Oct. 2, 1962 J. I. MERRICK 3,056,600

CLAMP

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Fig. 1

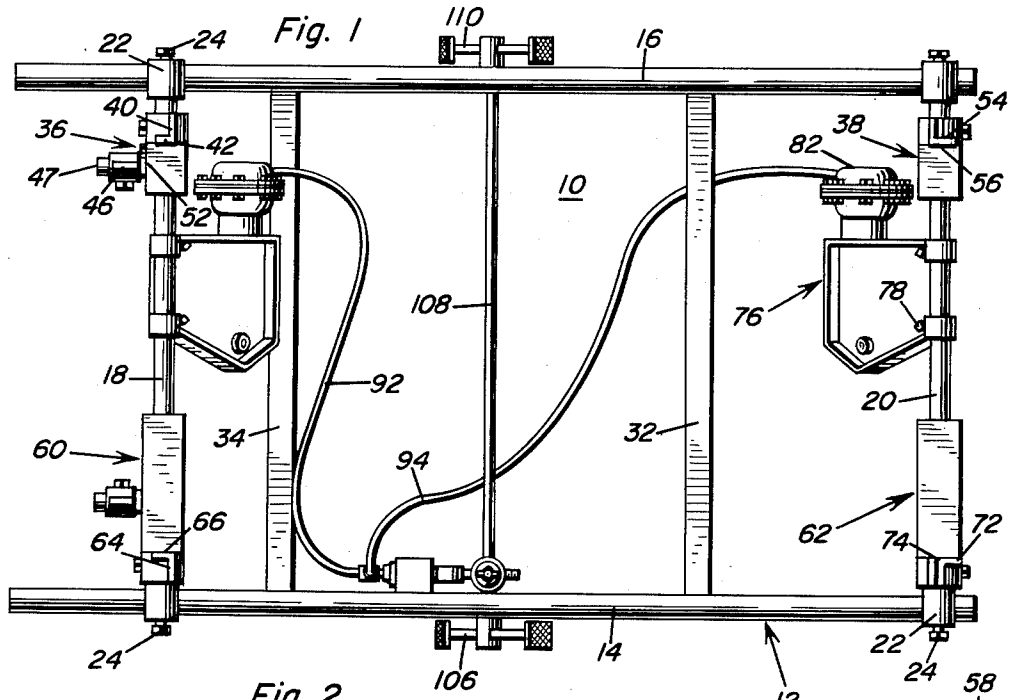
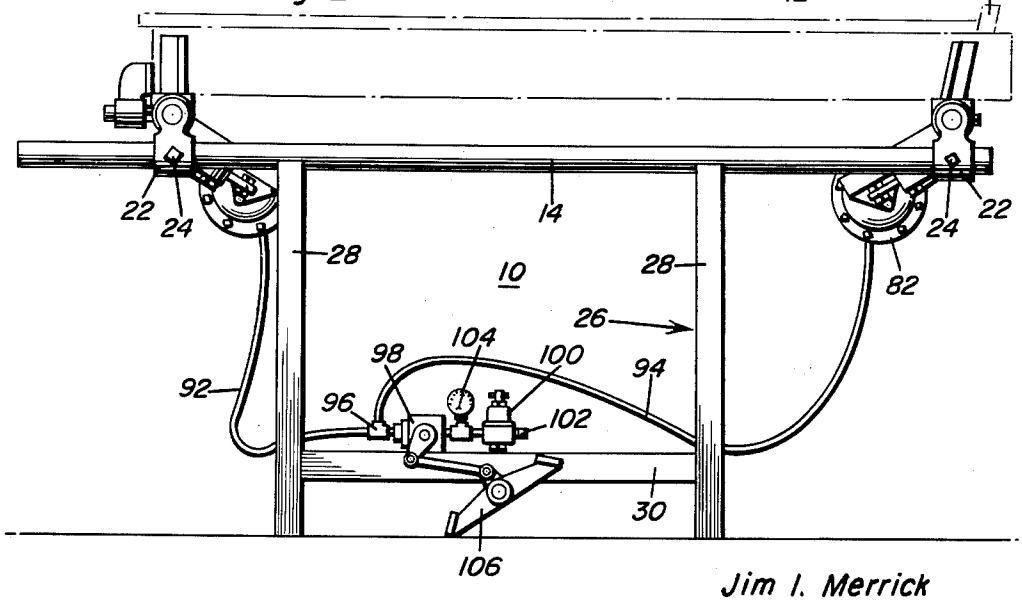


Fig. 2



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Fig. 3

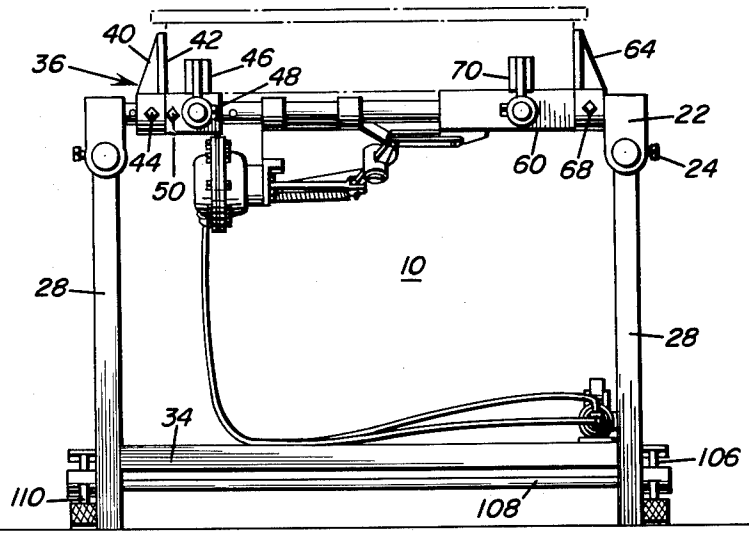


Fig. 4

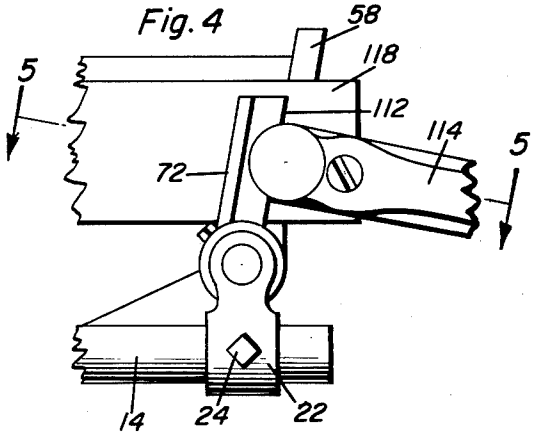


Fig. 5

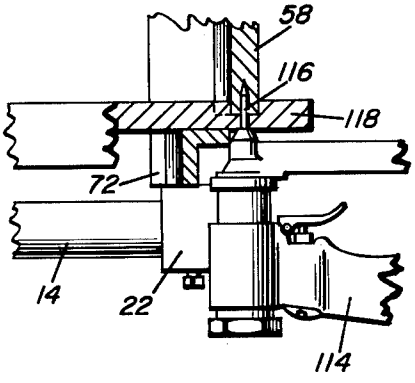
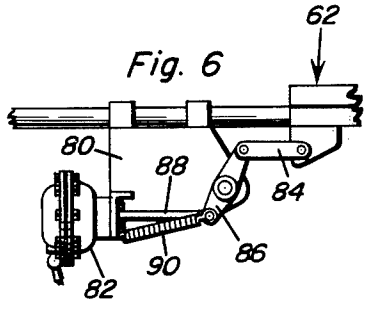


Fig. 6



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CLAMP

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6 Claims. (Cl. 269—32)

This invention relates to a power operated clamp device in which a window frame may be squared and clamped therein for purposes of nailing the parts of said window frame by a staple gun.

It is therefore a primary object of this invention, to provide a power operated clamp device for accurately positioning a window frame while exposing portions thereof for easy and accurate nailing by a power operated staple gun.

It is a further object of this invention in accordance with the foregoing object, to provide a clamping device for window frames for enabling accurate and rapid assembly of window frames by unskilled labor.

Another object of this invention in accordance with the foregoing objects, is to provide a clamping device which is readily adjustable for window frames of different sizes and stapling requirements.

In accordance with the foregoing objects, the clamping device is formed by a horizontal frame assembly mounted on a vertical stand, the frame assembly comprising a pair of parallel frame members interconnected by parallel cross members each being adjustably affixed to the parallel frame members to form a rectangular horizontal frame assembly. Each of the cross members has fixedly secured adjacent one end thereof, a flange member presenting a surface parallel to the frame members, while one of the cross members also has mounted thereon a pair of top flange members presenting a surface perpendicular to the frame members so that a window frame may be placed on the frame assembly and squared by the side flanges and top flanges abutting against two adjacent sides of the window frame. Adjacent the other ends of the cross members there is provided a slidable clamp assembly having side flanges similar to the side flanges affixed at the first ends of the cross members so that the clamp assembly may be slidably moved toward the stationary flange members to thereby clamp the window frame therebetween. Also, the slidable clamp assembly on one of the cross members has one of the top flange members attached thereto. Each of the cross members has affixed intermediate between the stationary and clamp flanges, a fluid motor connected by a linkage to the slidable clamp for power movement and clamping of the clamp assembly against the side of the window frame. The fluid motors mounted on the cross members are each simultaneously controlled by a valve mechanism mounted on the base of the clamping device, the valve mechanism being controlled by a foot operated pedal. Also, each of the stationary side flanges and clamp side flanges have an edge which may be used for guiding a power operated mechanism used for securing the frame parts to each other. The stationary and clamp side flanges are accordingly angularly adjustable so that the flanges may be disposed exactly parallel to the line along which fasteners such as staples are to be applied.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a top view of the clamping device in accordance with this invention.

FIGURE 2 is a side view of the clamping device with a window frame shown clamped therein in dotted line.

FIGURE 3 is a front view of the clamping device with the top of a window frame shown in dotted line.

FIGURE 4 is a partial side view of the clamping device showing the edge of one of the flanges being used as a staple gun guide.

FIGURE 5 is a partial sectional view taken through a plane indicated by section line 5—5 of FIGURE 4.

FIGURE 6 is a partial view showing a fluid motor and linkage connection to a clamp assembly.

Referring to the drawings in detail, reference numeral 10 generally indicates the clamping device in accordance with this invention. The horizontal frame assembly generally indicated by reference numeral 12 in FIGURE 1, includes a pair of parallel frame members 14 and 16, said frame members adjustably supporting thereon a pair of cross members 18 and 20 by means of brackets 22 adjustably secured to the frame members 14 and 16 by means of setscrews 24.

The frame assembly 12 is supported on a base or stand assembly 26 which includes parallel vertical supports 28 fixed to the frame member 14 and 16, said vertical supports being interconnected by members 30 as seen in FIGURE 2 and members 32 and 34 as seen in FIGURE 1.

Adjustably secured to each of the cross members 18 and 20, is a guide bracket assembly 36 and 38. The guide bracket assembly 36 includes a flange member 40 having an abutting surface 42 against which one side of a window frame rests as more clearly seen in FIGURE 3. The flange member 40 is adjustably secured to the cross member 18 by means of setscrew 44. Also secured to the cross member 18 on a stem 47 projecting therefrom is a top side flange member 46 angularly and axially adjustable by setscrew 48 on stem 47 and by setscrew 50 axially relative to the cross member 18. The flange member 46 also has an abutting surface 52 perpendicular to the surface 42, against which the top side of the window frame rests as more clearly seen in FIGURES 2 and 3. It will be apparent that axial adjustment of member 46 on stem 47 will be necessary for accommodating frames having top sides of different thicknesses. The bracket assembly 38 includes only a side flange member 54 having a surface 56 parallel to and in line with surface 42 against which the window frame side rests prior to clamping. The flange member 54, however, differs from flange member 40 in that it is angularly disposed on the member 20 relative to the plane of the horizontal frame assembly 12 and parallel to the slope of the window frame sill 58 as more clearly seen in FIGURES 2 and 4, for purposes hereafter explained.

Each of the cross members 18 and 20 have slidably mounted thereon a clamping assembly 60 and 62. Clamping assembly 60 includes a side flange member 64 secured thereto by setscrew 68 and slidable therewith. Member 64 has a clamping surface 66 parallel to the frame members and to the surfaces 42 and 56 on flange members 40 and 54 respectively, so that when the clamping assembly is slidably moved toward the stationary assembly 36 it will clamp the window frame side between the surfaces 42 and 66 as more clearly seen in FIGURE 3. The side flange member may also be angularly adjustable on the assembly by means of said screw 68. Thus, the flange member 64 and its adjustable mounting on the assembly 60 also constitutes part of an adjustable guide means for fastener application as to be explained hereafter. Also mounted on the assembly 60 is a top side flange member 70 which is identical to the flange member 46. The clamping assembly 62 is similarly slidable on cross member 20 and includes a side

flange member 72 having a surface 74 parallel to surface 56 on flange member 54 and is angularly disposed relative to the plane of the horizontal frame assembly 12 parallel to the disposition of flange member 54 on cross member 20 as aforementioned. The flange members 54 and 72 and their adjustable mounting thus also form part of the adjustable fastening guide means aforementioned.

Each of the cross members 18 and 20 have a power actuating assembly generally indicated by reference numeral 76. Each of the power actuating assemblies are identical so that only one will be described in detail, it being understood that similar details apply to the other power actuating assembly. The assembly 76 is fixedly secured to the cross member by setscrews 78 as seen in FIGURE 1, said assembly including a mounting bracket 80 to which there is bolted a fluid motor 82. As more clearly seen in FIGURE 6, the clamping assembly is connected to the motor 82 by means of a link 84 connected to a lever 86 pivotally mounted on the bracket plate 80, said lever 86 being connected to the fluid motor 82 by means of rod 88 and biased to one position by means of spring 90. Accordingly, power actuation of the motor 82 will move rod 88 against the bias of the spring 90 to pivot lever 86 and pull the clamping assembly toward the stationary assembly on the cross member, to thereby clamp the window frame between the stationary and clamping assemblies.

The fluid motors of each of the assemblies 76 mounted on each of the cross members 18 and 20, are simultaneously actuated by supply of fluid through a pair of fluid conducting conduits 92 and 94 which are interconnected by means of a T-fitting 96 to a valve box 98 mounted on the member 30 as seen in FIGURE 2. The valve mechanism 98 either admits the fluid under pressure to the conduits 92 and 94 for power actuation of the fluid motors 82 or vents the conduits. The valve mechanism 98 is supplied with fluid under pressure from a source connected to shut-off valve 100 by means of fitting 102. A pressure gauge 104 is inserted in the line so as to indicate the operating pressure. The valve mechanism 98 is controlled by means of a foot pedal lever 106 which is mounted on a shaft 108 extending to the other side of the clamping device for alternate actuation of the valve mechanism from said other side by means of pedal lever 110.

As was mentioned hereinbefore, the side flange members 54 and 72 are disposed at an angle relative to the plane of the horizontal frame assembly 12 as more clearly seen in FIGURES 2 and 4. Said angle being such that the edge 112 on flange member 72 for example is parallel to the window frame sill portion 58 of the window frame. Accordingly, a power operated mechanism such as stapling gun 114 may be guided by means of flange edge 112 for properly inserting a fastener such as staple or nail 116 as seen in FIGURE 5, between the side member 118 and the sill portion 58 of a window frame as shown in FIGURES 4 and 5. Similar fastening guidance is provided by the flange members 40 and 64.

From the foregoing description operation of the clamping device is apparent. It will also be appreciated, that this clamping device is readily adjustable for accommodating frames of different dimensions and for frames having different angular relationships amongst its parts. It will also be appreciated, that by use of this clamping device a tremendous savings in both time and labor for assembling window frames, is realized. Also, a much greater degree of accuracy is possible in assembling the window frames as a result of this invention.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily ocur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A power operated clamping device for window frames to be assembled by fasteners at abutting edge portions thereof comprising, support means adjustably mounting stationary abutment means for squaring a frame, power operated clamp means slidably mounted on said support means for clamping a frame against said abutment means, said clamp means and abutment means including fastener guide means exposing edge abutting portions of the frame to edge fastening mechanisms for securing the assembled frame in squared condition, said support means including a pair of horizontal parallel spaced support members mounted on a vertical base, and a pair of parallel cross members adjustably fixed to said support members, said cross members adjustably mounting said abutment means and clamp means, control means mounted on said base and operatively connected to said clamp means for operation thereof, said abutment means including a side flange adjustably fixed to each cross member adjacent one end thereof and disposed parallel to said support members and a pair of top flanges mounted on one of said cross members and disposed perpendicular to said side flanges, said clamp means including a clamp member slidably mounted on each cross member having a clamp flange disposed parallel to said support members, and fluid operated motor means fixed to each cross member between a side flange and clamp flange, each motor means being operatively connected to a clamp member for slidable movement thereof on the cross member, said control means including a foot-operated valve for controlling the flow of fluid simultaneously to said motor means for operation thereof, said fastener guide means being formed in said side and clamp flanges and including means for angularly adjusting said side and clamp flanges so as to present a flange edge parallel to lines along which fasteners are to be driven into edge abutting portions of the frame clamped in the clamping device.

2. The device as defined in claim 1, wherein one top flange of said pair of top flanges is adjustably secured to the clamp member for slidable movement therewith on said one cross member the other of said top flanges being adjustably secured to the cross member.

3. A power operated clamping device for window frames to be assembled by fasteners at abutting edge portions thereof comprising, support means adjustably mounting stationary abutment means for squaring a frame, power operated clamp means slidably mounted on said support means for clamping a frame against said abutment means, said clamp means and abutment means including fastener guide means exposing edge abutting portions of the frame to edge fastening mechanism for securing the assembled frame in squared condition, said guide means comprising fastener alignment edges on said abutment means and clamp means angularly adjustable to positions parallel to a fastening line.

4. A power operated clamping device for window frames to be assembled by fasteners at abutting edge portions thereof comprising, support means adjustably mounting stationary abutment means for squaring a frame, power operated clamp means slidably mounted on said support means for clamping a frame against said abutment means, said clamp means and abutment means including fastener guide means exposing edge abutting portions of the frame to edge fastening mechanism for securing the assembled frame in squared condition, said support means including a pair of parallel spaced support members mounted on a vertical base, and a pair of parallel cross members adjustably fixed to said support members, said cross members adjustably mounting said abutment means and clamp means, said abutment means including a side flange adjustably fixed to each cross member adjacent one end thereof and disposed parallel to said support members and a pair of top flanges mounted on one of said cross members and disposed perpendicular to said side flanges, said clamp means including a clamp

member slidably mounted on each cross member and having a clamp flange thereon disposed parallel to the support members, one top flange of said pair of top flanges being adjustably secured to a clamp member for slidable movement therewith on said one cross member, the other of said top flanges being adjustably secured to the cross member, said fastener guide means being formed on said side and clamp flanges and including means for angularly adjusting said side and clamp flanges so as to present a flange edge parallel to lines along which fasteners are to be driven into edge abutting portions of the frame clamped in the clamping device.

5. A power operated clamping device adapted to hold window frames or the like assembled in squared condition for mechanical fastening thereof, comprising, support means, squaring means fixedly mounted on the support means, clamp means movably mounted on the support means to clamp a frame against the squaring means while exposing abutting edge portions thereof, and fastener guide means integrally formed on the squaring means and clamp means defining reference edges parallel to lines along which fasteners are applied to the abutting edge portions of the frame for securing thereof while in

squared condition between the squaring means and clamp means.

6. The combination of claim 5 wherein said squaring means and clamp means include frame abutment surfaces disposed in parallel planes, said reference edges of the guide means being angularly adjustable by said clamp means and squaring means along said parallel planes.

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