N. C. HANSEN.

CLAMP.

APPLICATION FILED SEPT. 27, 1915.

1,222,204.

Patented Apr. 10, 1917.

2 SHEETS—SHEET 1.

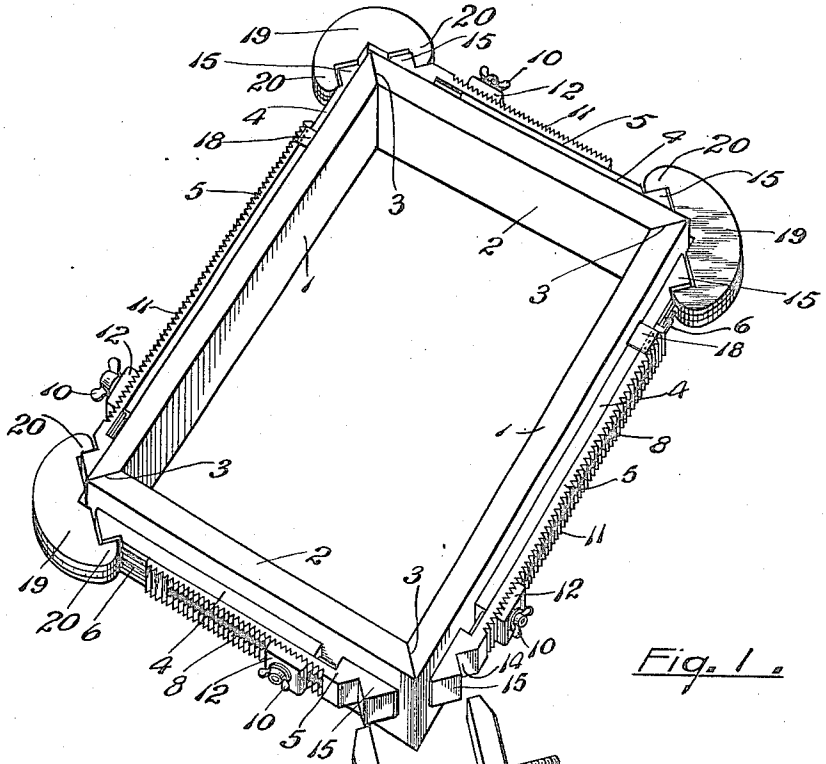


Fig. 1.

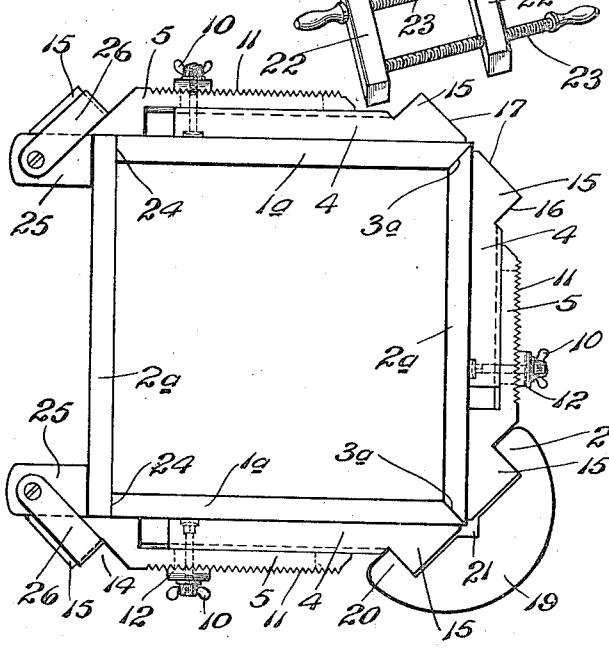


Fig. 2.

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2 SHEETS—SHEET 2.

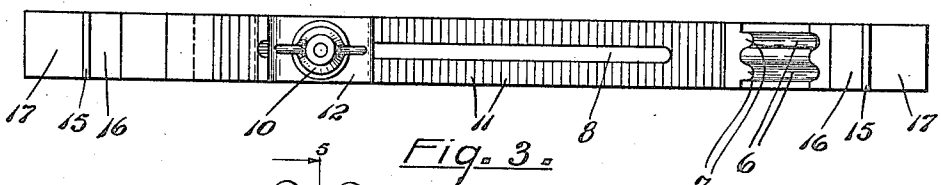


Fig. 3.

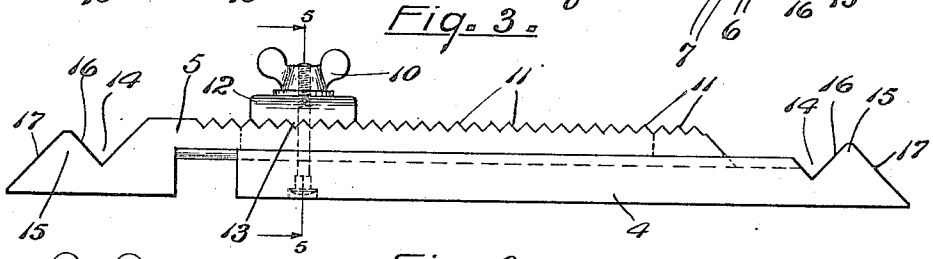


Fig. 4.

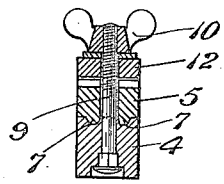


Fig. 5.

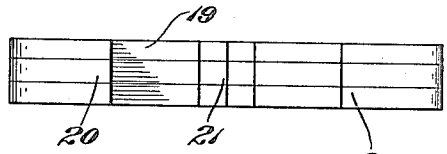


Fig. 6.

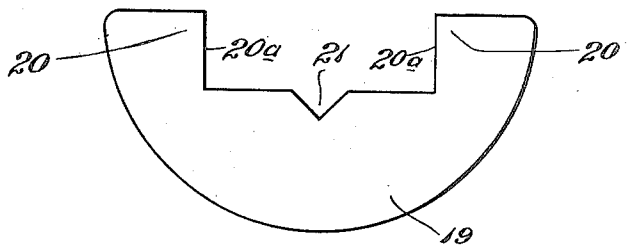


Fig. 7.

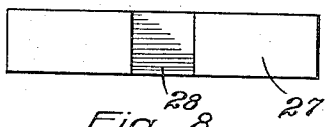


Fig. 8.

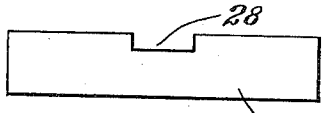


Fig. 9.

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UNITED STATES PATENT OFFICE.

NEILS C. HANSEN, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO WILLIAM A. BERKEY FURNITURE COMPANY, OF GRAND RAPIDS, MICHIGAN, A CORPORATION OF MICHIGAN.

CLAMP.

1,222,204. Specification of Letters Patent. Patented Apr. 10, 1917.

Application filed September 27, 1915. Serial No. 52,861.

To all whom it may concern:

Be it known that I, NEILS C. HANSEN, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Clamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a clamping device which is especially adapted to be used in holding the parts of a frame together in the process of gluing the corners thereof and is of especial value in gluing mitered corners. Heretofore in fastening mitered corners of a frame, door or the like together it has been necessary to glue on the members of the frame blocks adjacent the corners thereof so shaped that they were adapted to furnish a bearing for attachment of the well known screw clamp, these blocks after the frame had been made being cut off and the surfaces finished, necessitating several operations and adding to the expense. It is the object and purpose primarily of my invention to provide a clamping means which may be placed around a frame having mitered corners or any other similar article with like corners, this clamp serving to hold the members of the frame in rigid position with relation to each other without the necessity of these former additional operations. A further object of the invention consists in the provision of clamping devices which may be placed around and adjusted to frames of various sizes. Various other objects and purposes not specifically enumerated will also appear as understanding is had of the invention disclosed in the accompanying drawings, in which;

Figure 1 is a perspective view illustrating the use of my invention in the operation of gluing together the sides and ends of a rectangular frame.

Fig. 2 is a plan view illustrating the use of my invention and securing together the sides and ends of a frame in which only part of the corners are mitered.

Figs. 3 and 4 are plan and side elevations respectively of one element of the clamping mechanism, one of which is placed alongside each side and end of the frame.

Fig. 5 is a vertical section taken on the line 5—5 of Fig. 4.

Figs. 6 and 7 show in elevation and plan a tie member which is used in conjunction with the side and end members of the clamp shown in Figs. 3 and 4.

Figs. 8 and 9 are plan and side elevations respectively of an auxiliary block, a plurality of which are used with frames having members of considerable width.

Like reference characters refer to like parts throughout the several views of the drawings.

In Fig. 1 I have shown the clamp applied to a rectangular frame having sides 1 and ends 2, the corners being mitered on substantially an angle of 45 degrees as illustrated at 3. Along each side and end of the frame is positioned an extensible member consisting of an inner bar 4 and an outer bar 5, the inner bar being grooved on one face at 6 to receive corresponding tongues 7 formed on the inner face of the bar 5 whereby the bars are slidable lengthwise with respect to each other. Bar 5 is provided with a slot 8 which extends nearly the length thereof terminating short of each end, however, through which a pin 9 screw threaded at its outer end and inserted through bar 4 passes. A wing nut 10 threads on to the outer end of the pin 9 as shown. The outer surface of the outer bar 5 is provided with a plurality of projections 11 substantially triangular in shape leaving between them a plurality of triangular notches. A short block 12 equipped on its inner face with similar triangular projections 13 is mounted on the pin 9 between the wing nut 10 and the outer face of bar 5, its projections 13 seating in the notches of the bar 5. It will be apparent that by operation of the wing nut the bars may be loosened and adjusted to any desired position and when the wing nut is tightened block 12 seating against the bar 5 will hold the parts of the extensible member in rigid relation to each other.

Each bar 4 and 5 at its end is provided on its outer face with a notch 14, the sides of which in the present construction lie at right angles to each other. Each bar is further provided with a projection 15, the sides 16 and 17 of which in the present construction also lie at right angles to each other, though it is to be understood that the forma-

tion of the sides of the notches 14 and of the projection 15 may be varied for use in securing together the sides of frames which are not rectangular or in which the members do not lie at right angles to each other as shown in Fig. 1. When the bars 4 and 5 are of considerable length it is advisable to place a stirrup 18 around the bar 4 attaching its ends to the bar 5 as shown in Fig. 1, this being merely a precaution against separation of the bars when they are of considerable length though usually the groove 6 and guide 7 are sufficient.

As before stated, in the use of the clamp one of these extension members is located at each side of the frame, the sides and ends of which are to be glued together, and adjusted so that the length of an extension member is a little shorter than the length of the frame member against which it is positioned. A tie member 19 formed as shown in Figs. 1 and 7 and having two projections 20, is used to tie together the adjacent ends of two of the extensible members, one of which is located along the side of the frame and the other along the end, the projection 15 of said members engaging with the projections 20 of the tie members 19 with sides 20^a bearing against sides 16 of projections 15. A recess 21 is also formed in the tie member which comes opposite the corner of the frame operated upon. These tie members are used at all corners except one at which a well known form of screw clamp comprised of spaced apart bars 22 connected by screws 23 is used, the ends of bars 22 seating in notches 14 and bearing against sides 16 of the projections 15. By tightening the clamp all of the members placed around the frame are tightened and drawn very snugly against the frame, in this manner holding the corners at 3 together against displacement so long as the clamp is fixed thereon.

It is sometimes necessary to glue members of a frame in which all of the corners are not mitered corners. This is shown in Fig. 2 in which the sides 1^a and ends 2^a form the frame, two corners 3^a being shown similar to the mitered corners 3 of the frame in Fig. 1 while the other corners as shown at 24 are formed by merely abutting the ends of sides 1^a against one of the ends 2^a. With this type of frame but three of the extension bars are needed, being placed along the two sides and the one end which has the mitered corners with the sides. An auxiliary attachment consisting of a block 25 provided with a stirrup 26 pivotally attached thereto is placed over an end of the side extension members, the stirrup being received in the notch 14 and bearing against the side 16 thereof, while the block has a side contacting with the side 2^a as shown. One tie block member 19 is used at one mitered corner and the screw clamp previously described at the opposite corner, this serving to secure the parts of the frame together and hold them so that they may be glued.

I have also provided additional devices to be used when the sides and ends of the frame are of considerable width, much wider than the width of extension clamp members. This device consists of a block substantially square in cross section as shown at 27 having one side provided with a notch 28, the width of which is equal to the width of the extension members. In this case members 27 have a length approximately equal to the width of the side and end members of the frame and these members 27 are placed against the frame members with the extension members of the clamp seated in the notches 28 thereof, said extension members being tied and drawn together the same as shown in Fig. 1 but with the parts 27 bearing firmly against the sides and ends of the frame. It will be apparent that in this manner an even pressure may be exerted the full width of the members at the corners thereof even though they are of much greater width than the extension clamp members.

The invention is not limited in use to rectangular frames nor to frames of any particular size. In practice the invention has been used in gluing together sides and ends of a table frame which is located below the top of the table and to which the top is attached. It is of course understood that the invention may be utilized in many different ways and that the construction may be variously modified. Accordingly, I do not wish to be limited to the specific disclosure shown and described but consider myself entitled to all modifications in structure falling within the scope of the appended claims which define the invention.

I claim:—

1. In a clamp an extensible member comprised of two bars lying one against the other, one of said bars having lengthwise grooves formed on one side in which similarly positioned ribs on the other bar seat, one of said bars also having a slot formed lengthwise therein, a pin secured to the other bar extending through the slot in the first bar, a series of uniform projections on the first bar, a block formed with a plurality of notches adapted to receive the projections located on the pin, a nut threaded on to the end of the pin, and angular projections at the ends of the extensible member, one on each bar and extending in the same direction, substantially as described.

2. In a clamp, an extensible member comprised of two bars lying one against the other, said bars having coacting longitudinal grooves and ribs on their adjacent inner sides, and one of said bars also having a longitudinal slot therein, a plurality of con-

secutive transverse projections of the same size and shape on the outer side of said bar, a pin passing through the second bar and the slot in the first bar, a block having a plurality of transverse notches in its inner side adapted to receive the projections on said first bar, said pin also extending therethrough, a nut threaded on to the end of the pin, and a head having a width equal to the combined widths of the two bars located at one end of said first bar and provided with a notch having sides located at an angle to each other in its outer side, said head at its end being cut at an incline to the width thereof, said second bar on its inner side adjacent one end also having a notch with sides located at an angle to each other and with its end cut at an incline to the width thereof, substantially as described.

In testimony whereof I affix my signature.

NEILS C. HANSEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."