

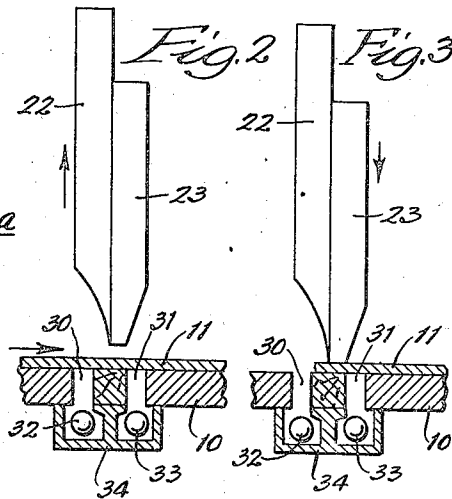
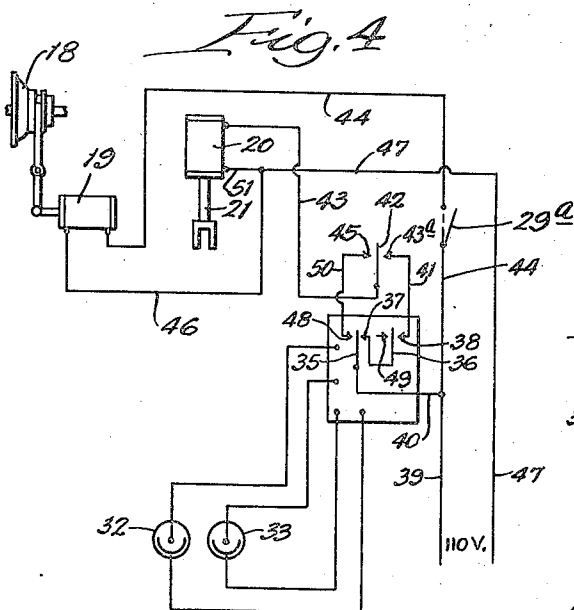
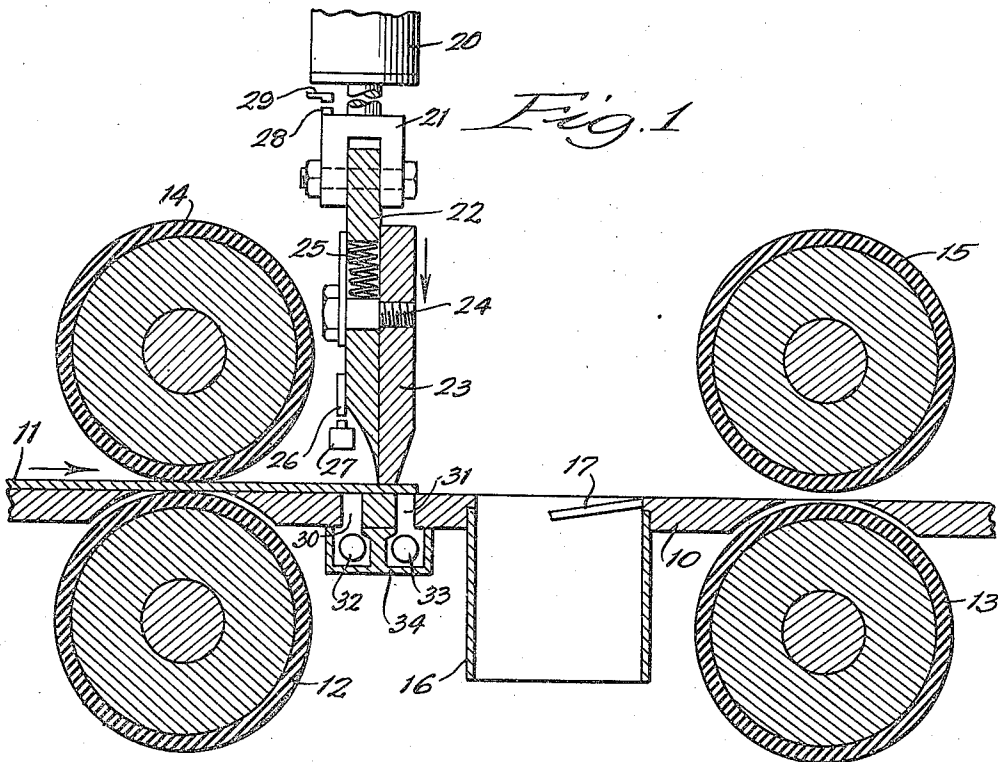
Oct. 26, 1948.

J. W. STRINGE

2,452,402

TRIMMING APPARATUS

Filed March 6, 1947



Inventor:
Jack W. Stringe,
By Dawson, Brothers & Fungenberg,
Attorneys.

UNITED STATES PATENT OFFICE

2,452,402

TRIMMING APPARATUS

Jack W. Stringe, Oak Park, Ill.

Application March 6, 1947, Serial No. 732,716

8 Claims. (Cl. 164-49)

1

This invention relates to trimming apparatus for the trimming of sheets of material such as wood, cloth, etc. The apparatus is particularly useful in the trimming of veneer sheets and for the severing of the front and rear edge portions of the sheets.

An object of the invention is to provide automatic mechanism for the trimming of the forward and rear edges of a veneer sheet or sheet of other material. Another object is to provide mechanism which automatically causes the knife to sever the forward edge of a sheet at a predetermined point while stopping the feeding apparatus, while, at the same time, automatically severing the rear edge of the sheet while stopping the feeding mechanism at the moment of severance. Yet another object is to provide a mechanism in which the operator need feed only the veneer sheet, etc., to the feed rollers of the apparatus, the remaining operations of severing the edge portions of the sheet being carried on automatically, means being provided for the removal of the severed waste strips. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in a preferred embodiment, by the accompanying drawing, in which—

Figure 1 is a broken longitudinal sectional view of apparatus embodying my invention; Fig. 2, a side in elevation with a portion of the frame structure shown in section and with the veneer strip in advanced position; Fig. 3, a view similar to Fig. 2 but showing the rear edge of the veneer strip adjacent the cutter blade; and Fig. 4, a diagrammatic showing of the wiring lay-out.

In the illustration given, 10 designates a frame providing a bed along which the veneer strip 11 may be fed. The bed is cut away at spaced points on its under side to receive the lower feed rollers 12 and 13. A feed roller 14 is mounted for operation above the roller 12, and a feed roller 15 is mounted for operation above the roller 13. Between the rollers, the bed is cut away to provide a discharge chute 16 adapted to receive the severed strip and to allow it to be ejected. An inclined guide member 17 causes the forward edge of the unsevered sheet to travel back upon the bed surface. The feed rollers 12 to 15 inclusive are of well-known construction, being driven by an electric motor or any other suitable mechanism and being connected to the driven shaft of such a mechanism by a clutch 18. The clutch 18 is controlled by a solenoid 19, as shown in the diagrammatic lay-out of Fig. 4.

2

Supported above the frame 10 is a solenoid 20 having its plunger 21 bifurcated and connected to a cutter blade 22. A spring (not shown) normally holds the plunger 21 in raised position. If desired, the solenoid may be double-acting so that a spring is unnecessary for this purpose.

The cutter blade 22 is slidably connected to a hold-down block 23 by means of a bolt 24. The clearance about the inner end of the bolt 24 permits the blade 22 to move relatively to the block 23 in the final severing operation. A spring 25 normally urges the hold-down block downwardly so that its lower end is normally below the lower portion of blade 22.

The lower end of the blade 22 is provided with a contact 26 adapted to engage a ratchet solenoid 27. The plunger 21 is also provided, preferably, with a contact member 28 adapted to engage a contact 29 when the member 21 is in raised position. The contact 29 controls the solenoid 19 which actuates the clutch 18 and thereby controls the operation of the feed rollers 12 to 15 inclusive.

The bed frame 10 is provided on the forward side of the knife 22 with a slot 30 and on the rear side of the knife 22 with a similar slot 31. Below slot 30 is mounted a photo-electric cell 32, and below slot 31 is mounted a photo-electric cell 33. A casing 34 is supported about the cells 32 and 33.

The wiring arrangement is such that when the advancing veneer sheet 11 covers both of the photo cells 32 and 33, the solenoid-controlled clutch is operated to stop the drive rollers 12 to 15 inclusive and the solenoid 20 is actuated to cause the knife to descend and sever the front part of the sheet. After the sheet has passed over the photo cells 32 and 33 and eventually uncovers the first photo cell 32, the knife is again actuated while the drive mechanism is again halted.

Referring more specifically to the diagrammatic lay-out in Fig. 4, the photo-electric cells 32 and 33 are connected in circuits for the actuation of switches 35 and 36. When both photo-electric cells are covered by the veneer strip 11 and light is excluded from the cells, the relay results in the swinging of the switches 35 and 36 to the right, making contact with the points 37 and 38. Current will now flow through lead 39, lead 40, thence through the switches to the lead 41. The switch 42 being, by the previous position, left against the contact 43, the circuit is now complete so that current will flow through point 43a, switch 42, and lead 43 to the solenoid 20 causing the knife to be set into operation. The downward movement of the plunger 21 of

solenoid 20 breaks the contact between points 28 and 29 and thus opens the circuit leading to solenoid 19, and the clutch 18 is disconnected with the drive shaft. The feed rollers 12 to 15 inclusive stop operating. The knife mechanism 22 now descends carrying with it the hold-down block 23 to the position illustrated in Fig. 1. Further, downward movement of the blade 22 itself severs the forward edge of the veneer sheet 11.

In its final severing stroke, the cutter 22 brings the contact 26 into engagement with the contact of the ratchet solenoid 27, and this results in the movement of the switch 42 to the left so as to engage the contact point 45. Since the swinging of switch 42 to the left breaks the circuit in which solenoid 20 is placed, solenoid 20 is de-energized and the members 22 and 23 are returned by the solenoid spring to their raised position. The raising of the member 21 brings member 28 into engagement with contact point 29, and the clutch switch 29a is moved to closed position. Current now flows through leads 39 and 44 to the solenoid 19 which actuates the clutch to connect the drive shaft with the driven shaft and thus set the feed rollers into operation again. Current flows from the solenoid 19 through lead 46 and thence back through lead 47.

As the veneer sheet 11 is advanced by the rollers 12 to 15 inclusive, the rear edge of the sheet passes over the slot 30 and allows light to actuate the forward photo-electric cell 32. This actuates the relay to cause the switch 35 to swing to the left engaging points 48 and 49. Since the point 49 is not connected in circuit, this movement of switch 35 into engagement with point 48 completes the circuit between lead 40 and lead 50. Current now passes through lead 40, switch 35, point 48, lead 50, point 45, switch 42, and thence through line 43 to the solenoid 20. The circuit is completed through lead 51 and lead 47. Downward movement of the plunger 21 breaks the contact between points 28 and 29 to cause solenoid 19 to be de-energized. The feed rollers stop operating and the knife 22 severs the rear edge portion of the veneer sheet 11.

In the foregoing operation, it will be noted that the operator is required only to feed the veneer sheet to the first feed rollers. From thence on, the operation is accurate and automatic. The spacing of the cells 32 and 33 may be such as to effect a cutting of the forward edge at any desired width. Further, such setting may be employed to remove any defects in the veneer stock. By adjusting the photo-electric cell relays, a maximum allowable defect limit can be set so that any defects larger than the limit will be clipped out of the veneer stock.

While in the foregoing specification, I have set one specific structure in detail for the purpose of showing one embodiment of the invention, it will be understood that the details thereof may be varied widely by those skilled in the art without departing from the spirit of my invention.

I claim:

1. In trimming apparatus, a frame providing a bed along which a sheet may be moved, a cutter mounted for cutting movement transversely of the sheet, electric power means for operating the cutter, spaced electric photo cells, relays connecting said cells in circuit with said power means, a source of electric current for said circuit, said photo-electric cells when covered by

said sheet actuating said relays to close said circuit and thus actuate said power means, and means actuated by said cutter means for breaking said circuit during actuation by said power means.

2. In trimming apparatus, a frame providing a bed along which a sheet may be moved, a cutter mounted for cutting movement transversely of the sheet, electric power means for operating the cutter, spaced electric photo cells, relays connecting said cells in circuit with said power means, a source of electric current for said circuit, said photo-electric cells when covered by said sheet actuating said relays to close said circuit and thus actuate said power means, means actuated by said cutter means for breaking said circuit during actuation by said power means, and means actuated by said cutter for conditioning said photo cell relays for closing the circuit of said power means again when the first of said photo cells is uncovered by the movement of said sheet thereover.

3. In trimming apparatus, a frame providing a bed along which a sheet may be moved, a cutter mounted for cutting movement transversely of the sheet, electric power means for operating the cutter, spaced electric photo cells, relays connecting said cells in circuit with said power means, a source of electric current for said circuit, said photo-electric cells when covered by said sheet actuating said relays to close said circuit and thus actuate said power means, and means actuated by said cutter means for breaking said circuit during actuation by said power means, said bed being provided with a transverse slot adapted to receive the strip severed from said sheet through the operation of said cutter.

4. In trimming apparatus, a frame providing a bed along which a sheet to be trimmed is passed, power means for advancing the sheet, a cutter, electric means for operating the cutter, a pair of longitudinally spaced electric photo cells, relays connecting said photo cells in circuit including electric means for operating said cutter and controlling said sheet advancing means, said cutter being set into operation and said sheet advancing means being stopped when both of said cells are covered first by said sheet, and means actuated by said cutter for conditioning said circuit relays whereby, when the first of said cells is uncovered by the sheet passing thereover, said electric cutter operating means is set into operation in another trimming stroke to cut off the rear end of said sheet.

5. In trimming apparatus, a frame providing a bed along which a sheet to be trimmed is advanced, power means for advancing the sheet, cutter means, solenoid mechanism for operating the cutter, solenoid-operated clutch means for controlling said power means, a pair of longitudinally spaced electric photo cells, and relays associated therewith in a circuit including said solenoids, said photo cells being positioned on opposite sides of said cutter and being exposed to light from the upper side of said bed, said relays closing the circuit to said cutter solenoid for the actuation of said cutter when said cells are first covered by said sheet, said cutter in its downward movement breaking the circuit controlling said sheet advancing means and conditioning said relays, whereby the exposure of the first of said photo-electric cells to light when the sheet has passed thereover, again actuates said

5

cutter solenoid for stopping said advancing means.

6. In trimming apparatus for removing a defective portion of a veneer sheet, a frame providing a bed along which a veneer sheet is advanced, means for advancing the sheet, cutter means, solenoid means for operating the cutter, a pair of spaced electric photo cells, one on each side of said cutter and exposed to the light upon said bed, relays associated with said cells and in circuit with said cutter solenoid for actuating said solenoid when one of said photo-electric cells is exposed to light, said relays again actuating said cutter means when both of said photo-electric cells are covered by said advancing sheet.

7. In trimming apparatus of the character set forth, a bed along which a sheet to be trimmed is advanced, a knife and hold-down block mounted above said bed, a solenoid for actuating said knife and hold-down block to sever said sheet, said bed having slots extending transversely thereof and on either side of said knife, a photo-electric cell aligned with each of said slots, relays connecting said photo-electric cells in circuit with said solenoid whereby, upon the closing of both of said slots by an advancing sheet, said solenoid is actuated to sever the forward edge of the sheet, a ratchet solenoid controlling the relay switch, and contact means carried by said knife for engaging said ratchet solenoid for moving said

5

10

15

20

25

30

6

switch in one direction or the other to make contact with a point in said circuit, whereby upon the uncovering of the first of said photo cells by the rear edge of said sheet, a circuit is established through said relay switch to said cutter solenoid to again actuate said knife.

8. In trimming apparatus, a bed having a pair of spaced slots therethrough, photo-electric cells below said bed in alignment with said slots, a knife supported above said bed for movement toward the same to sever a sheet advancing thereon, a solenoid connected with said knife for operating the same, means for advancing a sheet along said bed, a solenoid-controlled clutch controlling the operation of said advancing means, and relay connections between said photo-electric cells and said solenoids whereby, upon the closing of the slots above both of said electric cells, said knife solenoid is set into operation for severing the forward edge of said sheet while disconnecting said clutch, and means actuated by the downward movement of said knife for conditioning said relays whereby, upon the uncovering of the first of said photo-electric cells by the sheet being advanced thereover, said knife solenoid is again actuated for the severing of the rear edge portion of said sheet.

JACK W. STRINGE.

No references cited.