

W. H. GOODCHILD & S. F. HAY.

Joiners' Clamps.

No. 136,152.

Patented Feb. 25, 1873.

Fig. 1,

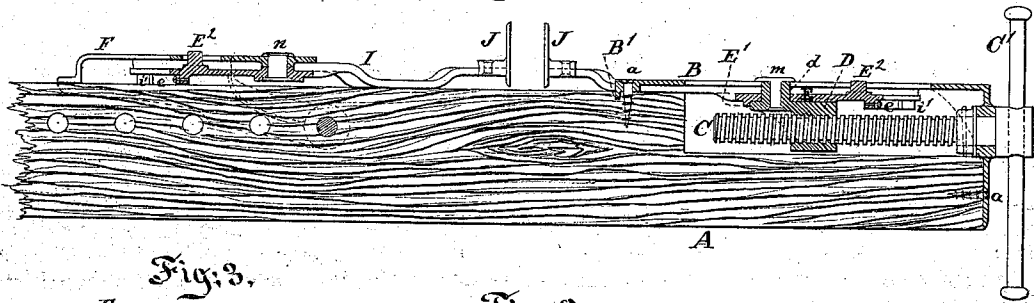


Fig. 3,

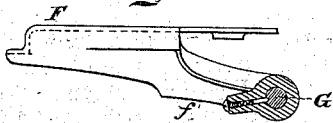


Fig. 2,

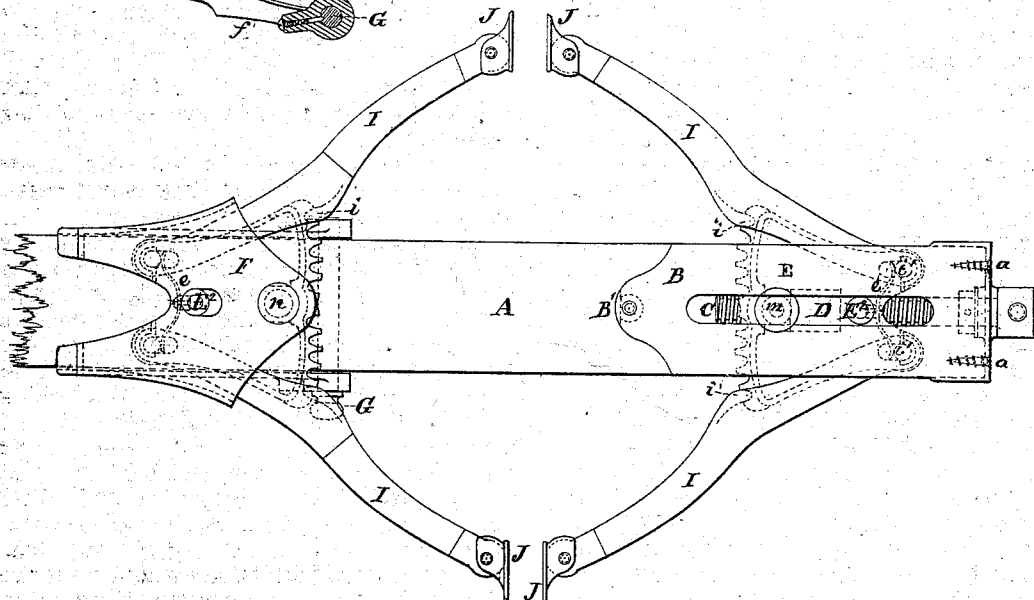


Fig. 4,

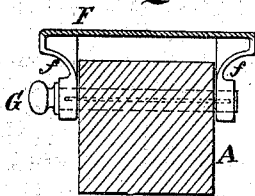
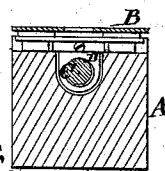


Fig. 5,



Witnessed:

Arnold Hermann.
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Inventors:
Samuel F. Hay, and
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UNITED STATES PATENT OFFICE.

WILLIAM H. GOODCHILD, OF BAYONNE, NEW JERSEY, AND SAMUEL F. HAY, OF BROOKLYN, NEW YORK, ASSIGNORS TO WILLIAM H. GOODCHILD, OF BAYONNE, NEW JERSEY.

IMPROVEMENT IN JOINERS' CLAMPS.

Specification forming part of Letters Patent No. 136,152, dated February 25, 1873.

To all whom it may concern:

Be it known that we, WILLIAM H. GOODCHILD, of Bayonne, Hudson county, in the State of New Jersey, and SAMUEL F. HAY, of Brooklyn, Kings county, State of New York, have invented certain new and useful Improvements in Joiners' Clamps, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The object of our invention is to render more perfect the devices long in common use for drawing firmly together the parts of doors, sashes, and other articles of wood in the process of manufacture. Our improved clamp is composed of two principal parts—viz., a compound head-block exerting pressure on the work by means of a screw and a compound tail-block, which is capable of being set at a greater or less distance from the head-block—both working in connection with a long bar, which we will designate a clamp-stick. In single-faced joiners' clamps pressure is exerted against the work at one side of the joint or mortise, and the joint is not closed perfectly its full length. In our invention a pair of self-adjusting shoes or bearing-surfaces bear directly at each side of the mortise, and inclose a joint its full width in any description of panel or framed work. The arms are adjustable through the notched plate to various widths at will, and are also self-adjusting by means of the notched plate partially turning on a stout pivot, thus allowing the bearing-surfaces or shoes a firm bearing on skewed or slightly beveled or inclined work. The arms may admit an adjustment of from four to twelve or fourteen inches between the shoes or bearing-surfaces. Any square work, the shoulders of which may have been tenoned or cut out of square, by mismanagement of machinery or other cause, is brought up and clamped firmly the entire width of the joint. So also may any work be clamped perfectly when formed "on a rake," or where the outside stiles of work are narrow and liable to twist or bulge, thus tending to open a portion of the joint.

We will proceed to describe what we consider the best means of carrying out the invention,

Figure 1 is a longitudinal section. Fig. 2 is a plan view; Fig. 3, a side view of main casting of the tail-block without the plate or arms; Fig. 4, cross-section of Fig. 3 with the addition of the clamp-stick; Fig. 5, a cross-section of the head-block with its clamp-screw and attachments.

Similar letters of reference indicate like parts in all the figures.

A, clamp-stick; B, head or cap-casting; C, main screw; D, traveling-nut; C', handle; I I, arms; J J, bearing-surfaces or shoes on I I; E, rocking bearing-plate; e, spring; F, main casting of tail-block; G, locking-pin and holding device.

The drawing represents the novel parts with so much of the clamp-stick as is necessary to show their relation thereto.

The cap-casting B is of the form shown, and held to the stick A by screws a, and locked thereto by means of the cross-ridge B', which is let into a corresponding recess formed in the wood, and defends the entire head-block against any end movement. The screw C has a suitable bearing in the front of the casting B, the upper face of which is slotted, as shown. The screw C, being turned by means of the handle C', imparts a backward or forward motion to the rocking plate E and its attachments. This screw is preferably left-handed.

The inside collar, here shown as made separate, may be forged on the screw, and the forms and arrangement of the operating-handle may vary, as will be obvious.

The traveling-nut D is elongated at its front and may be braced, as dotted in Fig. 1. From the elongated portion there is an upward extension or stud, d, of sufficient size to fill the slot in the casting B, thus steadying the parts. Said stud, being pierced by the large-headed bolt m, the head of which is larger than the width of the slot, and by the lower end of said bolt being slightly riveted to the nut D, as shown, serves to hold up and guide the nut and screw with the entire parts depending thereon. The plate E rocks on the center pin or stud d of the nut D, and allows the arms I I to adjust themselves to bear fairly on slightly irregular or untrue surfaces. This self-adjusting motion of the plate E and arms

I I provides what I term an independent yet concerted backward and forward movement of the arms, and consequently of the bearing-surfaces or shoes J J. The front of the plate E is formed with teeth or with recesses, into which correspondingly-shaped projections *i i* from the arms I I engage, as shown. It will be noticed that this plate E has cast on its upper surface, toward its back end, a pin or projection, E², which stands in the slot in casting B, and by making which of a proper size the rocking motion of the plate E may be limited, thus confining the backward and forward independent movement of the arms I I and their shoes J J within convenient limits. It will also be noticed that this plate E has two slots near its back end, the object of which is to permit the pins *i' i'*, extending downward from the back end of the arms I I, to pass through them. The spring *e* secured to the plate E maintains pressure on these pins *i' i'*, and by this means the projections *i i* on the arms I I are kept engaged in their respective recesses in the front of the plate E. The slots at the back end of the plate E are of sufficient length to permit the arms I I to be moved against the force of the spring *e*, or lifted out of any given recesses and dropped into others. There is also a projection, E¹, from the front of the plate E extending downward, which bears against the front of nut D, thus relieving the stud *d* from much strain and wear. The front of the nut D is rounded, to allow the correspondingly-formed projection E¹ to turn smoothly thereon. The bearing-plates or shoes J J form important features of our clamp. They are each a single casting, J, so shaped that a continual bearing is had against the curved end of the arms I I, thus relieving the bolt which connects them. These plates are shaped so as to take hold of the work readily, do not compel any unusual lengthening of the stiles of the work acted upon, and are not in the way of the joiner's hammer in driving wedges, &c. It will be noticed that these plates will always present a true face to the work being acted upon, no matter at what distance apart the arms I I are

set, or what angle they may assume in clamping work out of square or on a rake. The tail-block F is held to the stick A by means of the pin G which passes through the rings *ff* of the tail-block, and stands in one of a series of holes bored through said stick, as shown. The pin G and locking means are shown clearly in section in Fig. 3. A secure and strong connection of the working parts in the tail-block to the main casting may be made by a construction similar to that of the corresponding parts in the head-block, or it may be effected by means of the stout bolt *n*. The arms I I and face-plates J J operate with the spring *e* and plate E the same as in the head-block; the main casting F of the tail-block being slotted for the pin or projection E² from the upper surface of plate E to pass through and form a stop, as explained in describing the head-block. The plate E in the tail-block differs from plate E in clamp-screw only as to the thickness of some portions of it shown in section in Fig. 1; but its operation with the arms I I is essentially the same. Any desired length can be given to the clamp-stick.

We claim as our invention—

1. The within-described compound clamp, having adjustable and self-adjusting arms I I, with swiveling bearing surfaces or shoes J J adapted to act on each side of a joint or mortise, in combination with compressing means C, when the arms and their connections are capable of rocking to allow for inequalities or rake in the material acted upon; substantially as and for the purpose described.

2. The spring *e*, arranged as shown, and serving, in combination with the arms I I and suitable engaging notches or stops, to allow of adjustment of the arms, as herein specified.

In testimony whereof we have hereunto set our hands this 16th day of November, 1872, in the presence of two subscribing witnesses.

WILLIAM H. GOODCHILD.
SAMUEL F. HAY.

Witnesses:

WM. C. DEY,
ALF. WESTBROOK.