

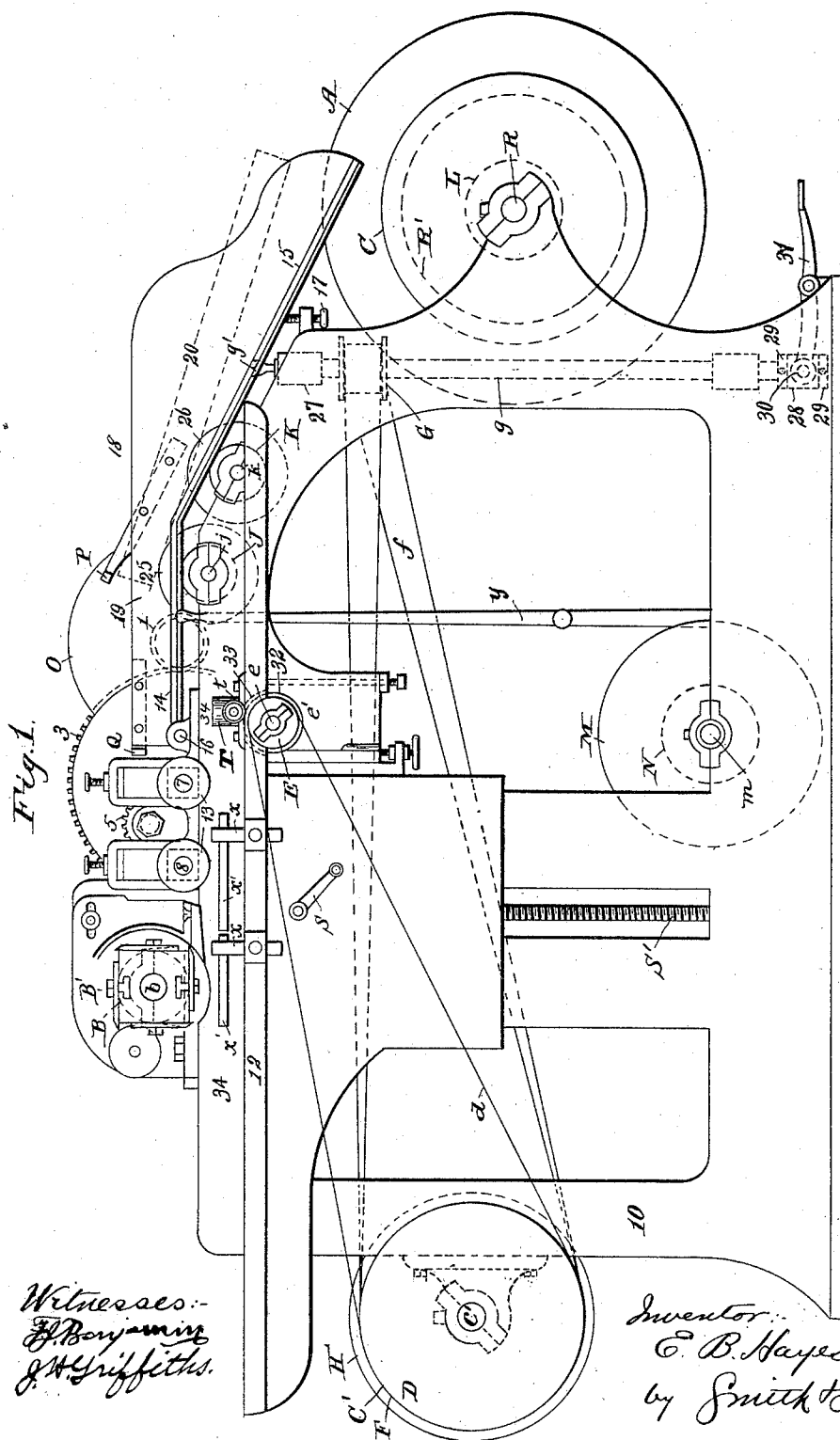
(No Model.)

3 Sheets—Sheet 1.

E. B. HAYES.
SASH MACHINE.

No. 476,202.

Patented May 31, 1892.



Witnesses:-
J. Benjamin
J. H. Griffiths.

Inventor
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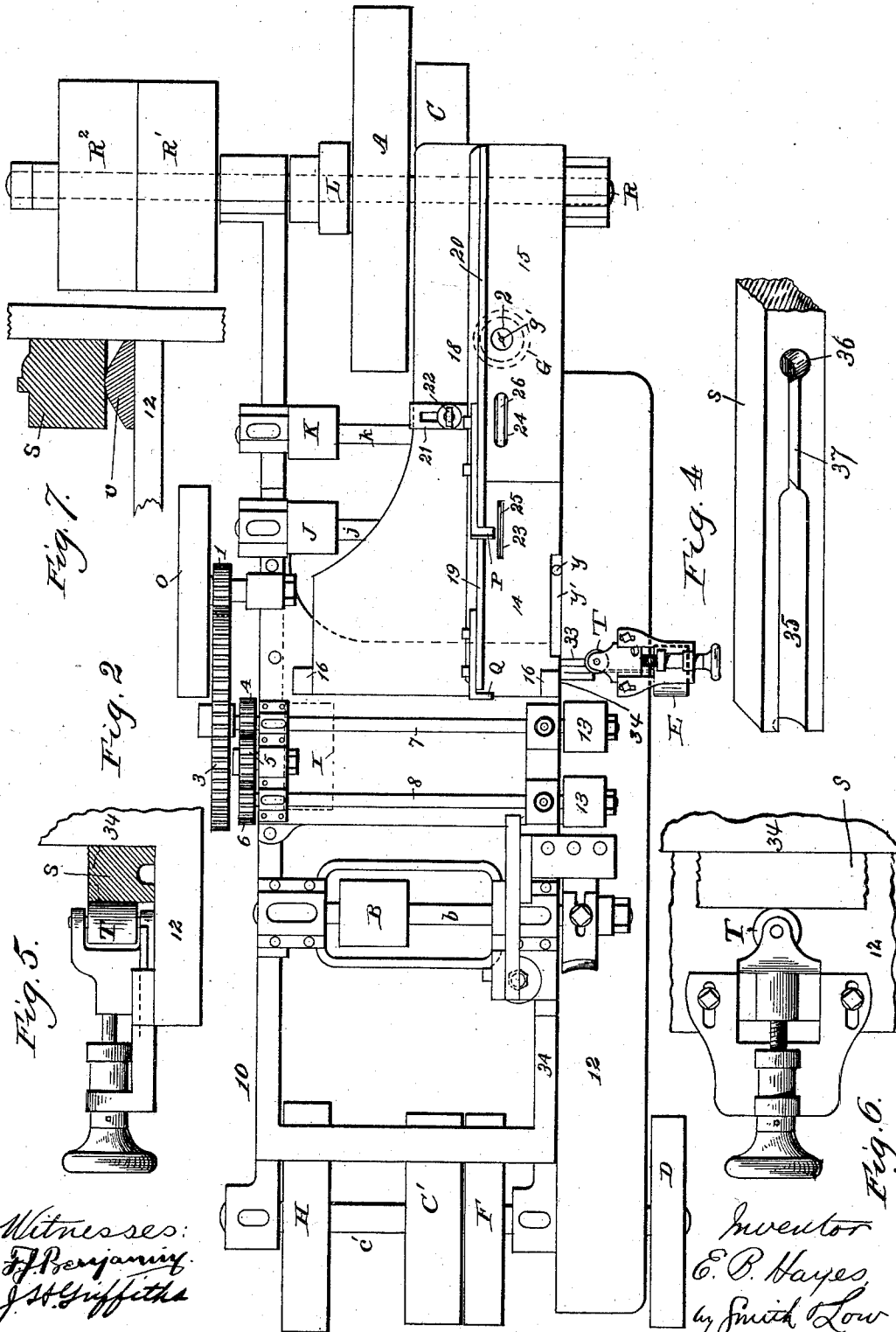
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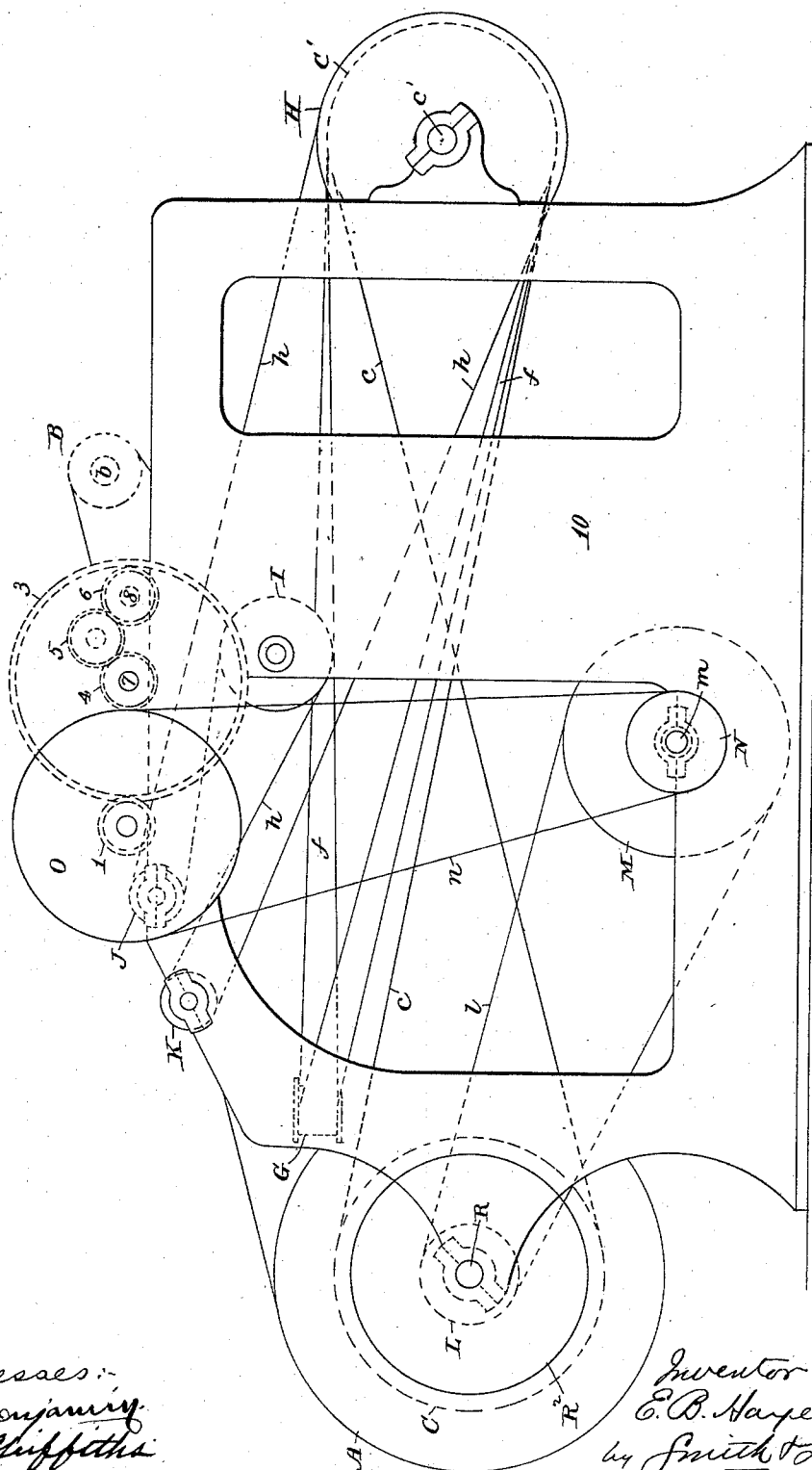
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Fig. 3.



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UNITED STATES PATENT OFFICE.

ELI B. HAYES, OF OSHKOSH, WISCONSIN.

SASH-MACHINE.

SPECIFICATION forming part of Letters Patent No. 476,202, dated May 31, 1892.

Application filed September 4, 1891. Serial No. 404,732. (No model.)

To all whom it may concern:

Be it known that I, ELI B. HAYES, a citizen of the United States, residing at Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Sash-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It is the object of my invention to provide a sash-sticking machine in which the sticking operation will be more accurately and squarely performed by a jointing of the sash while it is on the sticking-table and engaged by the feed mechanism of the sticking devices.

It is a further object of my invention to combine with the sticking devices a grooving and boring mechanism the parts of which are so arranged that a great economy of time and labor is effected and one operator enabled to rapidly supply the sticking devices with sash-rails properly grooved and bored for the sash-cord. By my improvements one operator can thus prepare and supply from thirty to forty lineal feet of sash-stiles per minute.

With such objects in view my improvements consist in the parts and combinations thereof hereinafter more particularly described and claimed.

In order to make my invention more clearly understood, I have shown in the accompanying drawings means for carrying it into practical effect without, however, intending to limit it to the particular construction which, for the sake of illustration, I have delineated.

In said drawings, Figure 1 is a side elevation of a sash-sticking machine embodying my improvements. Fig. 2 is a plan view of the same. Fig. 3 is an opposite side elevation of a portion of the machine, showing more especially the arrangement of the pulleys and belts of the power mechanism. Fig. 4 is a perspective view of a portion of a finished stile. Figs. 5 and 6 are side and plan views of the side roll and its supports. Fig. 7 is a sectional view illustrating an arrangement heretofore used for insuring an arrangement heretofore used for insuring the true or level position of the sash-stile while being stuck.

Referring to the drawings, 10 indicates the main frame of the machine, carrying at or near

the left-hand end (as viewed in Fig. 1) the sticking devices, of which B' is the cylinder; b, the shaft of the latter; B, the driving-pulley, and 12 the work support or table, vertically adjustable by means of a crank S, bevel-gears, (not shown,) and screw-shaft S'. As this portion of the machine may be of any well-known or suitable character and construction, it is sufficient for an understanding of my invention to thus briefly point out its main parts.

13 indicates the feed-rolls of the sticking devices, mounted upon the ends of shafts 7 and 8, which latter are provided with pinions 4 and 6, connected by an idler-pinion 5. The idler-shaft or one of the feed-shafts—in the construction shown the shaft 7—is provided with a gear-wheel 3, which is engaged and driven by a pinion 1. On the shaft of the latter is fixed a pulley O.

14 is a work-table, which in the normal though not necessary position of the machine is level, or substantially so, and which I therefore term the "level table."

15 is a second table at an angle to or inclined relatively to the table 14, and arranged as a continuation thereof and, if desired, formed in one piece therewith. These tables are preferably mounted upon hinges 16, so that they may be readily turned up to expose the cutters or bits beneath, and may be accurately adjusted by one or more set-screws 17.

18 is a side rest or gage having level and inclined portions 19 and 20 for the corresponding tables and adapted to be adjusted and secured in place by a slotted arm 21 and thumb-nut 22 in a well-known manner, according to the thickness of the stile to be operated upon.

23 and 24 are slots or openings through the tables 14 and 15, beneath and projecting through which are cutters or bits 25 26, of which the latter is the wider, carried by shafts j k, which latter are suitably mounted on the frame 10. These shafts are provided with driving-pulleys J K. At 2, in line with the openings 24, the table 15 has another opening, which may be circular, and in line with the latter is mounted on an arbor g a boring-tool g'. Said arbor is arranged at an acute angle relative to the table 15, which will be the case if the arbor is vertical and the table inclined, as shown, and is longitudinally mov-

able, so that the tool g' may be protruded at will, and while in operation, through the opening 2. To permit this movement, the upper end of the arbor is mounted in a bearing 27, in which it can slide vertically, and at its lower end is held in a bearing 28, the upper and lower sides of which are engaged by collars 29, fixed to the arbor, whereby the latter is caused to partake of any vertical movement imparted to the bearing so engaged. This latter bearing is formed with trunnions 30, journaled in the inner arm of a treadle-lever 31. The depression of the outer end of the latter will in an obvious manner cause the tool g' to be protruded through the opening 2.

G is a driving-pulley carried by the arbor g .

P is a stop or gage adapted to arrest a stile which is placed upon the table 15 against the side rest 18 and thrust forward and upward by the operator. This stop is attached to the side rest or other suitable support and projects over the table 14 at such height as to permit the passage of a stile along the level table, though it will engage a stile moving upon and parallel with the inclined table, as above stated.

Q is a similar stop arranged at the inner and left-hand corner of the table 14. It is lower than the stop P and will arrest a stile which is thrust inward in contact with the level table and side rest.

e is an arbor mounted in a bearing e' , carried by the sticking-table 12, and having a driving-pulley E.

32 is a jointing-tool mounted upon the arbor e and slightly projecting through an opening 33, formed in the table in proximity to and a little in advance of the feed-rolls 13.

T is a side roll mounted upon a bracket t on the table 12 and opposite to the side rest or guide formed by the part 34 of the frame 10. By this roll the stile is firmly held against said guide.

x indicates adjustable posts, and x' springs carried thereby, by which the stile is held against the guide 34 after passing the roll T and while operated upon by the sticking devices.

Heretofore a true vertical position of the stile while being stuck has been secured irrespective of any unevenness of its under side by the use of a narrow or V rail, (shown at v in Fig. 7,) by which the stile s has been supported under the pressure of the feed-rolls. The stile has thus been prevented when untrue on the bottom from being caused to conform to the supporting-table 12 and to get out of a true vertical position. The preliminary operation of the grooving-cutters renders this method unavailable. By the use of the jointer 32, however, the stile is trued on its under side, which is made square to the side guide of the work-table 12 just before being engaged by the feed-rolls. The subsequent pressure of the latter keeps the grooved and jointed stile in true vertical position during

the sticking operation and the molding will be stuck square and in the middle of the upper edge of the stile.

The main power-shaft is shown at R and has fast and loose pulleys R' R^2 and other pulleys L, A, and C of various sizes, as indicated. The pulley A is the driver for pulley B of the sticking-cylinder shaft, the pulley C is connected by a crossed belt c with the pulley C' of a counter-shaft c' , and the pulley L drives by a belt l the pulley M of the counter-shaft m . A pulley N on the latter is connected by a belt n with the driving-pulley O of the feed mechanism already described.

The counter-shaft c' has pulleys D F H, the former of which drives by a belt d the pulley E of the jointer. Pulley F is connected by belt f with the driving-pulley G of the boring-arbor. The pulley H is the driver for the grooving mechanism, and to this end has a belt h , which passes over the pulley J, back and around an idler I, mounted on the frame 10, and around the pulley K.

A hand-lever y , extending above the table through a slot y' , serves to operate a clutch of any well-known construction on shaft m , thus controlling the feed-rolls of the sticking devices independently of the grooving and boring mechanism.

The machine being constructed and arranged substantially as shown or in any equivalent manner, the operation is, briefly, as follows: The tables and the stops, gages, or rests of the machine having first been adjusted to the dimensions of the stiles to be operated upon and the power mechanism and the various operating parts of the machine hereinbefore described being in motion, the operator thrusts a stile along and in contact with the table 15 and side rest 18 until it is arrested by the stop P. As this is done the cutter 26 plows the wide groove 35, Fig. 4, for the proper distance in the bottom edge of the stile. This groove is designed to loosely hold the sash-cord. The operator then depresses the treadle 31, causing the bit g' to bore an inclined hole 36 into the stile at a short distance from the end of the groove 35. This hole is for the purpose of receiving the knot of the sash-cord, and its inclination, together with the pull of the cord, keeps the knot at the inner end of the hole. The outer end of the stile is then raised until its inner end is below the stop P, (see the dotted lines in Fig. 1,) whereupon it is thrust forward along and in contact with the table 14 and side rest 18 until arrested by the stop Q. In this movement the stile passes over the narrow cutter 25, which plows the narrow groove 37 therein, connecting the wide groove 35 and the hole 36 and adapted to tightly hold the sash-cord and prevent the knot thereof from passing. The stile is then moved laterally to the sticking-table 12 and passed between the roll T and guide 34 and forward under the feed-rolls 13. During this movement the under

side of the stile is squared relative to the table 12 by the jointer 32, which planes off a portion of the stile. The latter then passes on to the sticking devices, meaning thereby the holding and cutting instrumentalities by which the molding is formed on the upper edge of the rail. I am thus able to perform all of the operations necessary in producing a stile of the character shown in Fig. 4 with great rapidity and saving of labor, and, moreover, the finished stile is more perfect and square and the sticking more firmly and solidly applied.

What I claim is—

1. In a sash-sticking machine, the combination, with the sticking devices, the work-support opposite the latter, and the feed-rolls, of a side guide for the work and a jointer at right angles thereto situated in advance of the front feed rolls and on the same side of the work as said support and opposite to the sticking cylinder or cutter, substantially as set forth.

2. In a sash-sticking machine, the combination, with the sticking devices, the grooving-cutters, the work-support opposite the sticking-cutter head, and the feed-rolls, of a jointer situated in advance of and opposite to the feed-rolls and operating on the edge or side of the work next said support and opposite that on which the molding is stuck, substantially as set forth.

3. In a sash-sticking machine, the combination, with the sticking devices, the grooving-cutters, and the boring-arbor, of a jointer situated between said cutters and the sticking devices and a work-supporting table on the same side of the work as the jointer and opposite the sticking-cutter, substantially as set forth.

4. In a sash-sticking machine, the combination, with the sticking devices and an under-jointer in advance of the latter, of the grooving-cutters of different widths, separate arbors carrying said cutters, a boring-arbor, and an inclined table above said arbor, substantially as set forth.

5. In a sash-sticking machine, the combination of a level table having a grooving-cutter and stop, an inclined table in continuation of the first table, a stop and grooving-cutter for the inclined table, and a boring-arbor arranged at an angle to the latter, substantially as set forth.

6. In a sash-sticking machine, the combination of a table having a grooving-cutter, and a second table inclined or at an angle to the first table and in continuation thereof, and an independent cutter for the second table, substantially as set forth.

7. The combination, with the sticking devices and feed-rolls, of a work-table adjustable toward and from the same, and a side guide for the work, and a jointer mounted on said table in advance of and in proximity to the foremost of said rolls and operating on the side of the work next the table, substantially as set forth.

8. In a sash-machine, the combination of a narrow grooving-cutter, a boring-bit, a wide grooving-cutter situated between said narrow cutter and bit, and a work-support having its parts which hold the work for said cutters respectively in different planes transverse to the cutters, substantially as set forth.

9. The combination, with the level and inclined tables 14 15, of the stops P and Q, one for each of said tables, and the grooving-cutters 25 and 26 under said tables, respectively, substantially as set forth.

10. The combination, with the level and inclined tables 14 15, of the stops P and Q, one for each table, the grooving-cutters 25 and 26 under said tables, respectively, the jointer 32, the feed-rolls, the sticking devices, and a work support or table 12 over said jointer and opposite the feed-rolls and sticking-cutter, substantially as set forth.

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

ELI B. HAYES.

Witnesses:

F. C. STEWART,
THOS. E. ALLEN.