

No. 875,302.

PATENTED DEC. 31, 1907.

A. N. VERDIN.
SCREW CLAMP.

APPLICATION FILED OCT. 11, 1906.

Fig. 1.

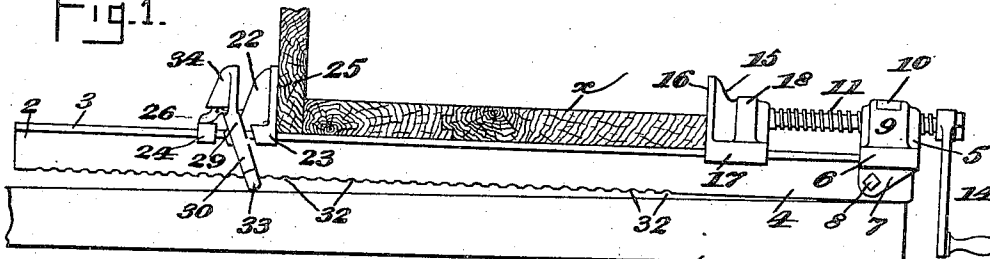


Fig. 2.

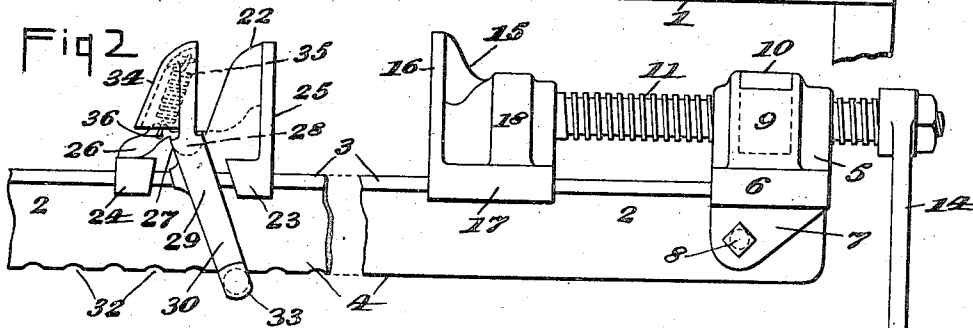


Fig. 3.

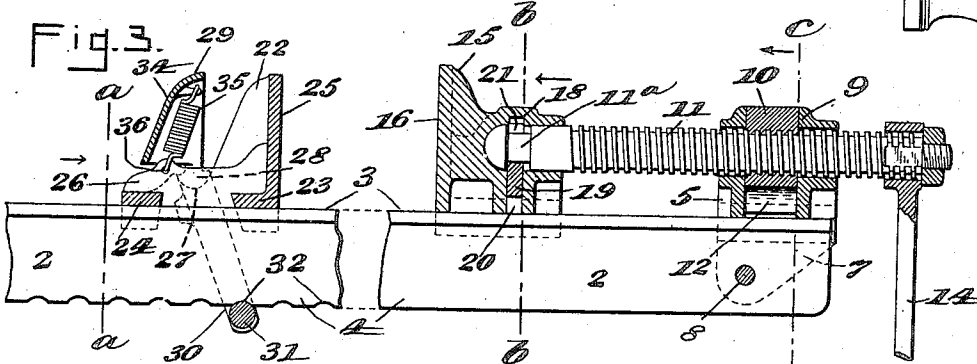


Fig. 4.

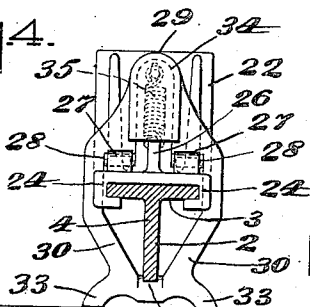


Fig. 5.

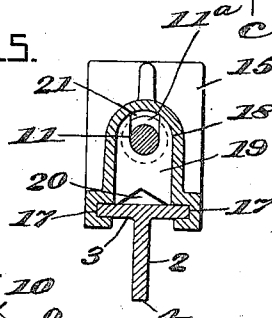
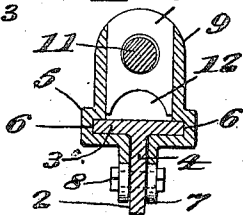


Fig. 6.



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UNITED STATES PATENT OFFICE.

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SCREW-CLAMP.

No. 875,302.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed October 11, 1906. Serial No. 338,339.

To all whom it may concern:

Be it known that I, ALOIS N. VERDIN, a citizen of the United States of America, and a resident of Glendale, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Screw-Clamps, of which the following is a specification.

This invention relates to certain improvements in clamps and more particularly in that class of such devices which are especially designed and adapted for use in joinery for holding or clamping parts as, for example, during the hardening of glue, and the object of the invention is to provide a device of this character of a simple and comparatively inexpensive nature and of a light, strong and durable construction which shall be adapted for convenient and rapid operation for securely holding the work and also for the release of the work when desired.

The invention consists in certain novel features and principles of the construction and combinations and arrangements of the several parts of the improved clamp, whereby certain important advantages are attained and the device is rendered simpler, cheaper and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings which serve to illustrate my improvements—Figure 1 is a side elevation, drawn to a small scale and showing a clamp constructed according to my invention applied for use for holding a piece of work; Fig. 2 is a view similar to Fig. 1, but drawn to a larger scale, the work being omitted, and certain parts of the elongated frame of the improved clamp being broken out for lack of space; Fig. 3 is a view somewhat similar to Fig. 2, but showing the movable parts of the improved clamp in longitudinal section; Fig. 4 is a transverse section taken through the clamp in the plane indicated by line *a— a* in Fig. 3 and showing certain features of construction of the adjustable work-rest or stop-jaw which will be hereinafter set forth; Fig. 5 is a transverse sectional view, taken in the plane indicated by the line *b— b* in Fig. 3, and showing certain features of the clamping-jaw of the device as will be hereinafter described, and Fig. 6 is a sectional view taken trans-

versely in the plane indicated by line *c— c* in Fig. 3 and illustrating certain features of the means for detachably-holding in position the nut for the actuating-screw of the clamping-jaw of the device.

In these views, 1 represents a work-bench or support on which the improved clamp is rested and 2 represents the frame thereof, which frame is made, as herein shown, in the form of an elongated beam or bar of metal T-shaped in cross-section and having an upper horizontally-extended longitudinal flange 3 and a lower longitudinally-extended vertical flange 4 integral along the central part of said upper flange 3, as clearly shown on the drawings. The length of this T-shaped beam or frame 2 may vary according to the requirements of the work to be done.

5 represents a casing or socket provided at one end of the frame or beam 2, being herein shown as formed from a metal casting extended above the horizontal upper flange 3 and having, at its opposite sides, undercut bearings 6, 6, within which the opposite edge portions of said horizontal flange 3 are snugly engaged as shown in Fig. 6, while below said bearings, said casing or socket-member 5 is provided with integral downwardly-extended arms or lugs 7, 7, spaced apart to take on opposite sides of the lower vertical flange 4 of the frame or beam 2 and perforated for the passage of a bolt 8, by means of which said casing or socket-member 5 is securely held in position upon the rear end of the frame or beam 2.

The upper part of the casing or socket-member 5, which is extended above the upper horizontal flange 3 of said frame or T-beam 2 is provided with a vertically-extended chamber or recess 9, wherein is a nut 10, held for vertical sliding-movement so that it may be conveniently slid within or withdrawn from the said chamber or recess 9, the top of which is open, as clearly shown in Figs. 2, 3 and 6, so that said nut may be readily inserted or withdrawn when desired.

The nut 10 has an internally threaded aperture through which is passed the operating-screw 11, which is alined with the length of the frame or beam 2, above the upper horizontal flange 3 thereof and is passed through openings in the walls of the casing or socket-member 5, and has one end portion arranged to project beyond the end of the frame or beam 2 at which said casing or member 5

is secured, said end of the screw being flattened or otherwise formed to engage and lock within a flat-sided opening in the boss of a crank-handle 14, the movement of which is thereby imparted to said screw 11. The said screw 11 has a reduced and threaded extended part beyond its flattened portion and a nut is screwed thereon for holding the crank-handle 14 in position. By this construction it will be seen that when the crank-handle and its securing-nut are disengaged from the outer end of the screw-shaft 11, said shaft may be sufficiently turned to cause its flattened end to pass entirely through the nut 10, whereby it will be seen that said nut is free for removal from the chamber or recess in the casing or socket-member 5, and in this way said nut may be conveniently removed when worn and may be replaced by a new nut, whereby the clamp may be readily repaired when worn by use. To prevent wear of the screw-shaft 11 said nut 10 will preferably be formed from softer material than the shaft, and the underside of said nut is centrally recessed or concaved, as shown at 12, to lessen weight without decreasing the surfaces of the nut for lateral engagement at the sides of chamber 9, the underside of said nut being, however, elevated out of contact with the frame or T-shaped bar 2, so as not to be tilted or thrown out of alinement by any irregularity in the upper surface of said bar.

15 represents the clamping-jaw of the device which is provided with a flattened clamping-surface 16 extended at right-angles above the frame or beam 2 and is adapted for adjustment lengthwise along said frame or beam to permit of being pressed into clamping-engagement with the work as indicated at x in Fig. 1. The clamping-jaw 15 has guides 17, 17, undercut at opposite sides of its lower part for engagement on and sliding-movement lengthwise along opposite edges of the upper horizontal flange 3 of the frame or beam 2, as seen in Fig. 5, and the upper part of said clamping-jaw, above the beam 2 is provided with a chamber or recess 18, wherein is removably-held a key or locking-piece 19, the upper end of which is centrally notched or slotted as shown at 21, for engagement within an annular groove 11^a produced in the headed, adjacent end of the screw-shaft 11, which headed or collared end is extended within an aperture in the jaw 15 communicating with the chamber 18 in which said key or locking-piece is held.

The chamber 18 in the jaw 15 is closed at the upper part of said jaw, so that the key or locking-piece 19 is held against accidental dislodgment in case the clamp is overturned, and the lower end of said locking-piece or key 19 is centrally notched or cut away, as shown at 20, to produce edge portions or feet resting for ready sliding-movement upon the upper surface of the horizontal flange 3 of the

frame or beam 2 so that in the turning of the screw-shaft 11, said clamping-jaw will be evenly and readily movable along said beam and the lower part of the key or locking-piece will be prevented from binding upon the said beam. Also, while the said key or locking-piece 19 is securely held against accidental dislodgment from the chamber 18 in jaw 15 when said jaw is in place upon the beam 2, it is evident that when the crank-handle 14 has been detached and the screw 11 run through the nut 10, the clamping-jaw may be freely slid toward and removed from the end of beam 2 opposite to the nut-casing 5 (after previous removal of the adjustable work-rest or stop 22 as will be hereinafter explained) and when said jaw 15 has been thus removed, the key or locking-piece 19 is freely removable at the bottom of the jaw so that it may be replaced when worn. This key or locking-piece is also made from metal softer than the screw-shaft, by preference, so that the wear on said shaft may be reduced to a minimum to facilitate repairs of the device.

22 represents the adjustable work-rest or stop of the device having a flattened clamping surface 25 extended at right-angles above the upper horizontal flange 3 of the frame or beam 2 similar and opposite to the surface 16 of jaw 15 and against which the work x is adapted to be forcibly pressed when engaged by the clamping-jaw 15, in such a way as to permit of securely holding said work in position between the two surfaces as indicated in Fig. 1. The rest or stop 22 has its lower part undercut, spaced, forward and rear guides 23 and 24 engaged for sliding-movement along opposite edge portions of the upper horizontal flange 3 of the frame or beam 2, said guides 23 and 24 being connected with a central web 26 connected with the rest or stop. Said rest or stop is also provided with lateral webs at opposite sides of said central web and wherein are produced pivotal depressions or seats 27, 27, central between the forward and rear guides 23 and 24 and alined at opposite sides of the rest or stop and wherein are received for pivotal rocking-movement, fulcra 28, 28, produced at opposite sides of a dog or locking-member 29, the lower part of which is formed into a yoke encircling the frame or beam 2 and having arms 30, 30, passed down along opposite edges of the upper horizontal flange 3 of said beam and converging beneath the lower edge of the vertical flange 4 thereof to form a tooth or part 31, which in the pivotal or rocking movement of the dog within the pivotal depressions 27, 27 at opposite sides of the work-rest or stop, is adapted to be engaged with one or another of a series of notches or serrations 32, 32, produced along said lower edge of the vertical flange 4 of the frame or beam 2.

The lower part of the dog 29, below the pin or tooth 31, is formed with oppositely-direct-

ed feet or projections 33, 33, extended at a sufficient distance beyond the opposite sides of the beam or frame 2, for engagement upon the work-bench 1 or other supporting surface to retain the clamp in supported position and prevent the same from tilting laterally whereby the work x carried by the clamp would be rested at one side or end upon the bench or other supporting surface and might thereby be damaged or sprung before the hardening of the glue joint.

The upper part of the dog or locking-member 29 is formed with an integral hood or shield 34, within which is housed a spring 35, the upper end of which is connected with said hood or shield, while its lower end is extended in a downwardly and rearwardly inclined direction and is connected with the central web 26 of the work-rest or stop at a point at the rear of the lateral alined fulcrum 28, 28 of the dog or locking-member 29, whereby the tension of said spring 35 is exerted to retain the upper end of the dog or locking-member in a rearwardly-inclined position as clearly shown in Figs. 1, 2 and 3. The length of the pendent yoke of the dog or locking-member 29, formed of the convergent arms 30, 30, and tooth or pin 31, is such that when the said dog or member 29 is moved against the tension of its retracting-spring 35 to an erect position, with the said yoke at right-angles to the length of the frame or beam 2, the pin or tooth 31 at the convergent ends of the arms 30, 30, will be rearwardly withdrawn out of engagement with the notches or serrations 32, 32, in the lower edge of the vertical flange 4 of said frame or beam and will stand in a plane below said flange in such manner as to permit free and unobstructed movement of the work-rest or stop, so that the latter may be freely slid forwardly or rearwardly along the frame or beam to permit adjustment of the forward clamping surface 25 of said rest or stop at any point along the frame or beam desirable to facilitate the clamping of the work x between said rest and the clamping-jaw 15 of the device. In this way the work-rest may be readily and conveniently adjusted along the beam 2 to accommodate work of different dimensions, and when so adjusted, the release of the dog or locking-member 29 will permit its retracting-spring 35 to at once act to throw said dog or member to its rearwardly-inclined position as shown in the drawings, whereby the pin or tooth 31 at the lower end of the yoke of said dog or member will be engaged within the adjacent notch or serration 32 in such a way as to securely lock said work-rest or stop to the frame or beam 2 and prevent movement thereof lengthwise along said beam.

In the operation of the device, when the work-rest or stop 22 has been adjusted at the proper position along the beam or frame 2 to accommodate the work to be clamped, the

clamping-jaw 15 being at the same time run forwards by proper manipulation of the crank-handle 14 so that the work may be received between the rest or stop 22 and jaw 15, the work is set in position between said parts as shown in Fig. 1 and the screw-shaft 11 is reversely turned by proper manipulation of the crank-handle so that the clamping-jaw is run up along the beam and is caused to press with sufficient force upon the forward side of the work to securely hold the same clamped during the drying of the glued joint.

The improved clamp is of an extremely simple and inexpensive nature and is especially well adapted for use by reason of the facility with which the work-rest or stop may be adjusted to accommodate work of different dimensions, and after adjustment of such rest or stop to a particular style of work it is evident that but slight movement of the clamping-jaw 15 is necessary either in clamping or releasing the work. It will also be evident that a material advantage is attained by reason of the fact that the clamped work may be effectively supported and held against damage due to tilting and contact of the work upon the supporting surface, and the work-rest or stop 22 is capable of ready removal over the rear end of the frame or beam 2 upon proper actuation of its dog or locking-member 29, whereby it will be evident that the clamping-jaw 15 may be readily removed for replacement of its key 19 when worn, the nut 10 being similarly replaceable so that the life of the device is greatly increased and repairs are permitted to be readily and cheaply effected.

It will also be evident from the above description that the device is susceptible of some modification without material departure from the principles and spirit of the invention and for this reason I do not desire to be understood as limiting myself to the precise form and arrangement of the several parts of the improved clamp herein set forth in carrying out my invention in practice.

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

1. A device of the character described comprising a frame having a horizontally-flanged upper portion and a vertical flange or lower portion, a work-rest having undercut guides adjustable along said upper portion of the frame, a clamping-jaw having a casing and also having undercut guides engaged for sliding-movement on said upper portion of the frame toward and from said work-rest, a removably-held key in said casing, a second casing having vertical and horizontal openings and hinged to the rear end of the flanged frame, a vertically-removable nut in the vertical opening of said second casing and coinciding with its horizontal

opening, and a collared screw-shaft engaging said key and nut whereby endwise movement is imparted to said clamping-jaw.

2. In a device of the character described,
5 the combination of a frame horizontally and oppositely flanged at its upper part and having at its lower part a longitudinally-extended series of serrations, a work-rest having undercut guides engaged for sliding
10 movement along the said oppositely-flanged upper part of the frame, a locking member or dog pivotally mounted on the work-rest and having a pendent yoke directed in advance of the pivot-point of said dog, lateral

supporting-feet on said yoke and a hood on 15 said dog carrying a spiral-spring, the latter stretched between the hood and the work-rest base and adapting said yoke for automatic normal engagement with one or another of the serrations of said longitudinal 20 series.

Signed at Cincinnati, Ohio, this 4th day of October, 1906.

ALOIS N. VERDIN.

Witnesses:

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