Dec. 28, 1926.

1,612,299

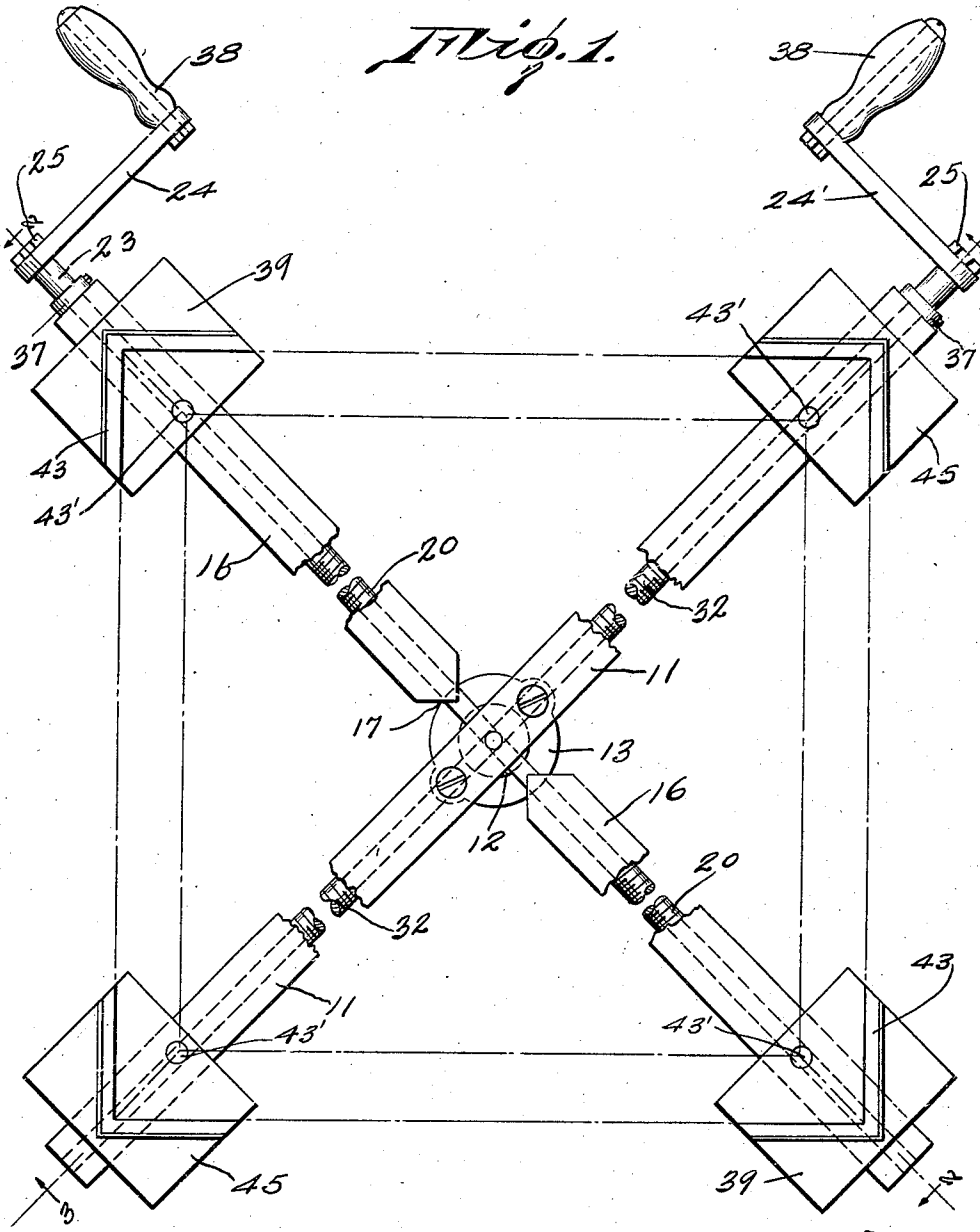
P. MADSEN

CLAMPING DEVICE

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3 Sheets-Sheet 1

Fig. 1.




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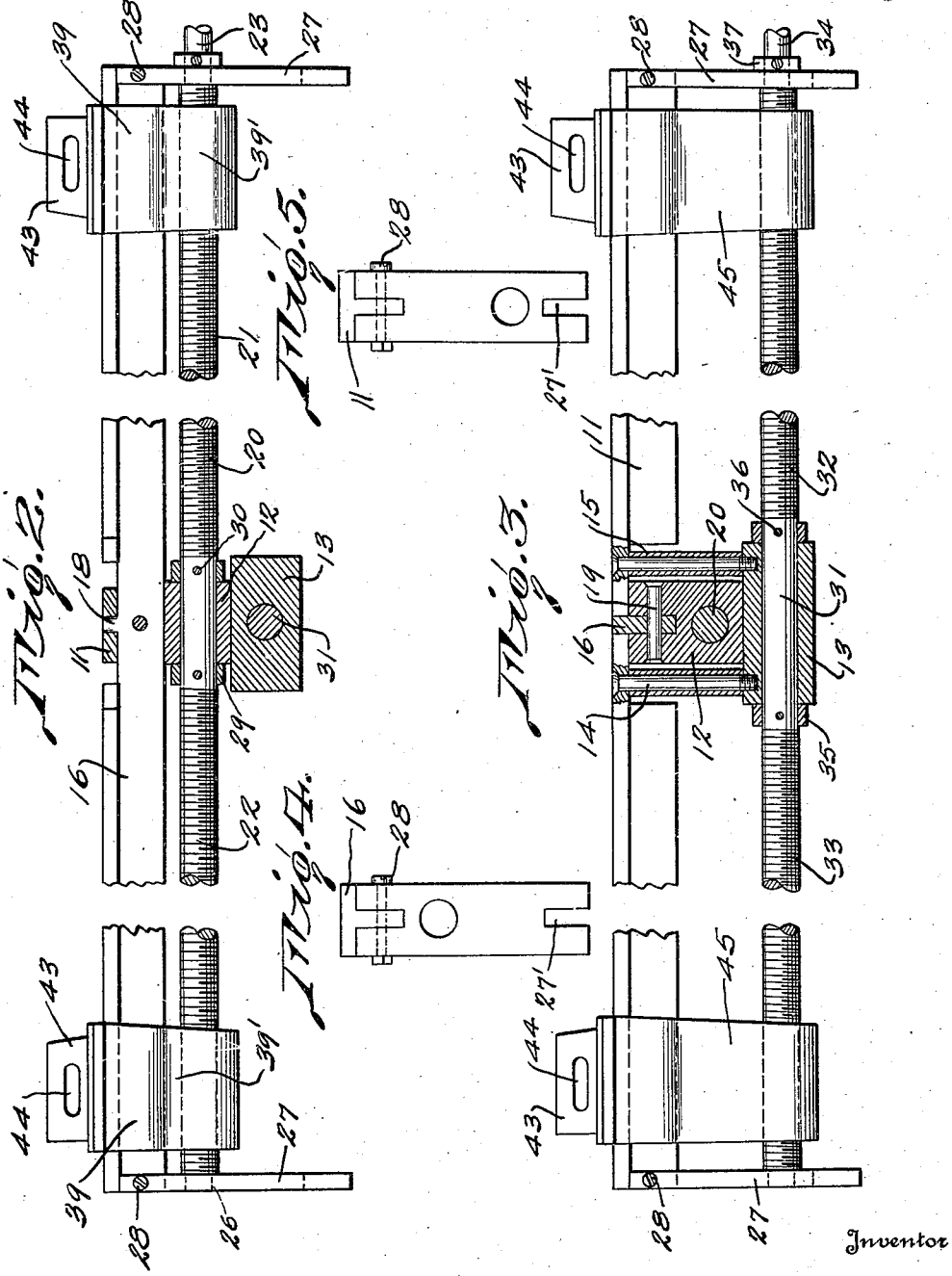
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Fig. 6.

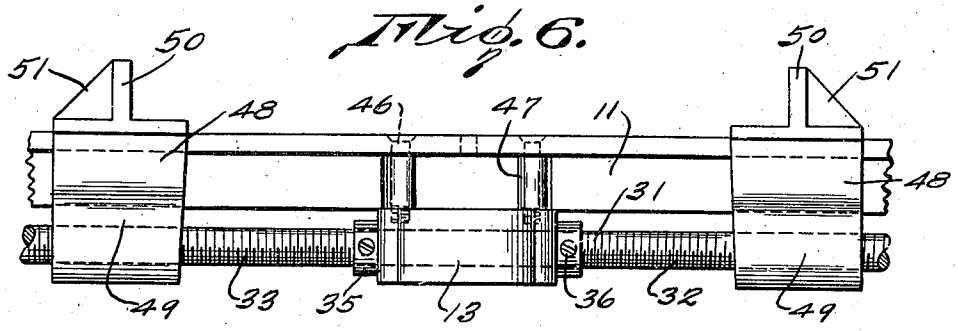



Fig. 7.

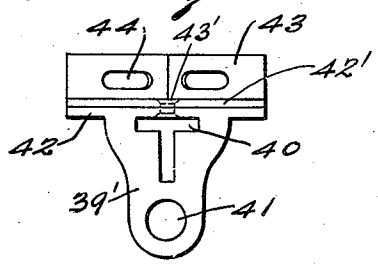



Fig. 8.

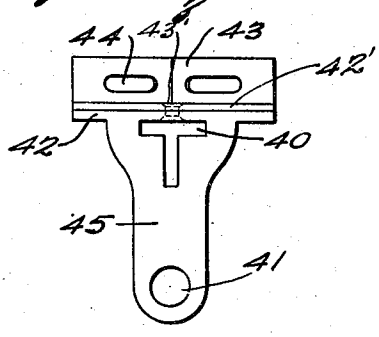



Fig. 9.

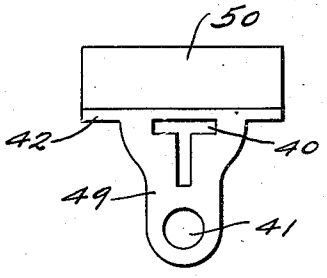
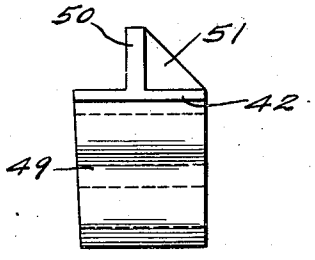



Fig. 10.




Inventor

Peter Madsen

Patented Dec. 28, 1926. 1,612,299

# UNITED STATES PATENT OFFICE.

PETER MADSEN, OF WEBSTER CITY, IOWA.

## CLAMPING DEVICE.

Application filed July 2, 1924. Serial No. 723,729.

This invention relates to improvements in clamping devices particularly adapted for use on picture frames or similar structures.

An important object of the invention is to provide a clamping device which will readily engage and retain in position picture frames and the like.

A further object of the invention is the provision of a device of this character which may be handled by one man and perform the work speedily and accurately.

A still further object of the invention is to provide a clamping device of this character which may be adjusted to engage different shaped frames.

A still further object of the invention is to provide a clamping device of this character which may be employed upon work accomplished by the ordinary single acting clamp.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is a plan view of my improved device,

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1,

Figure 3 is a vertical sectional view taken on the line 3—3 of Figure 1,

Figure 4 is an end elevation of one of the clamping units,

Figure 5 is a similar view of the other clamping unit,

Figure 6 is a side elevation of a modified form of my device,

Figure 7 is a front elevation of one of the retaining brackets,

Figure 8 is a similar view of another retaining bracket,

Figure 9 is a front elevation of a modified form of retaining bracket, and

Figure 10 is a side elevation of the same.

In the drawings, wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 11 denotes one of the guide bars which is preferably T-shape and is provided with three apertures in the central portion thereof. The central portion of the web plate formed on the T-bar 11 is cut away to permit mounting of a circular bearing block 12 which is positioned against the horizontal flange plate of the bar 11. A second bearing block 13 is mounted beneath the bearing block 12 and is also circular in cross section although not as deep as the upper bearing block 12. The lower bearing block is secured to the guide bar 11 by means of a pair of bolts 14 inserted through suitable openings formed in the flange of the guide bar 11 and provided with threads at the lower extremity to engage suitable threaded openings in the upper portion of the block 13. These bolts are preferably covered by a sleeve 15 positioned between the guide bar flange and lower bearing block to properly space the same.

A second guide bar 16 is mounted transversely of the guide bar 11 and is similar in construction, the central portion of the horizontal flange on the guide bar 16 being cut away to form U-shaped recesses 17. The vertical web of the guide bar 16 is positioned within a suitable groove formed in the upper portion of the bearing block 12, the upper extremity of the central portion having a pivot pin formed thereon extending upwardly through a suitable recess formed in the flange of the guide bar 11, thus forming a circular pivot about which the guide bars may be rotated and relatively adjusted. To further secure the guide bar 16 within the bearing block 12 I provide a cross pin 19 positioned within suitable openings formed in the block and guide bar web and riveted or otherwise secured at the extremities.

A circular actuating bar 20 is rotatably mounted in the lower portion of the bearing block 12, the central portion being suitably machined to form a bearing surface while the sections of the rod extending on either side are threaded. One section extending towards the handle is provided with right hand threads as at 21 while the other section is provided with left hand threads 22, the extremity being turned down to form bearing shafts. The shaft on the handle engaging extremity shown at 23 extends a substantial distance from the threaded section of the rod, the extreme end being square in cross section to engage a similar shaped opening formed in one extremity of a handle crank 24. A threaded extension of small diameter is formed upon the shaft 23 and is adapted to receive a retaining nut 25. At the other extremity of the rod 20 the shaft, denoted by the numeral 26, is comparatively short and adapted to engage a circular open-

ing formed in an end plate 27, four of which are used on the device secured to the extremities of the guide bars by means of screws 28.

The upper and lower extremities of the end plates 27 are provided with vertical slots 27′ to engage the webs of the guide bars, the plates being thus interchangeable and may be mounted upon either of the clamping units.

The threaded shaft 20 is prevented from side movement by a pair of collars 29 mounted upon the rod on each side of the bearing block 12, the collars being secured to the rod by means of threaded screws 30.

31 is a second actuating rod positioned below the rod 20 and at substantially right angles thereto, the central portion being rotatably mounted within the lower bearing block 13 the sections on the sides of the central bearing portion being provided with right hand threads 32 and left hand threads 33 similar to the previously mentioned actuating rod 20. The extreme ends of the rod 31 are turned down to project through suitable openings formed in the end plates 27, one of the turned down extensions indicated by the numeral 34 extending somewhat beyond the end plate and carrying a crank 24′ mounted upon the extension 34 as previously described for the other clamping unit. A pair of retaining collars 35 are secured to the rod 31 at both sides of the bearing block 13, the collars being securely fastened upon the rod by means of retaining screws 36. Collars 37 are also mounted upon the reduced extension shafts 23 and 34, bearing against the end plates 27 and taking the thrust from the handle. Rotatable handles of any desired form are secured to the extremities of the cranks 24 and 24′ as shown by the numeral 38 enabling the operator to readily rotate the crank without great effort.

This form of my device employs two pairs of movable retaining brackets, one pair being mounted on each clamping unit and actuated by the rods 20 and 31. The numeral 39 indicates the pair of brackets employed upon the upper clamping unit, each of these brackets comprising a tapered body portion 39′ provided with a T-shaped recess through the upper central portion as shown at 40 and an internally threaded bore 41 formed through the lower portion, this bore being adapted to engage the threads formed upon the actuating rod 20. It is obvious that one of these brackets will be provided with left hand threads while the other with right hand threads engaging the proper sections of the rod and causing the brackets to move inwardly or outwardly upon rotation of the same. A horizontal plate is formed upon the body portion 39′ as denoted by the numeral 42, this plate having a vertical opening formed near the inner edge. An upper retaining section is positioned upon this plate and comprises a co-acting plate 42′ also provided with an opening adapted to align with the opening formed in the plate 42, these openings being adapted to receive a rivet 43′ or the like adapted to hingedly connect the plates. Bracing lugs 43 provided with tapered sides and formed at an angle of less than 90 degrees are formed on the top plate 42′ for the purpose of engaging the corners of a frame or the like. These lugs are provided with a longitudinal slot 44 for the purpose of permitting the corners of the frame to be nailed or otherwise secured. The upper plate and lugs formed thereon being pivotally connected to the support plate 42 will be permitted to rotate about this pivot to conveniently assume the positions required by the frame, the angular positions of the guide bars being out of angular alignment with the brackets when the guide bars are adjusted for frames having much greater length than width. The bracket employed upon the lower clamping unit will necessarily be somewhat longer to accommodate the position of the actuating rod, the lower bracket portion indicated by the numeral 45 in this instance having a deeper body but otherwise being similar in construction to the bracket 39.

In Figure 6 I have shown a modified form of my device, this form comprising the guide bar 11 and other structure employed in the preferred form with the exception of omitting the upper bearing block 12 and raising the lower bearing block 13. To accomplish this it is necessary to provide a pair of shorter stud bolts 46 in place of the bolts 14 and correspondingly shortened sleeves 47 thus bringing the lower bearing block up against the vertical web of the guide bar. As this form of my device is intended to be used as an ordinary squeezing clamp I employ special bracket members indicated by the numeral 48, the body portion 49 being substantially similar to that of the brackets 39 the difference being noted in the lug construction 50 which in this instance comprises a transverse lug supported or braced by a web 51.

In operation, the preferred form of my improved clamping device is particularly adapted for clamping together the corners of rectangular frames. The extremities of the connecting members are positioned upon the bracket plates 42 and forced tightly against the angular lugs 43. As the operator rotates the crank handles the brackets are moved together, the angular inclination of the lugs causing the extremities of the same to be forced tightly together and retained in this position, a nail or like securing device may be then positioned through the frame extremities by means of the longi-

tudinal slots 44. It is to be noted that the device may be readily placed upon a work bench or the like and operated by one man, the work being accomplished with a substantial saving in time and in the most satisfactory manner.

In using the modified form of my device shown in Figure 6 the crank handle is rotated and the clamping brackets 48 forced together, pressing or holding any object which might be placed between the lugs thereon. This form of clamping device is well known to those familiar with the art, my improved device forming a comparatively simple yet sturdy structure which may be built up of parts employed in the preferred form of frame clamping device. The main difference between these forms consist in the necessary features employed in the frame clamping device wherein four brackets are essential to retain the corners of the frame. The frame clamping device may also be adjusted, that is the co-acting guide bars may be rotated to assume different angular positions with one another thus enabling the device to be readily employed upon different shaped frames.

It is to be understood that the form of my invention herewith shown and described is to be taken as the preferred example of the same, and that various changes as to the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention, or the scope of the subjoined claims.

1. A clamping device comprising a plurality of T-shaped guide bars, an upper bearing block mounted beneath the intersection of the guide bars, an upper actuating rod mounted in the said upper bearing block, right and left hand threads formed upon the extensions of the actuating rod, a lower bearing block positioned beneath the upper block, stud bolts mounted through one of the guide bars and connecting with the lower bearing block to retain same in position, a lower actuating rod rotatably mounted within the lower block, right and left hand threads formed upon the extensions of the lower actuating rod, a plurality of movable brackets mounted upon the guide bars and adapted to engage the threaded extremities of the actuating rod, end plates mounted upon the guide bars to prevent displacement of the brackets, and handle means secured to the extremities of the actuating rod for rotating the same.

2. A clamping device comprising a pair of T-shaped guide bars, an upper bearing block rigidly secured to one of the guide bars and pivotally connected with the other, an actuating rod rotatably mounted through the lower portion of the said bearing block, collars secured to the actuating rod to prevent axial movement thereof, left hand threads being formed on one of the extending portions of the actuating rod and right hand threads on the other extending portion, a lower bearing block positioned beneath the upper block, stud bolts positioned through openings in one of the guide bars and connected with the lower bearing block to retain same in position, a lower actuating rod rotatably mounted within the lower block, collars mounted upon the lower actuating rod on either side of the guide block, one of the extensions of the lower actuating rod having left hand threads formed thereon while the other extension is provided with right hand threads, two pairs of movable brackets slidably mounted upon the guide bars and provided with internally threaded bores to engage the threaded actuating rods, end plates secured to the extremities of the guide bars, a pair of cranks secured to the extreme ends of the actuating rods, and rotatable handle members secured to the said cranks for rotating the same.

3. A clamping device comprising a pair of T-shaped guide bars, an upper bearing block rigidly secured to one of the guide bars and pivotally connected to the other, an actuating rod rotatably mounted in the lower portion of the upper block, right and left hand threads being formed upon the extending portions of the actuating rod, collars securely mounted upon the said actuating rod at both sides of the bearing block, a lower bearing block positioned against the lower portion of the upper block, a plurality of bolts positioned through suitable openings in one of the guide bars and threadedly connected with the lower bearing block, a lower actuating rod rotatably mounted through the lower bearing block, collars securely mounted to the lower actuating rod adjacent the lower bearing block, two pairs of movable brackets movably mounted upon the guide bars and provided with internally threaded bores in the lower portion thereof adapted to engage the threads formed upon the actuating rods, a plurality of rectangular end plates having slots formed in the upper and lower extremities adapted to engage the T-shaped guide bars, the said end plates being secured to the extremities of the guide bars by means of screws or the like, angular shaped lugs formed on the upper portion of the movable bracket, a pair of cranks mounted upon the extremities of the actuating rod, and rotatable handle members mounted upon the cranks for rotating the same.

In testimony whereof, I have affixed my signature.

PETER MADSEN.