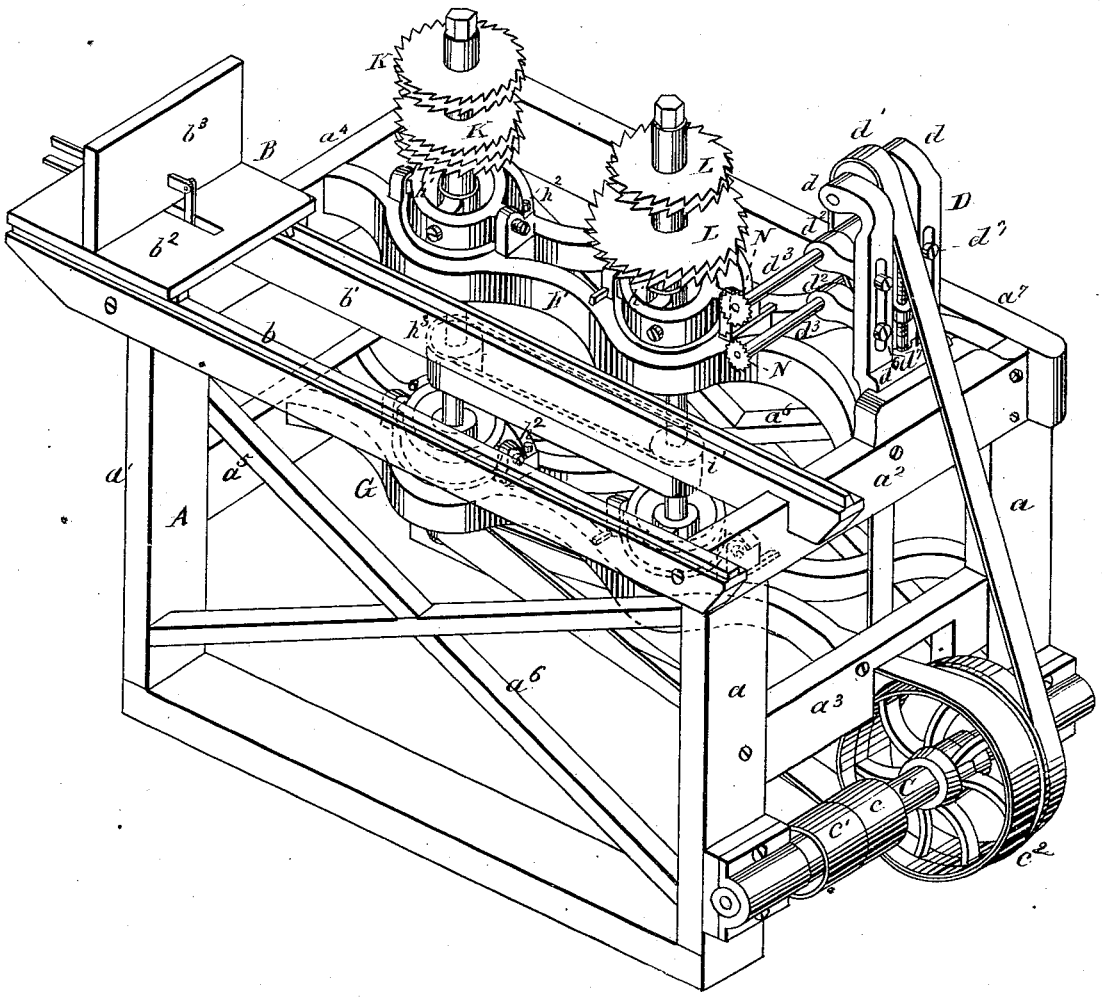
2 Sheets--Sheet 1.

J. H. MILLSPAUGH.

Machine for Relishing Tenons and Cutting Wedges.

No. 161,810. Patented April 6, 1875.

Fig. 1.



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J. H. MILLSPAUGH.

Machine for Relishing Tenons and Cutting Wedges:

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Fig. 2.

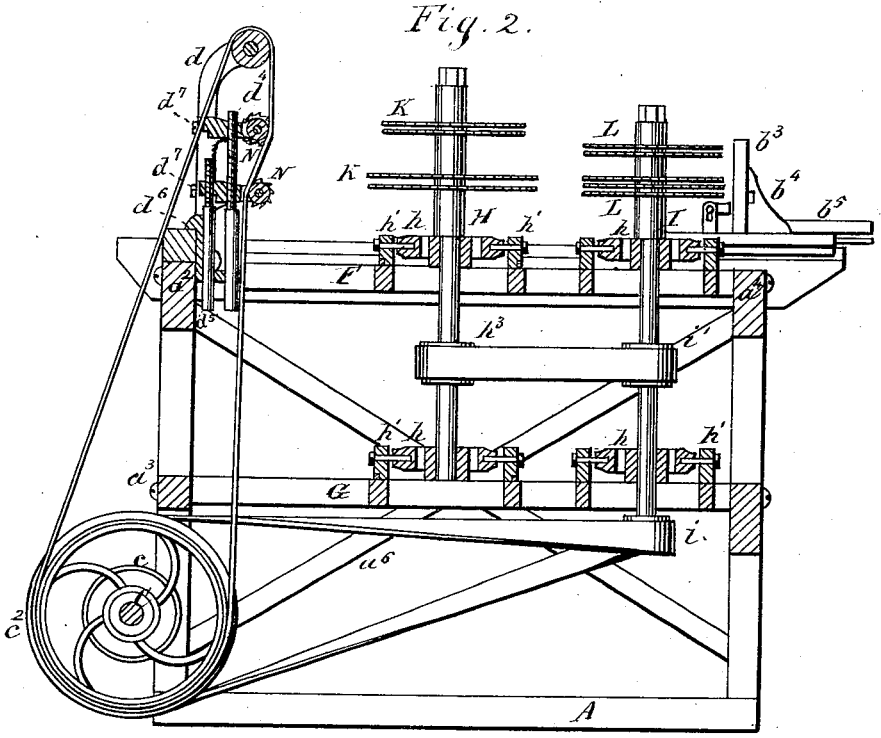


Fig. 3.

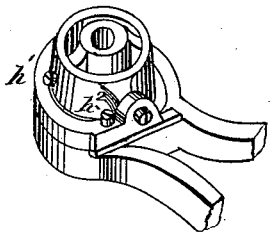
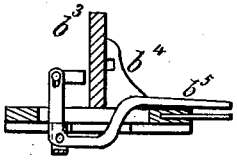


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN H. MILLSPAUGH, OF WILLIAMSPORT, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR RELISHING TENONS AND CUTTING WEDGES.

Specification forming part of Letters Patent No. **161,810**, dated April 6, 1875; application filed February 9, 1875.

To all whom it may concern:

Be it known that I, JOHN H. MILLSPAUGH, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Machines for Relishing Tenons and Cutting Wedges; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The object I have in view is the construction of a machine which shall combine a door-relisher and wedge-cutter in one, the portion of the door-rail which is usually thrown away being utilized by the machine for wedges, and the whole result being attained simply, cheaply, at one operation, and without complication of parts; and my invention therein consists in the peculiar arrangement of three sets of circular saws, two sets of which are firmly fixed on adjustable arbors, and revolve in horizontal or nearly horizontal planes, while the third set, which completes the operation of relishing, revolves in a vertical plane; and further, in combination with said saws a carriage, upon which the door-rail is carried in a vertical position, the action of the various sets of saws completing the operation of wedge-cutting and relishing as the carriage moves by them.

To enable those skilled in the art to make and use my invention, I proceed to describe the same in connection with the drawings, in which—

Figure 1 is a perspective view of the machine. Fig. 2 is a longitudinal section; Fig. 3, a detached perspective view of one of the gimbals; Fig. 4, a longitudinal section of the carriage.

Like letters denote similar parts in each figure.

A represents the frame of my machine, consisting of the four uprights a a a^1 a^1, the uprights a a being tied together by the top cross-piece a^2 and the middle cross-piece a^3, and the uprights a^1 a^1 being tied by the top cross-piece a^4 and the middle cross-piece a^5. These uprights are tied longitudinally by oblique girders a^6, which extend from the head of one of the uprights to the foot of the opposite upright, and, further, by longitudinal pieces a^7, which tie the heads and the bases of the uprights on one side, and the bases on the other side, the upper longitudinal piece on this side being substituted by two bed-pieces, b b^1, upon which the rails for the carriage are placed. The top cross-pieces a^2 and a^4 are made somewhat longer than the width of the machine, and project beyond the center of the uprights on that side half the width of the carriage intended to be used. Across the ends of this projection one of the bed-pieces, b, is placed, the other, b^1, being placed across the top pieces before mentioned, one-half the width of the carriage inside the uprights. Upon the bed-piece b a rail, rectangular in cross-section, is secured, and upon the inside bed-piece b^1 a higher rail of truncated conical section is secured. The whole frame A is mortised, tenoned, and bolted together in the strongest manner possible. The carriage B, which moves upon these rails, is composed of a flat platform, b^2, having a vertical transverse projection, b^3, from its upper surface, against which the door-rail is to be held. The projection b^3 is held firmly by two small brackets, b^4, which are fastened to the platform b^2 and to the projection b^3 before mentioned. Each bracket has a hole pierced through it transversely next to the projection, the hole in each bracket being in the same horizontal plane. A longitudinal slot is cut in the platform b^2, extending an equal distance on each side of the projection b^3. A hooked-shaped lever, b^5, is introduced into this slot, and so pivoted at one of its angles in a flat staple secured over the forward end of the slot on the under side of the platform, that when the door-rail is placed on the carriage next the projection b^3, and the handle end of the lever b^5 in the rear of the projection depressed, the end of the lever which projects above the platform on the forward side of the projection b^3 will press against the rail and hold it against the projection b^3 immovably. The bottom of the platform b^2 of the carriage B is further provided with a longitudinal batten on one side, which rests upon the rail b, and two narrower longitudinal battens on the other side, which rest on either side of the rail b^1 and keep the carriage from moving laterally.

Across the lower part of the uprights a a a

shaft, C, extends, its extremities properly journaled in boxes placed on each of the uprights. This shaft C is provided with loose and fast pulleys c and c^1. The pulley c, rigidly fixed to the shaft, communicates motion to it by any suitable driving-belt, and the pulley c^1 revolves loosely upon the shaft C, and is for the purpose of transferring the belt, when it is desired to stop the machine. The shaft C is further provided with a driving-wheel, c^2, which is rigidly connected to it. The wheel c^2 has a ridge around its periphery, so as to permit two belts to be used upon it, said ridge dividing the face of the wheel into two equal parts. The middle cross-piece a^3 is cut out to allow the wheel c^2 to revolve. Belted to the cross-piece a^2 is a metal frame-work, D, having two upright vertically-slotted arms, d. The heads of these arms are bent over toward the interior of the machine, and are pierced for the spindle of a pulley, d^1, which revolves between them. The inner faces of the arms d are flanged, for the purpose of guiding two smaller adjustable frames, d^2, which hold two small horizontal shafts, d^3. These frames d^2 are E-shaped, and are adjustable vertically, by means of two screws, d^4 and d^5, which are vertically held, though not prevented from revolving in a projection, d^6, from the foot of the frame-work D.

The frames d^2 may be held in any position by means of set-screws d^7, which pass through the slots in the arms d. The screw d^4 passes through a hole in the lower frame d^2, somewhat larger than the screw, and screws into the upper frame d^2. The screw d^5 screws directly into the lower frame d^2.

It will thus be seen that by slacking the hold of the set-screws d^7, and turning the screws d^4 and d^5, the frame d^2 can be adjusted vertically at any desired point.

Through the arms of the E-shaped frame d^2 pass longitudinal shafts d^3, before mentioned. The shafts d^3 revolve in the arms of the frame d^2, and are enlarged between these arms, so that the exterior of the arms and the enlargement shall present a smooth and uniform surface. These frames d^2, the upper wheel d^1, and one face of the large wheel c^2 are in the same vertical plane. An endless band passes around the wheel c^2, inside and against the shaft in the lower frame d^2, outside and against the shaft in the upper frame d^2, and over the wheel d^1. The revolution of the shaft C is, therefore, communicated to the shaft d. These shafts d^3 project from the frame D toward that side of the machine on which the carriage moves, and are provided on their ends with two small circular saws, N, which are used to complete the operation of relishing the door-rail, said saws cutting vertically.

A metal open-work frame, F, extends from one of the top cross-pieces, a^2, to the other cross-piece, a^4, and another frame, G, of similar construction extends from the middle cross-piece a^3 to the other middle cross piece a^5. These frames F and G are to hold the vertical arbors H and I, which carry the other two sets of saws.

The object of the frames F and G is to give a suitably-strong frame for the arbors H and I, and at the same time to have it as light as possible. To this end it is made of metal of a somewhat irregular shape. The same remark will apply to the frame G, which is below it.

The arbor H sets in about the middle of the machine, and is held in a vertical, or nearly vertical, position by gimbals h, which are pivoted in lugs on small half-moon slides h^1, which move laterally between guide-flanges on the top of the frames F and G over apertures in said frames. These half-moon slides h^1 may be secured at any point over the apertures before mentioned by means of set-screws h^2, which screw into the top of the frames. It will be seen, therefore, that the arbor H may be inclined and held in any desired position. The upper end of the arbor H is provided with four or more circular saws, K, which are separated by sleeves or collars, and which, by means of the adjustable slides h^1, or the collars before mentioned, may be made to cut in any oblique plane desired.

The arbor I is placed in the frame near the end of the machine opposite the frame D. This arbor I is similarly secured and manipulated as the one just described, and may be adjusted in the same manner. It is also provided with saws L, which are similarly placed and secured as those upon the other arbor H. The arbor I is further provided on its lower extremity, which projects below the lower frame G, with a wheel, i, which is rigidly connected to it. An endless belt passes over the wheel i, and over the wheel c^2, before mentioned; and the motion imparted to the shaft C is imparted to the arbor I carrying the saws L. The arbors H and I are provided with fast pulleys h^3 and i^1, placed upon them midway between the two frames F and G. An endless belt passes round these pulleys, and thus motion is communicated to the whole machine. If a door or blind rail be placed upon its edge upon the carriage B, and held there immovably, as hereinbefore described, and the carriage B be moved by the saws in motion, the first set of saws, L, will make a number of longitudinal cuts, the second set, K, will make a number of oblique cuts, which will divide the pieces outlined by the preceding cuts into wedges, while the third and last set of saws, N, will make a vertical cut in the rail, completing the relish, the part cut out falling to the ground as wedges which are utilized in wedging the various parts of the door or blind together.

Instead of inclining any of the saws, they may be adjusted so as to cut in horizontal planes, and the carriage B may be tilted, which will accomplish the same result.

Having thus described my invention and

explained its use, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the vertically-adjustable frames d^2, the vertically-slotted arms d, the pulley d^1, the shafts d^3, and the saws N, constructed and arranged substantially as described and shown.

2. The adjustable arbors H and I, in combination with the gimbals h and slides h^1, constructed and arranged substantially as described and shown.

3. In a single machine, the combination of the adjustable arbors H and I carrying the saws K and L, the adjustable frame d^2 carrying the shafts d^3, and saws N, and carriage B, the several parts constructed substantially as described and shown.

This specification signed and witnessed this 2d day of February, 1875.

JOHN H. MILLSPAUGH.

Witnesses:
WM. E. BUTLER,
EPHRAIM CASE.