(No Model.) 7 Sheets—Sheet 1.

W. F. LARISH.

JOINTING AND SANDING MACHINE.

No. 484,639. Patented Oct. 18, 1892.

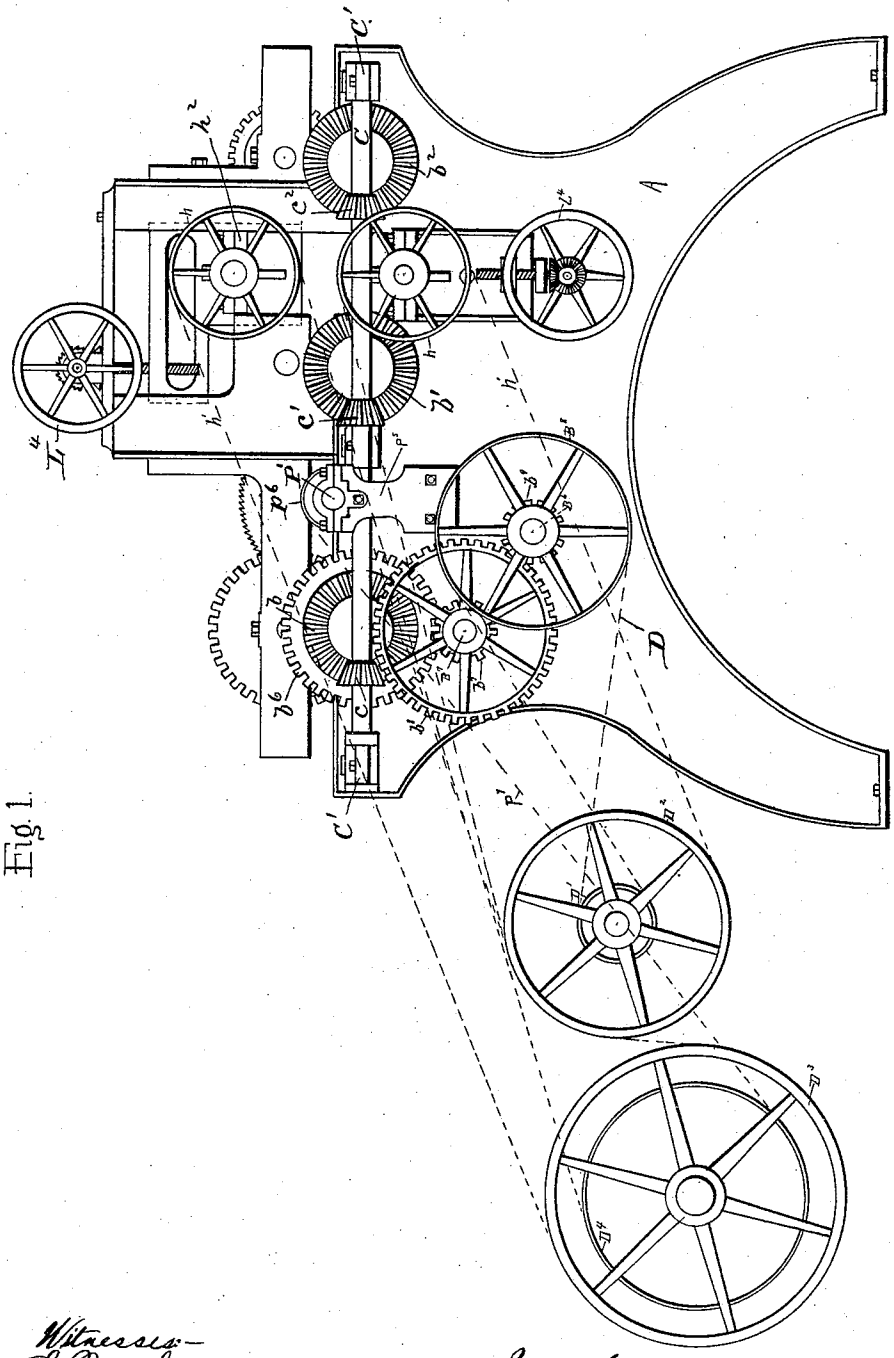

Fig. 1.

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Fig. 2.

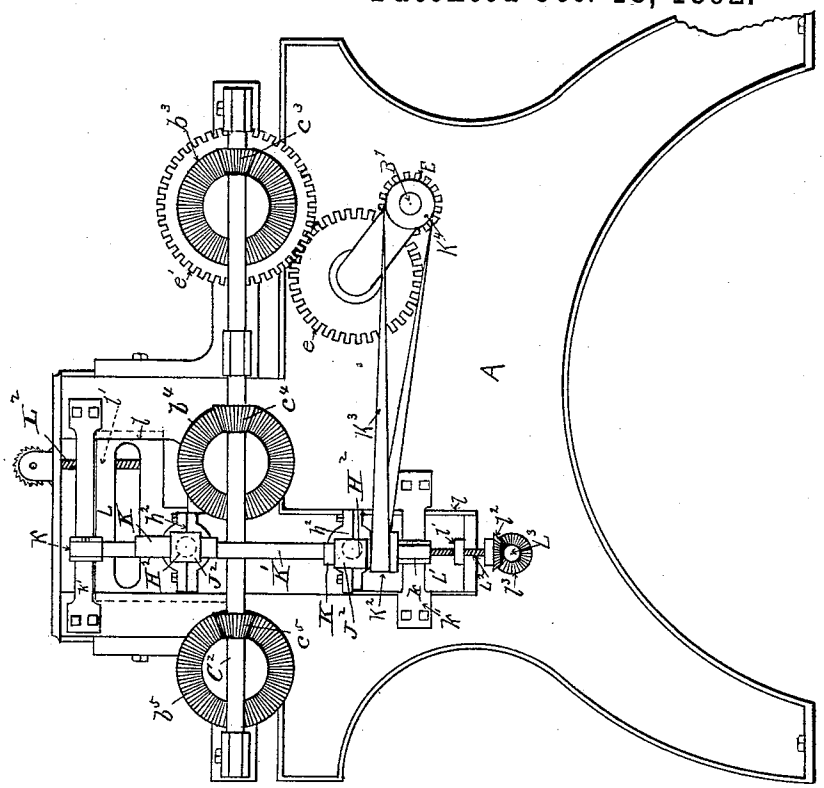
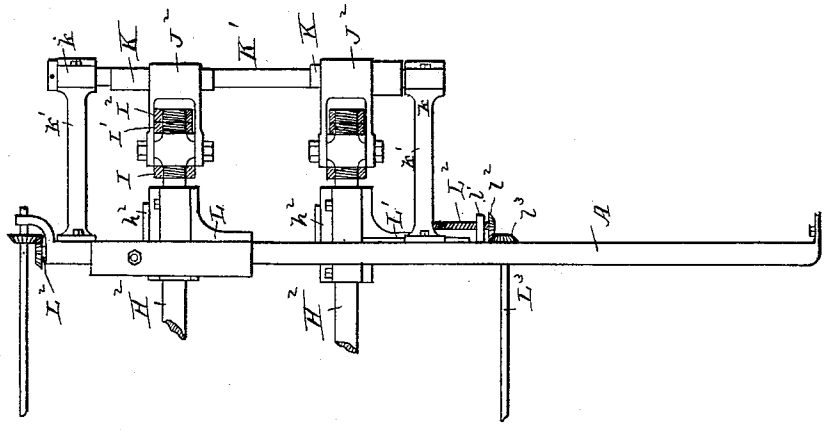


Fig. 3.



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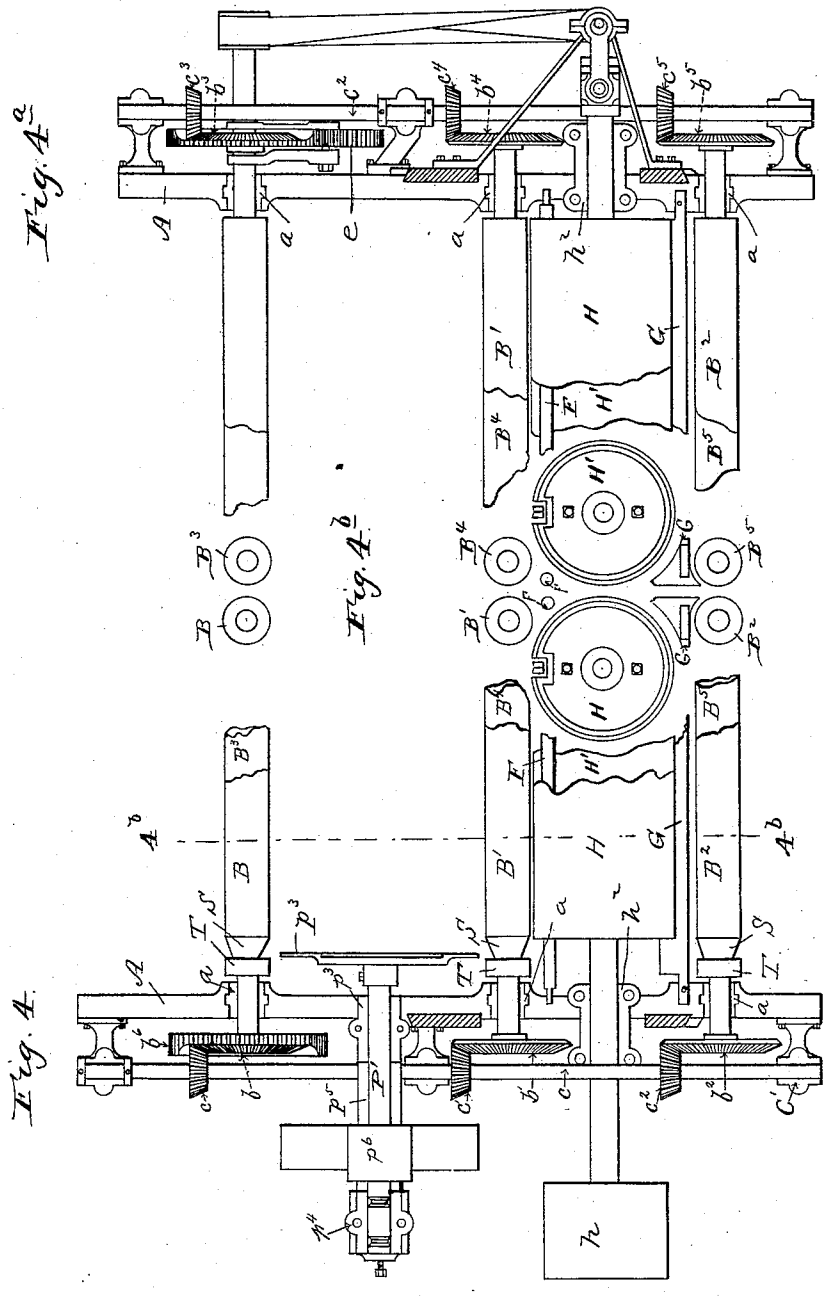

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Fig. 7.

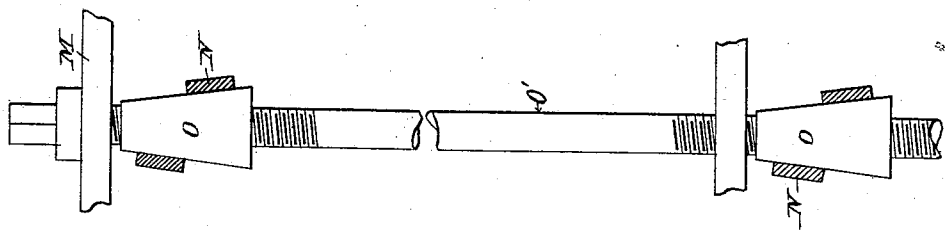
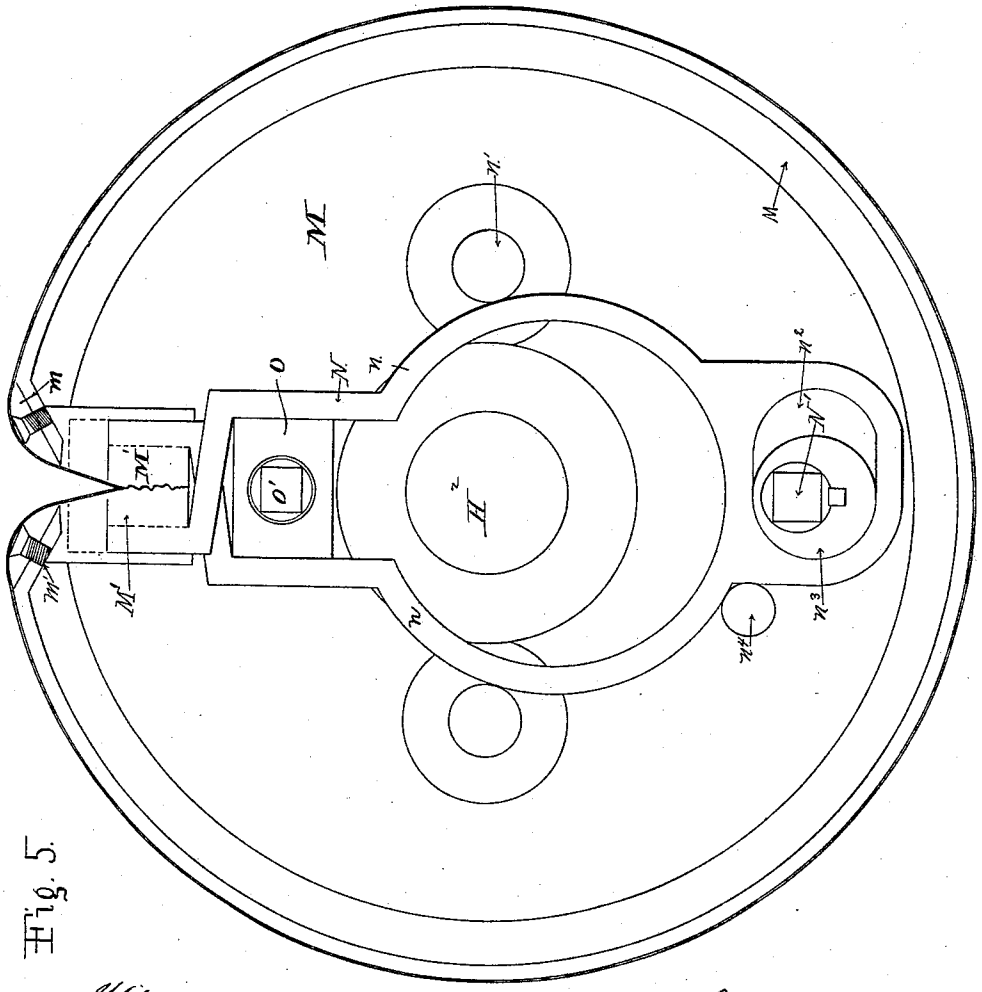


Fig. 5.



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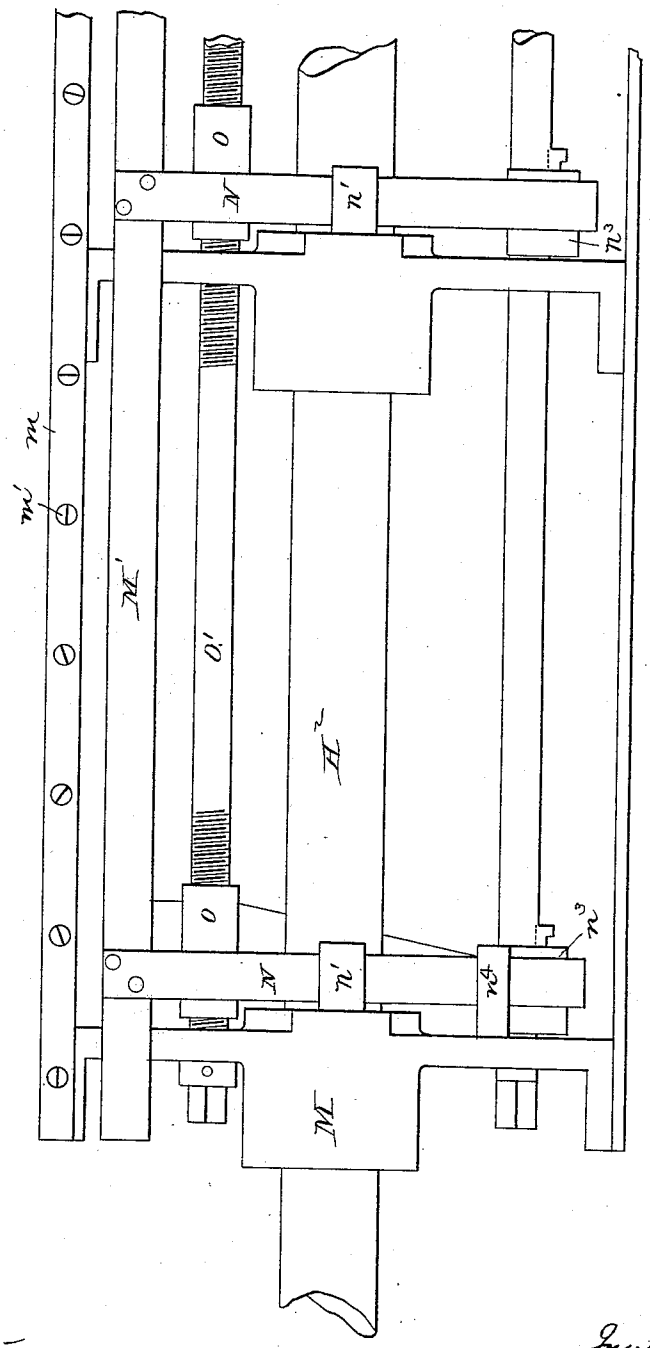

Fig. 6.

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JOINTING AND SANDING MACHINE.

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Fig 9

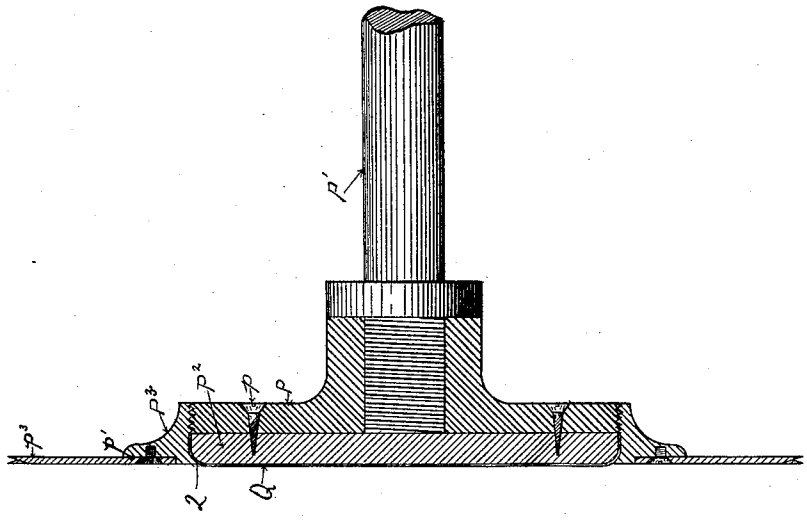
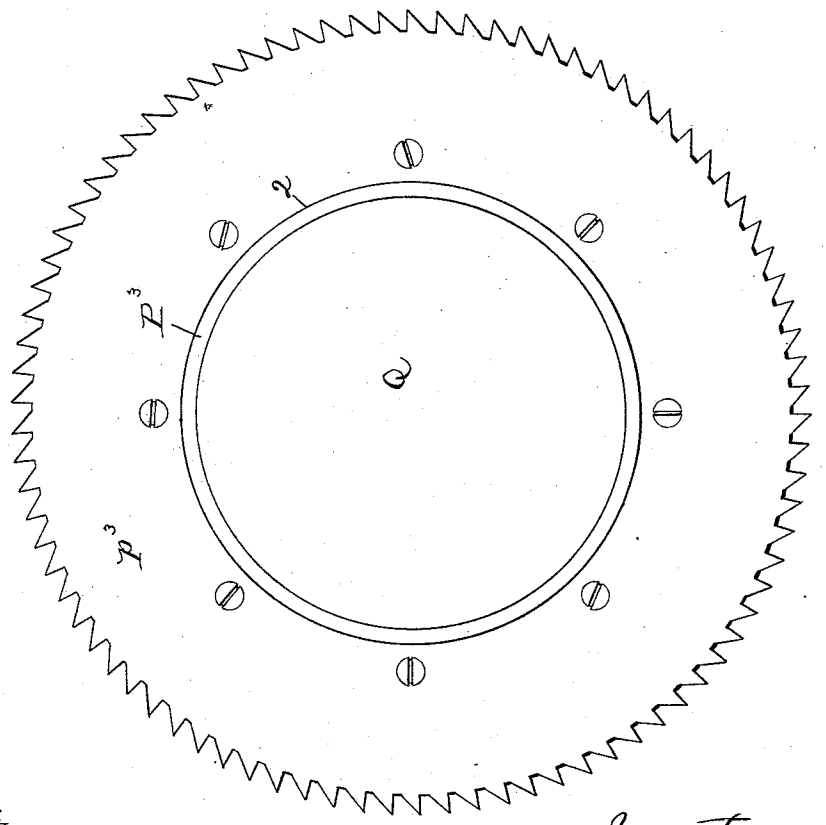


Fig. 8.



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W. F. LARISH.

JOINTING AND SANDING MACHINE.

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Fig. 10.

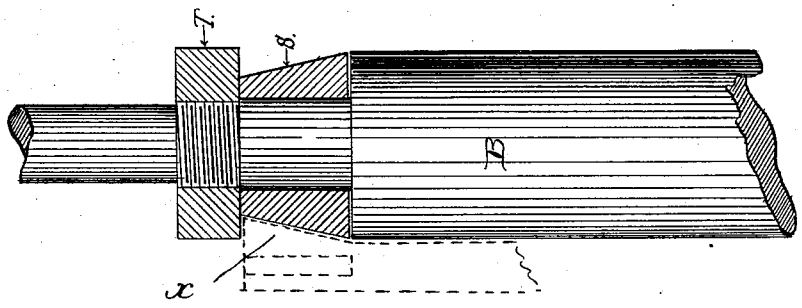


Fig 11

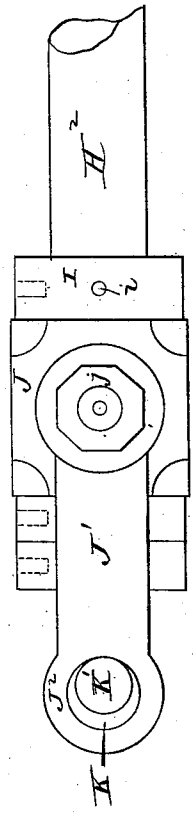
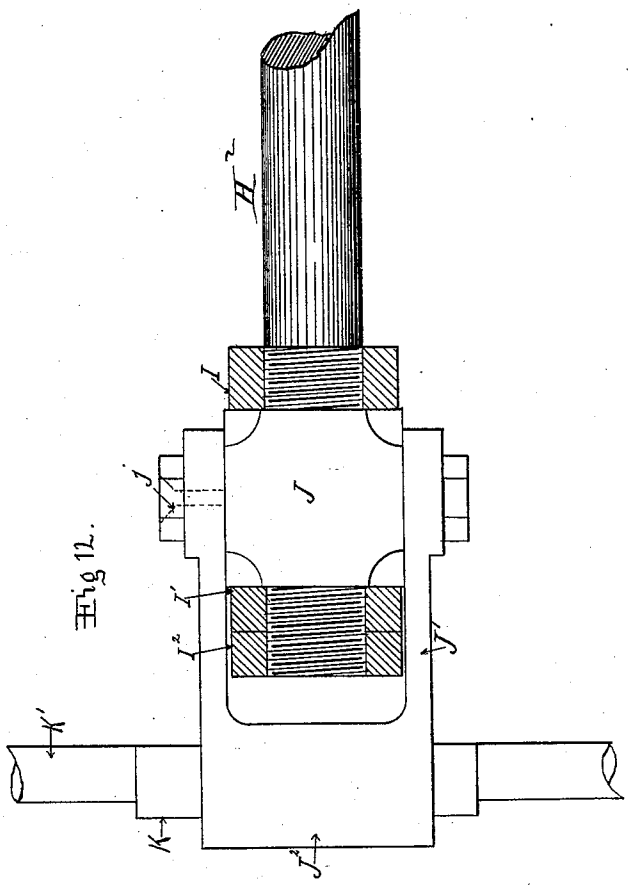


Fig 12.



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UNITED STATES PATENT OFFICE.

WILBUR F. LARISH, OF OSHKOSH, WISCONSIN.

JOINTING AND SANDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 484,639, dated October 18, 1892.

Application filed April 22, 1891. Serial No. 389,988. (No model.)

To all whom it may concern:

Be it known that I, WILBUR F. LARISH, 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 Jointing and Sanding 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.

My invention is directed to the production of a machine for sanding and jointing, especially adapted for use in the manufacture of blinds, sash, &c., in which the operations of shaping and finishing the various surfaces of the rails shall be performed with the greatest possible rapidity and completeness, my invention being directed to the simplification of the various parts of the machine, with a view of securing cheapness and durability of construction, and to such arrangement of the operating devices of the apparatus as will enable as many surfaces as possible of the article being manufactured to be shaped and finished at a single passage of the article through the machine. These being the general aims of my improvement, it consists in the parts and combination thereof hereinafter more particularly set forth and claimed.

In order to enable the invention to be more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect without, however, intending to limit myself in the application of my invention to the particular construction, which, for the sake of illustration, I have shown and am about to describe.

In said drawings, Figure 1 is a side elevation of a sanding and jointing machine embodying my invention. Fig. 2 is a similar elevation from the opposite side of the machine. Fig. 3 is an elevation at right angles to Fig. 2, showing a portion of the devices illustrated in the latter figure. Fig. 4 is a plan view, partly in section, of one side or half of the machine. Fig. 4^a is a similar view of the other half of the machine. Fig. 4^b is a sectional view on line 4^b 4^b, Fig. 4. Fig. 5 is an end view of one of the sanding-drums. Fig. 6 is a front view of its frame. Fig. 7 is a view of the longitudinal clamp-operating rod of the drum. Fig. 8 is a side or face view of the combined jointing-saw and sand-head. Fig. 9 is a sectional view of the same. Figs. 10, 11, and 12 are detail views of parts of the machine hereinafter more particularly referred to and described.

Referring to the drawings, A indicates the main frame of the machine, provided with suitable brackets and bearings for the various shafts and moving parts.

The rails are held and fed to the operating devices by the following means: B B′ B^2 are the upper feed-rolls supported in bearings *a* in the frame A, and below them are similarly mounted the bottom feed-rolls B^3 B^4 B^5. The projecting journals of the lower feed-rolls are provided at one side of the machine, Fig. 1, with bevel gear-wheels *b* *b′* b^2, engaged by bevel-pinions *c* *c′* c^2. The latter are fixed upon a longitudinal shaft C, mounted in suitable bearings C′ and extending in a direction parallel with the side of the machine. By this shaft all the lower feed-rolls are simultaneously rotated in the same direction. The bevel-gear *b* is provided with a spur-toothed crown b^6, which is engaged by a spur-pinion b^7, mounted on a transverse shaft B^7, which extends to the opposite side of the machine. This shaft is also provided with a spur-gear b^8, engaged by a pinion b^9 on the pulley-shaft B^6. The pulley B^8 of this shaft receives motion from a belt D, running from any suitable motor, such as the pulley D′. The end of the shaft B^7 at the other side of the machine, Fig. 2, is provided with a spur-pinion E, which operates, through an intermediate gear *e*, the spur-crown *e′* of one of the bevel-gears b^3 of the top feed-roll. A shaft C^2, provided with bevel-pinions c^3 c^4 c^5, engaging the bevel-gears b^3 b^4 b^5 of the top feed-rolls, transmits motion from the gear b^3 to all of the top feed-rolls, so as to rotate them simultaneously in the same direction, but in an opposite direction to that of the movement of the lower feed-rolls. The proper and uniform motion of all the feed-rolls is thus secured in a very simple and effectual manner and with the minimum amount of gearing and shafting. F indicates two steady rolls of small diameter situated between the feed-rolls B′ B^4 and the sanding-drums for the purpose of preventing vibration in the rails being operated upon. G

indicates two pressure-bars situated upon the opposite sides of the sanding-drums from the rolls F and adapted to receive the rail as it passes out from between the drums. The top and bottom sand-drums are shown at H H'. They are mounted in suitable bearings h^2, and are situated between the feed-rolls B' and B^2. At one side of the machine, Fig. 1, their projecting journals are provided with pulleys h, from which belts h' are run to any suitable source of power—such, for instance, as the pulleys D^2 D^3—by which the sand-drums are driven at the necessary degree of speed. In order that the action of the said drums may be more efficient, I have provided them with an improved reciprocating means, whereby while their rotation is not interfered with they are moved longitudinally of their axes from side to side of the machine.

Referring more particularly to Figs. 2, 3, 11, and 12, H^2 indicates the journal of one of the sand-drums, which is provided with a screw-thread, Fig. 12, and with nuts I I', engaging said thread. These nuts are preferably round and provided with openings i, adapted to be engaged by a suitable spanner for the purpose of adjusting the nuts upon the shaft H^2. One or more jam-nuts I^2 may also be provided. J is a bearing encircling the shaft H^2 between the nuts I I', which latter fit neatly against the faces of the said bearing. It will be seen that any motion of the bearing J in a direction parallel with the axis of the sand-drum shaft will impart a similar motion to the drum without interfering with its rotary movement. It will also be seen that the position of the drum relative to the bearing J may be adjusted by turning the nuts I I'. The described motion is imparted to the bearing J by means of a yoke J', which is joined to the bearing by means of pivot or trunnion bolts j, and which is provided at its outer end with a bearing or sleeve J^2, encircling an eccentric or cam K, Figs. 11 and 12. This cam is formed with or attached to a vertical shaft K', which is mounted in bearings k, supported by brackets k' from the frame A. The small pulley K^2 upon the shaft K receives motion from a belt K^3, which is driven in any suitable manner, preferably from a pulley K^4 on the feed-shaft B^7. The description thus given of the means for reciprocating one of the sand-drums will apply to both.

It will be seen that the reciprocating mechanism above described is consistent with the necessary vertical adjustment of the sand-drums. To this end the sleeve J^2 and eccentric K have, one or both, such vertical extension as to permit of considerable vertical adjustment of the sleeve without disengaging the latter from the eccentric. The bearings h^2 for the sand-drum journals are mounted or formed, respectively, in upper and lower slides L L', vertically movable in guideways l, formed in the frame A. These slides are provided with screw-threaded lugs or bearings l', which are engaged by screw-shafts L^2, which are mounted upon the frame A in such manner as to be rotary but longitudinally immovable, and are further provided with miter-gears l^2. The latter are engaged by corresponding gears l^3, mounted on through-shafts L^3. Similar devices are provided at the other side of the machine, Fig. 1, for operating the sand-drum bearing-slides there situated, with the addition of hand-wheels L^4, by which the shafts L^3 can be rotated. It will be seen, therefore, that by one of these hand-wheels the bearings at both ends of the lower sand-drum may be simultaneously adjusted and that by the other hand-wheel the upper sand-drum may be adjusted independently of the lower drum.

Referring now to the detail construction of the sand-drums, and in connection therewith to Figs. 5, 6, and 7, M indicates the heads of the drum, provided with suitable central hubs, by which they are mounted upon the shaft H^2. m indicates the edge rails secured in place upon the drum by screws m', over which the sandpaper is drawn. A space is left between these rails, through which the ends of the paper pass and enter between the clamping-bars M', which extend longitudinally of the sand-drum and pass through openings which are provided for them in the heads M. At each end of the drum these bars are attached to and supported by springs N of the peculiar shape shown best in Fig. 5. The free ends of each spring cross each other and are adapted to be forced apart by a wedge-shaped nut O, which is engaged by a longitudinal screw-threaded rod O', Fig. 7, thus causing the bars M' to seize the ends of the sandpaper. The inner faces of the bars are preferably corrugated, as shown, in order to increase the security of their hold. At each side the spring is provided with cam-shaped portions n, adapted to bear against pins n', secured in the head of the drum. At its closed end the spring is formed with a slot n^2, engaged by a cam or eccentric n^3, which is mounted upon a through-shaft N'. By turning the latter shaft the spring is moved bodily toward the rails m, and at the same time, by the engagemen of the portions n with the pins n', the legs of the spring are forced inward and the bars M' separated. If now the paper be placed upon the drum and its ends introduced between the rails m and bars M', said ends may be firmly grasped by turning the rod O' and causing the wedge-shaped nut O to move longitudinally between the legs of the spring. By now turning the shaft N' the action of the eccentric n^3 in the slot n^2 will draw the spring bodily away from the rails m and stretch the paper tightly over the surface of the drum.

n^4 is a stop-pin, which arrests the movement of the spring at the proper time. A similar spring to that above described is provided at the opposite end of the sand-drum, and so many intermediate springs as are rendered necessary by the length of the drum,

and the rod O′ and shaft N′ are provided, respectively, with a nut and cam for similarly operating upon such second spring or springs. I prefer, also, to employ two intermediate springs N between the heads of the drum.

In order to enable the rail-saw to finish one of the surfaces of the rail at the time of the sawing operation, I construct the saw substantially as shown in Figs. 8 and 9, with an opening 2, which is preferably circular or continuous. P is a flange screwed or otherwise suitably secured to the saw-arbor P′ and provided with a wooden face-plate P^2, secured to the flange by screws p. P^3 is an internally-screw-threaded collar or ring engaging a corresponding external thread upon the periphery of the ring P and extending to a plane about flush with the face of the said wooden plate. On this latter plane the ring is provided with a circumferential rabbet p', in which fits and is suitably secured the annular saw p^3. The sandpaper is shown at Q and is in the form of a disk covering the wooden face-plate P^2 and having its edge secured between the same and the inner surface of the ring P^3. It will be readily seen that the paper may be secured or released by turning the ring upon the screw-thread by which it engages the flange P.

When the parts are in proper position for operation, the sandpaper Q is not quite flush with the surface of the saw, but projects slightly therefrom and will operate upon the material as it is sawed in an obvious manner. The saw-arbor is mounted in inner and outer bearings p^3 p^4, carried by the frame A, and by a bracket p^5, mounted thereon, and is driven by a pulley p^6, belt p^7, and power-pulley D^4.

In order to insure that the sash shall be fed square through the machine, the feed-rolls are provided at one end with loose collars S, which have beveled or conical surfaces adapted to fit the check-rail. These collars may therefore have a different speed from the main body of the roll, and there will be no tendency to twist the sash out of a true line. The collars are confined by nuts T, screwed upon suitable threads provided upon the journals of the rolls.

A portion of the sash is shown at x in Fig. 10 in dotted lines, the check-rail being represented as engaged by the roller S.

Having thus described my invention, what I claim is—

1. In a jointing and sanding machine, the combination, with a sanding device for one surface of the material, such as a sanding-drum, of a circular jointing-saw provided with a sanding head or disk and situated in a plane at an angle to that in which the said sanding device operates, substantially as set forth.

2. In a jointing and sanding machine, the combination, with the jointing-saw having a sanding disk or head, of the feed-rolls, the upper sand-drum H, the lower sand-drum H′, shafts parallel with each other carrying said operating parts, and the feed mechanism connecting and actuating said shafts, substantially as set forth.

3. In a jointing and sanding machine, the combination, with the circular jointing-saw having an opening for the sanding material, extending continuously in the direction of rotation of the saw, and a backing-plate for the said material, of the feed-rolls, the upper sand-drum H, the lower sand-drum H′, shafts parallel with each other, carrying said operating parts, and the feed mechanism connecting and actuating said shafts, substantially as set forth.

4. In a jointing and sanding machine, the combination of the circular saw having an opening extending continuously in the direction of rotation of the saw, adapted to receive the edge of a sanding material, and a clamp for the latter, substantially as set forth.

5. In a jointing and sanding machine, the combination, with the jointing-saw and sanding devices, of the feed-rolls having the loose collars S, substantially as set forth.

6. In a jointing and sanding machine, the combination, with the jointing-saw, of the upper and lower sanding-drums, the feed-rolls, the longitudinal parallel shafts C C^2, situated at right angles to the axis of the rolls and on opposite sides of the machine, one for the upper and one for the lower set of rolls, beveled gears connecting said shafts with the rolls, and a through-shaft connecting said longitudinal shafts, substantially as set forth.

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

WILBUR F. LARISH.

Witnesses:
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H. D. WILBOR.