No. 782,342. PATENTED FEB. 14, 1905.

V. T. & C. JOHNSON.

MATCHING AND GLUING MACHINE.

APPLICATION FILED OCT. 13, 1904.

4 SHEETS—SHEET 1.

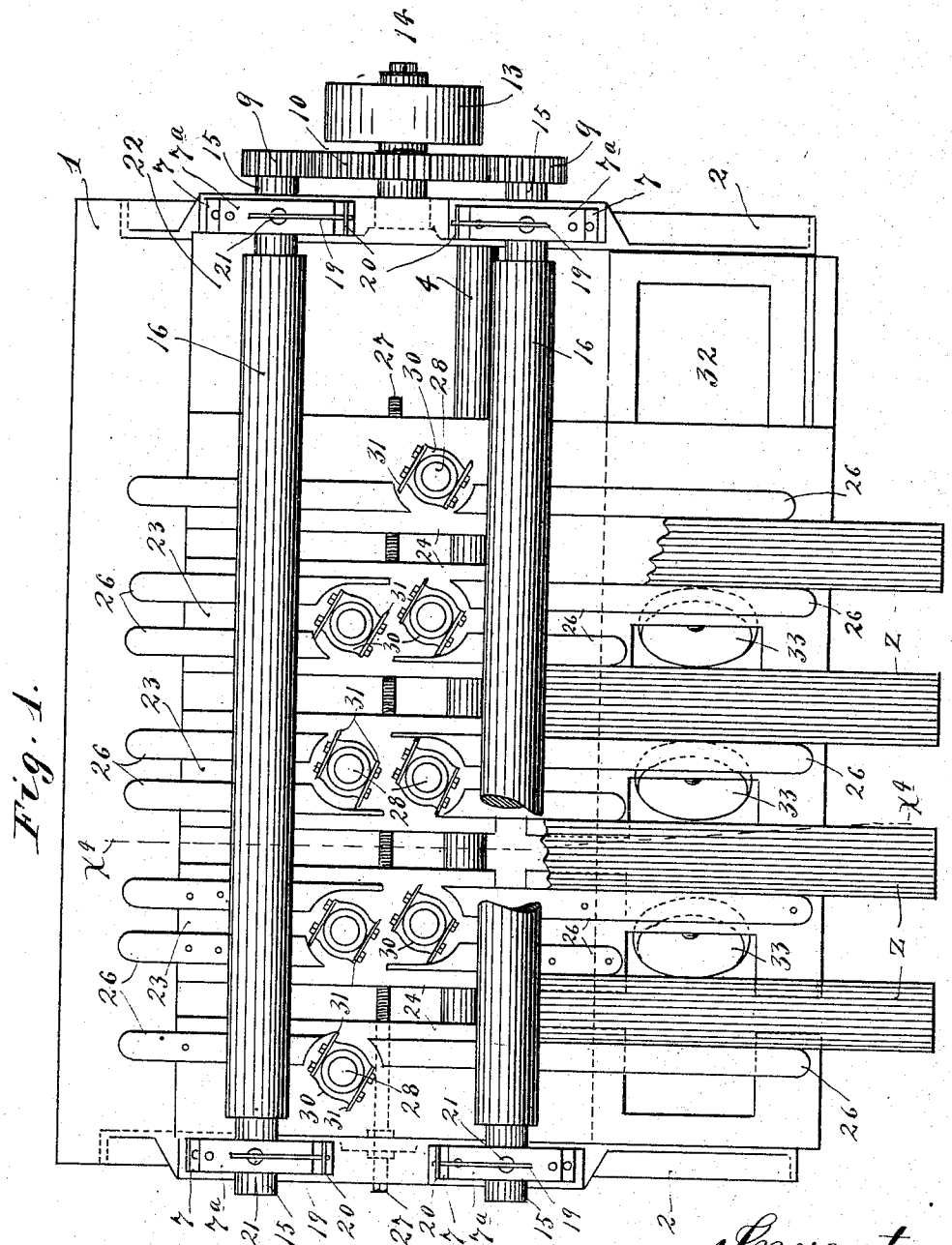


Fig. 1.

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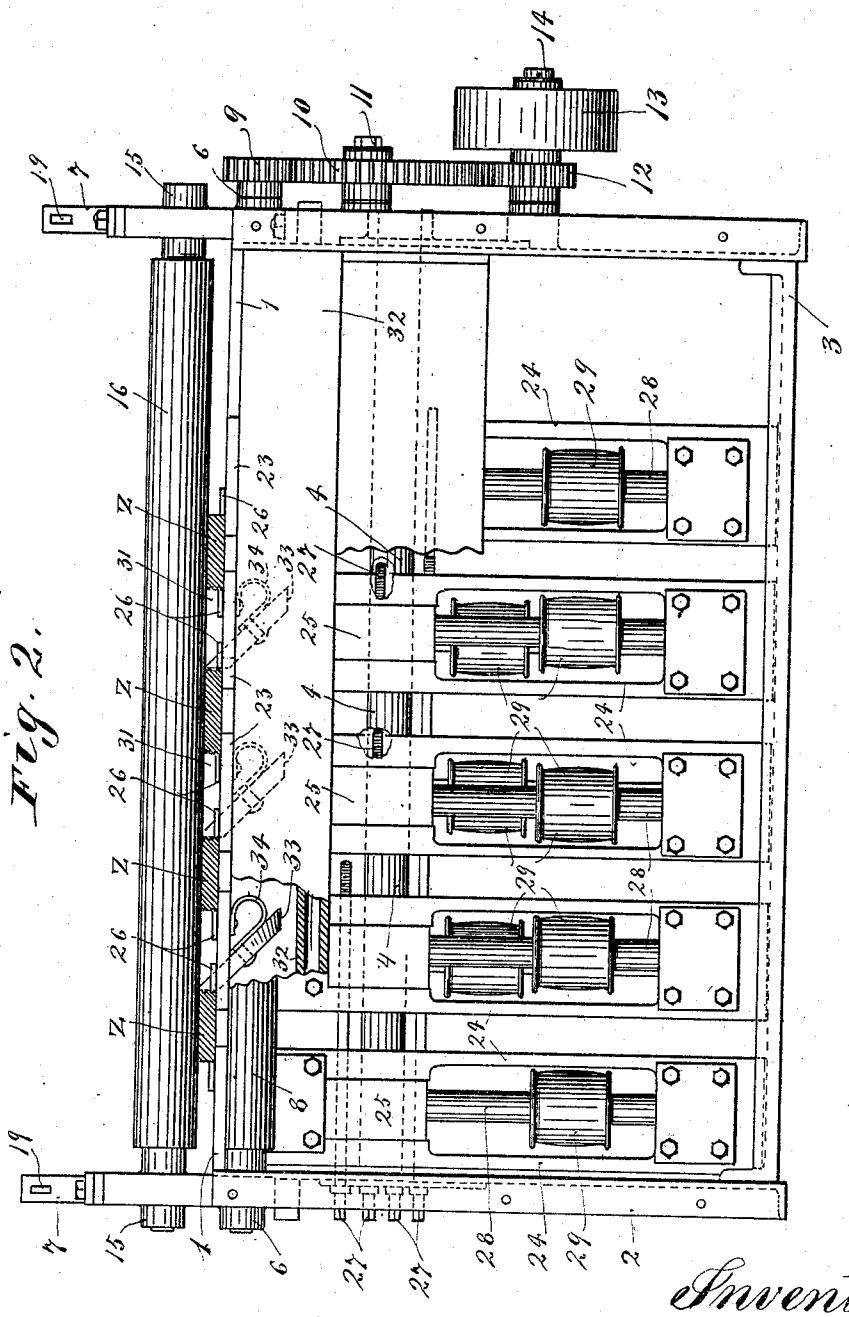


Fig. 2.

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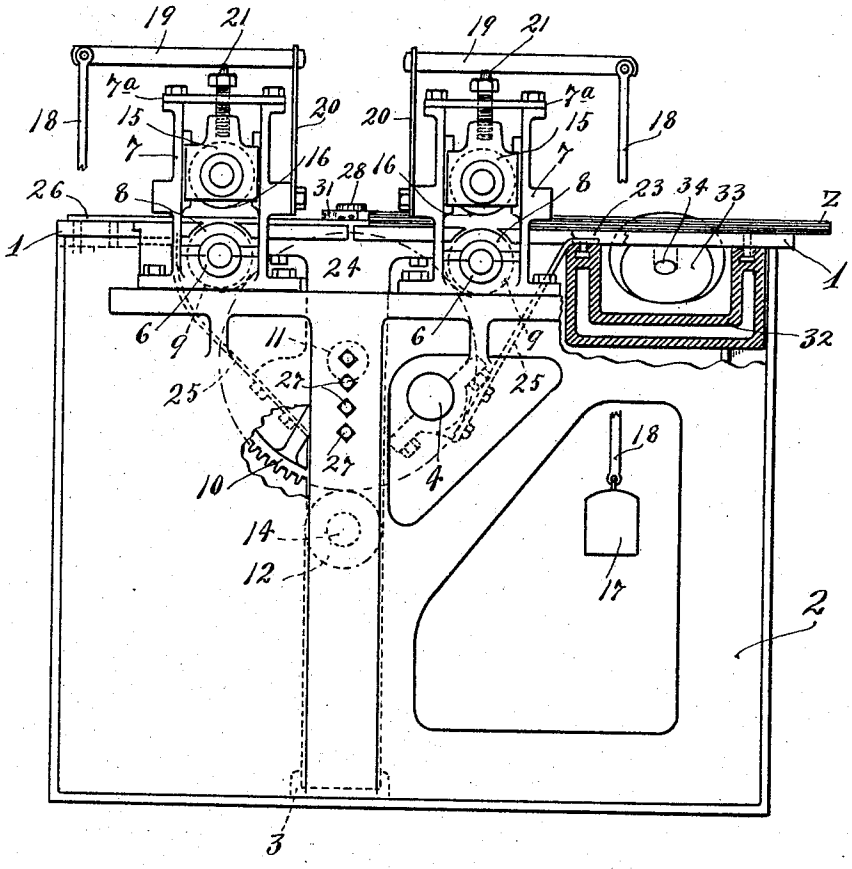
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 5.

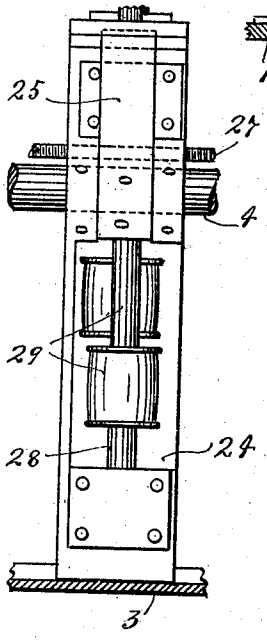


Fig. 4.

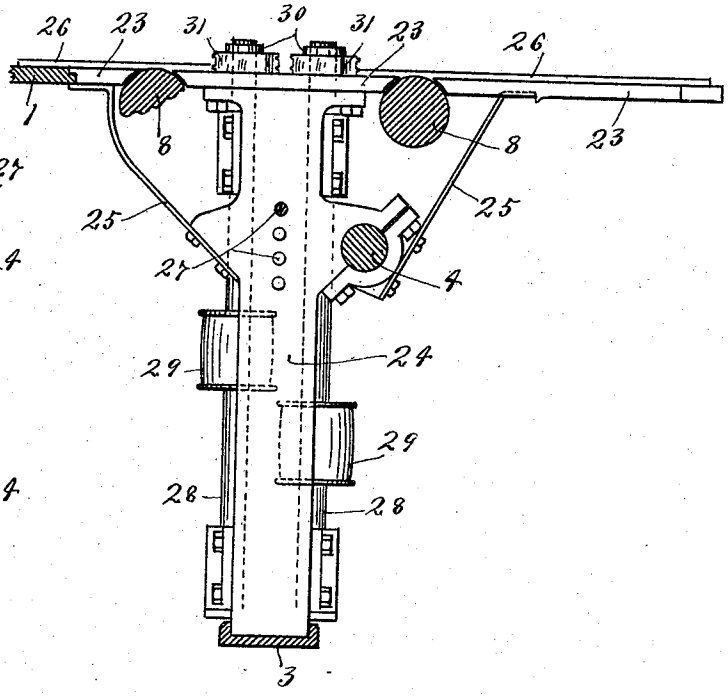
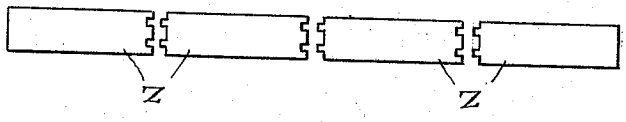


Fig. 6



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UNITED STATES PATENT OFFICE.

VICTOR T. JOHNSON AND CHARLES JOHNSON, OF MINNEAPOLIS, MINNESOTA.

MATCHING AND GLUING MACHINE.

SPECIFICATION forming part of Letters Patent No. 782,342, dated February 14, 1905.

Application filed October 13, 1904. Serial No. 228,267.

To all whom it may concern:

Be it known that we, VICTOR T. JOHNSON and CHARLES JOHNSON, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Matching and Gluing Machines; and we do hereby 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.

Our present invention has for its object to provide an improved matching and gluing machine for simultaneously grooving the edges of a plurality of wooden strips and for applying glue to the same.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The mechanism herein disclosed and claimed is also disclosed in our prior application, Serial No. 223,347, filed of date September 6, 1904, and entitled "Box-lumber machine."

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a plan view of the improved machine, some parts thereof being broken away. Fig. 2 is a rear elevation of the machine with some parts broken away and with some parts sectioned. Fig. 3 is a right side elevation of the machine with some parts sectioned and with some parts broken away. Fig. 4 is a detail in vertical section, taken from front to rear of machine, approximately on the line x^4 x^4 of Fig. 1. Fig. 5 is a rear elevation of the parts shown in Fig. 4, some parts being broken away; and Fig. 6 is a view in end elevation, showing several boards formed with tongue and grooves by the use of our improved machine.

A horizontally-disposed feed-table 1 is rigidly supported by a pair of laterally-spaced side frames 2, which, as shown, are rigidly tied together by said feed-table, by a lower channel-bar 3, and by an intermediate guide-rod 4. To the upper portions of the side frames 2 are bolted or otherwise rigidly secured roller-bearings 6 and vertical guide-brackets 7.

Mounted in the bearings 6 and extending transversely of the machine with their upper surfaces projecting slightly above the upper surface of the feed-table 1 is a pair of bed-rollers 8, the shafts of which project at one end and are provided with spur-pinions 9. The pinions 9 mesh with a spur-gear 10, that is loosely journaled on a stud 11, projected outward from one side of the frame 1, as best shown in Fig. 2. This gear 10 meshes with a driving-pinion 12, which is connected on a common sleeve with a driving-pulley 13, and which sleeve is loosely journaled on a stud 14, projected outward from and rigidly secured to the adjacent side of the frame 1. Motion is imparted to the running parts of the machine through a power-driven belt, (not shown,) but which will run over the pulley 13.

Working vertically in the bearing-brackets 7 are bearing-boxes 15, in which are loosely journaled press-rollers 16, one of which overlies each of the bed-rollers 8. The press-rollers 16 are forced downward under increased pressure by weights 17, as shown, applied to the lower end of rods 18, connected to levers 19, which levers, as shown, are fulcrumed to straps 20, anchored to the bearing-brackets 7. At their intermediate portions the levers 19 press set-screws 21, which, as shown, are loosely passed through upper bars 7^a of the brackets 7 and are screwed into the bearings 15.

The feed-table 1 is cut away at its intermediate portion, as shown at 22, to afford clearance for a plurality of horizontally-disposed pedestal-heads 23, which heads lie in the same plane as the said table and are themselves formed in sections rigidly attached to the upper ends of bearing-pedestals 24. The said pedestals 24 are mounted for sliding adjustments transversely of the machine on the heavy guide-rod 4, and at their lower ends they work in and are guided by the channeled tie-bar 3, already noted. The intermediate sections of the pedestal-heads 23 are directly and rigidly secured to the respective pedestals, while the forward and rear sections thereof

are rigidly secured to said pedestals by arms 25. The sections of the pedestal-heads are cut away or spaced apart so as to permit the upper portions of the bed-rollers 8 to project slightly above the upper surfaces thereof, as best shown in Fig. 4.

Rigidly secured to the pedestal-heads 23 and extending longitudinally of the machine are board-guiding cleats 26, which are properly spaced to guide the board strips *z* to the groove-cutters presently to be described.

The several pedestals 24, except the one at the extreme right with respect to a person standing and feeding boards to the machine, or with respect to the left as the machine is viewed in Figs. 1 and 2, are adapted to be adjusted transversely of the machine and to be held where set, so as to adapt the machine for action on board strips of various different widths. Preferably this is accomplished by means of transversely-extended screw-rods 27 of different lengths and of which there is one for each adjustable pedestal—to wit, as shown, four. These screw-rods are swiveled in the left-hand side of the frame 2, as viewed in Figs. 1 and 2, so that they cannot move endwise, and each rod has screw-threaded engagement with one, but only with one, of the said adjustable pedestals. The pedestal at the extreme left with respect to Figs. 1 and 2 may be and is treated as stationary, and hence all of the screw-rods pass therethrough; but none thereof have screw-threaded engagement therewith. At their outer ends the screw-rods 27 are provided with squared shanks to which a wrench may be applied to turn them.

The two outer pedestals 24 carry vertically-disposed spindles 28, and each of the intermediate pedestals carry two of such spindles, marked also with the numeral 28. These spindles carry pulleys 29, over which a power-driven belt or belts (not shown) run to impart rotary motion to said spindles. At their upper ends above the pedestal-heads 23 the spindles 28 are provided with cutter-heads 30, that carry tongue-and-groove-cutting knives 31. The cutter-heads on the spindles of the intermediate pedestals are offset transversely of the machine, so that the knives carried by one thereof will operate on the edge of a strip *z* on one side of the pedestal, while the knives of the other head operate on the edge of a strip *z* which is on the opposite side of a pedestal, as best shown in Fig. 1. The knives 31 are so formed in this preferred arrangement that they will cut double tongue-and-groove joints on the adjacent edges of the strips *z*, as best shown in the detail view Fig. 6.

Supported by the frame 2 and extending transversely of the machine at the rear of the cutter-heads is a trough-like glue-pot 32, which is preferably steam-jacketed. In the construction illustrated this trough also rigidly ties together the sides of the frame 2.

Working in the liquid glue contained within the glue-pot 32 is a plurality of inclined rotary wheels 33, formed with beveled edges, so that the upper portions of these beveled edges extend tangentially to imaginary vertical planes running longitudinally of the machine. This arrangement adapts the wheels to completely cover the edges of the engaged strips *z* with glue and at the same time to have the lower edges submerged in the liquid glue contained within the pot 32. Said wheels are journaled on yielding supports shown in the form of U-shaped springs 34, the upper ends of which are rigidly attached to the over-line rear sections of the pedestal-heads 23. The spring-supporting arms 34 keep the wheels pressed against the edges of the strips *z* under a yielding pressure which is sufficient to cause the wheels to rotate as the strips are forced rearward. The peripheral portions of said wheels may be of any suitable material, such as felt or bristles, or may even be smooth. In the machine illustrated there are three glue-wheels, and the supports 34 therefor are applied to the pedestal-heads of the three intermediate pedestals, so that the said wheels are adjustable laterally or transversely of the machine with the intermediate pedestals, and hence are always positioned for proper action on the strips *z*.

From the foregoing description and statements made the action of the machine in forming the tongue-and-groove joints on the board strips will be understood. It will of course be understood that the boards are fed past the tongue-and-groove cutters and past the glue-brushes by the action of the bed-rollers 8 and coöperating press-rollers 16. The strips may be fed to the said rollers either by hand or by feed mechanism, but would preferably be fed thereto by a feed mechanism of the character set forth and claimed in our pending application above identified and in the pending application of Victor T. Johnson, Serial No. 184,750, filed December 11, 1903, entitled "Machine for feeding boards." Also the boards or strips after they have been formed with tongues and grooves and have had glue applied thereto are preferably pressed together to form a complete composite board by a "squeezing mechanism," such as that set forth and claimed in our joint pending application above identified. Machines of this character are, as is well understood, especially adapted for making what is known as "box-lumber."

From what has been said it will be understood that the machine described is capable of modification within the scope of our invention as herein set forth and claimed.

What we claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a machine of the character described, the combination with a plurality of transversely-adjustable pedestals, and cutters carried thereby, of a plurality of glue-wheels and

means for imparting simultaneous and similar movements transversely of the machine to said pedestals, cutters and glue-wheels whereby operative relation between the same is maintained, substantially as described.

2. In a machine of the character described, the combination with a plurality of transversely-adjustable pedestals, and tongue-and-groove cutters mounted on said pedestals, of glue-wheels mounted on parts carried by said adjustable pedestals whereby they are adjusted transversely of the machine, with said pedestals and cutters, and a glue-pot in which said glue-wheels work, substantially as described.

3. In a machine of the character described, the combination with a feed-table and coöperating feed-rollers, of a bevel-edged inclined rotary glue-wheel for applying glue to the strips fed by said rollers, a spring-support for said glue-wheel, and a glue-pot in which said wheel works, substantially as described.

4. In a machine of the character described, the combination with a feed-table and feed-rollers, of a plurality of transversely-adjustable pedestals, tongue-and-groove cutters carried by spindles mounted in said pedestals, and a plurality of rotary glue-wheels connected to the adjustable pedestals by yielding supports, substantially as described.

5. In a machine of the character described, the combination with a feed-table and feed-rollers, of a plurality of transversely-adjustable pedestals, spindles mounted in said pedestals, tongue-and-groove cutters carried by said spindles, a plurality of inclined rotary glue-wheels mounted on supports carried by said adjustable pedestals, and a common glue-pot, extended transversely of the machine and in which the several glue-wheels work, substantially as described.

6. In a machine of the character described, the combination with a plurality of transversely-adjustable pedestals, guides for the board strips on the heads of the pedestals, tongue-and-groove cutters having spindles mounted in said pedestals, and glue-wheels carried by said pedestals, whereby operative relation is maintained between said guides, said cutters and said wheels, under all adjustments of said pedestals, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

VICTOR T. JOHNSON.
CHARLES JOHNSON.

Witnesses:
R. C. MABEY,
F. D. MERCHANT.