W. H. HARRISON.

Picture-Frame Clamp.

No. 212,552. Patented Feb. 25, 1879.

Fig. I

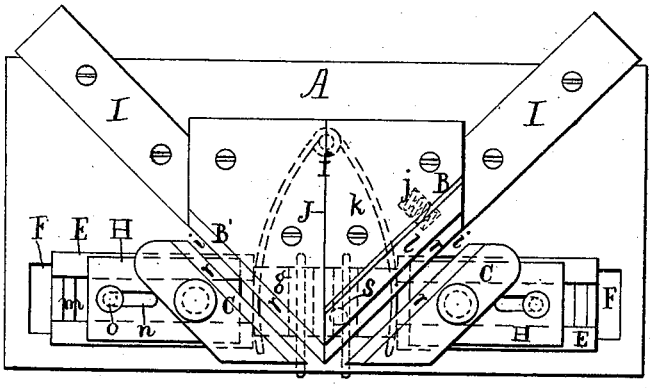


Fig. II

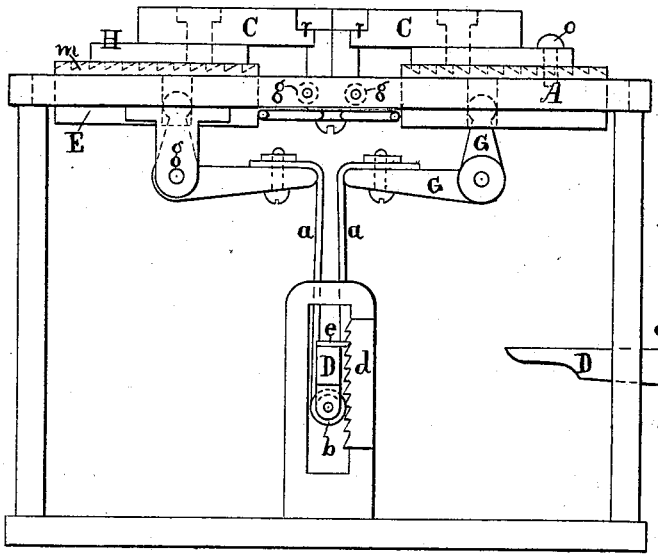
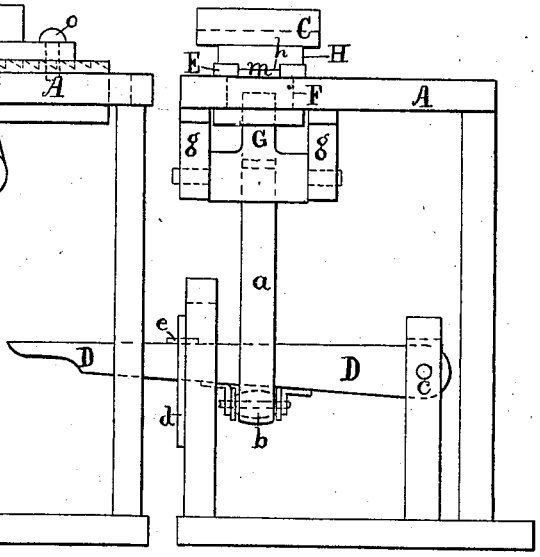


Fig. III



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WILLIAM H. HARRISON, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN PICTURE-FRAME CLAMPS.

Specification forming part of Letters Patent No. **212,552**, dated February 25, 1879; application filed July 1, 1878.

To all whom it may concern:

Be it known that I, WILLIAM H. HARRISON, of the city of Newark, in the county of Essex and State of New Jersey, have invented a certain Improvement in Picture-Frame Clamps, of which the following is a full and exact description, reference being had to the drawings annexed, of which—

Figure 1 is a plan; Fig. 2, a front view, with one of the hangers *g* removed; and Fig. 3, an end view of my machine.

The object of my invention is to securely hold a single corner of a picture-frame for the purpose of nailing the same after the moldings have been properly mitered, the appliances usually employed for the purpose being constructed to embrace all four corners of the frame at once, and are thus considerably larger and more costly, as well as more difficult to manipulate than one constructed to operate upon a single corner at once.

My device likewise possesses certain facilities for holding moldings of various widths, and an adjustment, self-acting in its nature, to compensate for irregularities in the widths of different pieces of the same molding.

The mechanism is chiefly attached to a plate, A, and is designed to press the two pieces of molding for the frame-corner against a right-angled block or former, B B′. When two such pieces of molding are nailed together, the other two pieces of the same or another frame can be similarly secured, and the halves thus formed can be afterward united by joining the opposite corners, one at a time. To press the two moldings against the former B B′, two clamps, C, are provided, each of which is moved simultaneously with the other by motion from a treadle, D, imparted to the blocks E, working in a slot, F, formed in the plate A parallel with its front edge. The former B B′, having its rectangular corner placed against the front edge of the plate, lies partly over the slot F, (if the same is continuous throughout,) and the blocks E thus stand at an angle of forty-five degrees with the adjacent sides of the former. The clamps C, when pressed closely against the former, extend from near its corner several inches along the two adjacent sides; but when a piece of frame-molding lies between the clamp and the former, the inclination of the slot F causes the clamp to withdraw from the corner of the picture-frame to such a distance that the entire corner is fully exposed, and the necessary nails or fastenings can be readily inserted. The blocks E are shown in Fig. 2 as simultaneously operated by bell-cranks G, one arm of each being inserted in a hole in the under side of the block, and the other or horizontal arms extending toward the middle of the plate A, where they are provided with connections *a* to the treadle D. This connection is made by attaching a strap to the ends of the horizontal arms, and folding the middle of the strap into a loop, which hangs down from the arms, and has the lever D passed through it. This lever is hinged at *c* near the floor beneath the rear edge of the plate A, and extends toward the operator far enough to be easily depressed by his foot, to draw the blocks E toward each other and press the clamps C against the former B B′. To keep the clamps thus, without further pressure from the foot, the treadle D is provided with a catch, *e*, which engages the teeth in a rack, *d*, attached to the floor near the treadle, and projecting upward as far as the treadle rises.

The treadle is easily disengaged from the rack, when the frame is secured by a sidewise pressure of the foot, and the blocks E are then pressed apart by a double-ended spring, *k*, secured beneath the plate A by a screw, *f*, and arranged with one of its leaves pressing against the inner end of each block E.

The clamps C are preferably pivoted to adjusting-plates secured upon the tops of blocks E, the plates being formed with ratchet-teeth on the under side, and the blocks E having similar teeth on the top, so that the position of the plates H can be varied at pleasure upon the blocks E, to increase the opening *i* between the clamps and the former, as the molding may require.

The plates H are slotted at *n*, and screws *o* are provided to hold the plates firmly to blocks E. The ratchet-teeth in the blocks are shown at *m* sunk in a channel formed in the top of each block, and the plates H are made with a tongue, *h*, upon which the ratchet-teeth are formed. The plates are thus kept in place on the blocks, and the teeth *m* being made of uniform size on the top of each block, the proper relation of the clamps to former is easily secured when the plates are at any time moved.

The pivoting of the clamps upon the plates H is a very cheap mode of fastening, and per-

mits them to adjust themselves to inequalities upon the surface of the frames.

To compensate for variations in the width of the same molding when fitted upon the two sides of the former to be secured, I have placed the treadle in the fold of the strap attached to the bell-cranks G, and the clamps C thus possess an independence of movement while pressed against the former by the treadle.

By inserting a roller, *b*, on the under side of the treadle in the fold of strap *a*, the strap is able to move freely, if a greater resistance is felt by one of the clamps and bell-cranks than by the other.

By the construction described, the machine is made self-adjusting to any inequalities in the material of which the frames are composed, and can be adapted to moldings of any required width by making the blocks E and racks *m* thereon of sufficient length.

The former B B′ and clamps C are rabbeted on their opposing faces at *r*, and the moldings are dropped into the gutter formed by the two rabbets, and rest upon strips I, secured to the plate A on a line with the rabbets on the former, and of the same height as the bottom of the rabbet, (marked *r* in Fig. 2.)

The clamp C may be faced with some soft material, to avoid injury to the outside of the moldings, and if the pressure produced by the cranks G is too great for any particular class of work, the strap *a* may be detached from the arms of the cranks, and a similar strap secured directly to the blocks E, passing from the blocks over rollers B, and thence downward below the treadle, as before.

The arms of the bell-cranks G may be made so as to transmit a pressure to the blocks E twice as great as that applied to the strap *a* by the foot, and by thus transferring the strap directly to the blocks and operating it over the rollers *g g* the pressure upon the blocks may be reduced one-half.

Should the pieces of molding laid against the former B B′ not be prepared with a perfect miter, the joint at the corner of the frame would be open either upon the inner or outer side of the corner. This would be more objectionable than to have a perfect joint made varying slightly from ninety degrees, as the variation at the corner would not be noticeable when the entire frame was completed, the several sides bending slightly in such a case. To correct the miter at the joint, a groove for a saw may be formed in the center of the former B B′ at J, and a saw run into the corner joint to perfect it. This method, however, is only applicable to plain wooden moldings, which are not marred by a saw; but in the case of gilt or decorated frames I construct the former so as to yield a little at one side, and accommodate itself to the angle formed by the ends of the two moldings, which can then be united and form a joint varying slightly from the proper angle. To accomplish this object, one-half of the former, as B′, may be made loose from the other, and secured to the table by a pivot, so as to oscillate slightly upon the table as required. I prefer, however, the arrangement shown in Fig. 1, where the former B B′ is shown with a loose jaw or strip, *l*, on the edge B, which is hinged to the former at one end and backed by a spring, *j*, at the other end, so that a perfect joint may be made at the corner of the frame when glued and nailed, even if the same has not been prepared with a perfect miter on each of the moldings forming the corner.

If preferred, the loose jaw may be hinged in the middle by a pin similar to that shown at *s*, (projecting downward from the under side of the strip *l* into the body of the former at a level with the bottom of the rabbet *r*,) and if set a little way from the edge of the former, behind it, will then adjust itself to the position taken by the molding when pressed firmly against it and against the molding on the side B′.

I am aware that the blocks E may be made without plates on the top or swiveling clamps, as shown at C, and do not limit myself exclusively to the use of such plates and clamps, as the advantage of the slot F directed at an angle of forty-five degrees to the sides of the former B lies in its forcing the blocks E toward the joint formed by the two moldings, and thus closing the joint very closely during the nailing operation; and this particular effect can be secured by making a block, E, of proper height to act as a solid clamp.

The machine may be constructed as a part of a table, large enough to support the moldings to be secured together; or it may be made, as described, on a small plate, A, and secured to a table, with the treadle D and rack *d* secured to the floor beneath.

Having thus described my invention, what I claim is as follows:

1. The combination of former B B′ with the slot F crossing its corner at an angle of forty-five degrees, in the manner described, and the blocks E E, operated toward one another in the slot to force the mitered ends of the moldings against each other to make a close joint at the same time that they are clamped against the former to be secured by nailing, as herein set forth.

2. In combination with the former B B′, blocks E E, slot F, and spring *k*, the bell-cranks G G, hangers *g g*, strap *a*, treadle D, fulcrum *c*, racks *d*, and catch *e*, substantially as and for the purpose set forth.

3. In combination with the bell-cranks G G, strap *a*, and lever D, the roller *b*, to equalize the pressure exerted upon the bell-cranks by the treadle, substantially as herein set forth.

In testimony that I claim the foregoing as my own I hereto subscribe my name in the presence of two witnesses.

WILLIAM H. HARRISON.

Witnesses:
THOS. S. CRANE,
E. P. ROBERTS.