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ELEVATOR AND SUPPORT FOR CEILING AND WALL BOARD

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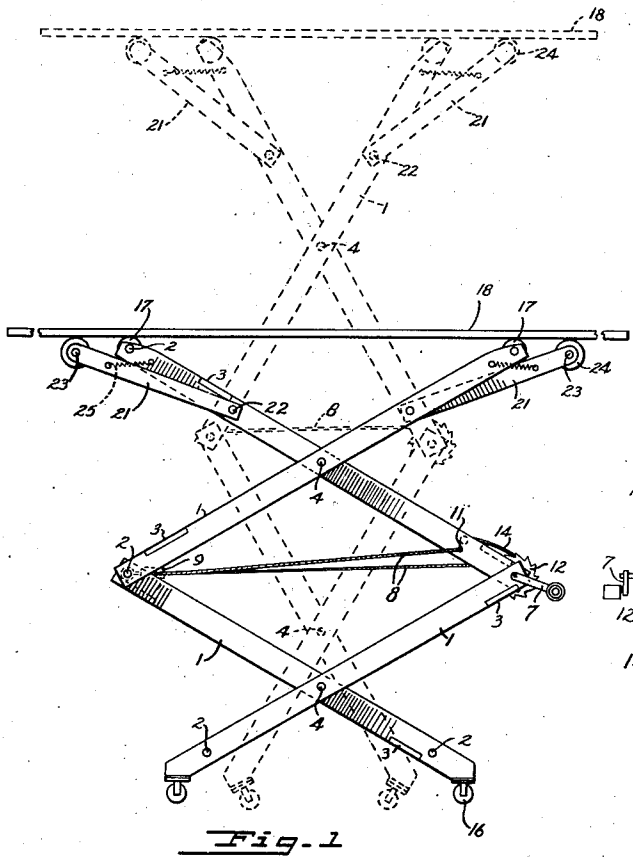


Fig. 1

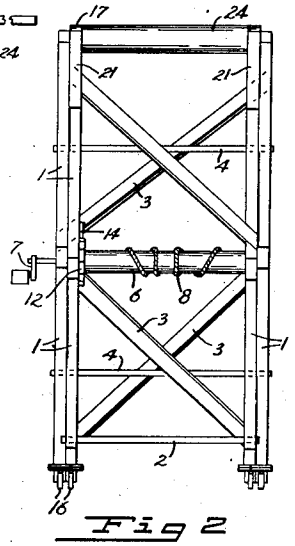


Fig 2

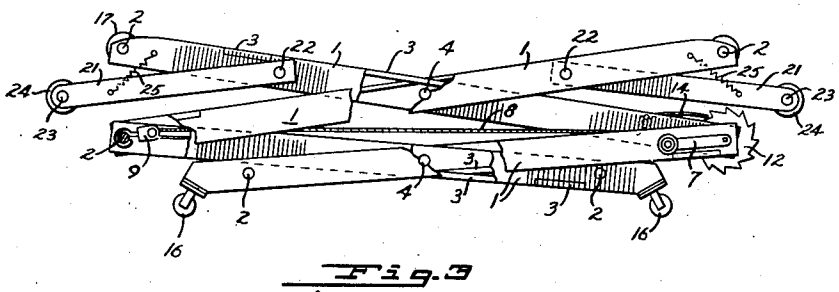


Fig. 3

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ELEVATOR AND SUPPORT FOR CEILING AND WALL BOARD

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6 Claims. (Cl. 304—9)

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My invention relates to devices for handling heavy sheet material for application to a ceiling.

It is among the objects of my invention to provide a device by which large sheets of material, such as fabricated plaster board, may be raised and held in desired position upon a ceiling, while permanent securing means are applied to fasten the sheet in place.

Another object is to provide a sheet handling device which will enable a single workman to place and secure heavy sheets of material on a ceiling.

Another object is to provide a device for handling sheet material which is extensible through a wide range of movement by actuating means operable with an effective mechanical advantage.

Another object is to provide a device of the character described having rollers arranged to facilitate the movement of heavy sheets onto the device and, by means of the device, to a desired position within a room.

Another object is to provide a sheet handling device having supplementary wing supports operable to give increased breadth of support when the frame structure is in extended position.

The invention possesses other objects, some of which with the foregoing will be set forth at length in the following description wherein is explained that form of the invention which has been selected for illustration in the drawings accompanying and forming a part of this specification. In said drawings, one form of the invention is shown, but it is to be understood that it is not limited to that form, since the invention as set forth in the claims may be embodied in a plurality of forms.

In the drawings:

Figure 1 is a side elevation of the device of my invention in partially extended position, a more fully extended position being indicated in dotted lines.

Figure 2 is an end elevation of the device as shown in full lines in Figure 1.

Figure 3 is a side elevation of the device in collapsed position, portions being broken away.

In terms of broad inclusion, the device of my invention comprises an extensible frame formed of a plurality of frame sections, pivotally connected for movement in the manner of lazy tongs between collapsed and extended position. The

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frame is preferably mounted on casters for easy movement to a desired position below a ceiling, and rollers are mounted at the top of the frame to provide support for a sheet of ceiling material. Actuating means, such as a crank actuated drum and cable, are provided for moving the frame sections about their pivot joints to obtain a desired amount of extension of the assembly; and lock means, such as a releasable pawl and ratchet, are provided for preventing collapsing movement of the frame sections. My invention also contemplates the provision of wing extensions to broaden the support afforded by the frame when it is extended. Bracing means, by which the frame sections may be given rigidity without interfering with the relative movement of the frame sections to and from a fully collapsed position, are also provided.

In terms of greater detail, the device of my invention comprises a plurality of frame sections each having a pair of side rails 1 connected at their ends by cross rods 2, and provided with a diagonally disposed brace 3 to give strength and rigidity to the frame.

The frames are pivotally joined to form a framework extensible in the manner of lazy tongs. To this end, the frames are joined in crossing pairs pivoted upon rods 4 which pass through the points of intersection of the centerlines of the crossing side rails 1, at opposite sides of the frame sections. The pairs of crossing frames are superposed, one upon the other, with the upper ends of the lower set of frame side rails pivoted to the lower ends of the superposed set by means of the cross rods 2. At these points, the rods 2 function both as cross rods, bracing the ends of both sections, and as the pivots upon which the sections move relative to each other.

One of the pivot cross rods 2, by which the upper and lower frames are pivoted to each other, is provided with a drum 6 arranged to be rotated by a crank 7, or other suitable actuating means. A cable 8 secured at its center to the center portion of the drum 6, has its ends extended over sheaves 9 secured to the opposite pivot rod 2, and thence back to points of attachment 11 on the frames near the drum. A ratchet 12 is mounted in connection with the drum 6 for engagement by a releasable pawl 14 pivoted upon an adjacent side rail 1.

The lower ends of the side rails of the lower pair of crossing frame sections are provided with casters 16 supporting the frame, and permitting it to be readily rolled to a desired position within a room. The upper ends of the side rails of the upper pair of frame sections are provided with rollers 17, journaled upon the upper cross rods 2.

The pivotally joined frame sections may be collapsed to a position, such as shown in Figure 3 of the drawings, to form a relatively light and compact unit, which may be readily transported from one place of use to another. The diagonal braces 3 are offset sufficiently to clear the center pivot rods 4, the braces of the lower pair of frame sections being arranged to underlie the rod 4 joining those sections, while the braces for the upper pair of frame sections overlie the rod 4 joining those sections. This arrangement obviates any obstruction to the movement of the frame sections to and from their extreme collapsed and extended positions.

In use, the frame is extended to a height suited to the convenient placing of a sheet 18 of plaster board or other ceiilng material thereon, as indicated in full lines in Figure 1 of the drawings. This is accomplished by turning the crank 7 to wind in the cable 8 onto the drum 6, thereby drawing the opposite pivot rod 2 toward it. The pawl 14 and ratchet 12 serves to hold the drum against unwinding rotation.

A sheet 18 of plaster board is placed upon the partially extended frame, where it is supported by the rollers 17, which permits the sheet to be readily moved to a substantially balanced position. The frame is then rolled to place the sheet 18 in a desired position immediately below the area to which it is to be applied. The frame is then further extended by winding additional cable onto the drum 6, until the sheet is raised and held in the position where it is to be permanently secured. The side rails 1 and the pivot joints of the extended frame afford sufficient resilience to permit the sheet 18 to be pressed firmly against the overhead framing, where it is held while the operator applies suitable securing means. After the sheet is fastened in place, the pawl 14 is moved out of engagement with the ratchet 12, and the frame is lowered to receive another sheet.

The sheets 18 are usually relatively long, and should be supported at relatively widely spaced points. As the frame is extended to raise a sheet to a ceiling, the width between the rollers 17 is progressively lessened, and the stability with which the sheet is supported is correspondingly reduced. To obtain increased stability in the raised position, I provide wing sections 21 upon the upper pair of crossing frame sections. The wing frames 21 comprise side pieces, pivoted as at 22 upon the side rails 1, and cross rods 23 joining the outer ends of the side pieces. Rollers 24 are preferably mounted on the rods 23 to provide rolling contact with a sheet 18 supported on the frame. The wing sections are yieldably supported at their outer ends by springs 25 secured to the adjacent side rails 1.

In the collapsed position, the wing sections 21 are disposed below the rollers 17, in an inoperative position. As the frame assembly is extended, the wing sections 21 are swung upwardly until the rollers 24 engage the under side of the sheet 18 and give additional support therefor. As the frame assembly is further raised, the wing sections swing outwardly under the weight of the sheet, and against the resistance of the springs 25, sufficiently to permit the load to be divided between the rollers 24 and the rollers 17, thereby maintaining a stable support for the sheet at all heights.

I claim:

1. A device for handling ceiling material comprising a plurality of frame sections provided with spaced side rails pivotally joined for extending movement in the manner of lazy tongs, crank actuated means for moving the sections between collapsed and extended positions, rollers upon the free ends of the top and bottom sections, and laterally extending wing sections pivoted upon the upper frame sections.

2. A device for handling ceiling material comprising a plurality of frame sections provided with side rails pivotally joined for extending movement in the manner of lazy tongs, means for actuating the sections between collapsed and extended position, extensions pivoted upon the free ends of the side rails of the upper frame sections, and spring means supporting the extensions in outwardly extending relation to the frame sections.

3. A device for handling ceiling material comprising a plurality of frame sections provided with side rails pivotally joined for extending movement in the manner of lazy tongs, means for actuating the sections between collapsed and extended position, extensions pivoted upon the free ends of the side rails of the upper frame sections, spring means supporting the extensions in outwardly extending relation to the frame sections, and rollers mounted upon the free ends of the upper frame sections and upon the outer ends of the extensions.

4. A device for handling ceiling material comprising a plurality of frame sections provided with side rails pivotally joined for extending movement in the manner of lazy tongs, means for actuating the sections between collapsed and extended position, casters upon the lower ends of the side rails of the bottom frame sections, extensions pivoted upon the free ends of the side rails of the upper frame sections, spring means supporting the extensions in outwardly extending relation to the frame sections, and rollers mounted between the free ends of the side rails of the top frame sections and between the free ends of the extensions carried thereby and positioned to provide a rolling support for ceiling material resting thereon.

5. In a device for handling ceiling material, a plurality of frame sections comprising pairs of spaced parallel side rails arranged in superposed crossing sets, center pivot rods extending through the crossing side rails at opposite sides of each set for pivotally joining the sections at the point of crossing, pivot rods pivotally joining ends of the side rails of the lower set with corresponding ends of the side rails of the upper set, bracing means connecting the free ends of the side rails of each section of each set, and braces extending diagonally from points adjacent one end of each frame section to points adjacent the other end upon the opposite side of the frame section, the diagonal braces of the upper and lower sets being offset to clear the respective center pivots in overlying and underlying relation thereto respectively.

6. A device for handling ceiling material comprising a plurality of frame sections provided with spaced side rails pivotally joined for extending movement in the manner of lazy tongs, crank actuated means for moving the sections between collapsed and extended positions, rollers upon the

free ends of the top and bottom sections, laterally extending wing sections pivoted upon the upper frame sections, and rollers upon the free ends of said wing sections.

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