

Nov. 30, 1954

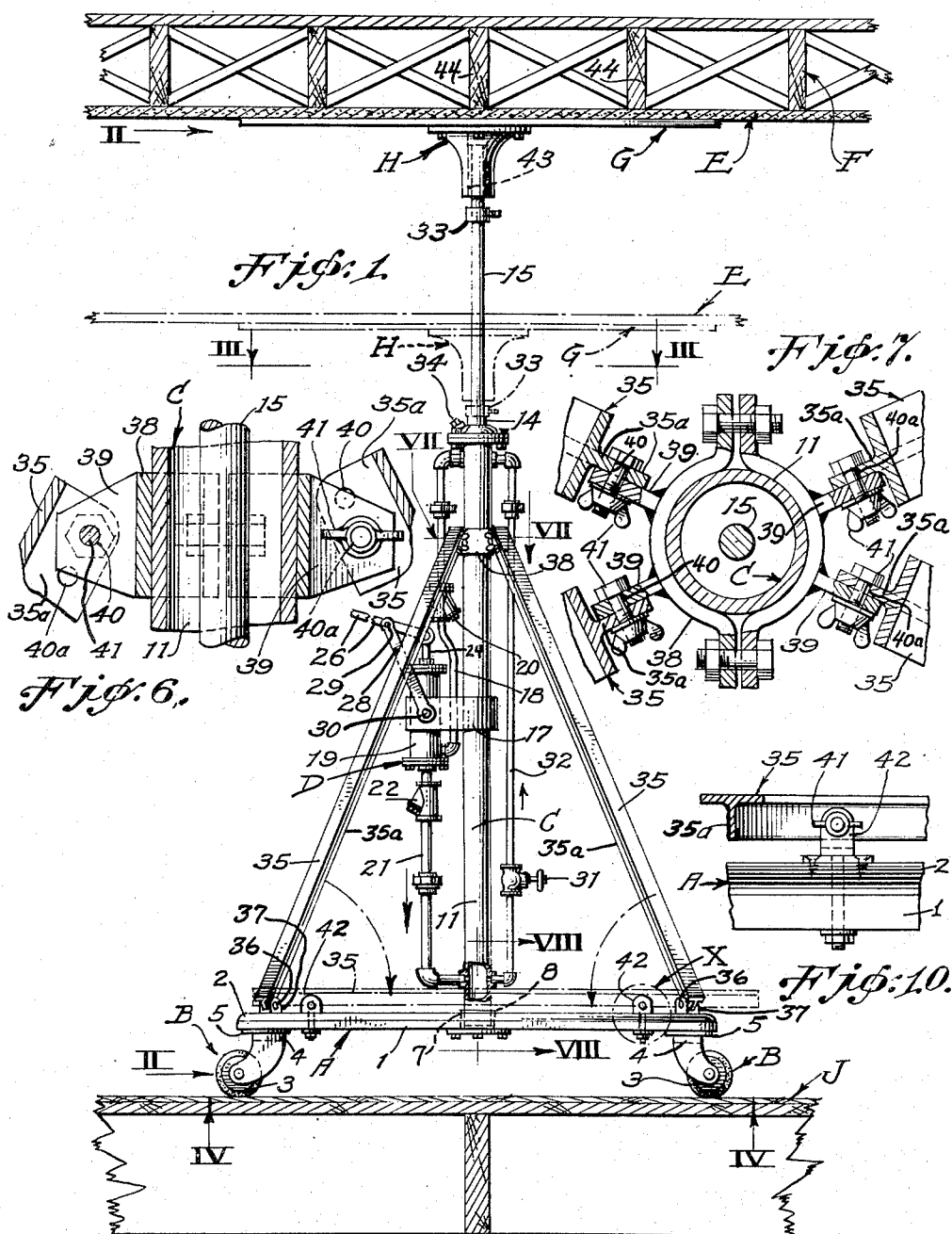
W. M. CROSSLIN

2,695,759

LIFTING DEVICE FOR FIBERBOARD AND THE LIKE
HAVING A BRACED BASE SUPPORTED UPRIGHT

Filed Feb. 13, 1951

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 8, 15

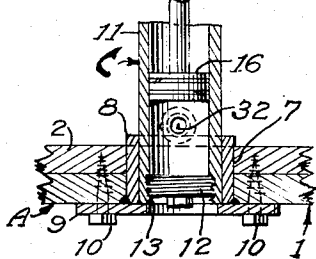


Fig. 9,

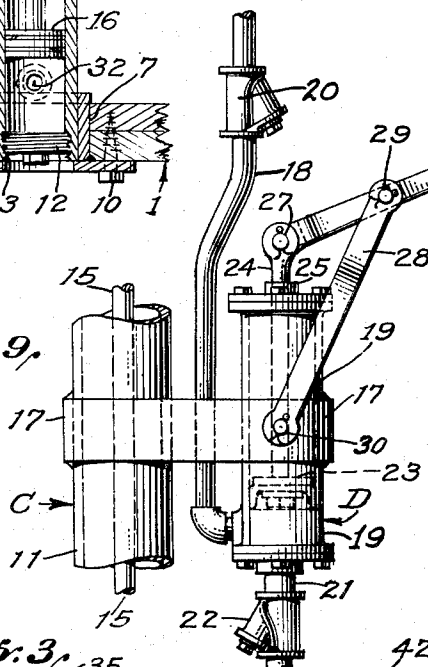


Fig. 3,

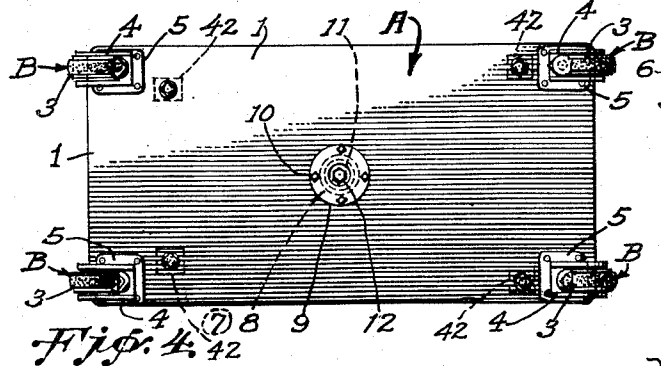
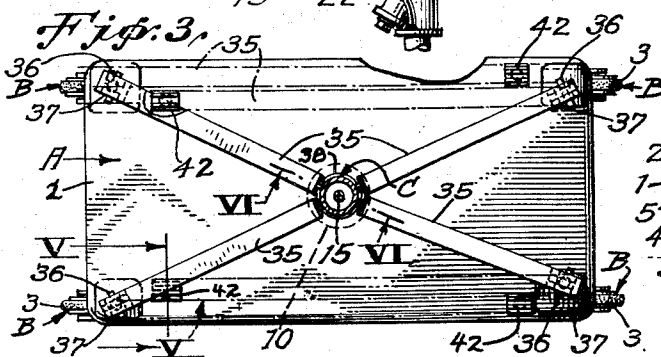


Fig. 4,

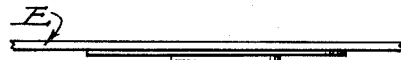


Fig. 2,

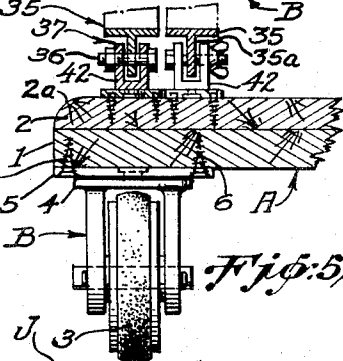
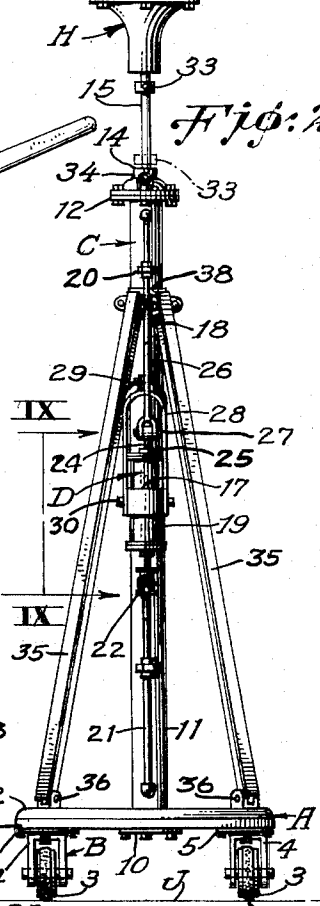


Fig. 5,

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LIFTING DEVICE FOR FIBERBOARD AND THE LIKE HAVING A BRACED BASE SUPPORTED UPRIGHT

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Application February 13, 1951, Serial No. 210,761

1 Claim. (Cl. 248—46)

An object of my invention is to provide a device for lifting Sheetrock or other fibre board up against ceiling rafters and holding the material in place while it is being secured to the rafters. The device is made small enough to be moved readily through door openings and has a novel braced, base-supported upright.

A further object of my invention is to provide a device of the type described in which the parts may be disassembled and collapsed for occupying very little space when storing or transporting the device. The device permits one man to move Sheetrock material or the like into the desired position against the ceiling rafters and the device will hold the material while the same man can nail it in place. The pieces of Sheetrock usually range in size from eight, ten, to twelve feet in length and four feet in width. The device is simple in construction and is durable and efficient for the purpose intended.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claim.

My invention is illustrated in the accompanying drawing forming a part of this application, in which:

Figure 1 is a side elevation of the device shown holding a piece of Sheetrock or the like against ceiling rafters;

Figure 2 is an end view of Figure 1 when looking in the direction of the arrows II—II of Figure 1;

Figure 3 is a horizontal section taken along the line III—III of Figure 1;

Figure 4 is a bottom plan view of the base when looking in the direction of the arrows IV—IV of Figure 1;

Figure 5 is an enlarged section taken along the line V—V of Figure 3 and shows a caster wheel and bracing members;

Figure 6 is an enlarged section taken along the line VI—VI of Figure 3, and shows the upper ends of the bracing members secured to the hydraulic lift cylinder;

Figure 7 is a horizontal section taken along the line VII—VII of Figure 1, and shows the upper ends of the braces on the same scale as in Figure 6;

Figure 8 is an enlarged vertical section taken along the line VIII—VIII of Figure 1 and shows the lower end of the hydraulic lift;

Figure 9 is an enlarged detail of the fluid pump used with the device when looking in the direction of the arrow IX—IX of Figure 2; and

Figure 10 is an enlarged detail of the circled portion X in Figure 1 and illustrates how the braces are supported in a horizontal position.

While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the appended claims without departing from the spirit and scope of the invention.

In carrying out my invention, I show a base member indicated generally at A and it is preferably made from two sheets of plywood 1 and 2, the sheet 2 being superimposed on the sheet 1. The base may be of any area desired and I prefer to make it four feet long and two feet wide so that it can be moved through door openings and the like. Figure 5 illustrates how the perimeter of the upper sheet 2 is rounded at 2a so as to give a more pleasing design effect to the base. If desired, the base may be covered by sheet metal, not shown, and the sheet may extend over the sides of the base and

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conceal the fact that the base is made from two pieces of plywood. The sheet metal covering will give additional strength as well as a more pleasing appearance to the device. I do not wish to be confined to any particular type of base construction.

The base is mounted on caster wheels indicated generally at B. Figures 1, 2 and 5 illustrate the particular construction of the wheels. Any desired type of caster wheel may be used and I have shown in Figure 5 a wheel 3 supported by a member 4 that is rotatably connected to a member 5, that in turn is secured to the base A by screws 6, or other suitable fastening means. Figure 4 shows four caster wheels, one being mounted at each of the four corners of the rectangular base A and being free to swing into different angular positions as the base is moved over the supporting surface.

Referring to Figures 1 and 8, it will be noted that I provide a central opening 7 in the base A. In this opening I mount a socket member 8 that has an outwardly extending flange 9 which is secured to the under side of the base A by cap screws 10 or other suitable fastening means. The flange 9 has a portion extending inwardly to provide a support in the socket member 8 for the lower end of a cylinder 11 of a hydraulic lift C. The hydraulic lift C is shown in its entirety in Figures 1 and 2. The lower end of the cylinder 11 is closed in any desired manner, such as by means of a removable cylinder head 12 and the head has a threaded periphery to be received in the threaded interior portion 13 of the cylinder. The cylinder 11 may be of any length desired and I prefer to make it approximately five feet in length, although I do not wish to be confined to this exact measurement.

The top end of the cylinder 11 is provided with a packing gland 14 and a piston rod 15 is slidably received in the gland. Figure 8 shows how the lower end of the piston rod 15 is provided with a piston 16 that is slidably received in the cylinder 11. The piston 16 may be lifted by compressed air or fluid and will lift the piston rod 15 therewith.

I provide a simple hydraulic pump mechanism D for the cylinder 11, see Figure 9, and Figure 1 shows conduits placing the pump in communication with the upper and lower ends of the cylinder 11. In Figure 1, I show the hydraulic pump D secured to the cylinder 11 by straps 17 or other suitable fastening means. A conduit 18 leads from the upper end of the cylinder 11 to the lower end of the pump cylinder 19, see Figure 9. A check valve 20 is placed in the conduit and will permit fluid to flow from the cylinder 11 into the pump cylinder 19, but will prevent a reverse flow of the fluid. A second conduit 21 leads from the base of the pump cylinder 19 to the lower end of the cylinder 11 and a check valve 22 is also placed in this conduit. The check valve 22 will permit a flow of fluid from the hydraulic pump D to the lower end of the cylinder 11 of the hydraulic lift C, but will prevent any return flow.

In Figure 9 I show a pump piston 23 reciprocally mounted in the cylinder 19 and the piston is secured to a piston rod 24 that extends through a packing 25 in the top of the cylinder. A lever 26 is pivotally connected to the rod 24 at 27 and a link 28 is pivotally connected to the lever 26 at 29 and to the cylinder 19 at 30. It will be seen from this construction that when the lever 26 is manually operated, the piston 23 will be reciprocated and will draw fluid from the top of the cylinder 11 and force this fluid into the bottom of the same cylinder for raising the piston 16 and causing the piston rod 15 to move upwardly.

A return movement of the piston 16, together with a downward movement of the piston rod 15 is accomplished by opening a by-pass valve 31 provided in a by-pass conduit 32 that communicates with both the top and bottom ends of the cylinder 11. When the valve 31 is opened, fluid that would otherwise be trapped in the lower portion of the cylinder 11 will escape through the by-pass conduit 32 and will enter the top of the cylinder 11. The weight of the piston rod 15 and piston 16 will cause the fluid to flow in the direction just mentioned when the by-pass valve 31 is opened and the piston will move downwardly in the cylinder. This valve

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is closed when it is again desired to move the piston 16 upwardly in the cylinder 11. A collar 33 is secured to the piston rod 15 at a predetermined point and this collar will engage with the packing gland 14 when the piston 16 reaches the lower end of its stroke. Figure 8 illustrates how the piston 16 is prevented from covering the opening to the pipe 32 when the piston is at the bottom of its stroke. The cylinder head 12 can be removed when it is desired to do any work on the piston. The packing gland 14 is provided with a filling plug 34, see Figure 1, whereby the desired amount of fluid can be added to the cylinder.

The cylinder 11 together with the conduits 18, 21 and 32 and the hydraulic pump D can be removed from the socket 8 as a unit when it is desired to dismantle the device. I have shown the hydraulic lift C in operative position in both Figures 1 and 2. I make use of novel bracing members for holding the cylinder 11 in an upright position on the base A. In Figures 1, 3 and 5, I show four bracing members 35 pivotally secured at 36 to hinge-joints 37 that in turn are rotatably secured to the base A and are free to revolve about vertical axes. Figure 3 illustrates the lower ends of the bracing members 35 not only pivotally secured at 36 to the hinge-joints 37, but this same view further shows these joints as being rotated about their vertical axes so that the free ends of the bracing members 35 can extend toward the cylinder and the upper ends of the braces can be removably secured to the cylinder 11.

In Figures 6 and 7, I show the cylinder 11 provided with a fixed collar 38 and this collar has projections 39 extending radially therefrom. The braces 35 are T-shaped in cross section and have their web portions 35a provided with two openings 40 and 40a disposed near the free ends of the braces. Referring to Figure 3, it will be seen that the hinge-joints 37 on the left hand side of the base A are disposed further apart than the hinge-joints 37 disposed on the right hand side of the same base. Therefore, the distance from the left hand hinge-joints 37 to the collar 38 is greater than the distance from the right hand hinge-joints 37 to the same collar. The two left hand braces 35 in Figure 3 will therefore have wing bolts 41 passed through the openings 40 provided in the webs 35a and the right hand braces 35 will have wing bolts 41 passed through the other openings 40a spaced further in from the free ends of the braces. This feature is clearly shown in Figure 6 and it permits the braces 35 of the same length to be used for all four braces in the device.

When the device is knocked down, the butterfly bolts 41 will be loosened from the lugs or projections 39 and this will free the upper ends of the braces 35 from the collar 38. The braces may now be swung into parallel relation with respect to each other and also swung down into a horizontal position overlying the base A as clearly indicated in Figures 1 and 3. The free ends of the horizontally disposed braces are now received in clevises 42 carried by the base, see Figure 10, and these clevises have openings for receiving the wing bolts 41 and thus the braces are secured in a horizontal position. The hinge joints 37 are free to rotate about their vertical axes as the bracing members 35 are swung from the full line position shown in Figure 3, into the dot dash line position.

The actual member that lifts the Sheetrock material E up against a ceiling F, see Figure 1, I term an elevator G that preferably has the same dimensions as the base A. The elevator carries a socket H which is secured to its under side and the socket has a bore 43 for removably receiving the upper end of the piston rod 15. There is no need to provide a set screw for holding the socket on the rod because the weight of the elevator G, plus the weight of the socket, will keep the elevator in place on the rod. When dismantling the device, it is merely necessary to lift the elevator G off from the top of the piston rod. After this the braces 35 can be freed from the collar 38 and then the hydraulic cylinder 11 can be lifted out of the socket 8. All of these three parts can be packed into a small space for transportation.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

I have already described how the hydraulic lift C can be secured in an upright position on the base A and I have further described how the elevator G can be removably disposed on the top of the piston rod 15. These

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parts are assembled preferably after the device is moved into the room or area where it is desired to lift the Sheetrock material E against the ceiling rafters.

In Figure 1, I show the device being movably supported on a floor J. The caster wheels B will permit the device to be moved to any desired location on the floor. The by-pass valve 31 is opened to permit the elevator G to move downwardly into its lowermost position as indicated by the dot dash line in Figure 1. The Sheetrock E, or other desired material, is placed on the elevator and then the by-pass valve 31 is closed. The lever 26 of the hydraulic pump D is now actuated and will force fluid into the lower portion of the cylinder 11 for raising the piston 16 and causing the elevator G to move the Sheetrock E against the ceiling joists 44.

It is possible to lift the Sheetrock into a position close to the ceiling and then move the device and swing the elevator G for bringing the Sheetrock into the exact place where it is desired to secure it permanently. The lever 26 can then be actuated for moving the Sheetrock firmly against the under sides of the joists 44. The area of the elevator G is less than the area of the Sheetrock and therefore the elevator will not interfere with the securing of the Sheetrock in place. After the Sheetrock is secured in place, the by-pass valve 31 can be opened again and permit the elevator G to move downwardly into a position where another piece of Sheetrock can be placed on it. The operation is repeated until the entire ceiling area is covered.

The device can be readily dismantled for transportation in the manner already indicated. The dimensions of the device are such that it does not need to be dismantled when it is moved from one room to another because the two foot width of the base A and the elevator G is less than the width of the average door opening in a building. The height of five feet for the cylinder 11, plus the height of the caster wheels B, is still less than the height of the normal door opening in a building and therefore the device can be readily moved through a door opening.

I claim:

In a device of the type described: a rectangular base having a centrally-disposed and upwardly-extending socket; an upright whose lower end is removably received in the socket so as to be supported thereby; a pair of braces for the upright having a length substantially equal to the length of the base; a pair of brackets swingably mounted adjacent to two corners at one end of the base and being rotatable about vertical axes; one end of one brace being pivotally secured on a horizontal axis to one bracket and one end of the other brace being pivotally secured on a horizontal axis to the other bracket; said braces when in inoperative position extending along the length of the base and adjacent to the sides; clevises secured to the base and removably holding the free ends of the braces when the latter are arranged in inoperative position; a second pair of braces for the upright and having a length substantially equal to the length of the base; a second pair of brackets swingably mounted near the other two corners of the base, but being spaced away from the base sides a distance equal substantially to the width of one of the first-mentioned braces; said second pair of brackets being rotatable about vertical axes; one end of one of the second pair of braces being pivotally secured on a horizontal axis to one of the second pair of brackets, and one end of the remaining brace in the second pair being pivotally secured on a horizontal axis to the remaining bracket of the second pair; said second pair of braces when in inoperative position extending along the length of the base and parallel and adjacent to the first pair of braces; a second pair of clevises secured to the base and positioned for removably holding the free ends of the second pair of braces when in inoperative positions; a plurality of lugs extending radially from the upright; said pairs of braces being swingable both horizontally and vertically when they are removed from their clips and are swung against the lugs; and means for connecting the free ends of both pairs of braces to the lugs for holding the upright in vertical position and for preventing its accidental removal from the socket.

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