Dec. 5, 1939. J. M. LANCASTER 2,182,154

FRAME PRESSING MACHINE

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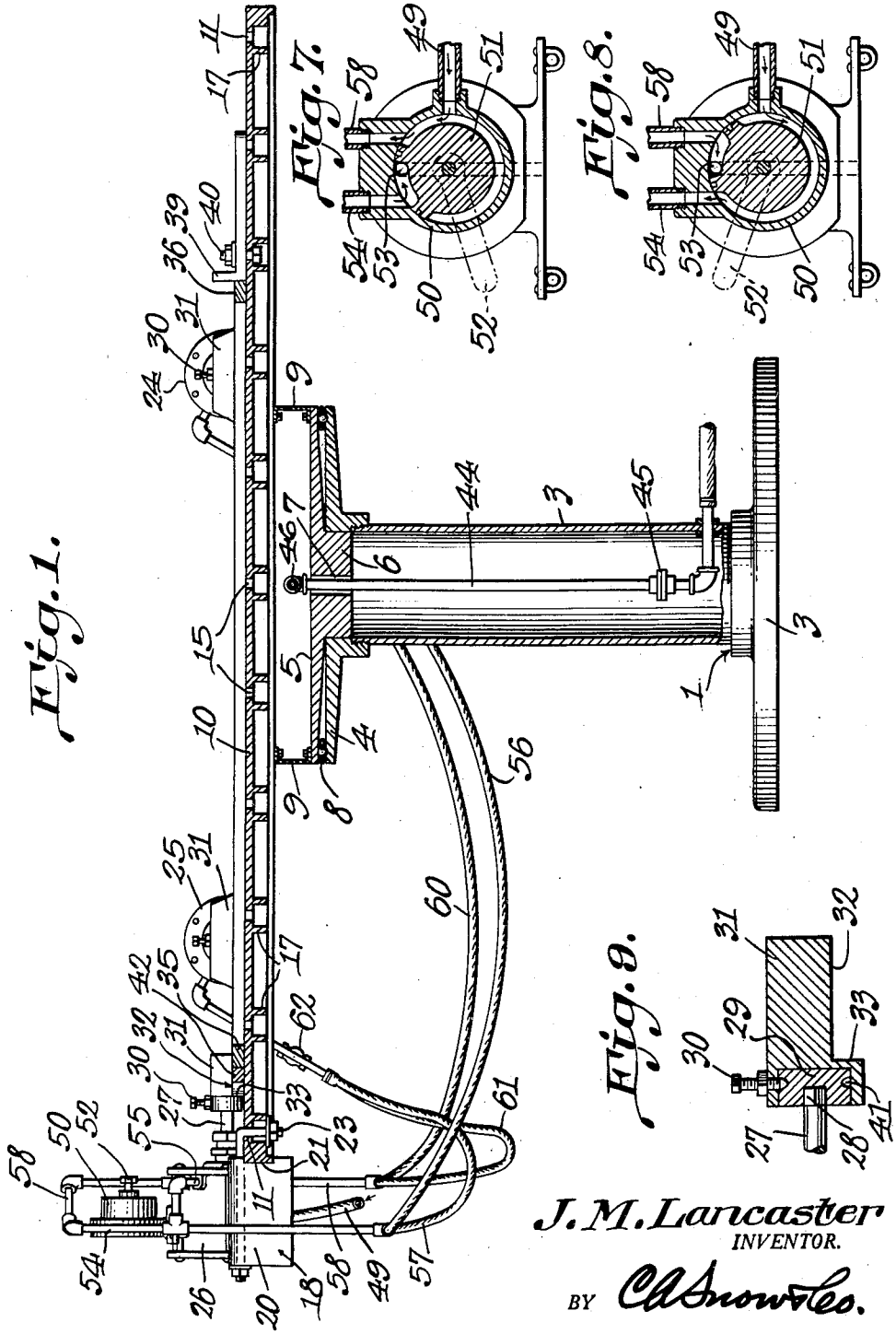


Fig. 1.

Fig. 7.

Fig. 8.

Fig. 9.

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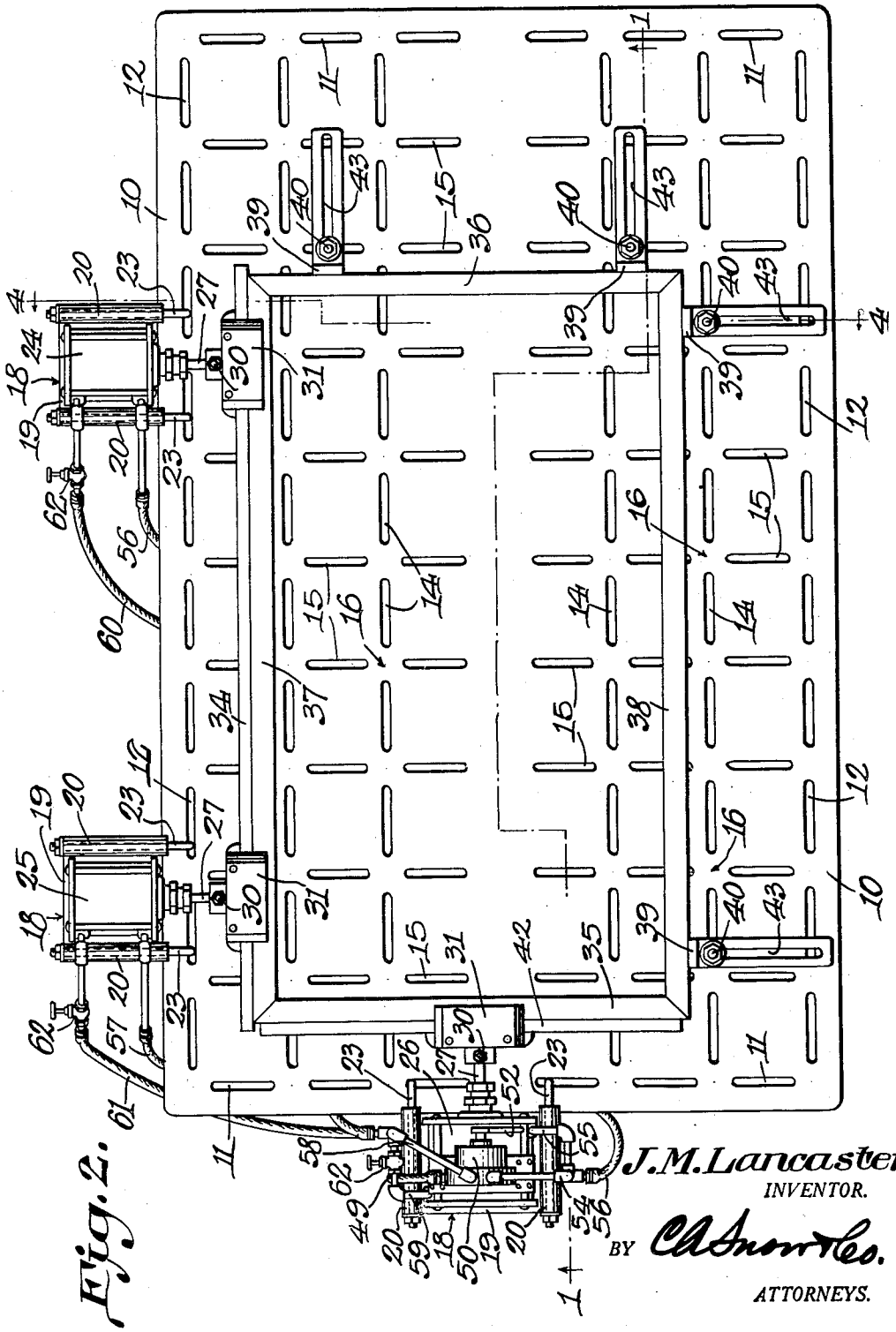


Fig. 2.

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Fig. 5.

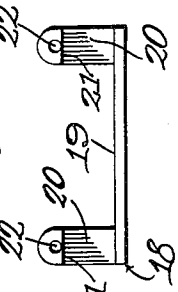


Fig. 6.

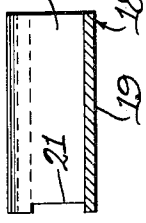


Fig. 3.

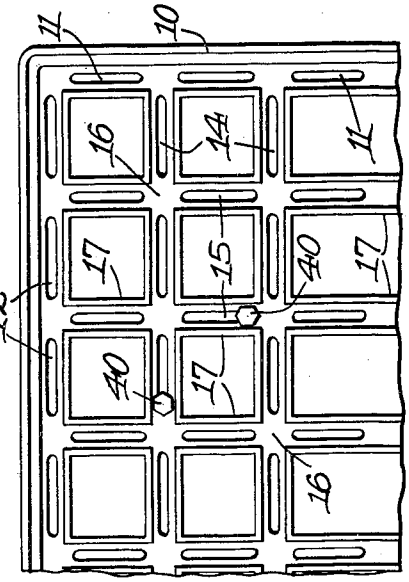
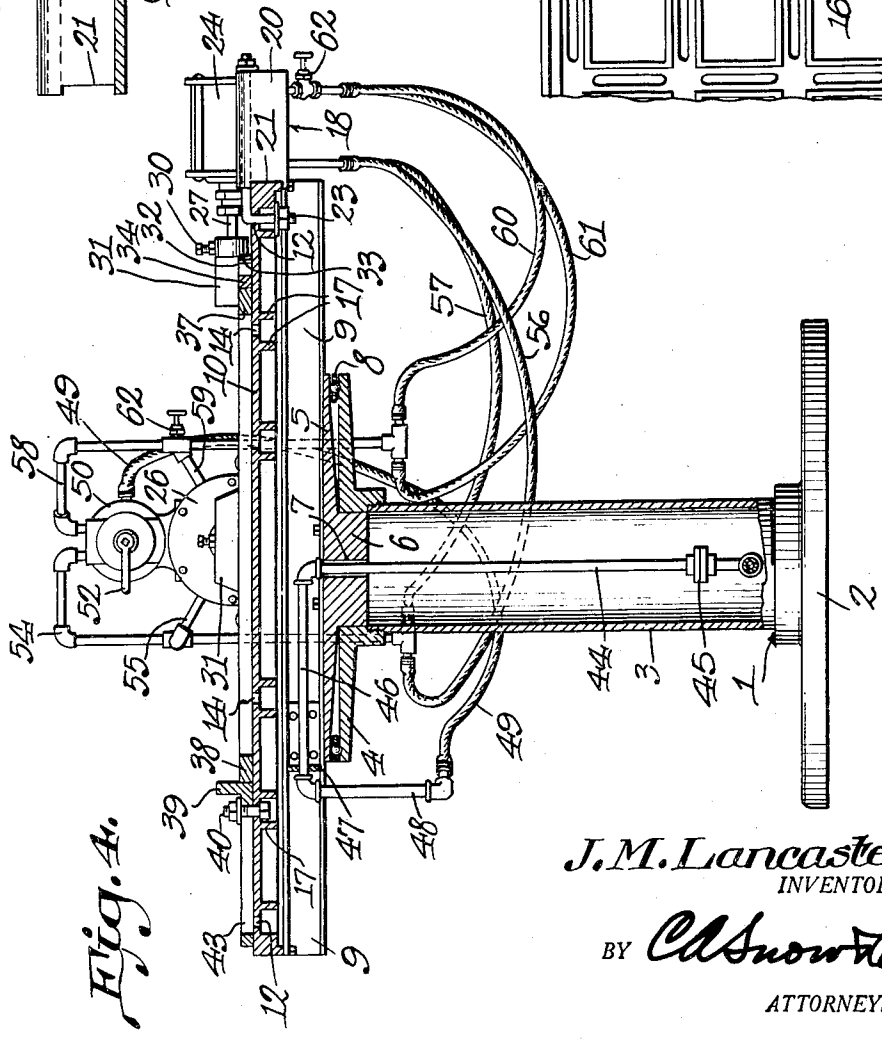


Fig. 4.



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UNITED STATES PATENT OFFICE

2,182,154

FRAME PRESSING MACHINE

Jeter M. Lancaster, High Point, N. C.

Application January 26, 1939, Serial No. 252,990

2 Claims. (Cl. 144—291)

This invention aims to provide novel means for clamping furniture frame members, novel means being supplied for actuating the clamping elements, and novel means being provided whereby frames, although of different shapes, may be clamped and held.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the present invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings:

Fig. 1 shows in longitudinal section, a machine constructed in accordance with the invention, Fig. 1 being a section on the line 1—1 of Fig. 2;

Fig. 2 is a top plan;

Fig. 3 is a fragmental bottom plan of the table;

Fig. 4 is a cross section on the line 4—4 of Fig. 2;

Fig. 5 is an elevation showing one of the cylinder supports;

Fig. 6 is a longitudinal section of the cylinder supports;

Figs. 7 and 8 are cross sections showing the valve in different positions;

Fig. 9 is a cross section showing one of the clamps.

The numeral 1 marks a support, including a foot 2 carrying a fixed, vertical, hollow pedestal 3 provided at its upper end with a fixed head 4, above which is located a rotor 5 having a hub 6 mounted to turn in the head 4, the rotor 5 having a central hole 7, an anti-friction bearing 8 being interposed between the rotor 5 and the head 4, the rotor being connected by cross beams 9 to a horizontal, oblong, rectangular table 10.

Near its edge, the table 10 has outer, transverse slots 11 and outer, longitudinal slots 12, the slots 11 being located in a straight line, the slots 12 being located in a straight line, and the lines being at right angles to each other. Within the rectangle formed by the lines of slots 11 and 12, the table 10 is provided with inner, longitudinal slots 14, arranged in straight lines, and with inner transverse slots 15, arranged in straight lines, the lines being at right angles to each other. The slots 14 and 15 are arranged in groups, the slots of each group radiating from a center 16, each slot of each group being common to two groups. On its lower surface, as shown in Fig. 3, the table 10 has depending ribs 17 arranged parallel to the slots 14 and 15.

Cylinder supports 18 (Figs. 5 and 6) are provided. Each cylinder support 18 includes a base plate 19 and upwardly projecting side pieces 20 having seats 21 in their inner edges. The side pieces 20 of the support 18 are provided with bores 22. L-bolts 23 are mounted in the bores 22 of the side pieces 20 and engage in the outer slots 11 and 12 of the table 10, to hold the cylinder supports 18 on the edges of the table, the edge of the table being received in the seats 21 that are formed in the side pieces 20 of the cylinder supports. Preferably, two of the cylinder supports 18 are located along one longitudinal edge of the table 10, a single cylinder support being disposed at one end of the table, the pair of cylinder supports at the longitudinal edge of the table being adjustable longitudinally of the table, because there is a plurality of the slots 12, the single cylinder support at the end of the table being adjustable transversely of the table, because there is a plurality of the slots 11.

Side cylinders 24 and 25 are secured to the side cylinder supports, and an end cylinder 26 is secured to the end cylinder support. There are two side cylinders, represented by the cylinders 24 and 25, and but one of the end cylinders, represented by the cylinder 26. Therefore, the bore of the end cylinder 26 should be somewhat larger than the bores of the side cylinders 25. Piston-operated plungers 27 are mounted to reciprocate in the inner ends of the cylinders 24, 25 and 26. The inner ends of the plungers 27 may be squared, as shown at 28 in Fig. 9, to fit removably in blocks 29, held by securing members 30, such as screws and lock nuts, in recesses formed in the outer ends of clamps 31, which are mounted to reciprocate, in and out, above the table 10. The securing members extend into circumferential grooves 41 in the blocks 29, and the clamps 31 can adjust themselves automatically, and rotatably about an axis represented by the plungers 27. The securing members 30 afford a means whereby the clamps may be interengaged, to adapt the clamps to the work in hand. In their lower surfaces, the clamps 31 are provided with recesses 32 defining vertical shoulders 33. The circumferential grooves 41 of the blocks 29 permit the clamps 31 to turn on horizontal axes, and, thus, the clamps can adjust themselves, as to the lower surfaces of the recesses 32, with respect to the work in hand.

The frame to be clamped is shown in Fig. 2 as comprising oppositely disposed side members 37 and 38, and oppositely disposed end members 35 and 36. Outwardly of the side member 37, a bar 34 is disposed, a bar 42 being disposed outwardly of the side member 35. The bars 42 and 34 abut against the vertical shoulders 33 of the clamp 31,

the clamps overhanging the bars 34 and 42, and the corresponding frame members 37 and 35. The bars 34 and 42 distribute pressure on the fame members 37 and 35, respectively, and the bars prevent the frame members 37 and 35 from being marred by contact with the shoulders 33 of the clamps 31.

L-shaped abutments 39 are provided, and the bases of the abutments have longitudinal slots 43, receiving attaching elements 40, such as bolts, the heads of which engage the ribs 17 on the bottom of the table 10 (Fig. 3), to prevent the bolts from turning, when the nuts that are threaded on them are tightened up. The bolts 40 can be mounted in any of the slots 14 and 15 in the table 1, and the abutments 39 can be swung for adjustment, horizontally, on the bolts. The construction is such that the abutments 39 can assume many positions, as to adjustment in a horizontal plane, and thus the abutments may be made to fit against the frame forming elements, even though those elements are not arranged in a rectangle, as shown in Fig. 2. A pair of the abutments 39 engage the end member 36, and a pair of the abutments engage the frame member 36. All of the abutments 39 are capable of in and out adjustment, with respect to the geometrical center of the frame which is to be assembled.

A fluid pressure conduit, adapted to convey steam or compressed air, is provided, and includes an L-shaped part 44 shown in Fig. 1, which extends inwardly through the side of the pedestal 3, and upwardly in the pedestal, through the hole 7 in the rotor 5, in spaced relation to the rotor, so that the rotor can turn freely. A rotary coupling 45 is interposed in the part 44 of the fluid pressure conduit, and is located within the pedestal 3.

At its upper end, the vertical part 44 of the fluid pressure conduit is connected to a horizontal part 46, shown in Fig. 4, disposed between the side beams 9, the said part of the fluid pressure conduit being connected to the beams by a bracket 47. The part 46 of the fluid pressure conduit has a depending end 48, connected by a flexible tube 49 to the side of a valve casing 50, which is held fixed above the end cylinder 26. A valve 51 is journaled in the valve casing 50, and is operated by a handle 52, located at the inner end of the valve casing. The valve 51 need be described only as to function, since its construction will be obvious when Figs. 7 and 8 are noted, the valve 51 and its casing 50 being a commercial structure, bought on the market.

Figures 7 and 8 show that the valve casing 50 is provided with an exhaust port 53.

A pipe 54 is in communication at one end with the valve casing 50, and has a branch 55 leading to the inner end of the cylinder 26, the pipe having a flexible branch 56, leading to the inner end of the cylinder 24, and a flexible branch 57 leading to the inner end of the cylinder 25. A pipe 58 is in communication at one end with the valve casing 50, and has a branch 59 leading to the outer end of the cylinder 26, the pipe having a flexible branch 60 leading to the outer end of the cylinder 24, and a flexible branch 61 leading to the outer end of the cylinder 25. Hand valves 62, located as desired, afford manual control of the cylinders 24, 25 and 26.

Fluid pressure is supplied to the valve casing 50 through the conduit 44—46—48—49. With the valve 51 in the position of Fig. 7, pressure cannot pass from pipe 49 to pipe 54, and pipe 54 is in communication with the exhaust port 53 of the valve casing 50. This lets off the pressure in the inner ends of the cylinders 24—25—26, by way of the branches 56, 57 and 55, and the pistons in the cylinders can move inward freely. The pipe 49 is in communication with the pipe 58. Pressure goes from pipe 49 to pipe 58, from pipe 58 by branch 59 to the outer end of cylinder 26, by branch 60 to the outer end of cylinder 24, and by branch 61 to the outer end of cylinder 25. The plungers 27 of the cylinders 24—25—26, and the corresponding clamps 31, are moved inward, and pressure is put on the bar 34 and the frame member 37, and on the bar 42 and the frame member 35. Cylinder pressure is opposed by the abutments 39.

With the valve 51 in the position of Fig. 8, pressure cannot pass from pipe 49 to pipe 58, and pipe 58 is in communication with the exhaust port 53 of the valve casing 50. This lets off the pressure in the outer ends of the cylinders 24—25—26, by way of the branches 60, 61 and 59, and the pistons in the cylinders can move outward freely. The pipe 49 is in communication with the pipe 54. Pressure goes from pipe 49 to pipe 54, from pipe 54 by branch 55 to the inner end of cylinder 26, by branch 56 to the inner end of cylinder 24, and by branch 57 to the inner end of cylinder 25. The plungers 27 of the cylinders 24—25—26, and the corresponding clamps 31, are moved outward, and pressure is relieved from the bar 34 and the frame member 37, and from the bar 42 and the frame member 35.

The rotatable mounting of the table 10, shown at 6—6 is desirable for the convenience of the operator, but is not necessary. When the table is rotated, the rotatable coupling 45 in the pipe 44 of Fig. 1 maintains the continuity of the pressure-supply conduit.

What is claimed is:

1. In a device for holding furniture frames, a table provided along its edges with first side and end slots arranged in lines at right angles to each other, the table being provided, within the space defined by the side and end slots, with second slots disposed in cruciform groups, each slot of each group being common to two groups, a side cylinder, means for mounting the side cylinder in different ones of the side slots, to secure an adjustment of the side cylinder longitudinally of the table, an end cylinder, means for mounting the end cylinder in different ones of the end slots, to secure an adjustment of the end cylinder transversely of the table, pistons movable in the cylinders, rods connected to the pistons, frame-engaging clamps carried by the rods, means for conveying fluid-pressure to the cylinders, to advance and retract the pistons in consonance, abutments opposing the thrust of the clamps, and means for connecting the abutments to the table in different slots of the groups, thereby to enable the abutments to cooperate with a frame of different outline from that defined by the side and end slots.

2. A device for holding furniture frames, constructed as set forth in claim 1, and wherein the clamps are L-shaped, to cooperate with the outer edges of the frame parts and to overhang the frame parts, and means for mounting the clamps on the rods for rotation about the axes of the rods, to permit parts of the clamps to overhang the frame parts and lie flat thereon.

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