Oct. 24, 1933. L. S. HOLMBOE 1,932,072

SHORING, JACKING, AND SCAFFOLDING METHOD AND MEANS

Filed March 30, 1929

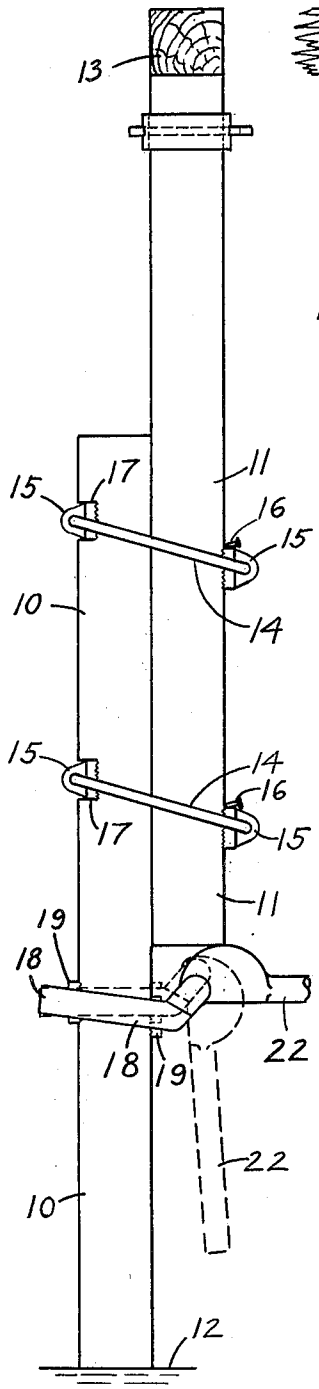


Fig. 1

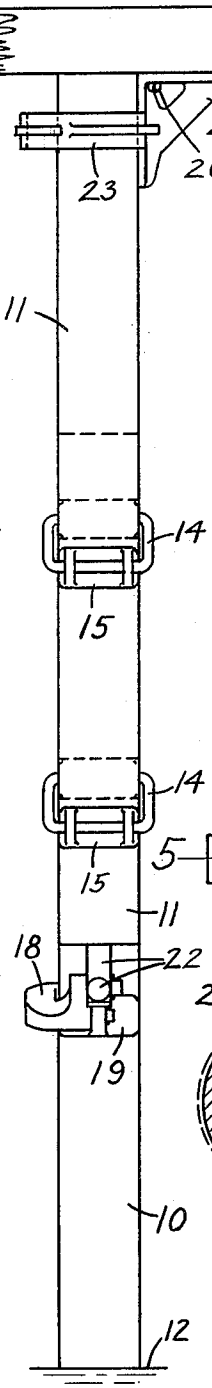


Fig. 2

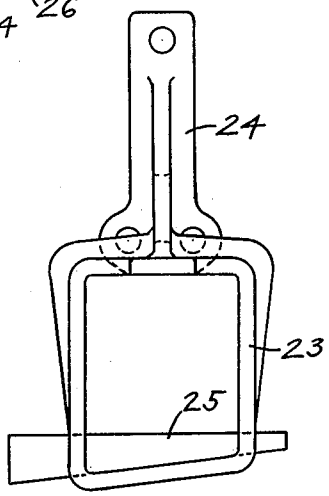


Fig. 3

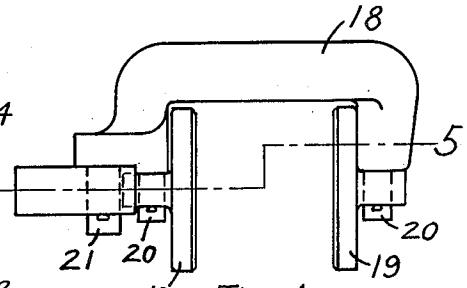


Fig. 4

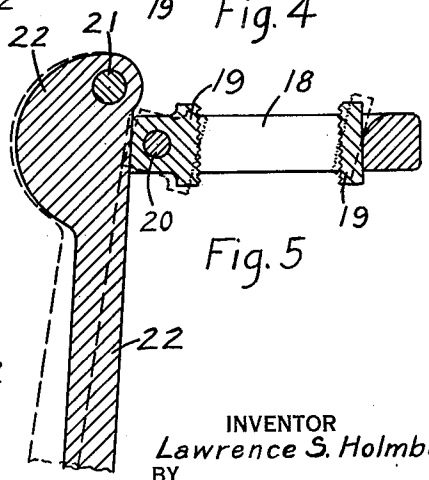


Fig. 5

INVENTOR
Lawrence S. Holmboe
BY
Fay Belmont Whitman
ATTORNEY

Patented Oct. 24, 1933 1,932,072

UNITED STATES PATENT OFFICE

1,932,072

SHORING, JACKING, AND SCAFFOLDING METHOD AND MEANS

Lawrence S. Holmboe, Oklahoma City, Okla.

Application March 30, 1929. Serial No. 351,148

1 Claim. (Cl. 248—2)

This invention relates to improved methods and means for shoring, jacking, and scaffolding, as used ordinarily in general construction work.

The invention contemplates generically a system of construction employing shore forms, towers, scaffolds, and protected lumber in place of the present crude and rule-of-thumb methods now in use for this purpose.

Particularly, the invention is an improved form of shore head, the shore proper, and the jacking device asssociated therewith to be used either independently of these other elements or in conjunction therewith.

This system uses preferably a standard 2 inch by 6 inch (or 4 inch by 4 inch) joist of standard lengths of 7 feet and 14 feet, and with steel connection members, as later described, to make erection quick and rapid and eliminate a large part of the nailing now employed, and which nailing takes time and destroys timber.

A major link in this system is the adjustable shore assembly illustrated in the drawing and described herebelow. In a general way, however, it consists of two pieces of standard protected lumber with steel connections and a jacking device.

The purpose of this improved form of shoring and its method of use is primarily to provide a strong economical adjustable strut or tension member. It is used for shoring in buildings and reinforced concrete structures of all kinds, in mines, as braces for sewer and other trenches, braces for caving excavations, scaffolds, construction hoist towers, and like uses where such a member is desired.

This invention primarily involves the use of two principal members adapted to slide with respect to each other. When desired, a head is quickly and rigidly attached to one of the shore members in the manner described below. There is also provided a lifting device and supporting clamps.

These and other objects of the invention as suggested herebelow are attained by the method and means now to be described, and illustrated in the accompanying drawing, in which—

Figure 1 is a side elevational view of a preferred embodiment of the invention in its practical application as an adjustable shoring member.

Fig. 2 is a front elevational view of Fig. 1.

Fig. 3 is a bottom plan view of the head which is quickly attachable to one of the shore members.

Fig. 4 is a top plan view of the lifting or jacking device adapted to move the two main members under pressure, such as to extend them.

And Fig. 5 is a cross-sectional view through the line 5—5 of Fig. 4.

Like numerals refer to like parts throughout the several views.

As disclosed in Figs. 1 and 2, the two main shore members 10 and 11 are assembled in the position shown with the member 10 resting upon a base or floor 12, and the upper end of member 11 supporting a cross member 13, for instance. Members 10 and 11 may be of any material, shape, or size, but are generally of wood, approximately three and one-half inches by three and one-half inches.

To one of the shore members, such as member 10, is attached one or more clamps 14, there being preferably two of them, positioned somewhat as shown in Figs. 1 and 2. Each of these clamps 14 consist preferably of a pair of parallelly disposed lateral bars of suitable strong metal, arranged in the form of a rectangular collar, to which is pivotally attached at each end a pivoted plate 15, having its inner flat surface knurled or roughened to provide a gripping surface. One of these two plates 15 of each clamp is held from movement on one side, as by means of nails 16.

When members 10 and 11 are of wood, it is preferable to have member 10, for instance, notched as at 17, Fig. 1, to receive each of the two bearing plates 15. This notching serves two purposes. It gives end bearing to the upper and lower surfaces of plates 15 to hold them very rigid under heavy stresses; and it permits notching to different depths to compensate for variations in the thickness of member 11, so as to hold uniform the distance that members 14 have to bridge with respect to each other.

Clamps 14 in the position shown in Fig. 1 are adapted to enable shore members 10 and 11 to carry a compression load. In this position, they slant downwardly from left to right, as shown. When it is desirable to adapt the shore construction to carry a tension load instead of this compression load, it will of course be readily apparent that these clamps 14 must be slanted downwardly in the opposite direction, that is from right to left. Nails 16 are also driven as shown for purposes of safety to prevent failure of the gripping surfaces of pivoted plates 15. Their position would be reversed when carrying a tension load. It has been found, however, that the clamps will carry several times the required stress without such auxiliary aid, but nevertheless it is sometimes desirable to provide this additional margin of safety.

The jacking device consists essentially of a U-

shaped pivoting collar 18, Figs. 1 and 4, to which is pivotally attached one or more (the present disclosure shows 2) gripping plates 19, Figs. 4 and 5. Plates 19 are pivotally attached to the U-shaped member 18 as by means of pivot pins 20. Also pivotally attached to member 18 as by means of pivot pin 21, is a lever 22 having an eccentric hub, as clearly disclosed in Fig. 5.

This jacking member is assembled around or over strut member 10 in the manner shown in Fig. 1; and with the lever 22 in the downward or dotted line position, the jacking clamps 19 at the left are pushed up on member 10 as far as possible, after which lever 22 is raised to the solid line position shown to jack up the end of strut member 11.

It will be noted that the gripping plate 19 in Fig. 1 at the left is positioned somewhat higher than the corresponding plate at the right, thus putting the U-shaped bracket 18 in a preferred position to carry the load when jacking lever 22 is operated.

The shore head is illustrated in Figs. 2 and 3 and consists essentially of a member 23 adapted to surround shoring member 11 and having a projecting flange formed in it for strengthening purposes. Integrally fastened to one side of member 23 is a right angle bracket member 24 having an upper flat surface to support the under surface of cross member 13, for instance, and a side flat surface to lie against the adjacent surface of shoring member 11. Suitable openings are provided in the opposite projecting sides of member 23 to permit the introduction of a wedge 25, Fig. 3, which is driven in to support the shore head in position at the upper end of member 11. Lag screws or bolts 26 are secured through holes in member 24 into the cross bar 13. By this construction, the shore head operates successfully with a bracket only on one side as shown, and it makes use of the wood shore head, which is the upper end of member 11, as a bearing.

By this means a satisfactory shore head is available weighing scarcely one-third of any design possible without these features. Bracket 24 has its lower vertical side extending somewhat downwardly from member 23 as shown in Fig. 2. This together with the use of the wedge 25 and the permanent attachment of the bracket assembly to the wood shore head, and in the position shown, is responsible for this new efficiency. Increased strength of the parts is obtained by ribbing, as shown.

This type of shore head with the bracket on one side has been found to be not only a very economical design but one which is very quickly and easily attached.

The operation of this shore, known to the trade as the "Elis-shore", is very simple. The following explanation to illustrate its working has to do with its use for building construction when used in a vertical position; it is of course understood that its operation for other uses is similar to that described and that the shore may be operated in any other position than the vertical and may be used to carry both tension and compression loads.

If it is desired to equip the shore with a head, the head assembly shown in Fig. 3 is first attached to member 11 in the position shown in Fig. 2 by the driving of wedge 25.

The assembled shore as shown in Fig. 1, but in collapsed position, is taken to the place where erection is desired and placed on the floor in a vertical position. The clamp assemblies are loosened by tapping on the underneath side of lowermost members 15. Shore member 11 is then slid upwardly until its top contacts with the ceiling or forms above. The clamp assemblies automatically clamp it and hold it in this position. By inclining the shore slightly before contact and then drawing it to its vertical position, any slight play is taken up and the jacking assembly 18—19—22, does not have to be used to get the shore fairly tight. However, if it is desired to get the shore very tight or to raise the load above, the jacking assembly is attached to shore member 10 in the position shown in Fig. 1. This can be accomplished with the use of but one hand, because of the arrangement of the assembly which holds the gripping plates 19—19 in a vertical position. Handle 22 is then lifted (a pipe extension being used on the handle if greater force is required) and the eccentric surface at the end of lever 22 exerts a pressure on the bottom of shore member 11. Loads up to three thousand pounds per shore may be easily lifted by this means. To lift heavier loads, it is only necessary to use additional shores. After the load has been lifted, it may be held in position without appreciable settlement after removal of the lifting assembly by tapping the lowermost clamping plate 15 on top with a hammer before the jacking assembly is removed. After the shores are jacked up and finally adjusted in place, the safety nails 16—16 are driven. To loosen the shore it is only necessary to remove these safety nails and tap the two lowermost clamps on their under surfaces.

This system of shoring is preferably used with selected standardized lumber of uniform dimension, and which is put out by the manufacturer under a trade mark name and protected against the elements and swelling by a suitable coating, which coating also has fire resisting qualities.

Some advantages of these shores are their economy of manufacture and use, and light weight, making it easy on the men to handle and economical to ship. Each shore will carry a load without cross bracing up to twelve feet in length. The shores require practically no upkeep cost. Their operation is quick, simple, and economical. They automatically lock when slid into position, and do not require someone to hold them in position while bolts or wedges are inserted, as in other types. These shores can be used for reshoring because the clamps can be tightened before the removal of the jack. They can be used to heights up to forty feet or more by simply inserting longer shore members. The shores are made of dressed or planed lumber, and unlike steel members, do not get extremely cold in winter or hot in summer and therefore the men enjoy working with them. Being made of wood, they can be nailed into at any point of their entire length.

It is to be understood that the present disclosure is for the purpose of illustration only, and that the invention is not limited thereto. To those skilled in the art, many modifications of the invention will be readily apparent, and it will also be obvious to such skilled persons that parts of the method and means may be used without other parts thereof, many such combinations readily suggesting themselves. Therefore, it should be, and is to be distinctly understood that for a definition of the limitations of the invention, reference must be had to the appended claim.

Having now described the invention, what is

claimed as new and for which Letters Patent of the United States is desired, is:

A device of the character described including a pair of shore pieces and means for holding them in overlapping relation, said means comprising a pair of unconnected clamping collars each of which collars has a plate pivoted on each end thereof, said plates being adapted to flatly engage the surfaces of the shore pieces irrespective of the angular positioning of the collars relative to each other.

LAWRENCE S. HOLMBOE.