Oct. 25, 1932. R. W. STANLEY 1,884,336

VENEER CLIPPING MACHINE

Filed Jan. 11, 1930 2 Sheets-Sheet 1

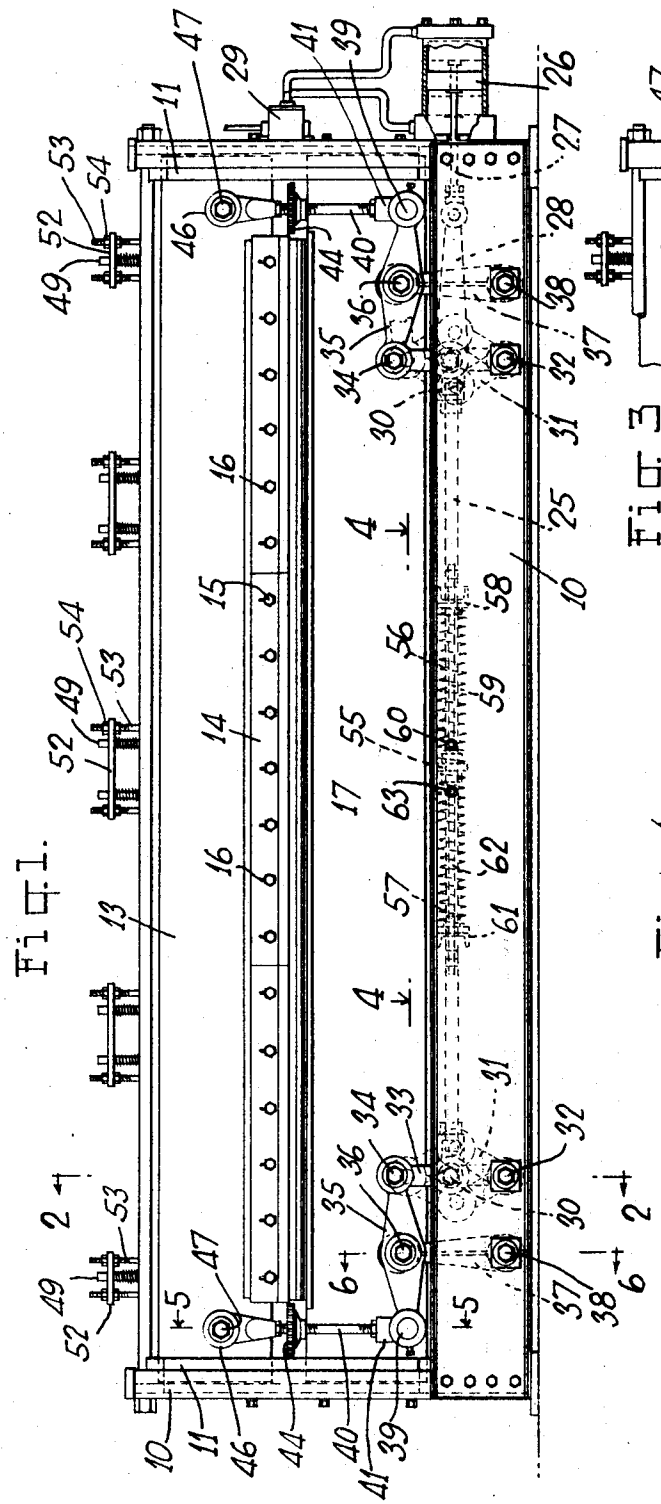

Fig. 1.

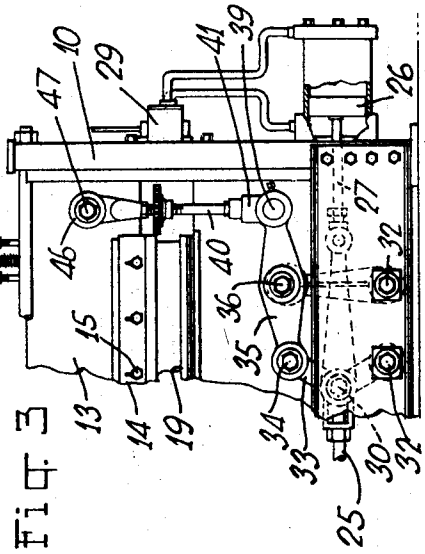

Fig. 3

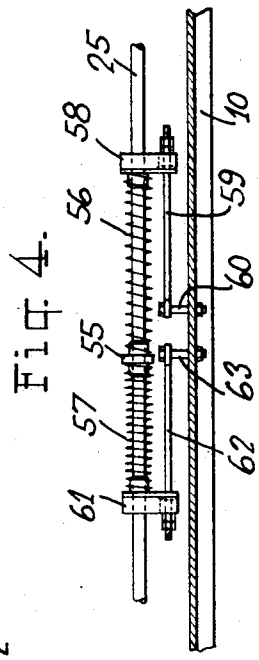

Fig. 4.

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Fig. 6.

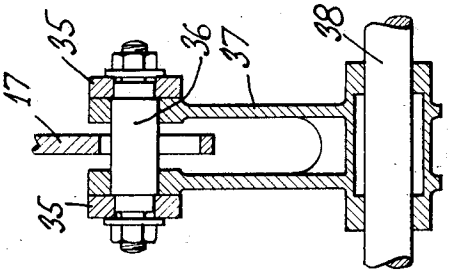


Fig. 5.

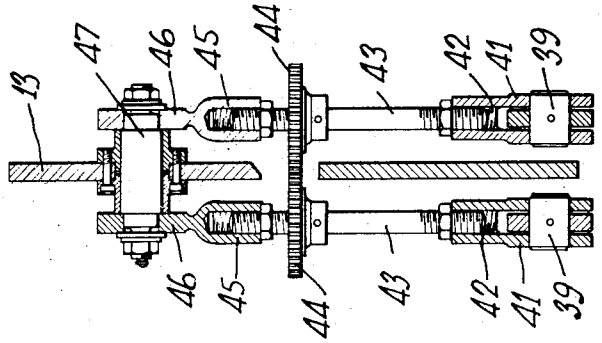
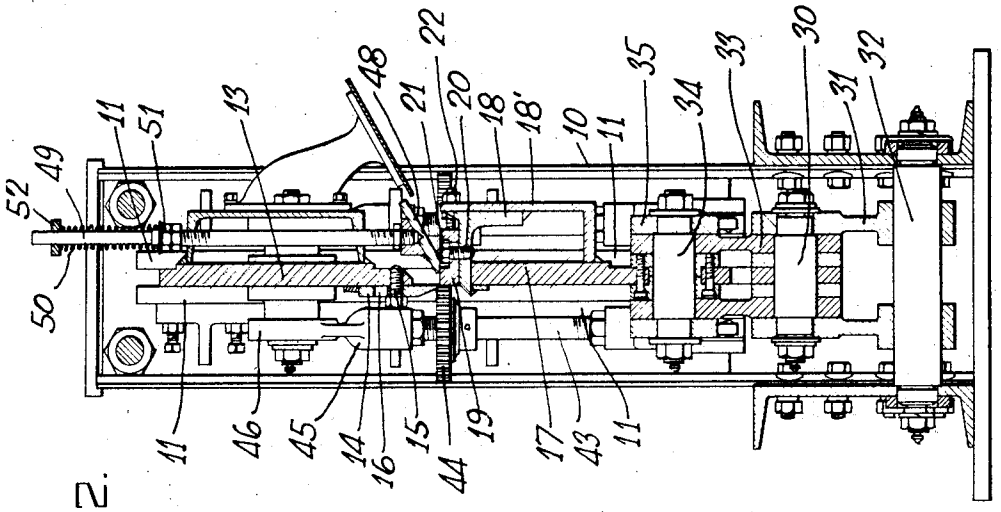


Fig. 2.



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UNITED STATES PATENT OFFICE

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VENEER CLIPPING MACHINE

Application filed January 11, 1930. Serial No. 420,100.

This invention relates to cutting machines of the type adapted to clip sheets of veneer into relatively short lengths, which machines will be hereinafter referred to generally as "veneer clipping machines."

In general, it is an object of the invention to provide a machine of the character described which is simple, sturdy and permanent in construction, which may be readily, easily and economically assembled, and which will efficiently accomplish the purposes for which it is intended.

Another object of the invention is to provide a veneer-clipping machine which will accurately and efficiently clip sheets of veneer in an especially expeditious manner.

Another object is to provide a veneer-clipping machine, wherein the relative position of the parts may be adjusted with especial ease.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

Fig. 1 is a side view of a veneer-clipping machine embodying the invention, showing the same with the plunger in the middle of its stroke and with the clipper knife and shear plate in cutting position;

Fig. 2 is a vertical section along the line 2—2 in Fig. 1;

Fig. 3 is a side view of one end of the machine showing the plunger at the end of one stroke, and with the clipper knife and shear plate in open position.

Fig. 4 is a fragmentary horizontal sectional view along the line 4—4 in Fig. 1; showing the plunger in a position corresponding to its position in Fig. 3.

Fig. 5 is an enlarged fragmentary vertical section along the line 5—5 in Fig. 1; and

Fig. 6 is an enlarged fragmentary vertical section along the line 6—6 in Fig. 1.

In veneer lathe assemblies arranged for the clipping into short lengths of veneer stripped continuously from a rotating log, an example of which is shown in my copending application, Serial No. 340,761, filed February 18, 1929, and in the copending application of Ericsson H. Merritt, Serial No. 341,017, filed February 18, 1929; the limiting factor in operation is ordinarily the speed of operation of the clipper, and it is accordingly desirable to expedite the operation of the clipper. Moreover, the faster the veneer is fed across the path of the knife the greater will be the tendency toward buckling, during the time when the flow of the veneer is halted by the severing operation, and in order to minimize this delay the provision of a clipper wherein the severing operation is expedited is particularly desirable. The accuracy in the operation of a clipping machine and the accurate conformity of the size of lengths into which the sheet is clipped are also important factors in the satisfactory operation of such a machine.

With these and other ends in view, there is provided, in accordance with the present invention, a machine which is quick acting, wherein the time consumed by the severing operation is reduced to a minimum, which will cut a continuously-moving sheet without a substantial interruption in the continuous movement of the sheet which will operate in a particularly accurate manner, and wherein the parts can be readily adjusted.

It is to be borne in mind that such machines are ordinarily employed in cases where the veneer is stripped by a lathe knife moving at a constant speed into a log which rotates at a constant speed, so that the speed of flow of the veneer from the lathe knife decreases, it being understood that the clipper operation may be suitably synchronized with the speed of flow of the veneer, as, for example, by means such as exemplified in the copending applications above identified.

I have found that the delay in the flow of

veneer caused by the severing operation can be materially reduced by moving the clipper knife and the shear plate toward each other simultaneously instead of moving the clipper knife toward a stationary shear plate, and there is exemplified a machine embodying this feature, as well as other features of the invention.

The exemplified machine comprises a frame indicated generally 10 on which are mounted suitable means indicated at 11 for guiding a reciprocable clipper knife assembly and a reciprocable shear plate assembly. The knife assembly comprises a reciprocable knife support 13 to which a knife 14 is secured by means of screws 15 each extending through one or another of a plurality of holes 16 in the knife and into a hole in the knife bar. The shear plate assembly comprises a reciprocable shear plate bar 17 carrying thereon certain bars 18 and 18′ and supporting at its upper end a shear plate 19, the shear plate being secured to the bars 18 in the present instance, by means of screws 20 extending through a transversely extending slot 21 in the shear plate and into holes in the bars 18. The bars 18′ carry adjusting screws 22 which bear against the inner edge of the shear plate so as to permit the position of its cutting with respect to the cutting edge of the knife to be accurately adjusted from time to time, it being only necessary to release the screws 20 temporarily to effect this adjustment. It will be apparent that the clipper knife assembly and the shear plate assembly may be so constructed as to be of substantially equal weight to facilitate the operation of the same in a manner such as hereinafter exemplified.

In order to operate the clipper knife and shear plate assemblies in synchronism there is provided a plunger 25 arranged to be operated in a suitable manner, as by means of fluid pressure acting alternately on opposite sides of a piston 26, the stem 27 of which is, in the present instance, pivotally connected to a link 28, which, in turn, is pivotally connected to the plunger 25. The supply of fluid pressure to the opposite ends of the piston may be controlled by a suitable valve 29, the operation of which may be timed in any desired manner, as by means such as exemplified in the copending applications of myself and Ericsson H. Merritt, above identified.

With a view to transmitting the plunger movement to the clipper knife and shear plate in such manner as to cause a substantially continuous movement of these members toward and away from each other during the movement of the plunger in one direction or the other, there are provided connections, which in the present instance are of the type exemplified in said copending applications and comprise toggle mechanisms. As exemplified, the plunger 25 carries pairs of toggle joints 30 at its ends, one arm 31 of each toggle joint being pivotally connected with the frame-work at 32 and the other arm 33 being connected with the shear plate bar at 34, the toggles being so arranged that during the movement of the plunger in either direction, as from one of the positions shown in dotted lines in Fig. 1, through the position shown in full lines in Fig. 1 to the other of the positions shown in dotted lines in Fig. 1, the toggles will be straightened out to move the shear plate bar upwardly and will again be bent to pull it downwardly. In order to move the clipper knife downwardly and upwardly as the shear plate moves upwardly and downwardly, there are provided levers 35 each pivoted at a point at 36 intermediate its ends to the upper end of an arm 37, the lower end of which is pivotally secured at 38 to the frame. One end of each lever 35 is pivotally secured to the shear plate bar at 34 and the other end is pivotally secured at 39 to an arm 40 which is suitably connected to the clipper knife bar.

In order to obtain a properly balanced action, the various toggle links, levers and arms whereby movement is transmitted from the plunger 25 to the clipper knife and shear plate assemblies are arranged in duplicate on either side of the plunger and the assemblies.

In instances such as the present, wherein both the shear plate and clipper knife move, it is of particular importance to adjust the relative position of the same with the maximum of accuracy and the importance of such adjustment is enhanced in machines of the type designed to operate on a sheet of material having a substantially continuous flow. With a view to facilitating an easy adjustment of these members the arms 40 each comprise, in the present instance, a link 41 pivotally connected at 39 to one of the levers 35 and formed with an upwardly extending internally threaded socket member 42, into which member the lower threaded end of a rod 43 extends. Fixedly mounted on each rod 43 is an adjusting gear 44 which intermeshes with a similar gear on an opposite rod 43, so as to assure a uniform movement of each pair of rods 43. The upper end of each rod is likewise threaded and fits into an internally threaded downwardly extending socket member 45 forming a part of a link 46 which is pivotally connected at 47 to the clipper knife bar 13.

It will be understood that suitable slots will be formed where necessary in all members which are interposed between connecting elements to provide clearance for the pivot pins, gears and other means connecting the toggle links, levers or connecting arms on either side of the interposed members. Such slots are shown in Figs. 5 and 6, for example.

In order to hold the veneer sheet during the severing operation to assure an accurate

and smooth cutting of the sheet and to assure an immediate stripping of the sheet from the knife with a view to avoiding a substantial interruption of the flow of the sheet by the knife, there are provided one or more stripper plates 48, a plurality of such plates being provided in the present instance to facilitate the clipping of narrow sheets of veneer. It is particularly desirable in a case such as the present, wherein the shear plate reciprocates, that the stripper plate hold the veneer, or other material to be clipped, firmly against the shear plate during the severing operation and exert its stripping action immediately thereafter, and to this end, each stripper plate is carried on a plurality of rods 49, on each of which is mounted a coil spring 50 bearing downwardly against a nut 51 on the rod and upwardly against a cross arm 52 mounted on uprights 53 by means of nuts 54. It is to be observed that the pressure exerted by each of the springs 50 can be readily adjusted both by the adjustment of the nut 51 and by the adjustment of the arm 52 by the movement of the nuts 54.

With a view to further expediting the clipping operation, and in order to make possible a movement of the knife and shear plate wherein any substantial delay is avoided not only between the forward and retractive portions of its stroke, but also between strokes, there is provided in connection with the plunger 25, in the present instance, an arrangement whereby the initial movement in each direction is expedited. To this end, the plunger is provided with a central collar 55 against which one end of a coil spring 56 and the opposite end of a coil spring 57 are adapted to press. The right-hand end of the coil spring 56, Fig. 1, presses against a slidable collar 58 which is secured by means of a pivoted link 59 to a stud 60 secured to the framework 10. Similarly the left-hand end of the spring 57, Fig. 1, presses against a slidable collar 61 which is secured by means of a pivoted link 62 to a stud 63 secured to the frame-work. In this manner, the spring 57 is compressed as the plunger reaches the left-hand end of the stroke (as indicated in Fig. 4), and the spring 59 is compressed as the plunger reaches the right-hand end of the stroke; and thus the initial movement of the plunger in either direction is assisted by a compressed spring, so that a high-speed forward and retractive movement of both the clipper knife and the shear plate can, in the present instance, be imparted thereto by the toggle mechanism.

It will be seen that there has thus been provided a machine which operates with particular efficiency and accuracy at a particularly fast rate of speed, and that the shearing action therein is such that the regular flow of the veneer is interfered with to a minimum extent, it being apparent that in a case where the clipper knife and shear plate each traverse during the shearing action a distance equal to one-half of the thickness of the veneer, the shearing action is to be completed in substantially one-half the time required for a clipper knife to traverse a distance equal to the entire thickness of the veneer.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings, shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a veneer-clipping machine, the combination of a clipper knife, a shear plate, a reciprocable member, a toggle joint on said reciprocable member, one arm of the toggle being fixedly mounted and the other arm of the toggle being connected with said shear plate, a pivotally mounted rocker arm, one end of said rocker arm being connected to said shear plate and the other end being connected to said clipper knife, and means to reciprocate said reciprocable member.

2. In a veneer-clipping machine the combination of a reciprocable cutting member, a plunger movable in a direction substantially parallel with the cutting edge of the cutting member and in a plane corresponding substantially to the plane of movement of the cutting member, and connections between said plunger and said cutting member for imparting a two-way movement to the cutting member in response to a one-way movement of the plunger, said connections being arranged in duplicate on each side of the plane of movement of the cutting member.

3. In a veneer-clipping machine, the combination of a cutting member, operating means therefor adapted to impart a two-way movement to said cutting member in response to a one-way movement in said means, and means associated with said operating means and adapted to assist said operating means at the beginning of its stroke.

4. In a veneer-clipping machine, the combination of a cutting member, operating means therefor adapted to impart a two-way movement to said cutting member in response to a one-way movement in said means, said operating means being arranged to retain said cutting member in a retracted position at the completion of a stroke, a spring asso-

ciated with said operating means, and means for compressing said spring as said cutting member moves toward its retracted position.

5. In a veneer-clipping machine, the combination of a cutting member, a plunger, means to impart a two-way movement to the cutting member in response to a one-way movement of the plunger, a pair of springs associated with said plunger, one of said springs being arranged to be compressed toward the end of the plunger movement in one direction, and the other of said springs being arranged to be compressed toward the end of the plunger movement in the other direction, whereby the initial movement of said plunger in each direction will be assisted.

6. In a veneer-clipping machine, the combination of a clipper knife, a shear plate, a plunger, means to move said clipper knife and said shear plate first toward and then away from each other in response to a movement of the plunger in one direction, and to move said clipper knife and said shear plate first toward and then away from each other in response to a movement of the plunger in the other direction, a pair of springs associated with said plunger, one of said springs being arranged to be compressed toward the end of the plunger movement in one direction, and the other of said springs being arranged to be compressed toward the end of the plunger movement in the other direction, whereby the initial movement of said plunger in each direction will be assisted.

7. In a veneer-clipping machine, the combination of a movable clipper knife, a movable shear plate, means to impart symmetrical movement of the clipper knife and the shear plate toward and away from each other to complete a clipping operation in response to an unreversed motion in said means, and means to adjust the planes of the cutting edges of said knife and shear plate with respect to each other.

8. In a veneer-clipping machine, the combination of a clipper knife, a shear plate, a plunger means to impart two-way motion to the clipper knife in response to a one-way motion of said plunger, a stripper plate, resilient means tending to press the stripper plate toward the shear plate, and means to adjust the effective pressure of said resilient means.

9. In a veneer-clipping machine, the combination of a clipper knife, a shear plate, means to move said clipper knife and said shear plate simultaneously toward each other, a stripper plate bearing against said shear plate, resilient means tending to press the stripper plate toward the shear plate, and means to adjust the effective pressure of said resilient means.

10. In a veneer-clipping machine, the combination of a clipper knife, a shear plate, means to move said clipper knife and said shear plate simultaneously toward each other, a plurality of stripper plates spaced longitudinally along said machine, resilient means associated with both ends of each stripper plate, and means to adjust the effective pressure of said resilient means.

11. In a veneer-clipping machine, the combination of a clipper knife, a shear plate, a plunger, means connecting said plunger with said clipper knife and with said shear plate to impart a movement of said clipper knife and said shear plate, both toward and away from each other in response to a movement of the plunger in one direction and to impart a movement of said clipper knife and said shear plate both toward and away from each other in response to a movement of the plunger in the other direction, said connecting means including means to adjust the relative positions of said clipper knife and said shear plate, means to move said plunger in one direction and in the other direction, and a pair of springs associated with said plunger, one of said springs being arranged to be compressed toward the end of the plunger movement in one direction and the other of said springs being arranged to be compressed toward the end of the plunger movement in the other direction to assist the initial movement of said plunger in each direction.

12. In a veneer clipping machine, the combination of a frame, a clipper knife, a shear plate, a reciprocable member, a toggle joint on said reciprocable member, one arm of the toggle being fixedly mounted and the other end of the toggle being connected with said shear plate, an arm pivotally secured to said frame, a second arm pivotally secured to said knife, a rocker arm, one end of said rocker arm being connected with said shear plate, an intermediate point of said rocker arm pivotally secured to the free end of the first-mentioned arm, and the other end of said rocker arm being connected to said second arm, and means to reciprocate said reciprocable member.

13. In a veneer clipping machine, the combination of a frame, a clipper knife, a shear plate, a reciprocable member, a toggle joint on said reciprocable member, one arm of the toggle being fixedly mounted and the other end of the toggle being connected with said shear plate, an arm pivotally secured to said frame, a second arm pivotally secured to said knife, a rocker arm, one end of said rocker arm being connected with said shear plate, an intermediate point of said rocker arm pivotally secured to the free end of the first-mentioned arm, and the other end of said rocker arm being connected to said second arm, means to reciprocate said reciprocable member, and a pair of springs associated with said member, one of said springs being arranged to be compressed toward the end of the movement of said member in one direc-

tion, and the other of said springs being arranged to be compressed toward the end of the movement of the said member in the other direction whereby the initial movement of said member in each direction will be assisted.

In testimony whereof I affix my signature.

RICHARD W. STANLEY.