May 9, 1933. W. L. VALIQUETTE 1,907,903

PAPER CUTTING AND TRIMMING MECHANISM

Filed Jan. 9, 1931 2 Sheets-Sheet 1

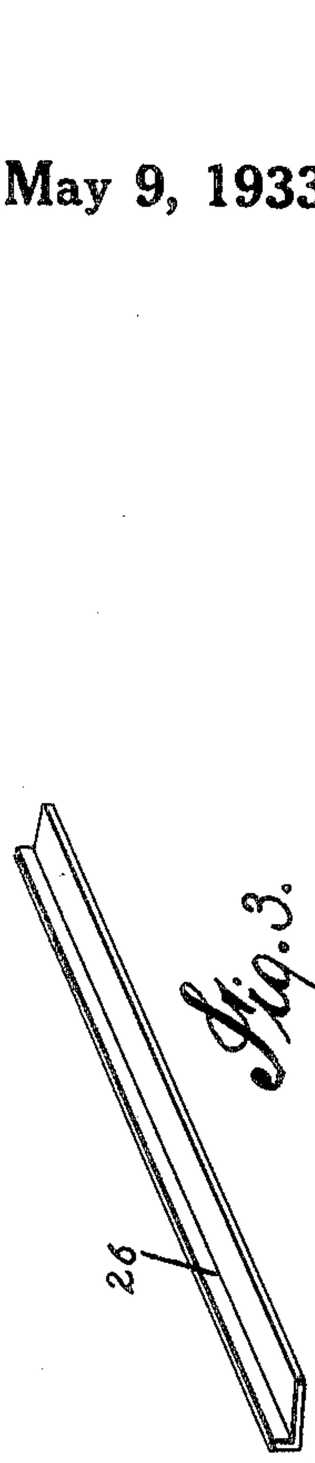

Fig. 3.

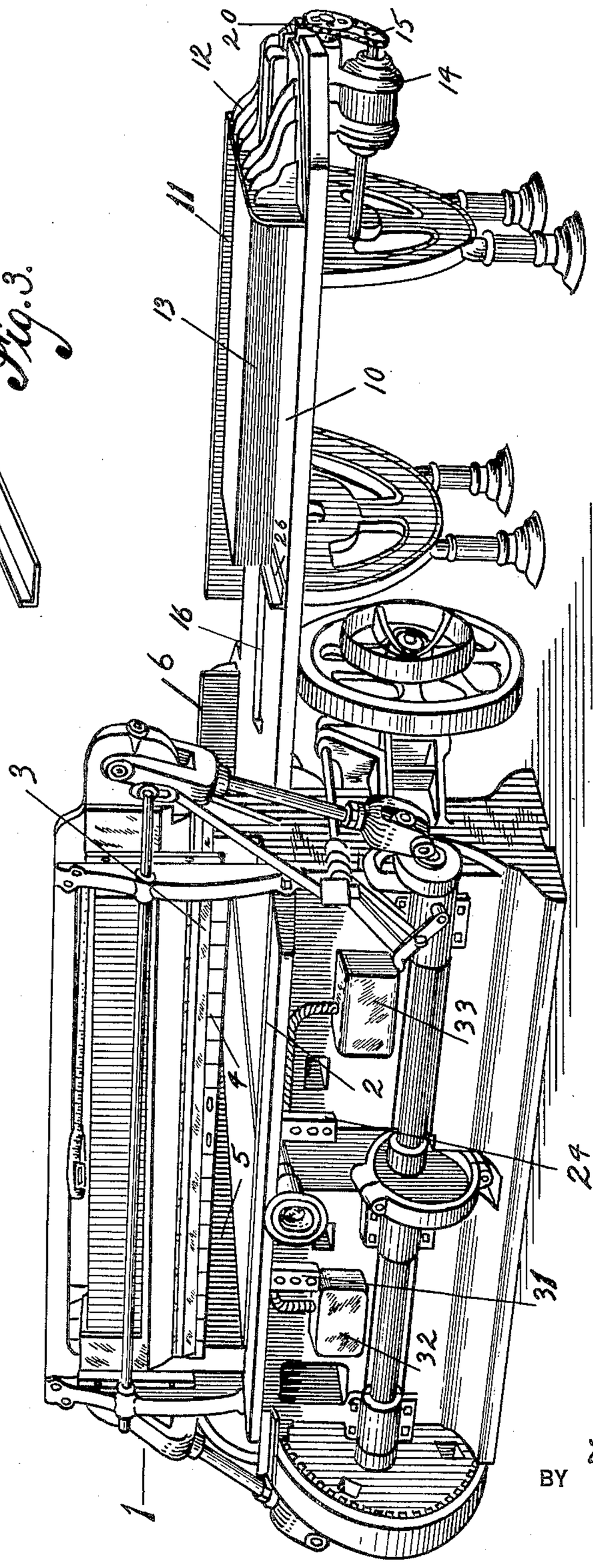

Fig. 1.

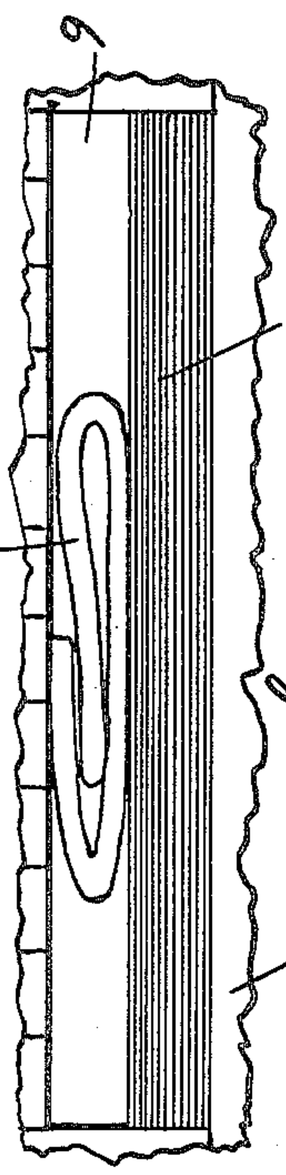

Fig. 4.

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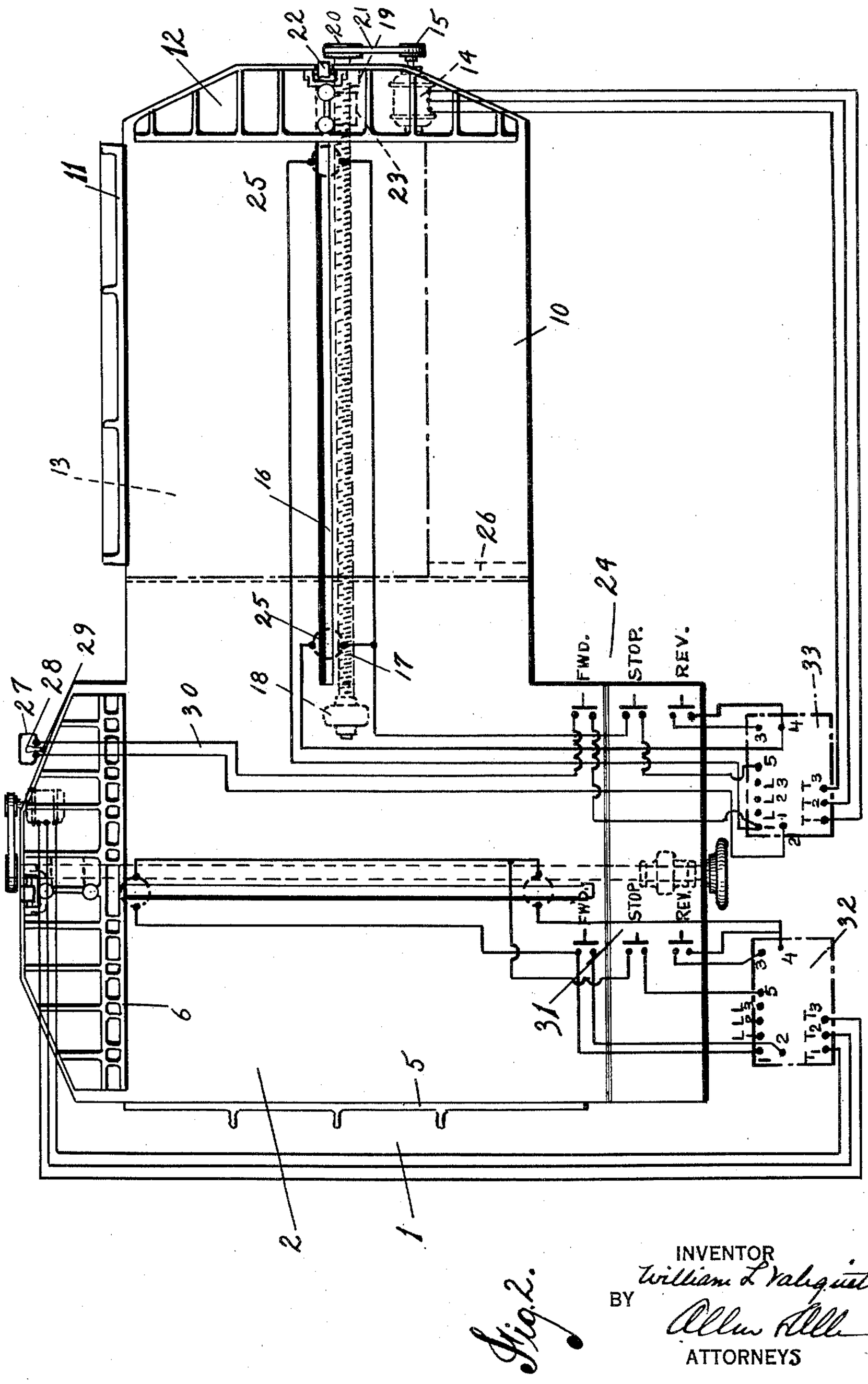

Fig. 2.

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UNITED STATES PATENT OFFICE

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PAPER CUTTING AND TRIMMING MECHANISM

Application filed January 9, 1931. Serial No. 507,625.

My invention relates to a method and mechanism for trimming and cutting paper stock.

Heretofore, in the laying up of paper stock and the jogging thereof to even the edges of the paper pile, several disadvantages have always been present. One of these has been the time required. If the sheet was of large dimensions, it necessited the services of two operators for the handling. The size of the sheets required that small quantities be folded over and then passed through the small space between the knife of the cutter and its table, and as the pile grew, the opening up of these folded groups became increasingly difficult as the height of the pile neared the edge of the clamp, and much time was required by both operators before the cutting of the sheets could be resumed.

Further, the time of the second operator or helper was a total loss during the cutting operation, as the entire cutting operation was handled by the machine operator, the helper being idle.

It is the object of my invention to minimize the difficulties of laying up and jogging the paper stock by eliminating the difficulties encountered by reason of the space previously required to open out the sheets as they were removed from the stock pile to the cutting table. It is a further object to provide a machine in which the jogging of the stock is greatly facilitated.

A still further object is to dispense with the necessity of a helper in laying up and jogging the stock.

The above objects and other advantages of my invention will be set forth and disclosed in the following specification.

Referring to the drawings:—

Figure 1 is a perspective view of a cutting machine embodying my invention.

Figure 2 is a plan view of the tables of the cutter, having superimposed upon them a diagram of the electric circuits.

Figure 3 is a perspective view of a slip strip for the paper stock file.

Figure 4 is a fragmentary view of the cutter showing the former method of building the paper pile.

A paper stock cutter and trimmer is shown at 1, having a table as shown at 2, a cutter knife as shown at 3, a hold-down 4, a side gauge 5, and a movable back gauge 6.

The machine shown is equipped with suitable driving devices and controls, all of these parts being of usual structure forming no part of my invention. Prior to my invention, the method of preparing the paper pile which is to be cut and trimmed, where the sheets were of large size, was to double a number of the sheets over as is shown at 7 in Figure 3 to facilitate handling. Then the folded bundle was inserted through the space 9 between the hold-down and the table top, and then opened out flat. Then the flattened stack was jogged against the side gauge and back gauge to even up each successive addition with the preceding ones.

Since it is desirable that the cutting stroke of the knife 3 be as short as possible with a certain standard size of pile, it follows that the space 9, which is the space between the clamp 4 and the table top 2, was limited in its dimensions to the least possible excess height which would allow the last folded group of sheets to be straightened out and jogged to even the edges of the pile. As the pile grew, this unfolding and jogging became increasingly difficult, thus slowing up the operation of getting the paper pile ready for trimming and cutting.

The operator and his helper alternated in the pile building and in the jogging of the pile, and when this was accomplished the machine operator completed the trimming and cutting, the helper being idle.

Referring now to Figure 1, the table 2 is shown extended angularly to the right, forming a second table top 10. The table top 10 has at one edge, a fixed side gauge 11, and at the end of the table top 10 furthest to the right, as shown, there is a movable end gauge 12. The two gauges 11 and 12 form a right angle against which a pile of paper stock may be jogged. With the extension 10 of the table, the process of laying up the pile and jogging it into an even edged pile of predetermined height is a much easier matter for the helper than with a machine which requires folding of the sheets and

pushing them under the clamp. The folded bundles 7 may be easily opened out on the table top 10 and jogged into position to form the usual pile of stock. The helper can easily jog the pile 13 of paper stock into position on the table extension 10 without being cramped by the proximity of the clamp.

With the pile 13 of paper stock in the position shown in Figures 1 and 2, the operator from the front of the cutter closes the switch to the motor actuating mechanism, which moves the paper stock pile to the left onto that part of the table indicated at 2, in front of the movable back gauge 6.

Mounted on the under side of the table extension 10 is a reversing motor 14 which has a driving pulley 15. The table extension 10 has a slot 16 extending from the outer end of the extension 10 to a position within the line of table top 2. Parallel with this slot 16 there is a traversing screw 17, which is journaled at its forward end in a thrust-bearing 18, and at its drive end in a bearing 19. In line with the driving pulley 15 there is a grooved pulley 20, connected to the pulley 15 by a V-belt 21.

The movable end gauge 12 has a connection 22 extending down through the slot 16 in the table extension 10. This connection 22 engages a nut 23 on the traversing screw 17. This mechanism is the usual construction in paper cutters for traversing the gauge.

Mounted at the front and to the right of the center of the cutter table 2 I have indicated a three button switch 24. One button controls the forward movement of the end gauge 12; another controlling its reverse movement, and the third controls the stopping of the movement of the end gauge 12.

Located beneath the extension 10 are a pair of safety stop stations 25, the function of which is to prevent an overrunning movement of the end gauge 12 in either of its directions of travel. Contact between the end gauge 12 and the safety stops 25 is made by suitable stops mounted on the nut 23. The stops over-ride and depress the circuit breaker of the appropriate safety stop station 25. I have not illustrated the mechanism of this safety circuit except diagrammatically, it being of well known commercial types.

The operator, stationed at the front of the cutter 1, can, by depressing the button marked "Forward", move the pile of paper stock 13 to a position in front of the back gauge 6. At the time the pile of paper stock 13 to be cut is completed, a slip strip 26 of thin metal is inserted under its forward edge. The strip has an upstanding edge to engage the pile of paper stock, as shown in Figures 1, 2 and 3. The function of the strip is to prevent the possibility of the frictional contact of the paper with the table, causing it to double back any of the under sheets, and thus disarrange the pile.

When the pile of paper stock is in position on the table 2 in front of the back gauge, the slip strip 26 is removed and held ready for insertion under the next pile to be handled.

When the pile of paper stock 13 is in position on the table 2, the next operation is to depress the bottom button marked "Reverse", as shown in Figure 2. The end gauge 12 is then returned by its traversing mechanism to its initial position, ready for the building of another pile of stock.

The operator's helper, who, with the usual apparatus, would be idle during the period of trimming and cutting of the pile of stock by the operator, now immediately begins the assembly of a new pile of stock, so that when the operator of the cutter 1 completes his operations on the previous pile, he finds a succeeding pile of paper stock 13 ready to be moved into position for trimming and cutting by the cutter 1.

In order to prevent any possibility of the accidental operation of the switch for moving the end gauge 12 forward and thereby bringing a prepared pile of paper stock into collision with either the pile of paper stock being cut or the back gauge 6 of the cutter 1, I have provided a circuit breaker switch 27 mounted on the rear edge of the table 2 of the cutter 1. This switch has a button 28 adapted to be depressed by a contact 29 carried by the back gauge 6 of the cutter 1. When the back gauge 6 begins to move forward, depressing the forward control button of the switch 24 will have no effect on the traversing motor 14 because, as shown in the diagram of the electric circuit, the current flow will be broken by the circuit breaker 27 in the line 30. The operation of the forward button of the switch 24 would therefore be ineffective.

The mechanism for feeding the back gauge on the cutter table 2 is similar to that for operating the end gauge 12. Safety stops are indicated to limit the travel of the back gauge 6, and there is also provided a three button switch 31 to control the forward, stop and reverse motions of the back gauge 6. The two panels 32, 33, carrying the automatic switch for the electrical circuits of the cutter are mounted in cabinets 34 on the front of the cutter frame 1, as is seen in Figure 1.

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

1. In combination with a power operated paper cutter having a feed table with a back gauge movable thereon for advancing stock to be cut, an auxiliary lay-up and jogging table provided with means for advancing stock from said auxiliary table to said feed table.

2. In combination with a power operated paper cutter having a feed table with a back gauge movable thereon for advancing stock to be cut, an auxiliary lay-up and jogging table provided with means for advancing stock from said auxiliary table to said feed table, said means comprising an end gauge.

3. In combination with a power operated paper cutter having a feed table with a back gauge movable thereon for advancing stock to be cut, an auxiliary lay-up and jogging table provided with mechanical means for advancing stock from said auxiliary table to said feed table.

4. In combination with a power operated paper cutter having a feed table with a back gauge movable thereon for advancing stock to be cut, an auxiliary lay-up and jogging table provided with mechanical means for advancing stock from said auxiliary table to said feed table, said means comprising a mechanically movable end gauge.

5. In combination with a power operated paper cutter having a feed table with a back gauge movable thereon for advancing stock to be cut, an auxiliary lay-up and jogging table provided with mechanical means for advancing stock from said lay-up and jogging table to said feed table, said mechanical means having an electric motor for actuating same, with a starter button mounted in a position accessible to the machine operator.

6. In combination with a power operated paper cutter having a feed table with a back gauge movable thereon for advancing stock to be cut, an auxiliary lay-up and jogging table provided with mechanical means for advancing stock from said auxiliary table to said feed table, said mechanical means having and electric motor for actuating same, with a starter button mounted in a position accessible to the machine operator, a circuit from said starter button to said electric motor, a cut-out switch in said circuit closeable by said back gauge in its fully withdrawn position.

7. In combination with a power operated paper cutter having a feed table with a back gauge movable thereon for advancing stock to be cut, an auxiliary lay-up and jogging table provided with mechanical means for advancing stock from said auxiliary table to said feed table, said mechanical means being inhibited from movement except in a fully withdrawn position of said back gauge.

8. In combination with a power operated cutter having a feed table with a back gauge movable thereon for advancing stock to be cut, an auxiliary jogging table provided with mechanical means for advancing the stock from said jogging table to said feed table, and means to prevent slippage of the alignment of the pile of stock as it is advanced toward the feed table.

9. In combination with a power operated cutter having a feed table with a back gauge movable thereon for advancing stock to be cut, an auxiliary jogging table provided with mechanical means for advancing the stock from said jogging table to said feed table, said means to prevent slippage of the alignment of the pile of stock as it advances toward the feed table, said means comprising a removable slip strip.

10. In combination with a paper cutter, a feed table, a piling and jogging table in direct delivering relation to the feed table, and mechanism for delivering the piled and jogged stock from the piling and jogging table to the feed table.

11. In combination with a paper cutter, a feed table, a piling and jogging table in direct delivering relation to the feed table, mechanism for delivering the piled and jogged stock from the piling and jogging table to the feed table, and means for automatically limiting the range of movement of said mechanism to correctly position the stock on the feed table.

12. In combination with a paper cutter, a feed table, a piling and jogging table in direct delivering relation to the feed table, mechanism for delivering the piled and jogged stock from the piling and jogging table to the feed table, a guide for guiding the stock on the feed table, and means for automatically limiting the range of movement of said mechanism to position the stock on the feed table in correct relation to said guide.

13. In combination with a paper cutter, a support for stock to be cut by said cutter, and means for feeding stock to said cutter comprising a plurality of gauges, and means moving the respective gauges successively to slide jogged stock on said support while maintaining the jogged condition of the stock.

14. In combination with a paper cutter, a support for stock to be cut by said cutter, and means for feeding stock to said cutter comprising a gauge against which stock is jogged on said support, mechanism moving said gauge to slide the jogged stock on the support, a second gauge, and mechanism moving said second gauge to further slide said stock, maintaining the jogged condition of the stock.

15. In combination with a paper cutter, a support for stock to be cut by said cutter, and means for feeding stock to said cutter comprising gauges at right angles to each other, against which stock is jogged on said support by contact of its adjacent edges with the respective gauges, mechanism moving one gauge to slide the jogged stock on the support by contact with the respective one of said edges, a third gauge and mechanism moving the third gauge to further slide said stock by contact with one of said edges, maintaining the jogged condition of the stock.

16. In combination with a paper cutter, a support for stock to be cut by the cutter,

and means for feeding stock to said cutter comprising gauges at right angles to each other, against which the stock is jogged on said support by contact of its adjacent edges with the respective gauges, mechanism moving one gauge to slide the jogged stock on the support by contact with the respective one of said edges, a third gauge and mechanism moving the third gauge at right angles to the first sliding to further slide said stock by contact with the other one of said edges, maintaining the jogged condition of the stock.

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