June 25, 1957 I. H. MOORE 2,796,738

TRENCH CRIBBING

Filed May 17, 1954 2 Sheets-Sheet 1

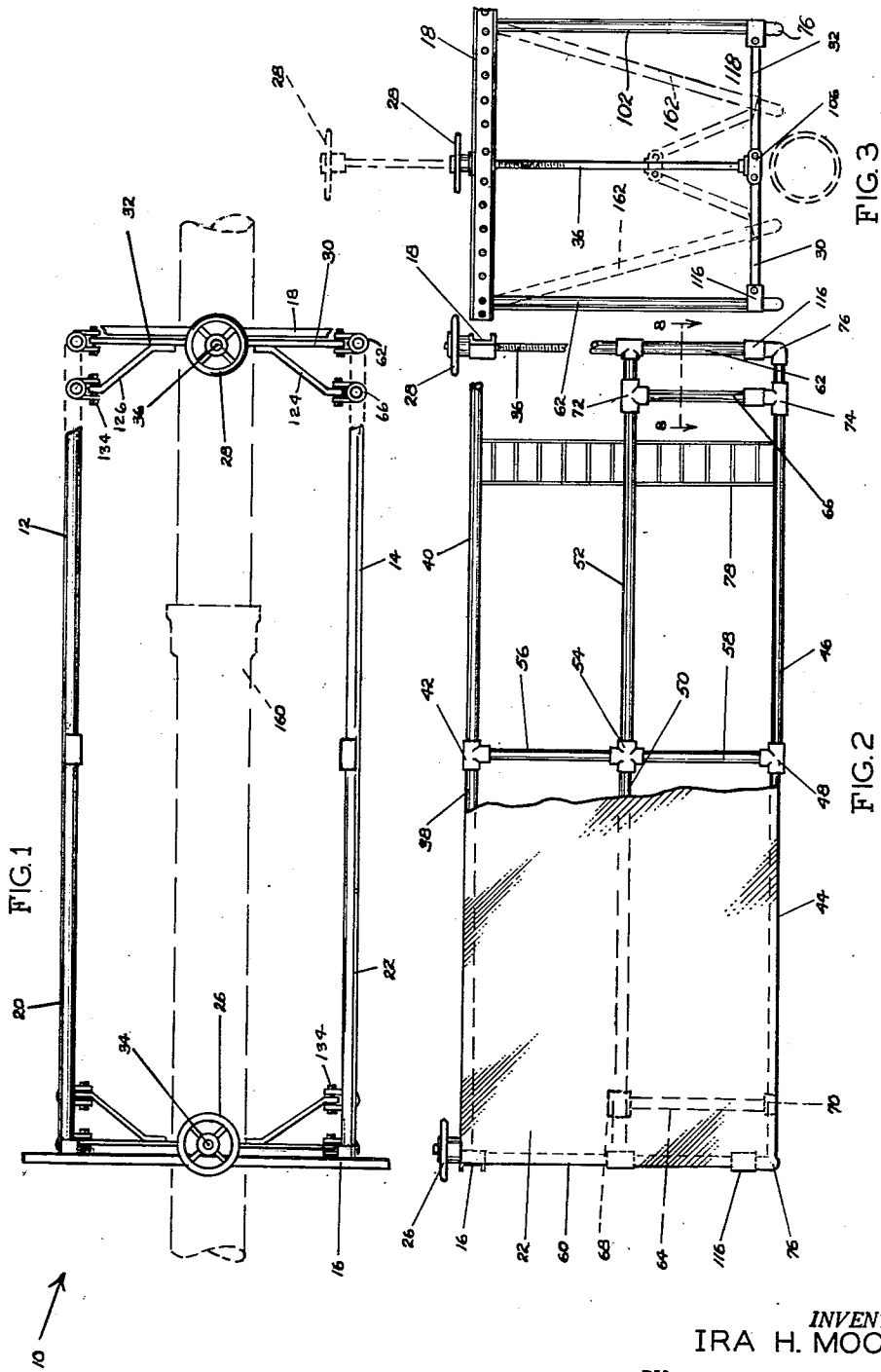


FIG. 1

FIG. 2

FIG. 3

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TRENCH CRIBBING

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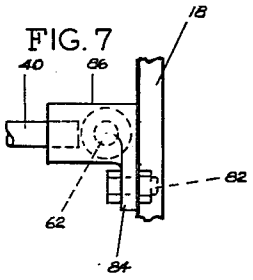


FIG. 7

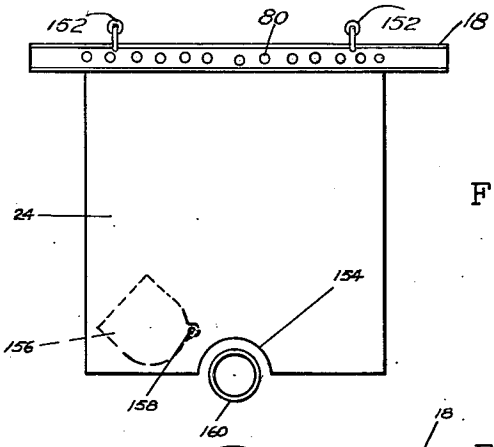


FIG. 4

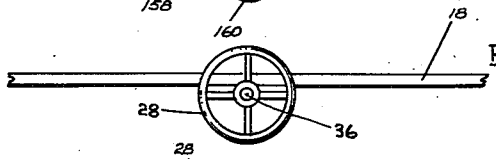


FIG. 5

FIG. 6

FIG. 8

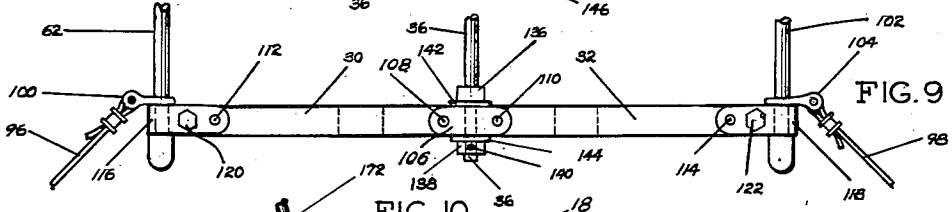


FIG. 9

FIG. 10

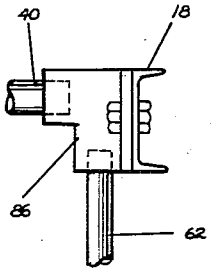
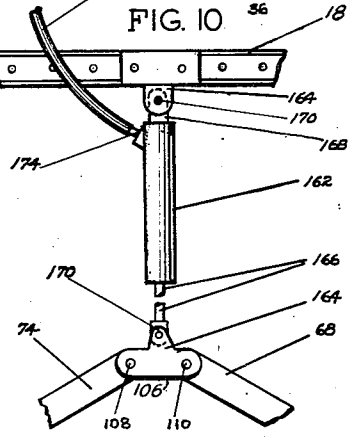


FIG. 12



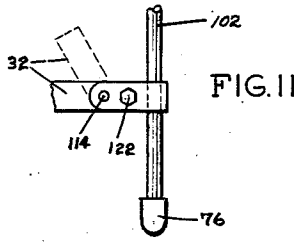


FIG. 11

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TRENCH CRIBBING

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Application May 17, 1954, Serial No. 430,164

2 Claims. (Cl. 61—41)

This invention relates to cribbing or devices for shoring walls of trenches and the like to facilitate laying pipe and other conduit, and in particular adjustable portable forms adapted to be set up in trenches for holding back the soil particularly in laying conduit where it is necessary to connect sections with sealed joints.

The purpose of this invention is provide means for retaining soil in walls of trenches particularly where the soil contains sand that readily crumbles and shifts whereby a trench may be held open and clean until a joint, such as a bell joint, is filled and sealed completely around the pipe.

In some types of soil it is difficult to hold the soil at the sides of a trench while installing pipe, tubes, and other conduit therein, and although boards have been held by cross braces against the sides such devices work loose and permit soil to run through openings around and between the boards. With the shoring retained in this manner workmen do not have the assurance that they can work around joints of the bell type to fill and seal the lower sides of the joints without danger of trenches in which the pipe is positioned caving in.

With this thought in mind this invention contemplates a pair of elongated frames covered with corrugated metal or other sheathing, adjustably connected at the upper edges thereof, with cross beams and having hand screw actuated toggles connecting the lower edges whereby the lower edges are adapted to be contracted and spread as desired to compensate for the requirements or conditions for which the trench is to be used.

The object of this invention is, therefore, to provide cribbing for trenches that is self-contained whereby parts thereof are adapted to be actuated to clamp side walls thereof against side walls of a trench or the like.

Another object of the invention is to provide cribbing for retaining the walls of a trench to facilitate laying conduit in which the cribbing is collapsible and adapted to be reused.

Another important object of the invention is to provide collapsible cribbing for holding soil at the sides of a trench in which the cribbing is adapted to be moved longitudinally of the trench.

It is yet another object of the invention to provide portable collapsible cribbing for retaining soil at the sides of a trench in which lower portions of the cribbing are adapted to be forced outwardly with toggle levers whereby soil dropping from the walls of the trench may be forced back into place.

A further object of the invention is to provide cribbing for holding the side walls of a trench to facilitate laying conduit therein in which both the upper and lower edges of the side walls of the trench are adapted to be adjusted laterally.

A still further object of the invention is to provide portable collapsible cribbing for retaining soil in side walls of a trench in position to facilitate laying conduit and the like therein in which the cribbing is of a simple and economical construction.

With these and other objects and advantages in view

the invention embodies elongated rectangular-shaped side frames made of pipe or other tubing, sheathing carried by said side walls, transversely disposed beams adjustably connected to upper edges of the side walls, hand screw actuated toggle levers positioned between and connecting the lower edges of the frames, and end frames also having sheathing thereon supported at the ends of the side frames.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings, wherein:

Figure 1 is a plan view illustrating the portable collapsible cribbing of this invention with parts at one end of a unit of the cribbing broken away to show the toggle elements in the lower part thereof.

Figure 2 is a side elevational view of the cribbing with part of the sheathing of one side broken away and also with one corner of the frame broken away to illustrate the construction of the frames.

Figure 3 is an end elevational view showing the cribbing with the end wall omitted and with the side walls shown in extended positions in full lines and in contracted positions in broken lines.

Figure 4 is a detail showing one of the end walls of the cribbing.

Figure 5 is a plan view of a cross beam at one end of the cribbing showing a hand wheel thereon and with other parts omitted.

Figure 6 is an end elevational view of the cross beam shown in Figure 5, the parts being shown on an enlarged scale.

Figure 7 is a detail illustrating a connection between one of the cross beams and side and end members of the frame at one side of the cribbing.

Figure 8 is a sectional plan through one end of the cribbing taken on line 8—8 of Figure 2, showing the lateral supporting braces of the toggle elements.

Figure 9 is a detail showing an end elevational view of the toggle levers at one end of the cribbing showing the levers in horizontal positions, and also showing cables attached to the end posts of the side frames for drawing the cribbing along a trench.

Figure 10 is a detail end elevational view of the toggle levers and cross beam and showing a modification of the means used to move the toggle levers including a hydraulic cylinder.

Figure 11 is a detail showing one of the clamps for slidably connecting the toggle levers to the posts at the ends of the cribbing.

Figure 12 is an end elevational view of the connection shown in Figure 7, with parts of the frame broken away.

While one embodiment of the invention is illustrated in the above referred to drawings, it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances which may arise, without in any way departing from the spirit and intention of the device which is to be limited only in accordance with the appended claims. And while there is stated the primary field of utility of the invention, it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

In the accompanying drawings, and in the following specification, the same reference characters are used to designate the same parts and elements throughout, and in which the numeral **10** refers to the invention in its entirety, numerals **12** and **14** indicating the side walls generally, numerals **16** and **18** cross beams to which the upper edges of the frames of the side walls are adjustably connected, numerals **20** and **22** sheathing carried by the frames of the side walls, numeral **24** sheathing of the end walls, and numerals **26** and **28** hand wheels for actu-

ating toggle levers 30 and 32 through threaded rods 34 and 36.

With the frames of the side walls formed as illustrated in the drawings the upper rails include pipes or tubes 38 and 40, connected at the center with a T 42, lower rails formed with tubes 44 and 46 connected with a T 48, intermediate rails formed with tubes 50 and 52 connected with a cross 54 from the top and bottom of which tubes 56 and 58 extend to the T's 42 and 48, vertically disposed posts 60 and 62 at the ends, and reinforcing tubes 64 and 66 parallel to and spaced from the posts, and positioned with the ends of the tube 64 connected to the tubes 50 and 44 with T's 68 and 70, and the ends of the tube 66 connected to the tubes 52 and 46 with T's 72 and 74. The lower ends of the posts at the ends of the frames are connected to the lower rails with L's 76. One of the side wall frames may be provided with a ladder, as indicated by the numeral 78, and as shown in Figure 2.

The cross beams 16 and 18 are provided with spaced openings 80, and the frames of the side walls are connected to cross beams by bolts 82 that extend through the openings 80 and also through flanges 84 of sockets 86 in which the ends of the upper rails and also the ends of the posts are secured, as shown in Figures 7 and 8. The positions of the frames of the side walls may be adjusted by moving the sockets from one opening or bolt hole to another.

Cables 88 and 90 may be provided at the ends of the cross beams for withdrawing the cribbing from a trench and, as shown in Figure 6, the cable 88 is connected to one end of the cross beam 18 with a clevis 92 and the cable 90 is attached to the opposite end with a clevis 92. Each clevis is connected by a bolt, such as the bolts 94 to the cross beams.

Cables 96 and 98 are also provided for drawing the cribbing along a trench, the cable 96 being connected to the lower part of the post 62 with a clevis 100, and the cable 98 being connected to the lower part of a similar post 102, at the opposite side of the cribbing, with a clevis 104.

The toggle levers 30 and 32, which are pivotally connected to a crosshead 106 with bolts 108 and 110, are pivotally connected, at the lower ends, with bolts 112 and 114, to slidable sockets 116 and 118, which are adapted to slide vertically on the posts, and the sockets are adapted to be clamped in adjusted positions on the posts with bolts 120 and 122. The levers 30 and 32 are provided with side braces 124 and 126, and the braces 124 and 126 are slidably mounted on the tubes 64 and 66 with sockets 128 and 130 that are pivotally connected to the braces with bolts 132 and that are clamped in position on the tubes with bolts 134.

The crossheads 106 are secured to the lower ends of the rods 34 and 36 with set collars 136 and 138, having dowel pins or set screws 140 therein, and washers 142 and 144 are provided between the crossheads and set collars. The upper or threaded portions of the rods 34 and 36 are threaded in sockets 146 that are secured to the cross beams 16 and 18 with bolts 148 and 150.

The cross beams 16 and 18 may also be provided with hooks as indicated by the numeral 152, and the lower edges of the end walls may be provided with notches 154 which are adapted to be covered with plates 156 that are pivotally mounted on the end walls with pins 158. The notches 154 are positioned to register with conduit 160, or the like, and in some instances it may be desirable to fill the trench with the pipe or conduit therein to the end wall before moving the cribbing to the next position.

With the hand wheels secured to the upper ends of the rods 34 and 36, such as by pins and draft keys, the rods are rotated to contract the lower edges of the side walls, as shown by the dotted lines 162 in Figure 3, and with the rods turned in the opposite direction the lower parts

of the side walls are spread as shown by the full lines in Figure 3.

Referring to Figure 10, a modification of the invention is shown including two hydraulic cylinders 162 which may be used in place of the threaded rods 34, 36 and hand wheels 26 and 28. Ears 164, one pair welded to the cross head 106 and a further pair welded to the cross beams 16 and 18, receive the cylinder shaft 166 and mounting bracket 168 of the cylinder 162, there secured by pins 170. A hydraulic oil line 172 is extended from the nipple 174 of the cylinder to a source of oil under pressure such as the pump of a farm tractor.

With the side frames and ends covered with suitable sheathing material, such as corrugated iron, the cribbing is lowered into a trench, and where the soil in the lower part of the trench has caved in the lower edges of the side walls of the cribbing are contracted and spread or expanded after the cribbing is in position whereby the soil may be forced back in position; and with the soil retained by the side and end walls of the cribbing workmen may make connections between sections of pipe and the like without danger of soil falling in around or over the pipe. As joints are completed between sections of the pipe the cribbing is moved to the next section or joint.

From the foregoing specification it will become apparent that the invention disclosed will adequately accomplish the functions for which it has been designed and in an economical manner, and that its simplicity, accuracy, and ease of operation are such as to provide a relatively inexpensive device considering what it will accomplish and that it will find an important place in the art to which it appertains when once placed on the market.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Changes in shape, size, and rearrangement of details and parts, such as come within the purview of the invention claimed may be resorted to in actual practice, if desired.

Having now described the invention that which is claimed to be new and desired to be procured by Letters Patent, is:

1. In a device for shoring the walls of a trench, the combination which comprises rectangular-shaped side frames, transversely disposed cross beams positioned at the ends of the side frames, means for pivotally and adjustably connecting the side frames to the cross beams, end walls adapted to be suspended from said cross beams, reinforcing tubes in the side frames and spaced inwardly from ends thereof, toggle levers pivotally connected to sockets slidably mounted on lower portions of the reinforcing tubes and ends of the frames, threaded rods threaded in sockets on said cross beams and operatively connected to said toggle levers, and hand wheels keyed to the upper ends of said threaded rods for expanding and contracting lower portions of the frames.

2. In a device for shoring the walls of a trench, the combination which comprises rectangular-shaped side frames having horizontally disposed upper, lower and intermediate rails connected at the ends and at points intermediate of the ends with vertically positioned posts, sheathing positioned on the side frames, transversely disposed cross beams positioned at the upper ends of the side frames, means for pivotally and adjustably connecting the side frames to the cross beams, vertically disposed reinforcing tubes positioned in the ends of the side frames, toggle levers pivotally connected to sockets slidably mounted on lower portions of the posts at the ends of the side frames and having side braces slidably mounted on said tubes, threaded rods threaded in sockets on said

cross beams and operatively connected to said toggle levers, hand wheels positioned on the upper ends of the threaded rods for expanding and contracting lower portions of the frames, end walls adapted to be suspended from said cross beams, and means for attaching cables to said side frames.

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