ELECTRIC CONTROL MEANS FOR VENEER CLIPPERS


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9 Claims. (Cl. 164—49)

This invention relates to electric control means for a veneer clipper or any strip cutter or clipper and an object of this invention is to provide simple and efficient means for automatically controlling a veneer clipper so as to cut veneer into pieces of predetermined standard widths or to selectively cut the veneer into random widths selected by an operator.

The present invention is in the nature of an improvement on the control means disclosed in the co-pending application of William J. Miller, Serial No. 484,673, filed April 25, 1943.

In the manufacture of plywood the veneer is removed from the log in a continuous sheet by a veneer lathe or peeler and is fed directly to a clipper by which it is cut up into the pieces that are to be used in making the plywood. As the peeled veneer comes from the log it will usually be of varying quality with portions that are suitable for use and other portions that must be cut out and discarded because of pitch pockets, knots or like defects that render these portions unsuitable for use. When a substantial run of usable veneer comes from the lathe in a continuous strip then it is desirable to cut this usable portion into standard widths, such as twenty-four, thirty, thirty-four or forty-eight inches. However, to utilize the veneer stock most efficiently and salvage pieces of usable veneer that are less than the minimum standard width, it is desirable to give the operator complete control so that he can suspend the automatic operation and cut the veneer at any desired location at any time he wishes.

It is an object of this invention to provide a control means of simple and durable construction which meets all of the above stated requirements and gives the operator complete control of the cutting of the veneer.

It is another object of this invention to provide a control means that is quickly and easily adjustable for the cutting of veneer strips of various standard widths.

It is another object of this invention to provide control means of this nature including an electric contact arm moveable over a plurality of contacts and connected with a veneer clipper knife so that said contact arm will be moved back to a zero or starting position each time the knife makes a cutting stroke.

Other objects of this invention will be apparent from the following description taken in connection with the accompanying drawing.

In the drawing:

Fig. 1 is a diagrammatic view of electric control means constructed in accordance with this invention showing the same in connection with a veneer clipper and veneer feeding means.

Fig. 2 is a sectional view on a larger scale than Fig. 1 taken substantially on broken line 2—2 of Fig. 1 and showing an electric control box with a movable contact arm therein in an upright position.

Fig. 3 is an elevation of the outer or front side of the electric control box.

Fig. 4 is an elevation of said control box as it would appear with the cover plate removed.

Fig. 5 is an elevation looking at the inside of the cover plate of the control box.

Fig. 6 is a sectional view through the control box taken substantially on broken line 6—6 of Fig. 3.

Like reference numerals designate like parts throughout the several views:

This control means is adapted for use in connection with a veneer clipper of the type disclosed in the prior patent application of William J. Miller, hereinbefore referred to. Parts of such veneer clipper are diagrammatically shown in Fig. 1. In such a clipper the veneer 10 as it comes from the log is fed by veneer feeding means 11 across a die or bed block member 12. A reciprocable knife 13 is operatively supported by toggle lever means 9 and disposed so as to cut against the bed block 12 and clip the veneer 10 that is passing across and supported by said bed block.

Link members 8, one of which is shown in Fig. 1, are rigidly connected at one end with the knife 13 and at the other end with a rocking mounted bar or shaft 7. This member 7 is hereinbefore referred to as a rock shaft and it oscillates every time the knife is stroked. This oscillating rock shaft is utilized as a means for moving a contact arm, hereinafter described, back to a starting position each time the knife 13 is stroked.

The knife 13 is reciprocably moved by electrically controlled means, such as by a piston 14 in a pneumatic cylinder 15. Air under pressure to move the piston 14 is supplied through an air conduit 16 to a valve 17. The valve 17 controls the flow of said air under pressure through other conduits 16′ to the cylinder 15. The valve 17 is of standard construction and is more fully illustrated in the co-pending application hereinbefore referred to. Electrically operated means, such as a double acting solenoid 18 is provided to operate the air valve 17.

An automatic control device constructed in accordance with this invention includes a main
housing part 20, a cover plate 2 for the front of
said housing part 20 and a back cover plate 22. All of
the housing parts are preferably formed of
insulating material, such as fiber. The main
housing 20 has its central portion cut away to
provide a cavity 23 for the operation of a con-
tact arm 24. The contact arm 24 is rotatively
mounted on a shaft 25 that extends through an
opening 26 in black plate 22. The shaft 25 is
journelled in a bearing 51 of a mounting bracket
22. A clutch plate 53 is fixedly secured, as by a
nut 54, to the forward end portion of the shaft
25 and frictionally engages the face of the con-
tact arm 24. A compression spring 55 is disposed
on the shaft 25 between the back face of the
contact arm 24 and a ball thrust bearing 56. The
spring 55 yieldingly holds the clutch plate 53 in
contact with the contact arm 24. This provides
a friction connection between the contact arm
24 and shaft 25 so that the contact arm 24 can
be moved by rotary movement of the shaft 25 or
can be moved independently of the shaft 25 by
slipping said contact arm relative to the clutch
plate 53. This provision for slippage be-
tween the contact arm and the disc 53 allows the
contact arm to be moved back to a starting po-
tion while the disc is being moved in an oppo-
site direction by movement of the vaneer 10, as
hereinafter described.

The contact arm 24 is preferably made of in-
ulating material and has two contact brushes
25 and 27, Fig. 4, that are electrically connected
with each other by conductor means 28.

The cover plate 21 has an arcuate slot 29 for
receiving and guiding a plurality of adjustable
contact members designated generally by nu-
merals 31, 32, 33, and 34. One end portion of
the slot 29 is enlarged to provide an opening 30
through which the contact members 31, 32, 33,
and 34 may be introduced into this slot.

Each of the contact members 31, 32, 33, and 34
is made up of a medial portion 35, Fig. 2, of proper
dimensions for a sliding fit in the slot 29. A con-
tact button 36 is provided on the inner end por-
tion of the contact member 31. A head member 37
on the outer end portion of said part 35. Parts 36
and 37 are wider than the slot 29 to prevent removal
of the contact members except by bringing them
to alignment with the enlarged end portions
30 of the slot 29.

The head part 37 of each contact member has a
groove 38, Fig. 2, to receive the peripheral por-
tion of an adjusting disc 39. The adjusting discs
39 are all threaded onto an arcuate screw mem-
ber 40 that is positioned in front of the slot 29
and is secured, as by brackets 41 to the outer
face of the cover 21. The contact members 31, 32,
33, and 34 are readily adjusted by turning of
discs 39. The discs 39 bind snugly on the screw
40 and may be further locked thereto by nuts
39 if desired.

A fixed arcuate contact member 42 is provided
on the inner side of the cover plate 21, as best
shown in Fig. 5. This contact member 42 is con-
tinuously in electrical contact with the lower con-
tact brush 26 of the contact arm 24.

Bolts 43 may be used to secure the front and
back cover plates 21 and 22 and main housing
20 in assembled relation. Cap screws 57 may be
used to secure the housing 20, 21, 22 to a sup-
porting bracket 52.

A sprocket wheel 44, shown diagrammatically
by broken lines in Fig. 1, and shown by full
lines in Fig. 2, is mounted on the shaft 25 exter-

shown diagrammatically by broken lines in Fig. 1
is used to connect the sprocket wheel 44 with
another sprocket wheel or pinion 46 that is rigidly
connected with a measuring wheel 47. The
measuring wheel 47 runs on the veneer and al-
ways tends to move the contact arm 24 in syn-
chronism with the veneer.

A shaft or spindle 48 common to pinion 46 and
measuring wheel 47 is supported in an upright
bracket 49 that extends upwardly and is shown
in a fixed guide 49'. A compression spring 50
exerts a yielding pressure tending to hold the
measuring wheel down on the veneer 10. The
measuring wheel 47 is rotated in a counter-clock-
wise direction, as respects the showing in Fig. 1,
by the traveling veneer 10 and will exert a con-
stant force through link belt 45, sprocket wheel
44, shaft 25 and friction plate 53 tending to move
the contact arm 24 in a counterclockwise direc-
tion. In the absence of slippage of the clutch
plate 53 the movement of the contact arm 24 will
be proportional to the movement of the veneer 10.

However, means are provided for slipping the
clutch plate 53 and returning the contact arm 24
to a zero or starting position so that when the knife
strikes a cutting blow. The contact arm 24 is
shown in the starting position in Fig. 4. Prefer-
ably a resilient bumper 50 is provided to stop this
contact arm in the starting position.

Various devices can be provided for returning
the contact arm 24 to the zero or starting posi-
tion each time the knife is stroked. One satisfac-
tory device for accomplishing this purpose com-
prises a pin 56 rigid with arm 24 and a link 59
connecting the pin 56 with a lever arm 60 that
is secured to the rock shaft 31. Lost motion means
are provided in the connection between pin 56
and rock shaft 31. One way of providing this lost
motion means is to provide a slot 51 in the por-
tion of the link 59 that engages the pin 56. This
slot 51 and the parts 58, 58 and 60 are propor-
tioned and arranged so that the contact mem-
ber 24 will always be moved to the starting po-
tion in which it is shown in Fig. 4 when the knife
19 strikes a cutting blow on its downward move-
ment and the link 59 is allowed to move to the left.
Fig. 1, on the retractive stroke of the knife without carrying the contact arm 24 back with it. Thus the contact arm 24 is always
moved to a starting position by the stroking of
the knife 13 and can only be moved away from
such starting position by the movement of the
veneer 10 under the measuring wheel 47.

A plurality of manually operable switches 62,
63, 64, 65 and 66, preferably of self opening type
and diagrammatically shown as push button
switches in Fig. 1, are provided for the use of an
operator in controlling this apparatus. Each of
said switches has one terminal connected by con-
ductor means 67 with one conductor 66 of a source
of energy circuit. The other terminal of the
switch 66 is connected by conductor 67 with one
terminal of a relay 70, the other terminal of the
relay 70 is connected by conductor means 71 with
the other conductor 72 of the source of energy

circuit.

The relay 70 is of a differential or ratchet type
and controls an independent circuit through
conductors 73 and 74. This relay 70 and the circuit
to the solenoid 18 so that it will exert a force first in one
direction and then in the opposite direction.

This operates the valve 17 so as to admit
air under pressure to opposite ends of the

cylinder 15 and results in the stroking of the
knife 13 each time the piston 14 is moved in either direction.

The switches 63, 64, 65 and 66 each have one terminal connected with source of energy conductors 78, as hereinbefore stated. The other terminals of said switches 63, 64, 65 and 66 are respectively connected by conductors 75, 76, 77 and 78 with the contact members 31, 32, 33 and 34. These contact members are adapted to be successively engaged by the contact arm 24 as the said contact arm 24 is progressively moved by the moving vane and in synchronism with the movement of said vane. Contact arm 24 is always in electrical contact with arcuate contact member 42 and this contact member 42 is electrically connected with relay 70 as by conductors 78 and 79.

This automatic control device, in combination with the switches and circuits just described, enables an operator to control the knife 13 very accurately. Any time the switch 63 is closed the knife 13 will always be instantly operated. Any time one of the switches 63, 64, 65 or 66 is closed a circuit will be completed by the progressively moving contact arm 24 and the knife 13 will always be operated after the vane has been advanced a predetermined distance from the position it occupied at the time of the preceding knife stroke, depending on which switch 63, 64, 65 or 66 was closed.

The peeled veneer, as it comes from the log, will usually be of varying quality with certain portions that are suitable for use and other portions that need to be cut out and discarded because they have pitch, pockets or like defects.

If the veneer that is passing under the knife 13 at a given time is free from defective portions that have to be discarded then the operator will hold one of the switches 63, 64, 65 or 66 closed and the machine will operate automatically to cut at the predetermined intervals for which the closed switch is set. Usually in good veneer pieces will be cut to the maximum width, such as forty-eight inches. An experienced operator is able to judge very accurately as respects the number and width of pieces of good veneer to be obtained from a run of veneer, when no defective coatings are present and the veneer calls for the cutting of pieces less than the narrowest standard width then the operator uses the switch 62 and in this way he can salvage a maximum amount of usable veneer but the narrower strips will not be of any standard or measured width.

The circuits herein shown operate in response to the closing of switches but it is obvious that circuits could be provided which would operate by the opening of switches.

The foregoing description and accompanying drawing clearly disclose what we now regard as a preferred embodiment of this invention but it will be understood that this disclosure is merely illustrative and that changes may be made within the scope and spirit of the following claims.

We claim:
1. A clipper and control therefor, a reciprocating knife; means for moving said knife to cut material; means for feeding sheet material past said knife; a controller having a contact arm movable over a plurality of contacts; means synchronized with said material feeding means for moving said contact arm over said contacts; and means operable by the cutting movement of said knife for returning said contact arm to a starting position.
2. A clipper and control therefor, means for feeding sheet material; a movable knife; means for moving the knife to cut the material; a controller having a contact arm movable over a plurality of contacts; means for moving the contact arm over the contacts in one direction in synchronism with the movement of the sheet material; and means synchronized with the knife for returning the contact arm to a starting position upon each cutting movement of the knife.
3. A clipper and control therefor, means for feeding sheet material; a movable knife; means for moving the knife to cut the material; a controller having a contact arm movable over a plurality of contacts; contact arm moving means frictionally connected with said contact arm and movable at a speed proportional to the speed of movement of the sheet material; and contact arm retracting means movable in synchronism with the knife to slip said frictional connection and retract said contact arm to a starting position at each cutting movement of the knife.
4. A clipper and control therefor comprising continuously moving sheet material feed means; a movable knife; means for moving the knife to cut the material; a controller housing means for driving contact arm; a plurality of contact members in said controller housing; a shaft extending into said housing; a contact arm freely movable on said shaft from a starting position to a contacting position relative to said contact members; friction drive means frictionally connecting said shaft and said contact arm; means for driving said shaft in synchronism with the movement of the material; and contact arm retracting means movable in synchronism with the knife to slip said friction drive means and return said contact arm to the starting position at each cutting movement of the knife.
5. In an electrical control device, an angularly movable contact arm; contact arm moving means having a frictional connection with said arm; and means operable to slip said frictional connection and reversely move said contact arm.
6. In an electrical control device, a plurality of contact members; a shaft extending into said housing; said contact arm movable over said contact members; and contact arm moving means having a frictional connection with said contact arm providing for the re-setting of said arm by the slipping of said frictional connection.
7. In an electrical control device, a plurality of contact members; a contact arm; continuously driven contact arm moving means frictionally connected with said contact arm for moving said contact arm over said contact members; and contact arm retracting means connected with said contact arm and operable to retract said contact arm by slipping said frictional connection.
8. In an electrical control device, a housing a plurality of contact members in said housing; an angularly movable contact arm in said housing movable from a starting position over successive contact members; continuously driven contact arm moving means frictionally connected with said contact arm for moving said contact arm over said contact members; and means for moving said contact arm back to the starting position by slipping said frictional connection.
9. In an electrical control device, a housing; a plurality of contact members in said housing; a shaft extending into said housing; an angular-
ly movable contact arm in said housing rotatable on said shaft and movable from a starting position over successive contact members; continuously driven contact arm moving means connected with said shaft; friction plate means rigid with said shaft and yieldingly engaging said contact arm for moving said contact arm away from the starting position and over said contact members in response to rotary movement of said shaft; and means for moving said contact arm back to a starting position by slipping said friction plate means relative to said contact arm.

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