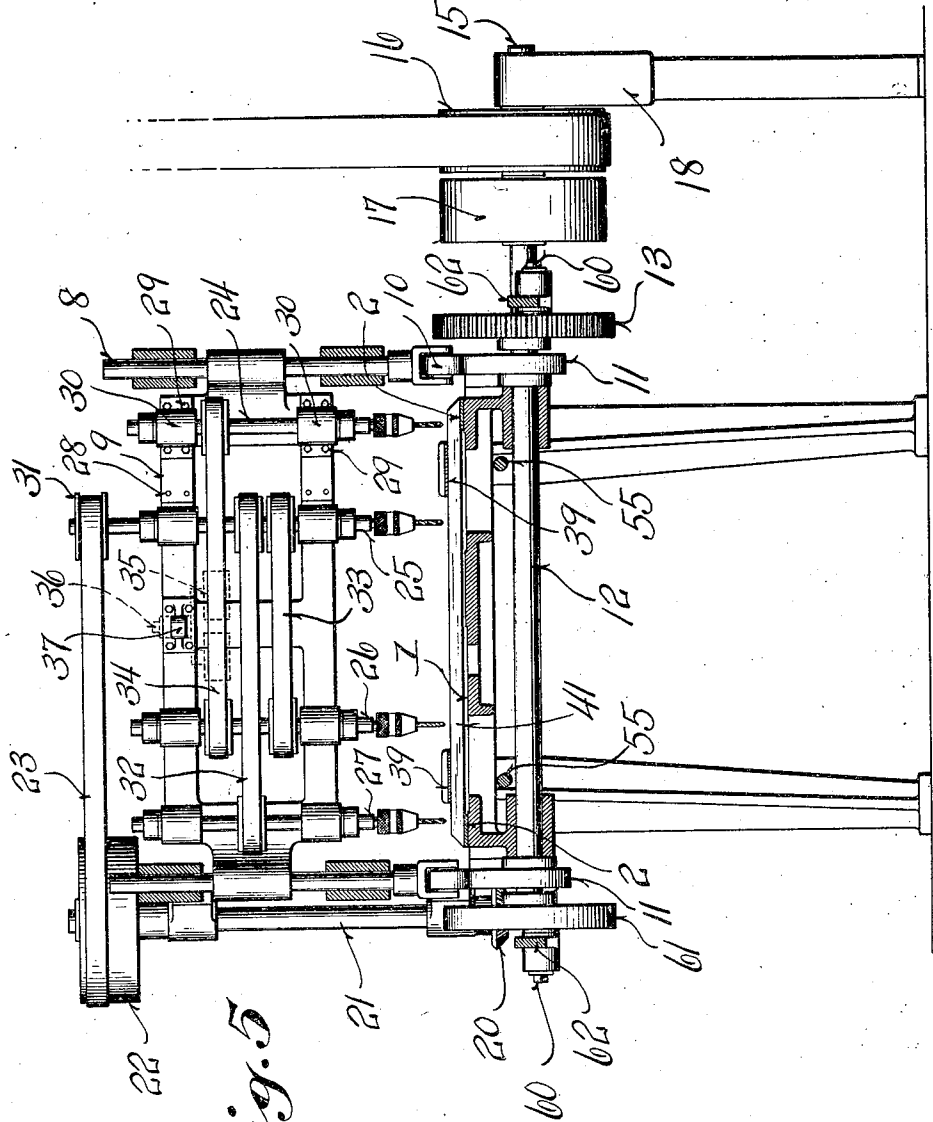


Fig. 5

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UNITED STATES PATENT OFFICE.

ADOLPH N. MILLER, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-FOURTH TO HERMAN JUNG, ONE-FOURTH TO WILLIAM BERSENERBRUGGE, AND ONE-FOURTH TO CHARLES KUNKEL, ALL OF MILWAUKEE, WISCONSIN.

WOODWORKING MACHINE.

Application filed October 17, 1925. Serial No. 63,017.

This invention relates to wood-working machines.

Objects of this invention are to provide a wood-working machine which will automatically operate upon strips of wood in a rapid manner to both bevel the ends of the strip and to drill or otherwise work upon the intermediate portions of the strip.

Further objects of this invention are to provide a machine for operating upon strips which will remove the strips from a hopper in an automatic and rapid manner, and which will advance them with periods of dwell allowing the other portion of the mechanism to operate.

Further objects are to provide a machine for operating upon wooden strips in which stationary knives are provided against which the wood is forced, and with the knives so arranged that they will take successive cuts from the wood and produce a finished shaped end.

Further objects are to provide a machine which will securely hold the work while drills operate and which will correctly center or position the strips of wood for the drills and for the knives.

An embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is a plan view of the machine.

Figure 2 is a sectional elevation taken on the line 2—2 of Figure 3.

Figure 3 is a transverse sectional view on the line 3—3 of Figure 2.

Figure 4 is a sectional view on the line 4—4 of Figure 1.

Figure 5 is a sectional view on the line 5—5 of Figure 3.

Figure 6 is a sectional view on the line 6—6 of Figure 4, and drawn to an enlarged scale.

Figure 7 is a detail of one of the presser feet for holding the work.

Referring to the drawings, it will be seen that the machine comprises a bed plate 1 which in reality may be an open frame work. This bed plate receives the work which is preferably carried by means of a pair of side strips 2 upon which the ends of wooden bars rest. Preferably a transverse strip 3 is positioned immediately beneath the drills hereinafter described and extends from one member to the other. This plate 3 is apertured, as indicated at 4, to

55 permit passage of the drills therethrough. Preferably one or more of the apertures are elongated, as indicated at 5, to permit adjustment of this end drill.

A pair of side frame members 6 are bolted to the bed plate 1 and project upwardly therefrom. These members, as shown particularly in Figures 1 and 2, are provided with bearings 7 through which the supporting rods 8 for the drill frame extend. These rods 8 are rigidly secured to a cross-head 9 or frame, as shown in greatest detail in Figures 2 and 5, and thus raise and lower the frame when the rods are correspondingly moved. These rods carry at their lower ends rollers 10 which ride upon cams 11 mounted at opposite ends of a transverse shaft 12, such shaft being carried in suitable bearings beneath the bed plate.

The shaft 12 is provided with an enlarged gear 13 meshing with a smaller pinion 14, as shown particularly in Figure 3, and it is to be noted that the pinion 14 is carried upon the driven shaft 15 of the machine. The shaft 15 is provided with tight and loose pulleys 16 and 17 adapted to receive a belt. Preferably, an additional bearing 18 is mounted at the end of the driven shaft 15. This driven shaft projects completely across the machine below the bed plate and is provided with a bevel gear 19 which meshes with a bevel gear 20 carried by a vertical shaft 21. The vertical shaft 21, as may be seen from Figure 5, carries a relatively large pulley or drum 22 which has a wide belt face and receives the narrow belt 23. The crosshead or frame 9 carries a plurality of drill spindles 24 to 27. One or more of these spindles may be adjusted by bolting the bearings to the crosshead or frame 9. In the form shown, the end spindle 24 is so mounted, and the crosshead 9 is provided with a plurality of apertures 28 adapted to receive the bolts or screws 29 for the bearings 30.

The drive for the several spindles is by means of the belt 23. For instance, this belt 23 passes over a flanged pulley 31 secured to the spindle 25. The spindles are provided with suitable pulleys for the short belts hereinafter described. As shown in Figure 5, the spindle 25 is connected to the spindle 27 by means of the belt 32. It is also connected to the spindle 26 by means of the

belt 33. The spindle 26 is connected with the spindle 24 by means of the belt 34.

When the spindle 24 is adjusted, it is obvious that means must be provided for accommodating the change in length of the belt. This is furnished by means of the belt tightener 35 which, as may be seen from Figure 5, includes a pair of pulleys carried by a shaft or stem 36 screw threaded into a bracket 37 bolted to the crosshead and locked by means of a lock nut. Thus, when the spindle 24 is moved inwardly the pulleys of the belt tightener 35 are rocked into a position to take up this slack and, thereafter, the belt tightener is locked in position by means of the lock nut.

When the crosshead 9 reciprocates up and down, it will be noted that sufficient room is furnished by the broad face of the pulley 22 to permit this shifting of the belt 23 while imparting continuous rotary motion to the gang of drills.

A supporting bar 38 extends transversely above the bed plate and carries a presser foot 39 at each end thereof. The presser feet are each provided with a plurality of bolts 40 which are loosely surrounded by springs to urge the presser feet downwardly. The presser feet, as may be seen from Figure 4, are equipped with upturned forward and rear ends to facilitate the movement thereunder of the strips of wood, as indicated at 41 in Figure 4. It is to be noted further that one or both of the presser feet may be adjusted along the length of the bar 38. Each presser foot is carried by means of a box-like member 42 (see Figure 6) which houses the bolts and springs, and which is itself bolted to the bar 38. The adjustment of the presser feet is to accommodate different lengths of strips with a corresponding adjustment of the end drill, as previously described. Each of the box-like members which carry the presser feet, is provided with slanting faces 43 and 44 upon which knives 45 are bolted. These knives 45 project at an angle to the horizontal and have their forward ends presented towards the front of the machine and are adapted to successively pare off the ends of the wooden strips, thus providing a finished beveled face as the strips are pushed past the bars.

The strips are carried in a hopper mounted above the bed plate. This hopper consists of upper and lower bars 46 and 47, as most clearly shown in Figures 4 and 6. The bars are joined by means of end members 48 provided with flaring channel-shaped upper ends, as most clearly shown in Figure 1, to aid in guiding the strips into the hopper. Further, a plurality of intermediate vertical bars 49 having outwardly turned ends are provided and join the bars 46 and 47. It is to be noted, particularly from Figures 1 and 6, that intermediate plate-like members 50

are secured to the bars. These plates are provided with notches 51 which may receive the adjustable end plates 52, as indicated in dotted lines in Figure 6, when it is desired to operate upon a shorter length of strip, thus adapting the hopper to the length of strip employed. It is to be noted that the hopper is mounted in advance of the transverse bar 38 and is spaced above the bed plate of the machine.

A transverse reciprocatory bar or crosshead 53 is mounted above the bed plate and has downwardly projecting lugs 54 (see Figure 4) which are rigidly attached to rods 55, such rods being guided in apertured projecting lugs 56 integral with the bed plate, as shown in Figure 4. The transverse crosshead 53 carries a plunger 57 at each end and such plungers are adapted to pass beneath the hopper and remove the lowest strip and project such strip forwardly into position beneath the presser feet 39 and in correct position to be operated upon by the drills. It is to be noted that during the forward passage of the strips that their ends are beveled by means of the knives 45, as previously described, and preferably the plungers 57 are correspondingly beveled, as indicated at 58. These plungers are set in slots in the crosshead 53 and bolted thereto. Preferably the crosshead is provided with a plurality of slots 59 intermediate its ends to receive one of the plungers for different adjustments of the machine corresponding to different lengths of strips.

The means for oscillating the crosshead 53 and consequently the plungers may comprise cranks 60 carried by the shaft 12, as shown in Figures 1, 2 and 3. For instance, the cranks may consist of pins fastened at one end of the shaft to the gear 13 and at the other end of the shaft to a disk 61. These cranks are connected by means of bent pitmen 62 with the crosshead 53 and as the cranks rotate serve to reciprocate the crosshead and consequently the plungers.

Preferably a guard plate 62' is positioned across the front end of the bed plate in order to house the crosshead 53 and its plungers and also guard straps 63 project outwardly to house the outer ends of the reciprocatory rods 55.

It is to be noted particularly from reference to Figure 2 that the cam 11 is designed to lower the drills while the crosshead is moving rearwardly, and to raise the drills prior to the forward stroke of the crosshead, such cam preferably providing a period of dwell for the upper portion of the stroke of the drills.

In operation, the strips are positioned within the hopper and are removed in regular succession from the hopper by the sliding plungers 57 which pass beneath the hopper and advance the strips in succession be-

neath the spring pressed presser feet. Thereafter, the drills operate and the plungers are retracted. During the forward passage of the strips, the knives 45 pare off the ends of the strips and correctly bevel them or otherwise shape them.

It will be seen that a very simple type of machine has been provided which is wholly automatic in its action, and which simultaneously drills a number of holes in the strips and also automatically bevels the ends thereof.

Further, it is to be noted that the utmost accuracy of operation is attained by this machine as the spring pressed presser feet, as shown in Figure 7, accurately guide the strips to their correct position. Upon reference to this figure, it will be seen that the presser feet are provided with downwardly turned end lugs 64 which have outwardly turned ends adapted to receive and guide the ends of the strips 41 as they are slid beneath such presser feet.

It will be seen further that the machine is very simple and of relatively sturdy construction and not likely to get out of order.

Although the invention has been described in considerable detail, it is to be

understood that the invention may be variously embodied and is, therefore, to be limited only as claimed.

I claim:

A machine for operating upon strips comprising a bed plate, a transverse bar mounted above said bed plate, a pair of spring pressed feet carried by said bar and having guiding lugs at their ends for guiding the ends of said strips, one of said presser feet being adjustable, a frame mounted for reciprocation above said bed plate, a gang of drills carried by said frame, means for simultaneously depressing said drills, means for adjusting one of said drills, means for driving said drills and permitting the adjustment of the adjustable drill, a hopper for said strips spaced above said bed plate, a plunger slidably carried by said bed plate and adapted to slide beneath said hopper and to feed strips from said hopper to a position beneath the presser feet, and means for reciprocating said plunger.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

ADOLPH N. MILLER.