

W. S. SHERMAN.

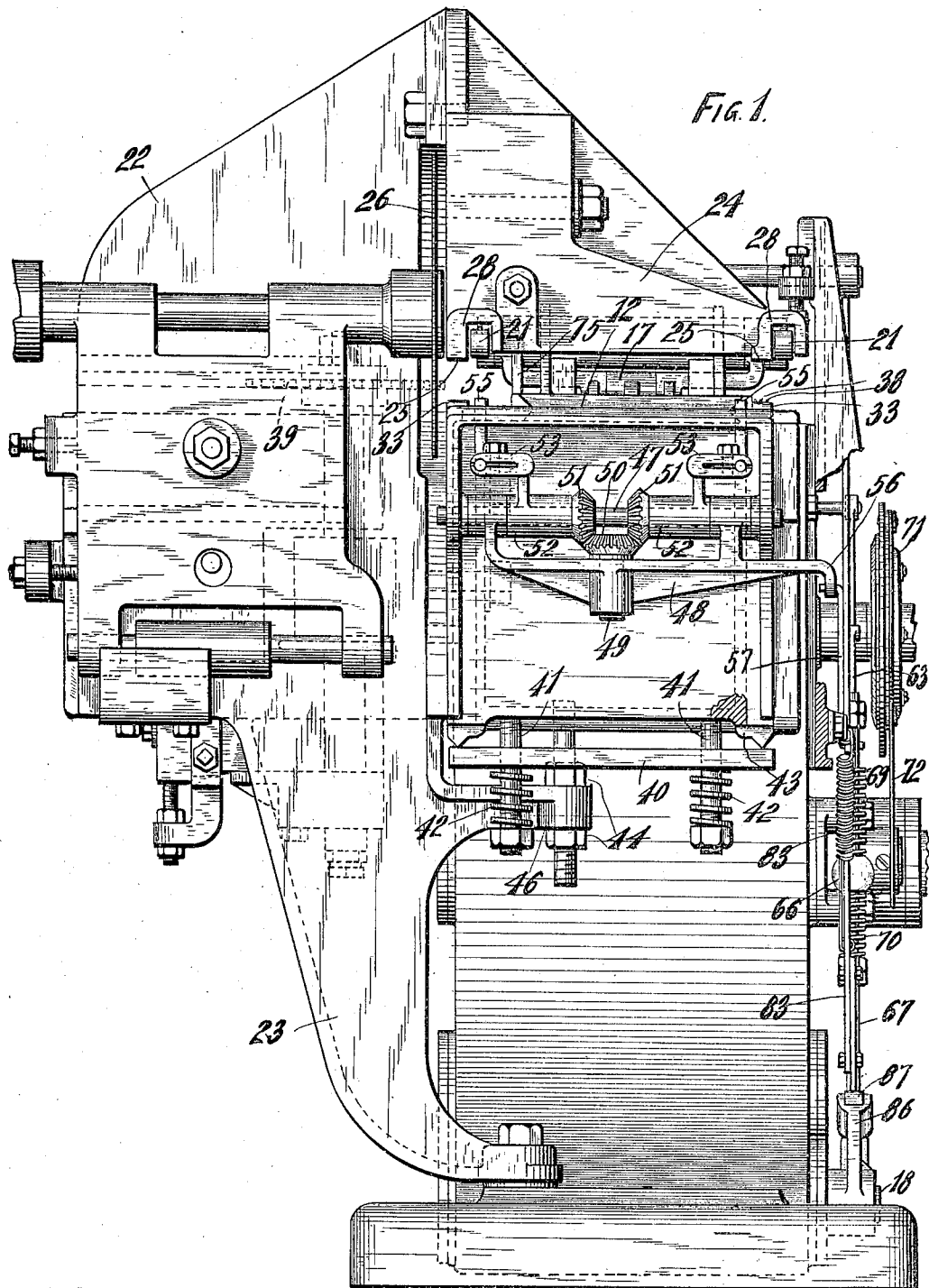
END MATCHER.

APPLICATION FILED DEC. 26, 1914.

Patented Nov. 4, 1919.

4 SHEETS—SHEET 1.

1,320,422.



WITNESSES.

*R. H. Thomas*  
Katherine Holt

INVENTOR.  
*W. S. Sherman*  
By *R. S. Caldwell*  
ATTORNEY.

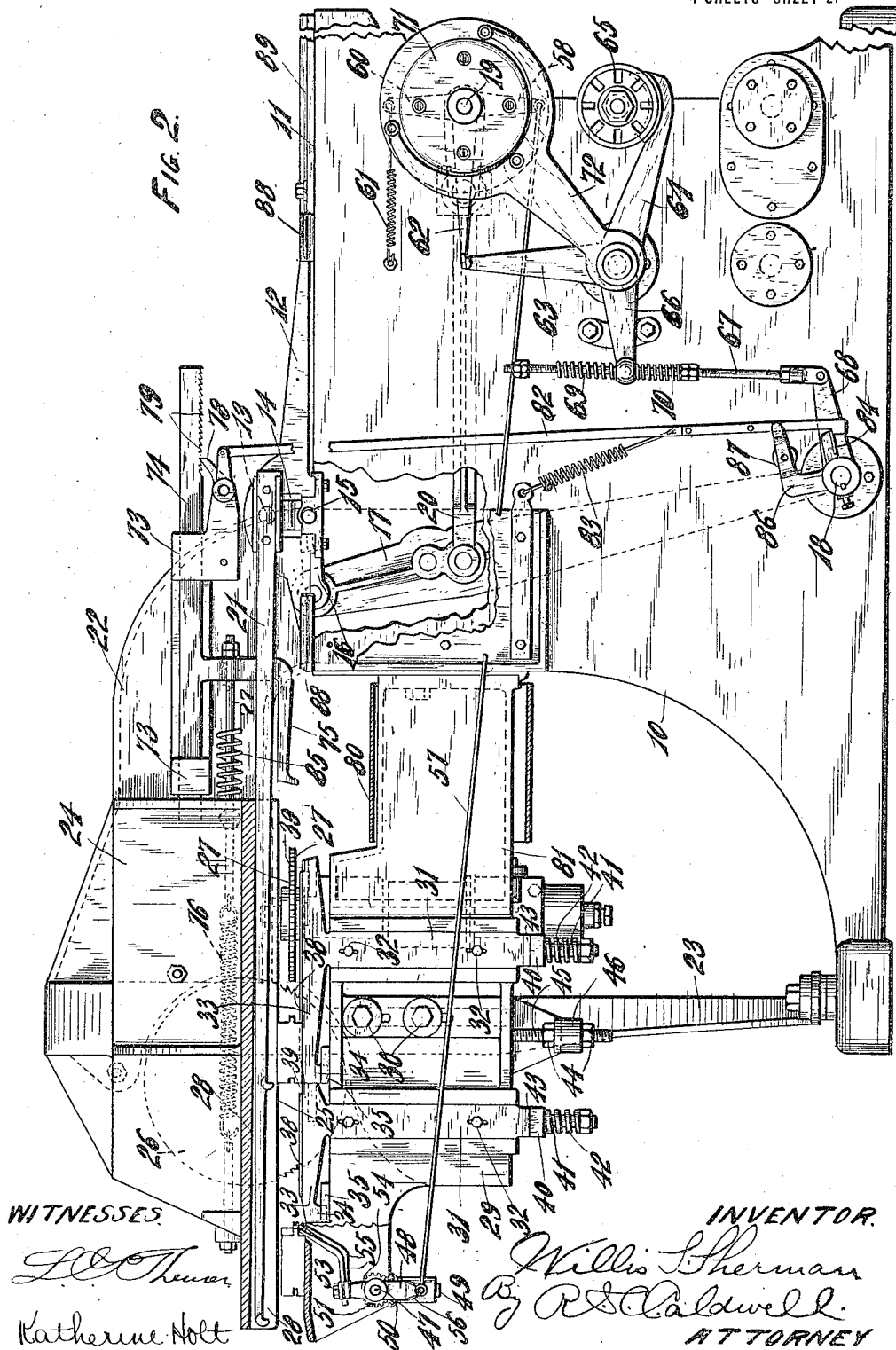
W. S. SHERMAN.  
END MATCHER.

APPLICATION FILED DEC. 26, 1914.

Patented Nov. 4, 1919.

4 SHEETS—SHEET 2.

1,320,422.



1,320,422.

W. S. SHERMAN.  
END MATCHER.  
APPLICATION FILED DEC. 26, 1914.

Patented Nov. 4, 1919.

4 SHEETS—SHEET 3.

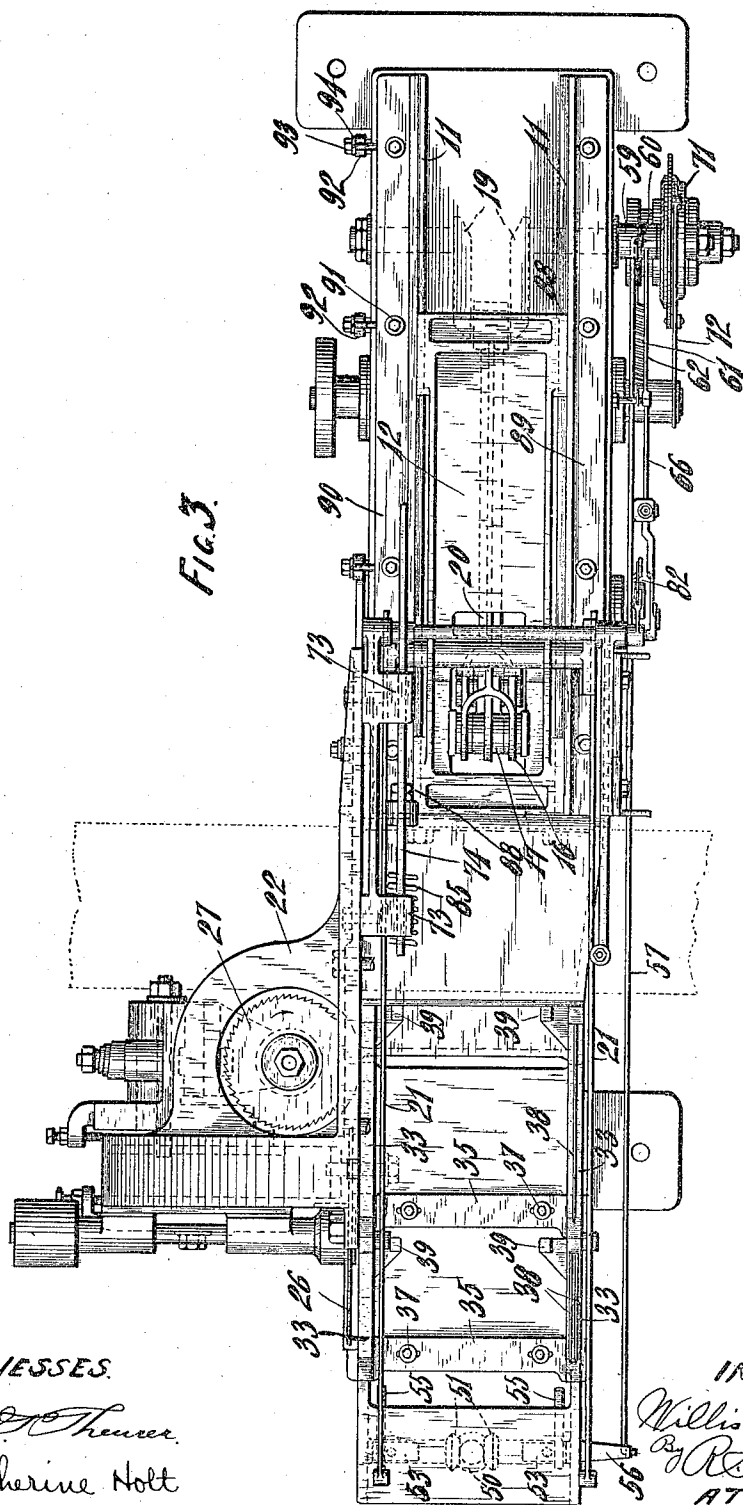


Fig. 3.

WITNESSES.

*L. J. Thuermer*  
Katherine Holt

INVENTOR.

*Willis S. Sherman*  
By *R. S. Caldwell*  
ATTORNEY.

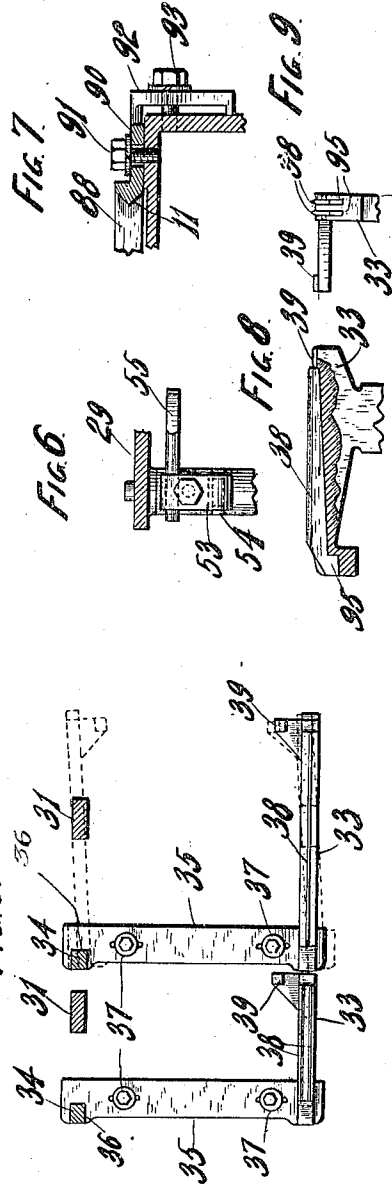
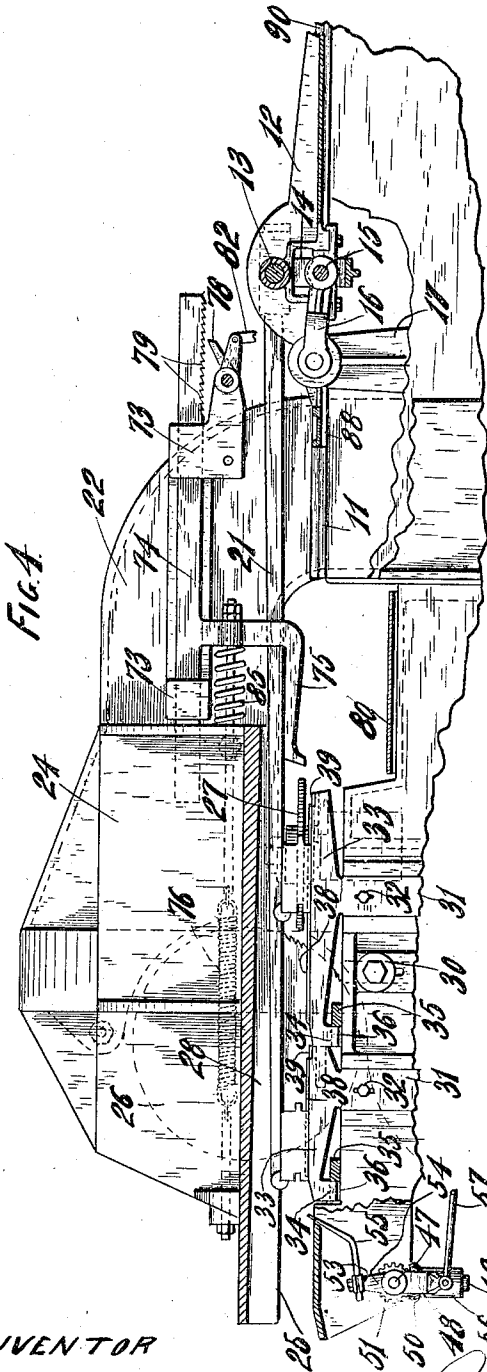
W. S. SHERMAN.  
END MATCHER.

APPLICATION FILED DEC. 26, 1914.

Patented Nov. 4, 1919.

4 SHEETS—SHEET 4.

1,320,422.



INVENTOR

*W. S. Sherman*  
Katherine Holt

INVENTOR.

By *Willis L. Sherman*,  
*R. S. Caldwell*,  
ATTORNEY

# UNITED STATES PATENT OFFICE.

WILLIS S. SHERMAN, OF MILWAUKEE, WISCONSIN.

## END-MATCHER.

1,320,422.

Specification of Letters Patent.

Patented Nov. 4, 1919.

Application filed December 26, 1914. Serial No. 879,029.

*To all whom it may concern:*

Be it known that I, WILLIS S. SHERMAN, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in End-Matchers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide an end matcher of the type in which the work is fed step by step past a cut-off saw and a matching saw by intermittently operating feeding mechanism controlled by the introduction of a strip of material, the tripping means for the working feeding mechanism being so arranged as to be inoperative until the work is positioned approximately at right angles to the line of feed thereof.

Another object of the invention is to provide an end matcher with separate presser bars engaging the work in its travel past the several cutters, said presser bars being provided with raised guide ribs for engagement with the work and for directing the travel of the work, and being movable to vary the angular adjustment thereof.

Another object of the invention is to provide an end matcher with an intermittent feed employing hook bars for pulling the work through the feedway past the cutters, enabling the work to be fed from the side of the machine toward the center thereof where it is discharged onto a traveling conveyor belt.

Another object of the invention is to provide such an invention with its cut-off saw so positioned as to be capable of operating upon the work at any desired distance from the end thereof.

With the above and other objects in view the invention consists in the end matcher as herein claimed and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the different views:

Figure 1 is an end elevation of an end matcher constructed in accordance with this invention, parts being broken away;

Fig. 2 is a front view thereof;

Fig. 3 is a plan view with the head block removed;

Fig. 4 is a detail view showing the work supporting means in position to receive the

work and showing the work feed hook rods in engagement with the work;

Fig. 5 is a detail sectional plan view showing the adjusting tie bar for the presser heads;

Fig. 6 is a plan view of the connector for the trigger arms;

Fig. 7 is a detail view of the means for giving pressure to the guide of the slide;

Fig. 8 is a detail side view of one of the presser bars with parts sectioned; and,

Fig. 9 is an end view thereof.

In these drawings 10 indicates a frame having opposite horizontal guide rails 11 forming a guide for a slide 12 which has a rock shaft 13 mounted therein and carrying an arm 14 which has its lower end loosely mounted in bearing boxes 15 to have a very limited amount of play. A link 16 connects the lower end of said arm 14 with a lever 17 fulcrumed on shaft 18. A suitably driven crank shaft 19 having its crank connected by means of a connecting rod 20 with the lever 17 serves to oscillate said lever and thereby produce a reciprocation of the slide on the rails 11. Work feeding hook rods 21 are mounted on the ends of shaft 13 to travel with the slide 12 and are adapted to be swung to a lowered position during the inward or feed stroke thereof and adapted to be swung to a raised position during the return or outward stroke thereof, such change in elevation being due to the rocking of the shaft 13 by reason of the play of the arm 14 in the bearings 15. A rear frame 22 is secured to the main frame 10 and projects to one side of the machine where it is supported by a leg 23 engaging the base of the main frame, and such rear frame supports a head block 24 which has pressure faces 25 in its bottom surface against which the work is pressed by means to be later described, during its travel past a cut-off saw 26 and a matching saw 27, both of which are suitably mounted on the frame 22. The head block 24 also contains grooves 28 in its bottom surface within which the rods 21 are reciprocated by the movements of slide 12. An adjustable work table 29 is mounted on the front of the frame 22 with a vertical tongue and groove connection therewith so as to have vertical adjustment thereon, and clamping bolts 30 passing through slots in the work table hold it in its adjustments.

For the greater portion of its length the

work table 29 has its upper surface recessed or cut away to contain the presser bars and their adjusting means. These presser bars consist of the stems 31 slidably mounted in vertical guideways at the front and rear of the work table 29 where they are held by bolts 32 fitting in vertical slots thereof, there being elongated bar members 33 at the upper ends of the stems forming between them and the pressure faces of the head block 24 a work feed passageway, of which the space between the end of the table 29 and said head block forms the entrance. Each of the four or more presser bars, which are arranged in pairs, has a downwardly extending lug 34 at one end thereof and an adjusting tie rod 35 connects the presser bars of each pair together by having notches 36 at its ends receiving said lugs 34, said tie rod 35 slidably fitting on the work table 29 and held in its adjustments by screws 37 fitting in elongated slots thereof. By slightly shifting the position of the tie rods 35 the direction of the presser bars 33 may be altered with respect to the direction of feed of the work, the stems 31 of the presser bars having sufficient play in their guides to permit of this movement, and the bearing faces of the presser bars may be provided with raised ribs 38 V-shaped in cross section extending longitudinally thereof to indent themselves in the bottom surface of the work as the work is carried through the passageway and by their direction determine the direction of travel of the work. If the work has a tendency to back away from the cutter its travel may be corrected by adjusting the presser bars to a slightly oblique position. These ribs 38 may be provided on all of the presser bars if desired, but they are shown on the front presser bars only, with two on the first presser bar and one out of alignment therewith on the second presser bar. Each presser bar at the discharge end thereof has an inwardly projecting lug 39 with a bearing face approximately on the level with the bearing face of the presser bars but spaced inwardly therefrom while the bearing face of the presser bar in line therewith is cut away. The bearing surface 39 is the last part of the presser bar to contact with the work as the work is fed through the passageway, and being spaced inwardly from the vertical plane of the bearing faces 25 of the head block the danger of the presser bars crushing the grooved edge of the strip of flooring or the like as the work leaves the presser head is avoided. As seen in Fig. 1 the stems 31 of the presser bars have their lower ends in the form of a knife edge engaging cross bars 40 slidably mounted on screw studs 41 which project from the bottom of the work table 29. There is one of these cross bars 40 for each pair of the presser bars, and the screw studs 41 pass

through openings therein with springs 42 surrounding them and held against the bottom of the cross bar to give an upward pressure to the presser bars to force them firmly against the work in its travel through the work feed passageway. The presser bars have stop lugs 43 near their lower ends to engage the bottom of the work table 29 and limit the upward movement thereof.

The entire work table may be adjusted nearer to or farther from the head block 24 to vary the depth of the passageway for the work, according to the thickness of the work, by means of nuts 44 on a threaded stud 45 projecting from the bottom of the work table 29 and passing through a lug 46 on the leg 23 of the rear frame 22, such adjustment being permitted after loosening the bolts 30 by the travel of said bolts in their slots.

At the entrance to the work feed passageway there is provided a means for causing the operation of the work feeding mechanism upon the insertion of a strip of flooring or other material, but dependent in its operation upon the work being presented therein with its front edge at approximately right angles to the line of feed. A shaft 47 is journaled across the work table 29 to form the pivotal connection for a swinging frame 48. A stub shaft 49 journaled in the swinging frame 48 at right angles to the shaft 47 carries a beveled pinion 50 meshing with a pair of oppositely positioned beveled pinions 51 on sleeves 52 loosely mounted on shaft 47 so as to constitute a differential gear by which the simultaneous turning of the sleeves 52 in the same direction will cause the swinging frame 48 to move therewith, though it is not moved otherwise. A clamp 53 is formed on an arm 54 of each of the sleeves 52 and serves to adjustably connect therewith an angular trigger member 55. These two trigger members 55 project through an opening of the work table just in front of the first pair of presser bars and extend into the work feed passageway where they will be engaged by the work when it is placed within the passageway in position to be fed to the cutters, that is to say, at approximately right angles to the line of feed thereof. When so positioned the work in being moved toward the contracted portion of the work feed passageway at the beginning of the first pair of presser bars will engage both of the trigger members 55 and depress them simultaneously if it is properly positioned to pass through the work feed passageway. This combined movement of the two trigger members 55 effects a swinging movement of the frame 48 to engage a clutch mechanism as will be later described, but if the work is not in its proper position only one of the trigger members will become depressed before the work reaches the contracted portion of the

passageway, and consequently there will not be sufficient movement of the frame 48, to engage the clutch. An arm 56 on the swinging frame 48 is connected by a connecting rod 57 with a downwardly extending arm 58 on a sleeve 59 loosely mounted on the crank shaft 19, there being another arm 60 on said sleeve connected with a spring 61 for turning the sleeve in the direction to hold the trigger members 55 in their normal upper position. A third arm 62 on the said sleeve 59 engages a notched arm 63 of a suitably mounted three-armed bell crank, another arm 64 thereof constituting the pin releasing member of a pin clutch 65 for establishing driving connection for the crank shaft 19, while the third arm 66 slidably fits upon a rod 67 carried by a crank arm 68 mounted on shaft 18 to move with the lever 17 in its oscillations for reciprocating the work feeding slide 12. The arm 66 plays between coil springs 69 and 70 on the rod 67 and said springs by engaging set nuts on the rod 64 give pressure to the arm 66 either upwardly or downwardly according to the position of shaft 18. With the parts in the normal position shown in Fig. 2 the introduction of the work to the work feeding passageway causes the swinging of the frame 48 as just described, and through the connecting rod 57 causes the sleeve 59 to turn against the action of spring 61 and lift arm 62 out of engagement with arm 63, thus permitting spring 70 which is under compression to lift arm 66 and disengage the pin releasing member 64 from the groove of the pin clutch 65 so that the clutch springs into engagement and causes the rotation of parts to complete a cycle of operation of the machine. In the forward movement of the lever 17 the crank arm 68 by swinging downwardly brings the pressure of springs 69 to bear on the top of arm 66, thus returning the arm 64 to its position of engagement with the groove of the clutch, and at the same time brings the arm 63 to its normal position where it is reengaged by the arm 62 under the action of spring 61, since the work has in the meantime passed the trigger arms 55 so that they may return to their upper position. Thus at the end of the cycle of operation the clutch becomes disengaged to stop the movement of the parts and to check the movement of the parts before the beginning of the feed movement of the work feeding slide 12 which would cause the work feeding hook bars to be lowered into the work feed passageway, a friction brake 71 is mounted on the crank shaft 19 with an anchor arm 72 connecting with the shaft on which the three-armed bell crank is mounted, or with any other suitable stationary part that will prevent the brake from turning with the crank shaft.

On the rear frame 22 is secured a guide 73

in which is slidably mounted a bar 74 carrying a downwardly extending work holding arm 75 which stands in the path of the work in its travel through the work feeding passageway and in position to engage the work as it leaves the matching cutter 27. A coil spring 76 connected with a rod 77 leading from said work holding arm 75 gives the bar 74 a tendency to remain at the end of its line of travel where the work holding arm 75 is nearest the matching cutter 27. It is, however, forced from this position by the engagement of the work with the work holding arm 75 during the travel of the work out of the work feeding passageway, the work being held between said work holding arm 75 and the last hooks on the hook bars 21 until the latter begin their return movement. The bar 74 is prevented from following the hook bars in this return movement by a pawl 78 pivotally mounted on a bracket of the guide 73 engaging ratchet teeth 79 on the bar 74. This detention of the work holding arm 75 assures the discharge of the work at the end of the work feeding passageway where it is dropped upon and in alinement with a conveyer belt 80 which passes around a projection 81 of the frame 10. At the beginning of the next feeding movement, however, it is necessary to release the bar 74 from the engagement with the pawl 78 to permit its return under the action of spring 76 to its forward position. For this purpose a hook rod 82 carried by the pawl 78 is pulled by a spring 83 into engagement with a catch 84 on shaft 18 so that the start of the turning movement of the shaft 18 pulls pawl 78 out of engagement with the rack teeth of bar 74, and to cushion the forward movement of the bar 74 the rod 77 is provided with a coil spring 85 surrounding it and bearing against the head block 24 and engaged by the arm 75. A forked arm 86 on shaft 18 embraces the hook rod 82 and carries a roller 87 to engage said hook rod and force it out of engagement with the catch 84 before the end of the feeding movement of the slide 12 so that the pawl 78 is restored to its position for engaging the ratchet teeth 79 before the bar 74 reaches the end of its movement under the influence of the traveling work.

The operation of the machine has been described incidental to the description of the construction and arrangement and it will be sufficient to briefly review the same. With the work feeding parts standing idle in the position shown in Fig. 2 a strip of flooring or the like is entered into the throatway of the machine so that the point at which it is desired to make the cut therein is in the plane of the cut-off saw 26. It is then pressed toward the presser bars and if in the proper position to be operated upon it depresses both trigger members 55 simul-

taneously to engage the clutch and start the operation of the feeding mechanism. If, however, the work is not at right angles to the line of feed only one of the trigger members will be depressed which will not affect the engagement of the clutch, thus necessitating the position of the work being corrected before the feeding means is set in operation. Both trigger members cannot be depressed by the work when it is in an improper position for the reason that the work comes into engagement with the first presser bar at that position in which it completely depresses one of the trigger members. The resistance to the further movement of the work offered by the contracted portion of the passageway above the presser bars prevents the work being forced by hand in a slanting position until the second trigger member is depressed. The trigger members may be adjusted as to elevation and as to distance from the first presser bars to accomplish the desired accuracy in the operation thereof.

The closing of the clutch by the proper introduction of the work causes the crank shaft to produce one oscillation of the lever 17 and at the beginning of the forward movement of the lever 17 its pressure on the lower end of the crank arm 14 through the link connection 16 causes the shaft 13 to rock slightly and lower the hook arms 21 so that their hook members engage the strips of work in the work feeding passageway and cause them to move through the work feeding passageway past the cutters as the slide 12 proceeds with its forward travel. Near the end of the stroke the strip of work which has just received the action of the matching saw 27 engages the work holding arm 75 so as to be supported between said arm 75 and the advance feeding hook so as not to release the work until it is free of the passageway, and then by the detention of the arm 75 by the engagement of pawl 78 with ratchet teeth 79 the return movement of the feeding hooks drops the work upon the conveyor belt 80 by which it is removed. The stroke of travel of the work feeding hooks is such that the work is carried past the cutting edge of the cut-off saw during its first step of travel and is left at rest between the two edges of the cut-off saw and is carried beyond the matching saw during its second step of travel, thus avoiding injury to the end of the work that might occur if it had been left at rest in a position where it would be engaged by the saw teeth. The adjustment of the presser bars assures the proper line of travel of the work, and the light overhead hook bars which automatically descend into engagement with the work before making their advance movement and automatically ascend out of the path of the work before making their return movement

perform the feeding operation positively and without encumbering the slide with unnecessary weight that would hamper it in its quick movements.

The end matcher of this invention is capable of performing the work with great speed and is designed to facilitate the rapid feed of the work thereto, the strip being merely inserted in a slot at the end of the machine and automatically traveling inwardly to the center of the machine where it is discharged onto a conveyor.

Owing to the necessity for the return movements of the hook bars being quickly made without engagement of the projecting hooks with the work it is necessary that the slide 12 have a tight fit in its guides to prevent the least play thereof which would permit the hook bars to tilt. Accordingly the V-shaped guide grooves 88 at the ends of the slide 12 are fitted upon a corresponding stationary V-shaped guide 89 on one side of the machine and a yieldingly mounted V-shaped guide 90 on the other side of the machine which is held with spring pressure against the slide. Said guide 90 is held to the frame by clamping nuts 91 passing through slots of the guide, and U-shaped clamping members 92 held by bolts 93 with spring washers 94 therebetween give lateral adjustment and spring pressure to the guide. The slide thus working between guides held against it with spring pressure is steady in its movements and the work is not injured by the engagement of the hooks therewith in their return movements.

The object in placing the knife edge guide ribs of the tandem presser bars out of alignment with each other is to avoid the necessity for the guide ribs of the second presser bar following in the groove that is formed in the work by the first presser bar with a resulting end-wise movement of the work in moving from one presser bar to the other in case the guide ribs were not in true alignment.

As shown in Figs. 8 and 9 the presser bars have longitudinal inclined grooves in their bearing faces and the raised ribs 38 are formed by metal wedge shape strips fitting therein, said strips having inclined lower edges fitting against the inclined bottom walls of the grooves while the upper edges of the strips are V shaped in cross section to form knife edge guide beads engaging the work. At the larger end of the metal strips 38 are stop shoulders 95 to fit within recesses in the presser bars and prevent the longitudinal movement of the metal strips 38 in their inclined grooves. When however the guide strips 38 have become worn and it is necessary to regrind them they may be re-adjusted to have the desired amount of projection above the surface of the presser bars by filing away a portion of the stop should-



ders 95 and driving them farther along the inclined grooves. The direction of travel of the work over the guide strips 38 being from the wider portion thereof toward the narrower portion serves to keep said guide strips firmly in place when the stop shoulders engage the end of the recess.

What I claim as new and desire to secure by Letters Patent is:

1. In an end matcher, a head block having bearing faces on the bottom thereof, presser bars beneath the head block and spaced therefrom to form a work feeding passageway therebetween, a suitably mounted reciprocating slide, hook bars pivotally mounted on the slide and traveling within grooves in the bottom of the head block with a plurality of projecting hooks on the underside thereof, means for swinging the hook bars into and out of the work feeding passageway, a cut-off saw in the path of the work in that portion of its travel through the work feeding passageway while in engagement with one set of hooks, and a matching saw in the path of the work in that portion of its travel through the work feeding passageway while in engagement with the other hooks.

2. In an end matcher having a work feeding passageway, a yielding presser bar projecting into the work feeding passageway to restrict the passage therethrough, means for feeding strips of lumber edgewise through the work feeding passageway, a trigger projecting into the work feeding passageway ahead of the presser bar to be engaged by the front edge of the work on its introduction to the work feeding passageway and yielding to permit the work to pass thereby, said work feeding means being set in operation by such movements of the trigger, and a cutter in the path of the work in its travel through the work feeding passageway.

3. In an end matcher, a head block, presser bars cooperating therewith to form a work feeding passageway therebetween, there being grooves in the face of the head block, a suitably mounted reciprocating slide, hook bars pivotally mounted on the slide and contained within the grooves of the head block, means for moving the hook bars into and out of the work feeding passageway, and cutters in the path of the work in its travel through the work feeding passageway.

4. In an end matcher, a head block having bearing faces on the bottom thereof, presser bars beneath the head block and spaced therefrom to form a work feeding passageway therebetween, a suitably mounted reciprocating slide, hook bars pivotally mounted on the slide and traveling within grooves in the bottom of the head block with a plurality of projecting hooks on the under side

thereof, means for swinging the hook bars into and out of the work feeding passageway, a cut-off saw in the path of the work in that portion of its travel through the work feeding passageway while in engagement with one set of hooks, and a matching saw in the path of the work in that portion of its travel through the work feeding passageway while in engagement with the other hooks, the position of rest of the work between said portions of its travel being between the cutting edges of the cut-off saw.

5. In an end matcher having a work feeding passageway, means for feeding the work through the work feeding passageway, a cutter in the path of the work in its travel through the work feeding passageway, and a presser bar having an elongated work guiding bearing surface to bear against the work in its travel through the work feeding passageway, said presser bar being pivotally adjustable to vary its position with relation to the line of travel of the work feeding means.

6. In an end matcher, a work feeding passageway, means for feeding work through the work feeding passageway, a cutter in the path of the work in its travel through the work feeding passageway, a pair of presser bars having slidably mounted stems at right angles to their parallel elongated bearing faces, an adjustable tie bar connecting the presser bars at points distant from their stems, and means for clamping the tie bar in its various adjustments to hold the presser bars to positions of angular adjustment with relation to the line of travel of the work feeding means.

7. In an end matcher, a work table, a head block thereabove forming a work feeding passageway therebetween, means for feeding work through the work feeding passageway, a pair of presser bars having parallel elongated bearing faces and having vertical stems slidably mounted in the work table, means for forcing the presser bars upwardly against the work in its travel through the work feeding passageway, means for feeding the work through the work feeding passageway, a cutter in the path of the work in its travel through the work feeding passageway, a tie bar slidably mounted on the work table and having connection with the presser bars at points distant from their stems for adjusting the angularity of the presser bars with relation to the line of travel of the work feeding means.

8. In an end matcher having a work feeding passageway, a yielding presser bar projecting into the work feeding passageway to restrict the passage therethrough, means for feeding the work through the work feeding passageway, a cutter in the path of the work to be engaged thereby during its

movements through the work feeding passageway, and a trigger member projecting into the work feeding passageway ahead of the presser bar and in position to be moved by the work when the work is moved there-  
 5 against in proper position to pass through the work feeding passageway for producing the operation of the work feeding means.

9. In an end matcher having a work  
 10 feeding passageway, means for feeding work through the work feeding passageway, a cutter in the path of the work in its travel through the work feeding passageway, a pair of pivotally mounted trigger  
 15 members projecting into the work feeding passageway and adapted to be engaged by the work when properly placed in position for being fed through the work feeding passageway, a movable member having a differential connection with the trigger mem-  
 20 bers to be moved thereby when they are both moved to a predetermined position by the work, and a driving mechanism for operating the work feeding means actuated by the  
 25 movements of the movable member.

10. In an end matcher having a work feeding passageway, means for feeding the work through the work feeding passageway, a cutter in the path of the work in its  
 30 travel through the work feeding passageway, there being a restricted yielding portion of the work feeding passageway, a pair of swinging trigger members projecting into the work feeding passageway ahead of  
 35 the restricted portion of the work feeding passageway, a swinging frame, a differential gear connection between the swinging frame and the trigger members, and a driving mechanism for the work feeding means  
 40 actuated by the movements of the swinging frame.

11. In an end matcher having a work feeding passageway, means for feeding work through the work feeding passageway,  
 45 a cutter in the path of the work in its travel through the work feeding passageway, said work feeding passageway having a yielding restricted portion, a pair of trigger members projecting into the work feeding  
 50 passageway ahead of the restricted portion,

a shaft, a pair of sleeves loosely mounted on the shaft, clamping members carried by the sleeves and adjustably supporting the trigger members, a swinging member  
 55 mounted on the shaft, a beveled gear on each of the sleeves, a beveled gear carried by the swinging member and meshing with the other beveled gears, and a driving mechanism for operating the work feeding means actuated by the swinging frame.  
 60

12. In an end matcher, a frame having a work feeding passageway, guides on the frame, one of which is movable toward the other with spring pressure, a slide mounted  
 65 between the guides, means for reciprocating the slide, work feeding means carried by the slide, a connection between the work feeding means and the slide reciprocating means for swinging the work feeding means  
 70 into and out of the work feeding passageway, and a cutter in the path of the work in its travel through the work feeding passageway.

13. In an end matcher having a work feeding passageway, means for feeding  
 75 work through the work feeding passageway, a cutter in the path of the work in its travel through the work feeding passageway, and a pair of presser bars positioned one in front of the other and positioned in the work  
 80 feeding passageway each presser bar having a raised longitudinal guide knife-edge, the knife edges of the two presser bars being out of alinement with each other.

14. In an end matcher or the like, a  
 85 presser bar having an inclined groove, a guide rail having an inclined edge fitting within the groove, the outer edge of the guide rail being V shaped, and a stop shoulder on the guide rail fitting in a recess of  
 90 the presser bar to prevent longitudinal movement thereof and admit of adjustment for taking up wear.

In testimony whereof, I affix my signature, in presence of two witnesses.

WILLIS S. SHERMAN.

Witnesses:

R. S. C. CALDWELL,  
 KATHERINE HOLT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."