

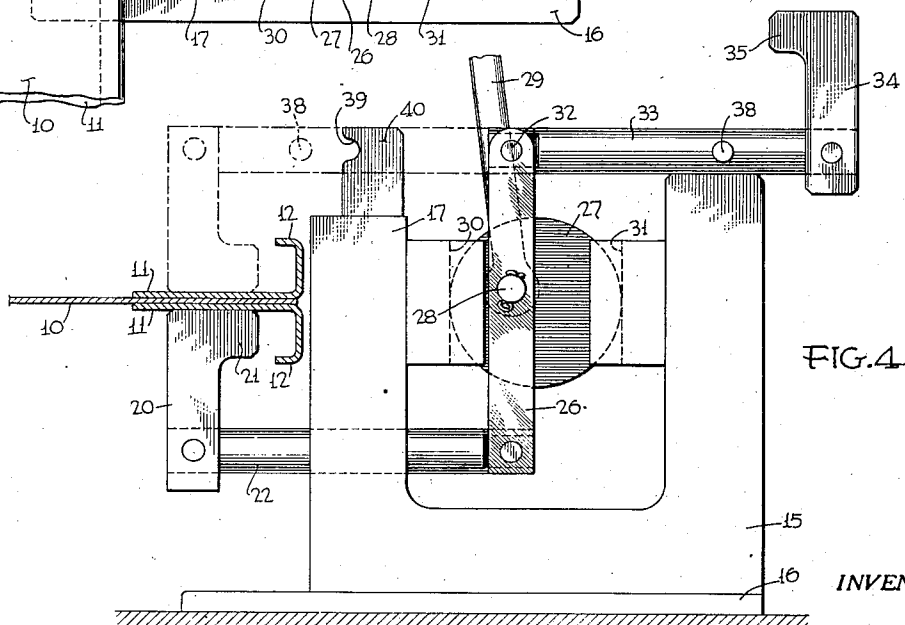
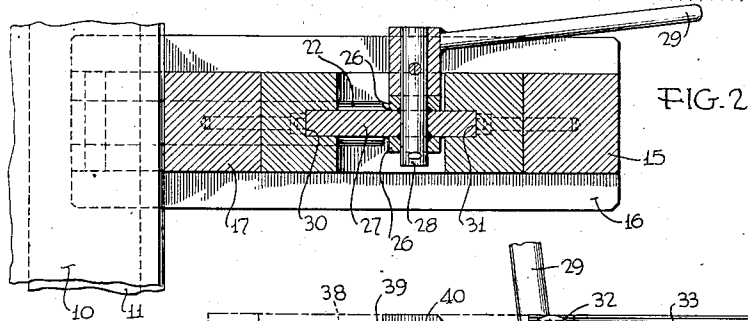
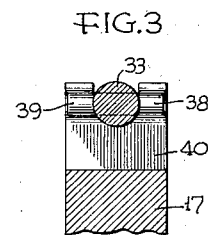
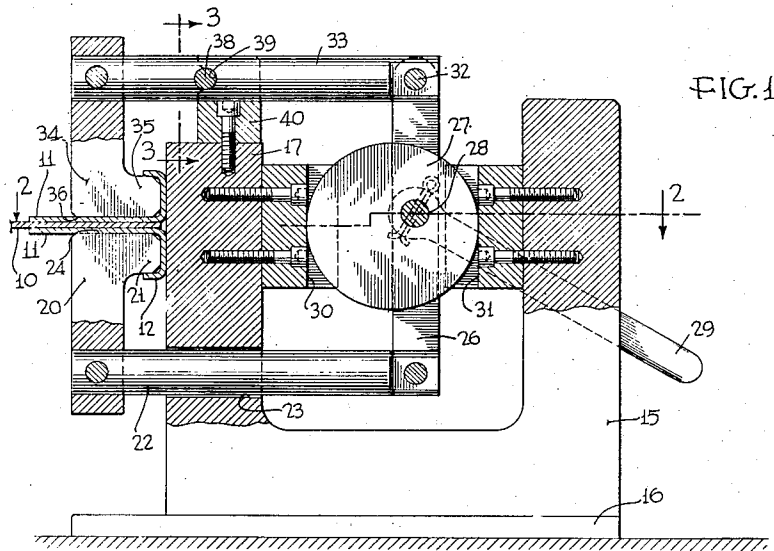
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JIG CLAMP

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JIG CLAMP

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4 Claims. (Cl. 81—26)

This invention relates to a jig clamp, such as that which may be used to clamp one or more angle-flanged stringers or chords to a web for riveting or welding the parts together, and has for an object the provision of improvements in this art.

One of the particular objects of the invention is to provide a clamp of convenient type for holding edge reinforcing strips having overhanging flanges to a web or body member to which they are to be secured.

Another object is to provide a clamp which may be quickly engaged with the stock.

Another object is to provide a clamp which will accurately place and securely hold the stock.

Another object is to provide a clamp of simple and inexpensive design.

The above and other objects and advantages will be evident from the following description of an exemplary embodiment of the invention, reference being made to the accompanying drawing, wherein:

Fig. 1 is a side elevation and section of the clamp in stock gripping position;

Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1;

Fig. 3 is a partial vertical transverse section taken on the line 3—3 of Fig. 1; and

Fig. 4 is a side elevation showing the clamp in released position.

Say the structure to be secured together is the rib, spar, or other frame member of an airplane, it may comprise a web 10 and one or more stringers, chords, or cap strips 11. When these chords are simple angle or flanged members, they may be readily clamped to the web by simple jig clamps of well-known construction. Even when there is a chord member with an overhanging flange, that is, an edge flange which turns back in the direction away from the main flange, the usual type of clamp may be used if the chord member is on the top side where it is readily visible and accessible. In such a case the web may be laid on a fixed rest or positioning member; the flanged chord member laid on the web; and a swinging overhanging clamp brought over, down and back to enter beneath the overhanging flange and clamp the parts in proper position.

But when the chord member with overhanging flange is to be placed beneath the web where it is difficult to locate and position, the clamp of the present invention provides a convenient means for quickly bringing the parts into proper position.

The clamp here illustrated comprises a frame 15 having a base 16 and a pedestal 17. The base is adapted to be secured to a table or stand (not shown) which carries other such clamps and also suitable fixed parts or rests to support the stock parts at proper height.

The lower chord member is engaged by a rest jaw 20 having an overhang 21, the rest jaw being mounted rigidly on a slide or slides 22 reciprocable in a guide or guides 23 on the pedestal 17. The upper surface 24 of the rest is at the proper height to support the flange of the chord member which is parallel to the web. This upper surface moves back and forth in a horizontal plane and when the rest jaw is pulled back the overhang 21 enters the space within the chord member to engage the vertical flange. The range of movement is such that the chord member is moved back to proper position when the rest jaw moves back and that the overhang 21 clears the overhanging flange 12 of the chord member when the rest jaw is returned to its forward position.

The rear end of the slide 22 is secured to a carriage 26 which is moved in one or both directions (here both) by a cam 27 mounted in the carriage upon a shaft or shaft stubs 28 and turned by a handle 29 between fixed abutments 30 and 31. These abutments are carried by the pedestal and may consist of hardened blocks anchored in position by screws or the like.

To the upper part of the carriage there is hinged, as by a pivot pin 32, a swingable bar 33 carrying a clamp jaw 34. The jaw is rigid with the bar and has an overhang 35 adapted to enter the space within the upper chord member. The clamp jaw moves back and forth with the lower rest jaw and in addition may be swung out of position to permit the stock members to be introduced to and removed from the jig.

The clamp jaw 34 has a clamp face 36 on its lower side which presses the stock members together when the jaws are pulled back by the eccentric. The means by which this clamping action is effected is a wedging device comprising a pin 38 on the jaw bar 33 and a tapered slot 39 for the pin formed in an upstanding bracket 40 secured to the pedestal 17.

In operation, when the handle and eccentric are turned in one direction the jaws are moved rearwardly and clamped upon the stock, the upper clamp jaw and bar, of course, first having been swung over into stock engaging position; and when the handle and eccentric are moved in the other direction the jaws are moved forwardly to

release the stock and clear the overhanging flanges of the chord members. The upper jaw may now be swung back to permit the assembled structure to be removed.

It will be seen from the above description that the invention provides a simple, convenient and effective device for clamping and holding a number of stock members of shapes which are difficult to clamp rapidly by usual clamping devices.

While one embodiment of the invention has been illustrated and described by way of example, it is to be understood that there may be various embodiments within the limits of the prior art and the scope of the subjoined claims.

What is claimed is:

1. A stock clamp adapted to position and clamp an overlying chord member having an overhanging flange upon a body member, comprising in combination, a fixed jaw, a first clamping jaw mounted for simple reciprocatory movement in the plane of the body member toward and from the fixed jaw, a second clamping jaw mounted for reciprocatory movement in the plane of the body member toward and from the fixed jaw and also for swinging movement to clear the space above the first clamping jaw on the side of the body member in unclamped position, means for reciprocating said clamping jaws, and means for bringing said clamping jaws toward each other as they approach the fixed jaw.

2. A stock clamp adapted to position and clamp an overlying chord member having an overhanging flange upon a body member, comprising in combination, a fixed jaw, a first clamping jaw mounted for simple reciprocatory movement in the plane of the body member toward and from the fixed jaw, a second clamping jaw mounted for reciprocatory movement in the plane of the body member toward and from the fixed jaw and also being pivoted for free outward swinging movement by hand about a pivot behind the region of the body member to clear the space above the first clamping jaw in unclamped position, means for reciprocating said clamping jaws abreast, and

means for moving the second clamping jaw toward the first clamping jaw to clamp the members as the jaws approach their final rearward position.

3. A stock clamp adapted to position and clamp angle-section chord members having return flanges upon the opposite sides of a plate member, comprising in combination, a rear stop, a first jaw mounted for reciprocation toward and from said rear stop, said first jaw having a side face forming an aligning support for the lower chord member, and said first jaw also having a rear overhang with a rear face adapted to fit within and press the lower chord member against said rear stop, a second jaw mounted for reciprocation toward and from said rear stop, said second jaw being mounted to swing out freely about a rear pivot to permit insertion of the chord and plate members in a direction normal to the aligning face of the first jaw and in front of the rear stop, said second jaw having an aligning face parallel with the aligning face of the first jaw when in stock engaging position and an overhanging rear face adapted to fit within and press the upper chord member against said rear stop, means to reciprocate said jaws together to clamp the stock against the rear stop, and means for moving the second jaw toward the first to clamp the stock between them as the jaws near their rear position.

4. A stock clamp comprising in combination, a rear fixed jaw, a pair of clamping jaws reciprocable toward and from said fixed jaw to clamp stock thereagainst, one of said clamping jaws having straight reciprocation to guide the stock and the other clamping jaw being mounted to swing freely outward when in the unclamped position away from the fixed jaw, means for reciprocating said clamping jaws, and means for moving the swinging jaw against the stock and toward the first clamping jaw as the clamping jaws move toward the fixed jaw and the final clamped position.

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