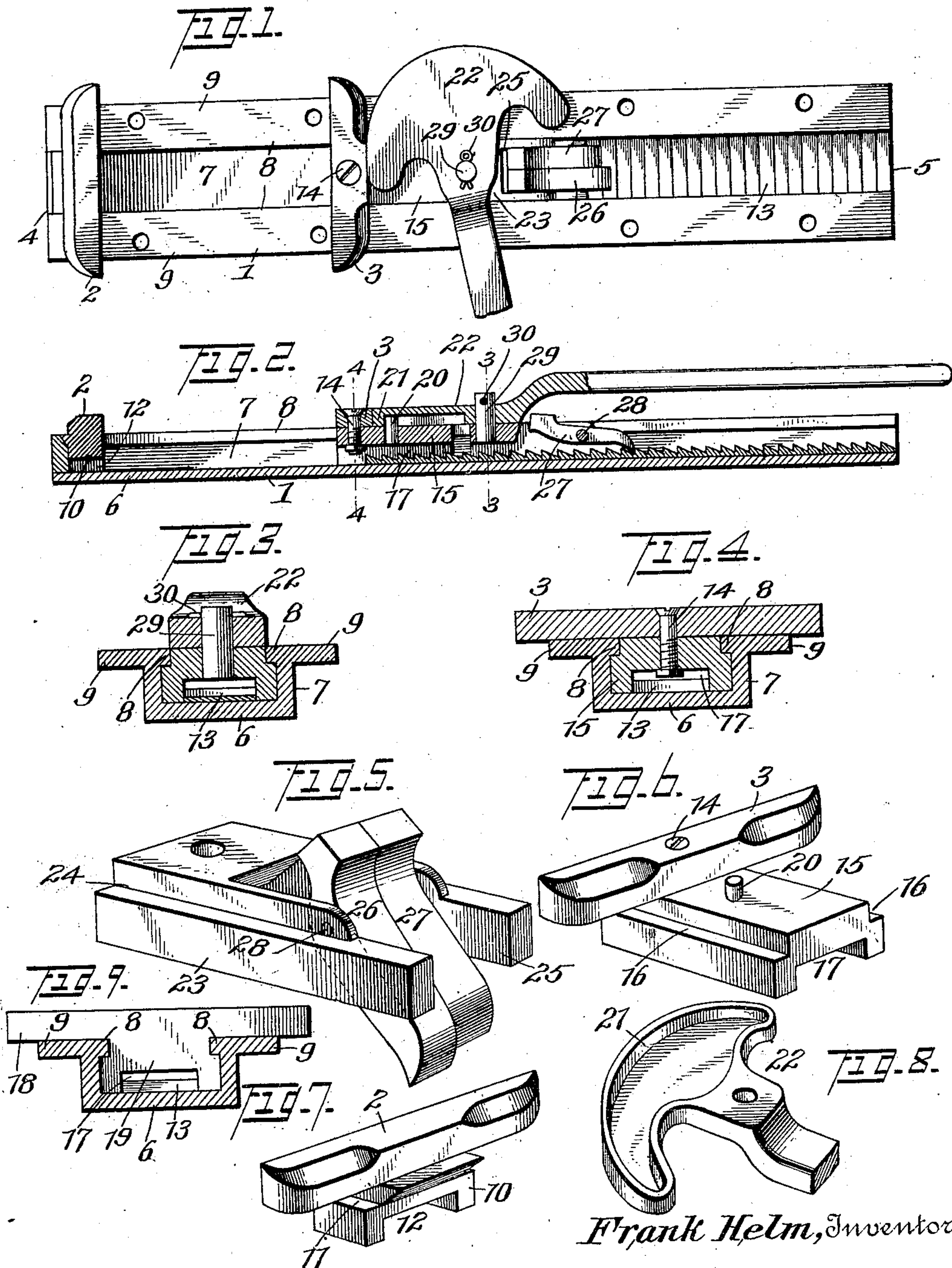


No. 841,012.

PATENTED JAN. 8, 1907.

F. HELM.
WOODWORKER'S BENCH CLAMP.
APPLICATION FILED NOV. 9, 1905.



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WOODWORKER'S BENCH-CLAMP.

No. 841,012.

Specification of Letters Patent.

Patented Jan. 8, 1907.

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To all whom it may concern:

Be it known that I, FRANK HELM, a citizen of the United States, residing at Traverse City, in the county of Grand Traverse and State of Michigan, have invented a new and useful Woodworker's Bench-Clamp, of which the following is a specification.

The invention relates to improvements in bench-clamps for carpenters, cabinet-makers, and the like.

The object of the present invention is to improve the construction of woodworkers' bench-clamps and to provide an exceedingly simple and inexpensive one designed to dispense with the use of the tailpiece or screw of a bench and adapted to hold materials of any size, shape, or thickness.

A further object of the invention is to provide a bench-clamp of this character adapted to save time in benchwork and to enable all of the work to be performed at the head of a bench, where the tools are usually placed.

Also the invention has for its object to provide a woodworker's bench-clamp having a pivotally-mounted jaw adapted to fit tapering or other-shaped material.

A further object of the invention is to provide a bench-clamp having jaws adapted to be moved back out of the way to leave the upper face of the bench clear.

With these and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size, and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a plan view of a bench-clamp constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 2. Fig. 4 is a similar view on the line 4 4 of Fig. 2. Fig. 5 is a detail perspective view of the slide or block of the cam-lever and the pivoted dogs for locking the slide or block. Fig. 6 is a detail perspective view illustrating the construction of the pivoted rear jaw and the

slide or block upon which it is mounted. Fig. 7 is a detail view of the front jaw. Fig. 8 is a detail view of the cam-lever. Fig. 9 is a transverse sectional view showing a rear jaw rigid with its slide or block.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a guide designed to be countersunk in the upper face of a bench in rear of the ordinary bench-clamp with its upper face flush with the upper face of the bench, so that the latter will present a smooth upper face when front and rear clamping-jaws 2 and 3 are moved back out of the way. The guide, which is closed at its front end 4, is open at its rear end 5 and is substantially rectangular in cross-section, being composed of a horizontal bottom 6 and vertical sides 7, which are provided with top flanges 8 and 9, extending inwardly and outwardly from the side walls of the guide and having flat upper faces. The outwardly-extending or attachment flanges 9 are provided with suitable openings for enabling the guide to be secured to a bench by screws or other suitable fastening devices; but the fastening devices may be arranged at any other desired point.

The front jaw 2 is provided with an integral slide or block 10, which is arranged within the guide and which is provided at opposite sides with upper recesses 11 to receive the inwardly-projecting flanges 8 of the guide. The slide or block 10 is arched, being provided at its bottom with an opening 12 to enable it to straddle and clear a ratchet-rack 13, extending longitudinally of the guide along the median line thereof and spaced from the side walls 7. The front jaw 2, which in use is adapted to be placed against the closed end 4 of the guide, as clearly illustrated in Figs. 1 and 2 of the drawings, is also adapted to be readily moved back to the rear end of the guide to arrange it out of the way and to lift the upper face of the clamp flush with the top of the bench to provide a clear surface.

The adjustable jaw 3 may be pivoted by a screw 14 or other suitable fastening device to a block or slide 15, having upper side recesses 16 to receive the inwardly-projecting flanges of the longitudinal guide and arched

to provide a lower central recess or opening 17 to clear the ratchet-rack. The pivoted jaw is adapted to readily adjust itself to various shapes; but, as illustrated in Fig. 9 of the drawings, a rigid jaw 18 may be employed. The jaw 18 is formed integral with its slide or block 19 and is capable of adjustment longitudinally of the guide. The slide or block 15 of the pivoted jaw is provided with a projecting stud 20, which is engaged by a curved eccentrically-arranged flange 21 of a cam-lever 22, and the latter is pivotally mounted on a slide or block 23. The stud or projection 20 is spaced from the rear jaw 3, and the eccentrically-arranged flange is interposed between the stud or projection 20 and the said jaw 3, and when the cam-lever is swung in one direction its curved eccentrically-arranged flange engages the rear jaw and forces the latter toward the front jaw and into engagement with the work, whereby the same will be securely clamped and firmly held. When the cam-lever is swung in the opposite direction, the eccentrically-arranged flange engages the stud or projection and moves the rear jaw backward to release the work. The cam-carrying slide or block 23, which is provided with upper recesses 24, is arched to clear the ratchet-rack, and its upper portion 25 is bifurcated to receive a pair of dogs or detents 26 and 27, which are mounted on a transverse pin or pivot 28. The dogs or pawls 26 and 27 are of unequal length and are arranged to engage ratchet-teeth, one of the pawls or dogs being half-way between the teeth when the other pawl or dog is in engagement with one of the teeth. By this construction an adjustment equal to one-half of the distance between the teeth of the ratchet-rack is provided. The teeth are beveled at the rear side and are shouldered at the front side, so that the pawls or dogs of the cam-carrying block or slide may be moved freely forward. The pawls or dogs drop automatically into engagement with the teeth, and their front portions are adapted to be readily depressed to disengage them from the rack. They are provided at their front ends with projecting portions to facilitate their operation. The cam-lever is provided with a suitable handle, and it is fulcrumed on a pivot 29 of the slide or block 23, being secured to the pivot by a key 30 or other suitable fastening means.

When the front portions of the pawls or dogs are depressed to lift their rear engaging portions from the ratchet-rack, the lever and the rear jaw are adapted to slide freely in either direction along the guide. The guide may be of any desired length, and the open rear end of the guide permits the jaws to be entirely removed from the same, so that jaws of different sizes may be employed to adapt the bench-clamp to different kinds of work. The bench-clamp is designed for

woodworking and is especially adapted for the use of carpenters and cabinet-makers. It will hold material of any size, shape, or thickness, and it dispenses with the tailpiece or screw usually employed on benches. As it is designed to be constructed of pressed steel or steel castings or other suitable material, it is exceedingly inexpensive in construction, and as it is arranged at the front of a bench in rear of the ordinary bench-clamp it is adapted to centralize the work at the front of the bench, where the tools are usually arranged, and it will thereby save much time in bench-work.

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

1. A bench-clamp comprising a guide open at one end and closed at the other and having a fixed rack at the bottom, said guide being provided with inwardly-extending longitudinal flanges, front and rear jaws slidably interlocked with the flanges of the guide and removable at the open end of the latter, a cam for engaging one of the jaws, and means for engaging the rack for holding the cam against backward movement.

2. A bench-clamp, comprising a guide having a longitudinal ratchet-rack and provided with inwardly-extending flanges, front and rear jaws arched to straddle the ratchet-rack and interlocked with the inwardly-extending flanges, a cam-lever for actuating one of the jaws, and means for engaging the rack to lock the cam-lever against backward movement.

3. A bench-clamp, comprising a guide provided with a longitudinal ratchet-rack and having inwardly and outwardly extending flanges, front and rear jaws slidably interlocked with the guide and having arched portions to straddle and clear the ratchet-rack, a cam-lever for engaging one of the jaws, and means for engaging the rack to lock the cam-lever against backward movement.

4. A bench-clamp, comprising a longitudinal guide substantially rectangular in cross-section provided with a longitudinal ratchet-rack and having inwardly-extending flanges, front and rear jaws slidable in the guide and provided with slides or blocks having upper recesses to receive the flanges of the guide and provided with bottom openings to clear the ratchet-rack, a cam-lever for engaging one of the jaws, a slide receiving the cam-lever and having opposite recesses for the said flanges and also provided with a bottom opening to straddle the ratchet-rack, and means mounted on the latter slide for engaging the ratchet-rack.

5. The combination of a guide having a ratchet-rack, front and rear jaws slidably interlocked with the guide, a slide, a cam-lever mounted on the slide and engaging one of the jaws, and a pair of dogs pivoted to the slide and arranged to engage the ratchet-rack.

6. A bench-clamp, comprising a guide having a ratchet-rack, front and rear jaws, the rear jaw being provided with a stud or projection, a slide, a cam-lever fulcrumed on the slide and arranged to engage the rear jaw and provided with a curved flange for engaging the stud or projection, and means mounted on the slide for engaging the rack.

7. A bench-clamp, comprising a guide having a rack, front and rear jaws, the rear jaw being slidable along the guide and pivotally mounted, a slide, a cam-lever pivotally mounted on the slide and arranged to engage the rear jaw, and means mounted on the slide for engaging the rack.

8. A bench-clamp, comprising a guide having a rack, front and rear jaws, the rear jaw being slidable along the guide and having a stud or projection, a slide, a cam-lever fulcrumed on the slide and provided with an eccentrically-arranged flange interposed between the stud or projection and the rear jaw and arranged to engage the same, and a pair of dogs or pawls of unequal length pivoted to the slide and arranged to engage the rack.

9. A bench-clamp, comprising a guide having a rack, a front jaw having a slide or block interlocked with the guide and arched to straddle the rack, a rear jaw slidably inter-

locked with the guide, a slide arched to clear the rack and interlocked with the guide and having its rear end bifurcated, a cam-lever fulcrumed on the bifurcated slide and engaging the rear jaw, and a dog pivoted in the bifurcation of such slide and engaging the rack.

10. A bench-clamp comprising a fixed jaw, a guide, a slide operating in the guide, a movable jaw carried by the slide, a cam-lever for actuating the movable jaw, a slide carrying the cam-lever, and a detent for locking the latter slide in its adjustment.

11. A bench-clamp comprising a guide, front and rear jaws, the rear jaw being slidable along the guide and having a stud or projection, a slide, a cam-lever fulcrumed on the slide and provided with an eccentrically-arranged flange interposed between the stud or projection and the rear jaw and engaging the same, and means for locking the slide against backward movement.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK HELM.

Witnesses:

CHAS. M. BEERS,
A. B. COOK.