(No Model.) 2 Sheets—Sheet 1.

W. W. ABBOTT.

MITERING MACHINE.

No. 493,541. Patented Mar. 14, 1893.

Fig. 1

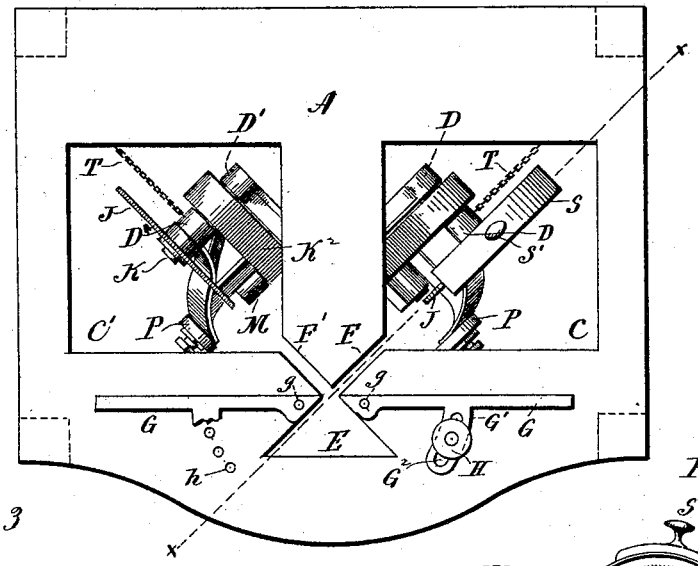


Fig. 2

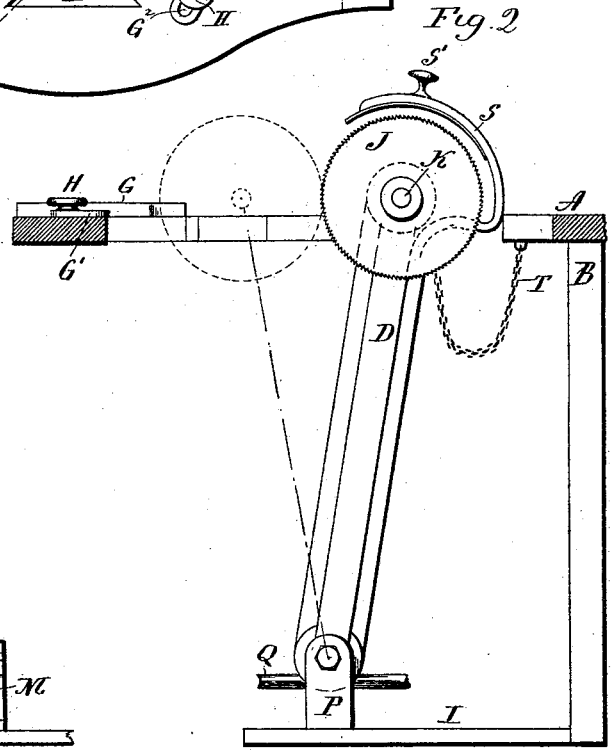
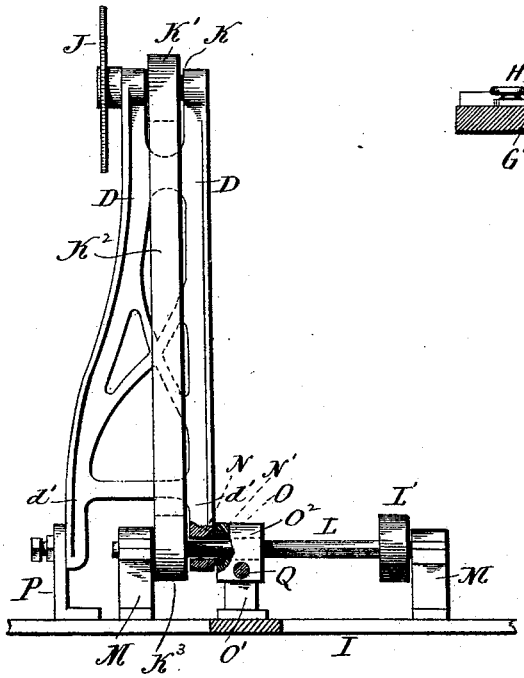


Fig. 3



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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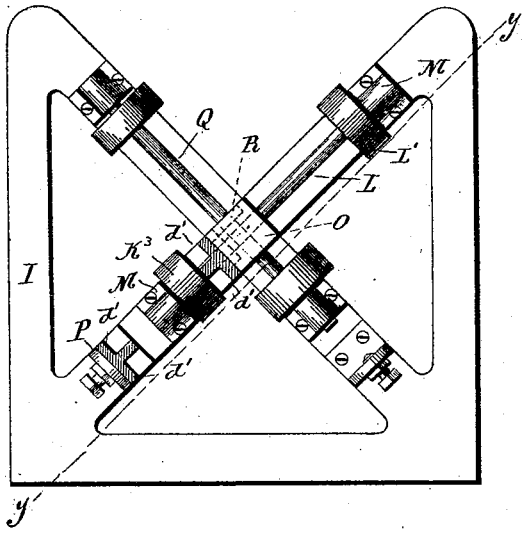
Fig. 4



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UNITED STATES PATENT OFFICE.

WILLIAM W. ABBOTT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO ELBRIDGE F. BARNES, OF SAME PLACE.

MITERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,541, dated March 14, 1893.

Application filed November 14, 1892. Serial No. 451,913. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. ABBOTT, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Mitering-Machines; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a plan view of a mitering machine constructed in accordance with my invention, the guard or fender of one of the saws being removed; Fig. 2, a view of the machine partly in side elevation and partly in vertical section on the line *x*—*x* of Fig. 1; Fig. 3, a similar view on the line *y*—*y* of Fig. 4; Fig. 4, a plan view of the base of the machine.

My invention relates to an improvement in mitering machines, the object being to produce a simple, convenient and effective machine, having a large capacity for accurate work, capable of being readily adjusted for square as well as for a variety of miter cuts, and reducing the handling of the molding or material operated upon to the minimum, the saws being moved upon the work instead of the work being moved upon the saws.

With these ends in view, my invention consists in a mitering machine having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claims.

As herein shown, the table A, of my improved machine is supported upon four legs B, and constructed with two large corresponding openings C C′, in which the upper ends of the respective saw-frames D D′, swing, with a triangular opening E, located centrally in front of the openings before mentioned, and with two narrow, corresponding saw-ways F and F′, located at a right angle to each other, and respectively leading from the adjacent forward corners of the openings C and C′ into the inner end of the triangular opening E. The said table is provided upon its upper face with two corresponding guides G G, swung on pivots *g g*, passing through their inner ends, which are located in line with the intersection of the two saw-ways F and F′ before mentioned. Each of these guides is provided with a curved arm G′, having a segmental slot G^2, which receives a hand-screw H, which may be shifted to the different holes of a series of holes *h*, formed in the table, according to the character of the miter which it is designed to cut. The arm G, of one of the guides is broken away, in order to show these holes, of which there are two sets, one for each guide.

The saw-frames D and D′, before mentioned, are arranged at a right angle to each other beneath the said table, and pivotally supported at their lower ends in a base I, best shown by Fig. 4 of the drawings. Thus arranged, the upper ends of the saw-frames when the same are swung, move in paths at right angles to each other. These frames, as shown, are cast in what may be called skeleton-form, and gradually widen from their upper to their lower ends. Each frame is provided with a circular saw J, projecting above the table A, and mounted upon the outer end of a short horizontal driven-shaft K, having bearing in the extreme upper end of the frame, which is virtually bifurcated to receive a pulley K′, mounted upon the said shaft, and driven by a belt K^2, also running over a pulley K^3, mounted on a driving-shaft L, which is supported at its ends in bearings M M, attached to the base I, before mentioned, the bearing M, and the pulley K^3, being located within the two arms *d d′* formed at the lower end of the frame, which by preference should swing on a point concentric with the shaft L. In order, however, to relieve the said shaft of the weight and wearing action of the frame, the arm D, thereof is provided with a horizontal bore N, larger in diameter than the diameter of the said shaft, and with a projecting horizontal hub N′, through which the said bore extends, and which takes into a circular recess O, formed in one face of a bearing O′, which is secured to the base I, and located about centrally under the table A, this bearing being provided with a horizontal bore O^2, corresponding in diameter to the bore N, before mentioned, and receiving the shaft L. It will be seen from this construction, that the weight and wear of the saw-frame D, so far as the same is borne by

the arm *d*, thereof, falls upon the hub N′ and the recess O, in which the same turns, instead of upon the shaft L, which turns freely in the said bearing O′ and arm D. The outer arm *d*′ of the frame, is pivoted in a light bearing P, also attached to the base I. The driving-shaft L, is provided at its outer end with a driving-pulley L′, to which power is communicated from any convenient source.

The foregoing description which has had particular reference to the saw-frame D, shown by Figs. 2 and 3 of the drawings, applies equally well to the saw-frame D′, which is like it in all respects except that it is pivoted at a point a little lower down than the frame D, which becomes necessary in order to provide for the clearance of its driving-shaft Q, from the driving-shaft L, the hub formed at the lower end of this frame, but not shown, taking into a recess R, corresponding to the recess O, shown in Figs. 3 and 4 of the drawings, and located in another face of the bearing O′, at a right angle to the recess O, and in a plane below the plane thereof. Inasmuch as the two frames are hung in the same way except as specified, a detailed description of the frame D′ is thought unnecessary.

Each of the frames is provided at its upper end with a fender S, curved to conform to the curvature of the saws, and provided near their upper ends with knobs S′, by means of which the frames are swung, and the saws thus advanced to do their work. Chains T T fastened to the saw-frames, and the table A, are provided for limiting the forward movement of the frames, whereby the saws are prevented from falling forward far enough to be dulled upon the outer wall of the clearance space E, in the table.

In using my improved mitering machine, the work is moved upon the table, pressed against the inner faces of the guides G G, and cut by pulling one saw or the other up against it, then after one cut has been made with one saw, the work is moved along and cut by the other saw without being reversed end for end, that being unnecessary, inasmuch as the saws operate at a right angle to each other. Time is thus saved, and the handling of the work, which is often clumsy, avoided, for in ordinary mitering machines having only one saw, the work must be reversed end for end, in order to have the cuts come right. It will be observed too, that instead of advancing the work against the saws, I advance the saws against the work. Herein, also, I secure an important advantage, for in sawing long strips of molding, which come often in twelve foot lengths, it is very awkward to move the whole strip, but when the saws are moved instead of the work, long strips may be cut as conveniently as short ones. By shifting the guides in position, I am enabled to make all of the different miter cuts that are required, and I may even turn them around so that they will stand at right angles to the respective saws, and thus present the work for being cut at a right angle or square.

I would have it understood that in carrying out my invention I may make some departures from the construction herein shown and described, and might even, for instance, dispense with one of the saw-frames, and use only one saw, but by preference I shall employ two saws. I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a mitering machine, the combination with a table, of two saw-frames pivotally supported below the same at their lower ends, at a right angle to each other, two saws respectively mounted in the upper ends of the said frames, projecting above the table, and also arranged at a right angle to each other, means for driving the saws, and guides located upon the table for holding the work, substantially as described, and whereby either of the saws may be advanced to the work by swinging the frames.

2. In a mitering machine, the combination with a table, of two saw-frames pivotally supported below the same at their lower ends, at a right angle to each other, two saws respectively mounted in the upper ends of the said frames, projecting above the frames, and also arranged at a right angle to each other, two driving-shafts arranged at a right angle to each other, and respectively concentric with the centers on which the frames are swung, connections between the said shafts and the saws, and guides located upon the table for holding the work, substantially as described.

3. In a mitering machine, the combination with the table thereof, of the two saw-frames pivotally supported at their lower ends below the said table, at a right angle to each other, two saws respectively mounted in the upper ends of the said frames and projecting above the said table, two driving-shafts arranged concentrically with the centers on which the said frames swing, and one extending under the other at a right angle thereto, and connections between the said shafts and the saws, substantially as described.

4. In a mitering machine, the combination with a table constructed with two large openings, with a clearance opening located centrally in front of the same, and with two sawways located at a right angle to each other, and leading out of the adjacent forward corners of the said large openings into the said clearance opening; of two saw-frames pivotally supported at their lower ends below the said table at a right angle to each other, two saws respectively mounted in the upper ends of the said frames and projecting above the

table through the large openings therein, two driving shafts arranged at a right angle to each other, concentric with the centers on which the respective saw-frames are swung, and connections between the said shafts and saws, substantially as described.

5. In a mitering machine, the combination with a table, of two saw-frames located below the same, and pivotally supported at their lower ends at a right angle to each other, two saws respectively mounted in the upper ends of the said frames and projecting above the table, power connections for driving the said saws which are located at a right angle to each other, and two guards or fenders respectively attached to the upper ends of the frames and extending up and over the same, and each adapted to be grasped for swinging the frames and hence the saws, substantially as described.

6. In a mitering machine, the combination with a table, of two saw-frames located below the same, and pivotally supported at their lower ends at a right angle to each other, two saws mounted in the upper ends of the respective frames, and projecting above the table, power connections for the said saws which are also arranged at a right angle to each other, guards or fenders for the saws, and two guides pivoted to the said table and movable thereon to present the work at different angles to the saws which are moved up to it by swinging the frames, substantially as described.

7. In a mitering machine, the combination with the table thereof, of two saw-frames located below the said table, arranged at a right angle to each other and each provided at its lower ends with a hub having a concentric bore, two saws respectively mounted in the upper ends of the said frames, and projecting above the table, a bearing located below the table and constructed with two bores arranged one above the other, and at a right angle to each other, and with two recesses respectively concentric with the said bores, two driving-shafts extending through the bores of the said bearing and through the said hubs which take into the recesses of the bearing and support the frames independent of the said driving-shafts which are thus made concentric with the centers on which the frames swing, and connections between the said shafts and saws, substantially as described.

8. In a mitering machine, the combination with the table thereof, of one or more saw-frames pivotally supported below the same at its lower end, each frame having a saw mounted in its upper end to project above the table, a driving-shaft arranged concentric with the centers on which it is swung, but relieved of its weight, connection between the said shaft and saw, whereby the latter is driven, and a guard attached to the upper end of the frame, and curving upward over the saw, and adapted to be grasped by the hand for swinging the frame, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WM. W. ABBOTT.

Witnesses:
GEO. D. SEYMOUR,
FRED. C. EARLE.