Jan. 19, 1960 W. L. BOYD 2,921,772

SHORING JACK

Filed Dec. 3, 1953

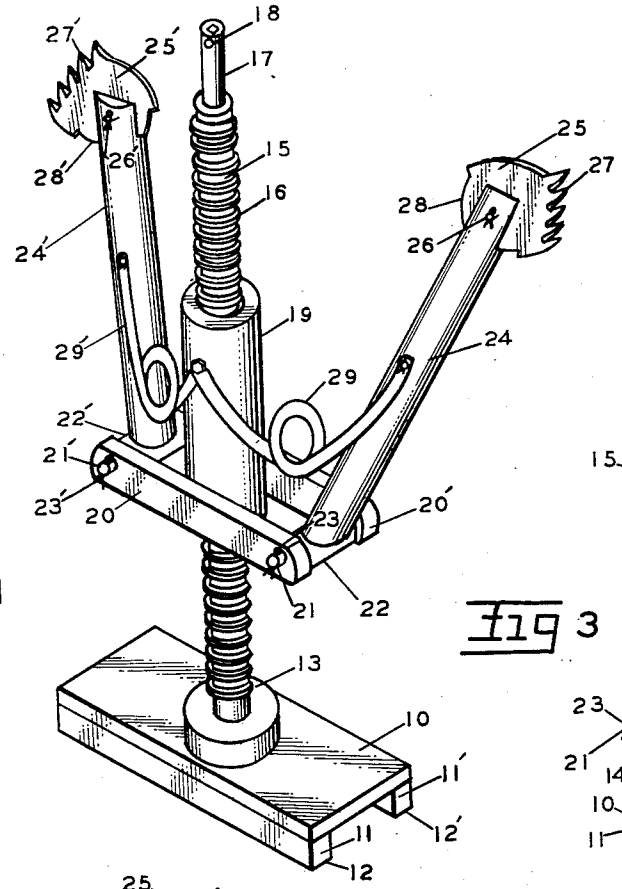


Fig 1

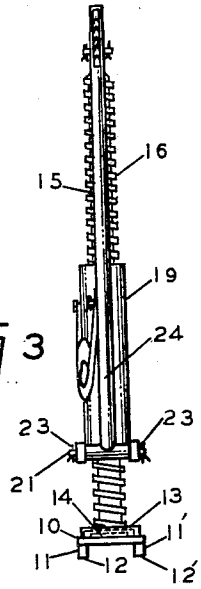


Fig 3

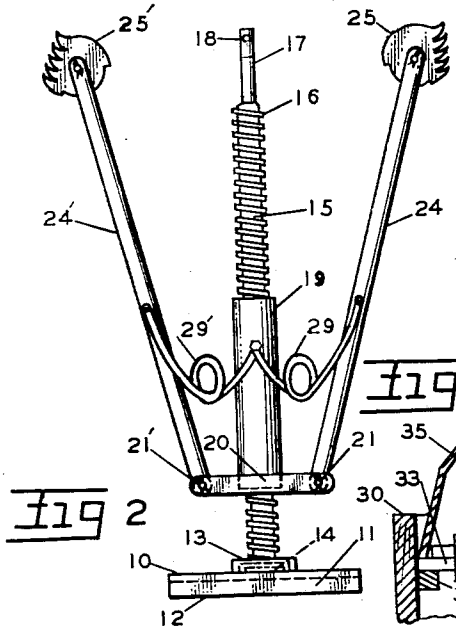


Fig 2

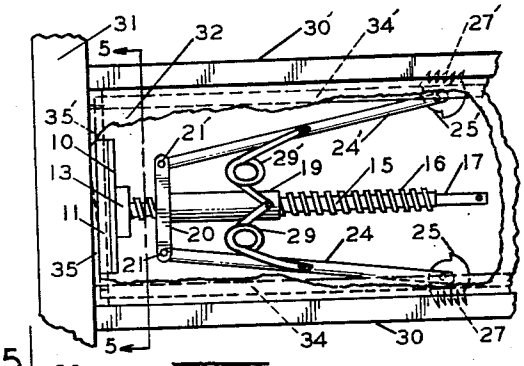


Fig 4

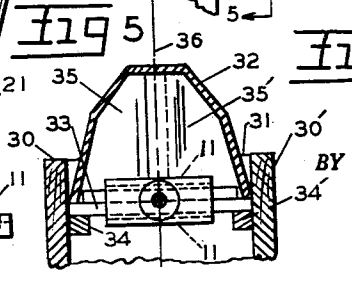


Fig 5

INVENTOR.
WILLIAM L. BOYD
BY
ATTORNEY

United States Patent Office 2,921,772 Patented Jan. 19, 1960

2,921,772

SHORING JACK

William L. Boyd, Atlanta, Ga.

Application December 3, 1953, Serial No. 395,915

7 Claims. (Cl. 254—100)

This invention relates to a shoring jack and more particularly to a shoring jack for pans utilized as arch forms for concrete floor construction.

In providing a concrete floor for buildings and the like, a plurality of concaved pans are used to provide temporary bases in spaces defined by adjacent, parallel, transverse, floor joists and lateral cross beams over which wet concrete is poured and spread evenly. Because the pans must be removed after the concrete has dried or "set up," the pans are provided at each end with a pair of vertical end portions which overlap along the vertical center line thereof, and because the wet concrete has a tendency to seep past these end portions, it has been necessary, according to the prior art, to provide shores which extend across the base of the ends and are urged thereagainst by pivotal wedges which are nailed to the joists. Hence, according to the prior art, it is necessary to provide four pivotal wedges and two shores for each pan utilized.

In the present invention, I have replaced the shore and pivotal wedges with a shoring jack which comprises arms adapted to be anchored to the lower portion of the floor joists and a threaded shaft extending through a member formed by the junction of the arms, one end of the shaft being provided with a shoring base. Upon rotation of the shaft, the shoring base is urged against the end of the pan to effectively urge the overlapping portion of the end against the cross beam and prevent seepage of wet concrete therethrough.

Accordingly, it is an object of my invention to provide a shoring jack adapted to be easily installed between adjacent floor joists and act against the end of a concrete retaining pan to prevent the seepage of concrete between the end of the pan and the adjacent cross beam.

Another object of my invention is to provide a shoring jack which is portable and may be quickly installed or removed from a position urging the end of a concrete retaining pan against an adjacent cross beam.

Another object of my invention is to provide a shoring jack which is easy to manufacture, efficient in operation and durable in structure.

Other and further objects and advantages of my invention will become apparent from the following description of a single embodiment of my invention when taken in conjunction with the accompanying drawing wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Fig. 1 is a perspective view of a shoring jack constructed in accordance with my invention.

Fig. 2 is a front elevational view on a slightly reduced scale of the shoring jack illustrated in Fig. 1.

Fig. 3 is a side elevational view on a slightly reduced scale of the shoring jack illustrated in Fig. 1.

Fig. 4 is a top plan view of a portion of the supporting structure adapted to receive the wet concrete to form a concrete floor, wherein pans are installed to retain the wet concrete, one of said pans being broken away to show the installation of my shoring jack illustrated in Fig. 1.

Fig. 5 is a cross-sectional view taken along line 5—5 in Fig. 4.

Referring now in detail to the embodiment chosen for purpose of illustration, numeral 10 denotes a shoring base

plate which is formed of flat rectangular sheet metal material. Fixed to the lower side of base plate 10 along the longitudinal edges thereof are a pair of reinforcing bars 11, 11' which provide rigidity for base plate 10 while forming flat surfaces 12, 12' which are adapted to act against the edge portions of a concrete retaining pan.

Mounted centrally on the upper surface of base plate 10 is an inverted cup-shaped member forming a bearing disc housing 13 which retains bearing disc 14. Disc 14, in turn, is fixed to the lower end of standard 15 which extends outwardly through a centrally located aperture in housing 13. It will now be seen that standard 15 is free to rotate about its axis with respect to base plate 10 while disc 14 is rotatably retained in housing 13 with its lower surface in contact with the upper surface of base plate 10.

In the preferred embodiment of my invention, standard 15 is provided with helical threads 16 throughout substantially its entire length, and a means for rotating the standard is located at the upper end thereof. In the present embodiment of my invention, this means for rotating the standard consists of a stub shaft 17 provided with a diametrical aperture 18 adapted to receive a pin (not shown) or other lever means.

Threadably received on shaft 15 for axial movement upon rotation thereof is an internally threaded sleeve 19 which is provided with a pair of spaced laterally disposed brackets 20, 20' fixed by their central portions to opposite sides of sleeve 19 whereby they extend tangentially therefrom. Aligned apertures are provided in the ends of brackets 20, 20' through which a pair of stub shafts 21, 21' extend between respective brackets 20, 20'. Between brackets 20, 20', shafts 21, 21' respectively carry for rotation a pair of journals 22, 22' and the ends of shafts 21, 21' are bored diametrically to receive cotter keys 23.

Extending in a plane with standard 15 generally in a direction away from plate 10 are a pair of arms 24, 24' which are respectively mounted by their ends to journals 22, 22' whereby arms 24, 24' are adapted to pivot toward or away from standard 15. The free ends of arms 24, 24' are slotted along the aforesaid plane to provide yokes within which joist engaging members 25, 25' are positioned and pivotally retained in place by bearing pins 26, 26' which respectively pass through the central portions of members 25, 25' and the slotted ends of arms 24, 24'.

Joist engaging members 25, 25' are mirror reproductions of each other, and are flat generally circular members which are provided with outwardly and upwardly projecting spikes or teeth 27, 27' adapted to respectively project into adjacent floor joists. Arcuate edge portions 28, 28' along the lower and inside portions of joist engaging members 25, 25' terminate in flanges on both sides of arms 24, 24'; hence, joist engaging members 25, 25' are free to pivot between the limits of the flanges whereby teeth 27, 27' are positioned outwardly at all times.

To maintain arms 24, 24' in a position projecting away from plate 10, a pair of expansion springs 29, 29' may be fixed by their respective ends to sleeve 19, and the other ends respectively connected to the central portion of arms 24, 24' thereby urging arms 24, 24' outwardly under spring pressure.

In Figs. 4 and 5, a section of a conventional supporting structure for concrete flooring is illustrated wherein adjacent floor joists 30, 30' abut cross beam 31 and a second cross beam (not shown) to define a space which receives concrete retaining pan 32. As illustrated in Fig. 5, retaining pan 32 is an inverted concaved mem-

ber having lower edges which are supported by a plurality of strut strips **33** spaced parallel to beam **31** and supported by carrying strips **34, 34'** respectively fixed along the central inner surfaces of joists **30, 30'**. Retaining pan **32** is provided with substantially vertical ends, each of which is divided into two wings overlapping along the vertical center line. An end of pan **32** is seen in Fig. 5 and comprises wings **35, 35'** which are overlapped along the vertical center line denoted by numeral **36**. The outer surface of wings **35, 35'** is adapted to abut cross beam **31** to prevent wet concrete from seeping past it.

Operation

After retaining pan **32** is installed according to conventional methods with wings **35, 35'** abutting cross brace **31**, and the other end abutting a second cross brace (not shown), my shoring jack is mounted by compressing arms **24, 24'** against standard **15**, placing the shoring jack in a substantially horizontal position beneath retaining pan **32** with shoring base plate **10** in a position adjacent wings **35, 35'**. Next, arms **24, 24'** are released whereby teeth **27, 27'** engage the inside surfaces of joists **30, 30'** and standard **15** is then rotated so that base plate **10** moves toward wings **35, 35'** until at least one of reinforcing bars **11, 11'** rests against the lower portion of wings **35, 35'** urging them together and against cross beam **31**. The identical operation is followed using a second shoring jack, constructed in accordance with my invention, at the other end (not shown) of retaining pan **32**. Thus the retaining pan **32** is effectively held in place and wet concrete (not shown) may be poured over the top of the supporting structure.

It is apparent that teeth **27, 27'** of my shoring jack are so arranged that the more standard **15** is rotated to force reinforcing bar **11** or **11'** against wings **35, 35'**, the more embedded in joists **30, 30'** teeth **27, 27'** become, and that because both joist engaging members **25, 25'** and arms **24, 24'** are pivoted in a plane with standard **15**, my shoring jack is easily adaptable to widely varying widths between adjacent joists.

To remove my shoring jack after the concrete has sufficiently "set up," standard **15** need only be rotated in the opposite direction and my shoring jack pulled in the direction of that end of retaining pan **32** to disengage teeth **27, 27'**.

It is obvious to those skilled in the art that many variations may be made in the single embodiment chosen for purpose of illustration without departing from the scope of my invention as defined by the appended claims.

I claim:

1. A shoring jack comprising a base, a threaded standard bearing against said base, an internally threaded sleeve on said standard threadably engaging said standard for axial movement upon rotation of said standard, arms pivotally carried by said sleeve, said arms projecting outwardly from said sleeve and being adapted to be pivoted in a plane with said standard, joist engaging members respectively pivotally carried by the free outer ends of said arms, and teeth projecting from the joist engaging members, said teeth projecting generally away from said jack in a direction substantially parallel to the axis of said arms for engaging opposite joists of a concrete supporting structure.

2. A shoring jack comprising a base, a threaded standard, a bearing disc connected to the end of said standard and bearing against said base, a housing on said base surrounding said disc, an internally threaded sleeve on said standard threadably engaging said standard for axial movement upon rotation of said standard, a bracket projecting from said sleeve, arms pivotally mounted upon respective ends of said bracket, said arms being adapted to be pivoted in a plane with said standard, the free ends of said arms being slotted along the aforesaid plane, joist engaging members respectively pivotally carried within the slotted portions of said arms, said joist engaging members being respectively provided with teeth for engaging opposite joists of a concrete supporting structure, said teeth projecting generally axially away from said arms, and spring means connected between said arms and said sleeve and urging said arms outwardly from said sleeve.

3. A shoring jack adapted to fit between adjacent joists of a concrete floor supporting structure to urge the end of a concrete retaining pan against a cross beam to prevent wet concrete poured over said structure and said pan from seeping past said end comprising, a base adapted to fit against said end, a standard mounted by one end to said base, means including teeth projecting away from said standard adapted to engage the inside walls of said adjacent joists, said means being connected to said standard and means for transversing said standard with respect to said first mentioned means to urge said base against said end.

4. The structure as claimed in claim 3 wherein said means for transversing said standard with respect to said arms includes threads on said standard and a sleeve connected to said first mentioned means threadably engaging said threads of said standard.

5. A shoring jack adapted to fit between adjacent joists of a concrete floor supporting structure to urge the end of a concrete retaining pan against a cross-beam to prevent wet concrete poured over said structure and said pan from seeping past said end comprising, a rectangular base, spaced bars projecting from said base, said bars being provided with flat surfaces along the same plane for engaging said end of said concrete retaining pan, a standard rotatably mounted on said base, a sleeve threadably engaging said standard for axial movement upon rotation of said standard, a pair of diametrically opposed arms pivotally mounted with respect to said sleeve for movement in a plane with said standard, the free ends of said arms being slotted in the aforesaid plane, joist engaging members respectively pivotally carried within the slotted portions of said arms, a portion of each of said joist engaging members being arcuate adjacent said slotted portions for limited pivoting of the joist engaging members, and teeth on each of said joist engaging members, aligned along respective planes generally perpendicular to the plane of said arms and said standard, said teeth projecting generally axially of the respective arms for engagement with said adjacent joists when said sleeve is moved away from said base.

6. The structure as claimed in claim 5 including spring means urging said arms away from said standard.

7. A shoring jack comprising a base, a threaded standard against said base, an internally threaded sleeve on said standard threadably engaging said standard for axial movement upon rotation of said standard, brackets on said sleeve, arms pivotally mounted on said brackets, said arms projecting outwardly of said sleeve and being adapted to be pivoted in the plane with said standard, joist engaging members respectively pivotally carried by the free outer ends of said arms, and teeth projecting generally away from said jack in a direction substantially parallel to the axis of said arms for engaging opposite joists of a concrete supporting structure.

References Cited in the file of this patent

UNITED STATES PATENTS

98,295	Phillips	Dec. 28, 1869
396,104	Morrill et al.	Jan. 15, 1889
489,405	Anthony	Jan. 3, 1893
721,681	Early	Mar. 3, 1903
1,061,658	Bradshaw	May 13, 1913
2,510,593	Mechling	June 6, 1950

FOREIGN PATENTS

477,638	Germany	June 11, 1929
613,299	Germany	May 16, 1935