

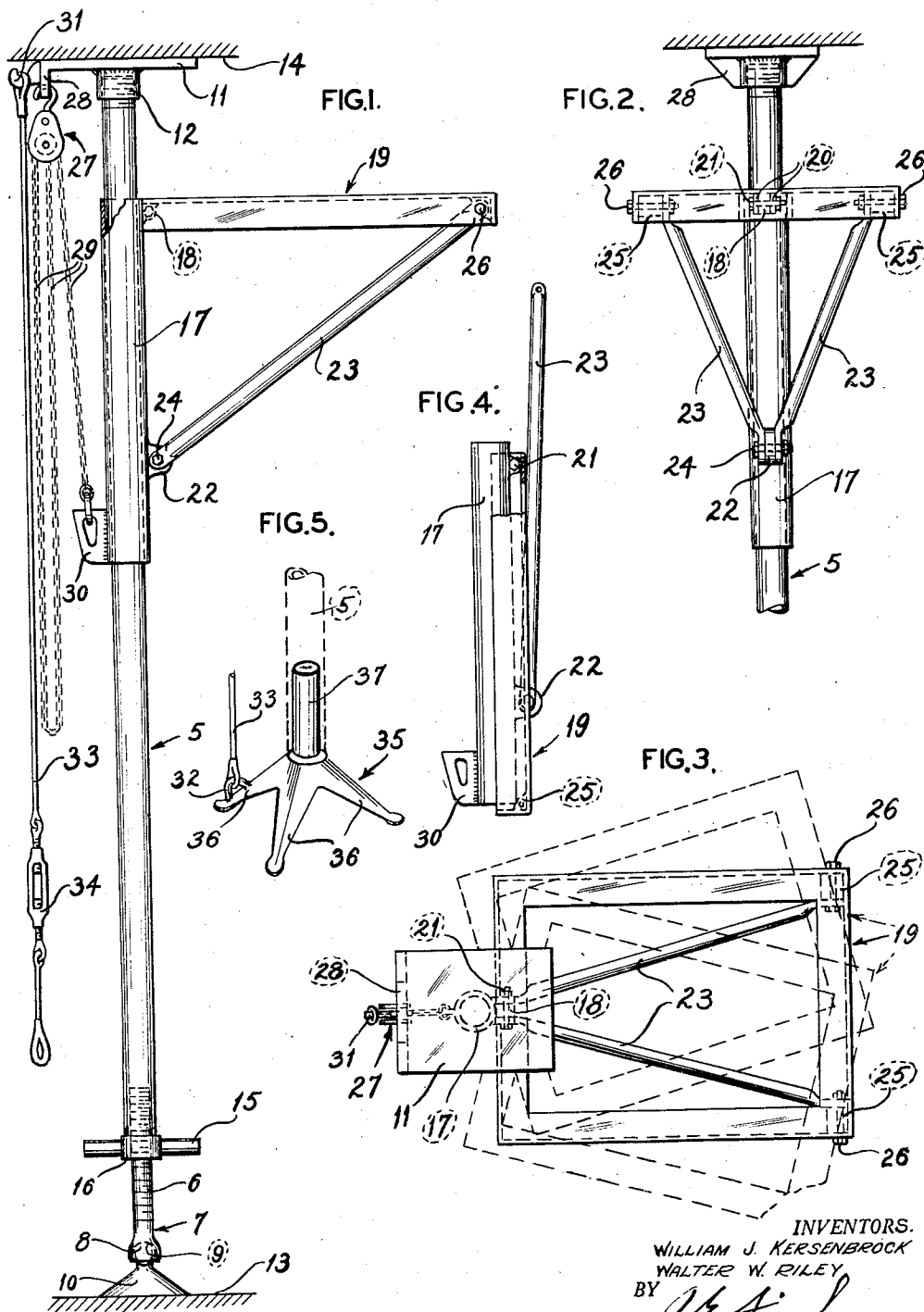
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HOIST

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HOIST

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1

This invention relates to hoists and lifting apparatus, and has reference more particularly to a hoist designed and adapted for use by steam fitters, pipe fitters and plumbers, or other workmen, for the purpose of lifting heavy radiators, pipes or other equipment to an elevated position, and holding them in such position while they are being secured permanently in place.

Where radiators and steam and water pipes are installed in buildings such as factories, refrigerating plants, greenhouses or other similar locations, it frequently becomes necessary to secure heavy radiators or pipes in elevated positions adjacent the ceilings, or directly upon the ceilings. Such work and operation becomes very difficult without the assistance of some special apparatus for raising such equipment to the required elevated position and holding same to location while being permanently secured and anchored in place.

It is the chief object of the present invention therefore, to provide in relatively simple, compact and practicable form, a hoist or elevating apparatus that may be readily braced in vertical position between the floor and ceiling of a room of a building wherein any such installation as above referred to is being made, and including a vertically movable platform or bracket for carrying the load required to be elevated to position, the said platform or bracket being pivotally mounted upon its vertical support so as to rotate therearound in a horizontal plane, for picking up a load at one side of the support and carrying the load to the opposite side of the support for elevation to position, including means for raising and lowering the platform or bracket as required in the work, and the platform or bracket itself being collapsible and foldable into compact form relative to its supporting elements, to facilitate storage or transportation.

Another object of the invention is to provide a hoist of the kind referred to, the same comprising a cylindrical post, upright or support, tubular at its lower end for receiving the screw shaft of a lifting jack, and provided at its upper end with a ceiling bearing plate, whereby by operation of the lifting jack the post may be braced vertically between the floor and ceiling of a room of the building wherein the apparatus is to be used, a tubular sleeve rotatably mounted upon the post and adapted to slide thereon from the upper end to the lower end thereof, a platform hinged at one end to the upper end of the said sleeve and adapted to fold downward to the sleeve, a pair of braces hinged at their lower ends to the lower end

2

of the sleeve in vertical alignment with the hinge supporting the platform, these braces being flared upwardly in a V-formation and releasably pivoted at their upper ends to the outer corners of the platform for releasably supporting the platform in horizontal position, whereby the braces may be released from the platform and the elements folded together compactly for storage or shipment, and means for raising or lowering the platform and any load placed thereon, as required in the work.

Other objects and advantages provided by the invention will appear from the following specification, reference being had to the accompanying drawing wherein is illustrated a preferred embodiment of the invention and structural features thereof, and wherein:

Figure 1 is a side elevation of a hoist as formed in accordance with this invention, showing the same as braced by means of a lifting jack, between the floor and ceiling of a room, and showing the platform elevated to the upper end of the post or upright.

Figure 2 is a frontal view of the upper portion of the assembly shown in Figure 1, the lower portion thereof being broken away.

Figure 3 is a top plan view of the assembly of Figure 1, the rotatability of the platform being indicated in dotted lines.

Figure 4 is a detail view in side elevation of the tubular sleeve for slidably and rotatably mounting upon the post, showing the platform and braces as hingedly mounted thereon, and in folded position.

Figure 5 is a detail in perspective of a floor pedestal adapted for engaging the lower end of the post of the hoist after the jack has been removed, and whereby the post (indicated in dotted lines) may be vertically supported, and the hoist operated with light loads, independently of any support at the ceiling.

A hoist as constructed in accordance with this invention, comprises a post or upright represented generally at 5, the same being cylindrical in cross-section, and preferably tubular from end to end, but at least tubular at its lower end, and thus adapted for receiving the shank or stem 6 of a screw lifting jack 7, the lower end of this shank being formed with a socket 8 adapted to freely engage and seat the ball 9 of a base or foot piece 10 integrally formed with the ball 9, the margins of the socket being intumed at the lower side of the ball to rotatably hold these elements together. A ceiling plate 11 is formed with an outstanding socket member 12, the socket of which is formed

and adapted to either slidably or threadedly receive and hold the complementally formed upper end of the post 5, whereby the coiling plate is operatively mounted in place. By these arrangements the post or upright may be readily braced in vertical position between the floor 13 and ceiling 14 of the room wherein the apparatus is set up for use, and with small danger of injury to the ceiling because of the widened area of the ceiling plate. Likewise a universal joint is provided by the elements 8 and 9 of the jack 7, for freely connecting the base 10 with the shank 6 thereof, and whereby the base of the jack adapts itself automatically to the surface of the floor 13 for full and even contact therewith.

A jack operating lever or handle 15 is formed with a hub 16 which is bored through and threaded complementally to the threaded shank 6 of the jack. The hub 16 is adapted to bear up against the lower end of the post 5, and rotation of the lever 15 operates to raise the post and brace the ceiling plate 11 against the ceiling, as above indicated.

A tubular sleeve 17 of suitable length for the purpose, is slidably and rotatably mounted over the cylindrical post 5 and is nicely yet freely fitted thereto. A hinge or pivot lug 18 is welded to the upper end of the sleeve 17, and a rectangular bracket or platform 19, constructed of angle iron as shown, is hinged to this lug by means of spaced ears or tabs 20 welded to and extended from a web of the angle bar, medially at that end of the platform abutting the post 5, these said ears or tabs being seated over the lug 18 and the elements then hingedly connected by means of a pivot bolt 21 passed through these elements. The web of the angle bar contiguous the post may be cut away at the described hinged connection, to enable the platform to fold down more closely to the post when the hoist is to be stored away. This arrangement is indicated more clearly in Figure 4. Preferably and as here shown the angle bars have their vertical webs turned outwardly, and their perpendicular webs turned upwardly, and while angle bars or strips are here indicated for the platform, as providing the required strength, any other preferred form of rods or bars may of course be employed.

In order to releasably support the bracket or platform 19 in horizontal position upon the sleeve 17, another hinge or pivot lug 22 is welded to the lower end of the sleeve 17 in longitudinal alignment with the upper lug 18, and a pair of brace rods 23 are hinged or pivoted at their lower ends by placing these ends at either side of the lug 22 and passing a bolt 24 therethrough. Anchor lugs 25 are welded in the outer corners of the platform 19, and the outer ends of the brace rods 23 are hingedly and removably connected to these lugs by means of the bolts 26 passed through the lugs and through the overlapped outer ends of the brace rods. Thus these rods when connected to the platform in the manner stated, flare outward at their upper ends in a V-formation, and firmly support the platform in horizontal position for receiving and carrying a load. On the other hand and when it is desired to collapse and fold the apparatus for storage, the bolts 26 are removed and the platform is folded down against the post 5 and the brace-rods 23 are turned upward through the frame, as shown in Figure 4. If preferred, the anchor lugs 25 may be omitted, and the upper ends of the brace rods 23 then hingedly or pivotally connected directly to the vertical

webs of the angle bars of the platform 19 by the bolts 26.

In order to raise and lower the sleeve 17 and attached platform 19, and any load that may be placed thereon, a conventional form of chain block and tackle 27 is employed, the upper hook thereof being passed through an apertured lug 28 depended from the rear margin of the ceiling plate 11, oppositely to the platform 19. The free lower end of one of the chains 29 is then secured by means of its lower hook to an apertured lug 30 welded to the adjacent side of the sleeve 17 in operative alignment with the lugs 28. By this arrangement the sleeve and platform may be raised or lowered as desired, by the usual manipulation of the chains 29, and platform and load locked stationary to any set position desired.

The apparatus may also include a relatively short pedestal 35 formed with legs 36 and central vertical stem 37, this stem being adapted to slidably enter the lower tubular end of the post 5 after the jack 7 has been removed therefrom. By the use of this accessory the post 5 may be supported vertically from the floor without any support or bracing at the ceiling, and any reasonably light load may be carried upon the platform. And in this adaptation of the apparatus, in order to further reinforce and brace the post 5 against bending laterally, a strain cable 33 with turn-buckle 34 therein, may be connected at its upper end to a hook 31 extended from the rear margin of the ceiling plate 11, and at its lower end to a hook 32 at the end of one of the legs 26. Thus by merely turning up the turn-buckle 34, the cable 33 may be tensioned to offset the strain of the load upon the post in the opposite direction.

In the use and operation of the forms of apparatus as described and shown, and for heavy loads, the post 5 is braced between the floor 13 and ceiling 14 in manner pointed out, by manipulation of the jack 7. The platform 19 is then lowered as closely as possible to the floor by rotating it on the post 5 to the side of the post opposite the load that is to be raised. The free end of the chain 29 is then released from the lug 30 and is attached to the load in any conventional manner. The chain 29 is then manipulated in conventional manner for elevating the load from the floor to a height slightly above the platform. The platform 19 is then rotated laterally beneath the said load, and the load in turn is then lowered down upon the platform. The platform and load are then rotated vertically under the point to which the load is to be raised, and the end of the chain 29 is again hooked into the lug 30. The chain 29 is then operated for raising the platform and load to the required position or location, after which and when the load is disposed of from the platform, or if a radiator or the like is to be mounted upon a wall or ceiling—after such anchorage is completed, then the platform may be again lowered and the hoist released for further operations. In the raising of steam or water pipes or other elongated materials, two of the described hoists may be employed, one at each end of the articles.

While the strain cable 33 is shown in Figure 1 as associated with that embodiment of the invention designed for bracing between floor and ceiling by means of a jack, this cable is not used in the operation of this embodiment of the hoist, but is shown in Figure 1 for the sake of convenience. This strain cable 33 is designed for use only with the modification or accessory represented in Fig-

5

ure 5, wherein the post 5 has no ceiling support and is supported vertically only by means of the pedestal 35. And in the use of this form of the invention the cable 33 serves to reinforce the post 5 against bending laterally in an opposite direction, in the manner already pointed out.

While there is here shown and described a certain preferred embodiment of the invention, and specific structural features thereof, it is understood that the described assembly may be changed or modified in minor details as may be found desirable, not departing however from the essence of the invention as defined in the claims.

We claim:

1. In a hoist of the kind described, a cylindrical post for positioning vertically between the ground or floor and an overhead ceiling or the like, the lower end of the post being formed axially tubular for receiving a jack-shank, a base having an integrally formed ball located centrally on its upper side, a round and screw threaded jack-shank passed freely at its upper end into the tubular lower end of the post, the lower end of the jack-shank being formed with a socket for seating upon the ball of the base for enabling the vertical adjustment of the post, a jack operating handle formed with a centrally bored and interiorly screw threaded hub portion adapted to threadedly engage and pass the jack-shank below the lower end of the tubular post and upon which hub the post rests and whereby through rotation of the jack operating handle the post may be raised, a ceiling plate formed with a pendant socket member adapted to receive and rotatably engage the upper end of the post and whereby

6

the post may be braced between floor and ceiling or removed therefrom by rotation of said operating handle, a sleeve slidably and rotatably mounted upon the post, a platform connected with and supported from the sleeve, and means for raising and lowering the sleeve and platform vertically upon the post.

2. In an apparatus according to claim 1, the said means for raising and lowering the sleeve and platform comprising a chain block and tackle connected at the upper end of the ceiling plate and at the lower end to the said sleeve.

3. In an apparatus according to claim 1, the said platform being collapsible and foldable against the said sleeve for facilitating storage and shipment.

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