Jan. 3, 1956 F. J. ZOERB 2,728,970

CELL HOLDER AND CONCRETE FORM

Filed Aug. 6, 1954

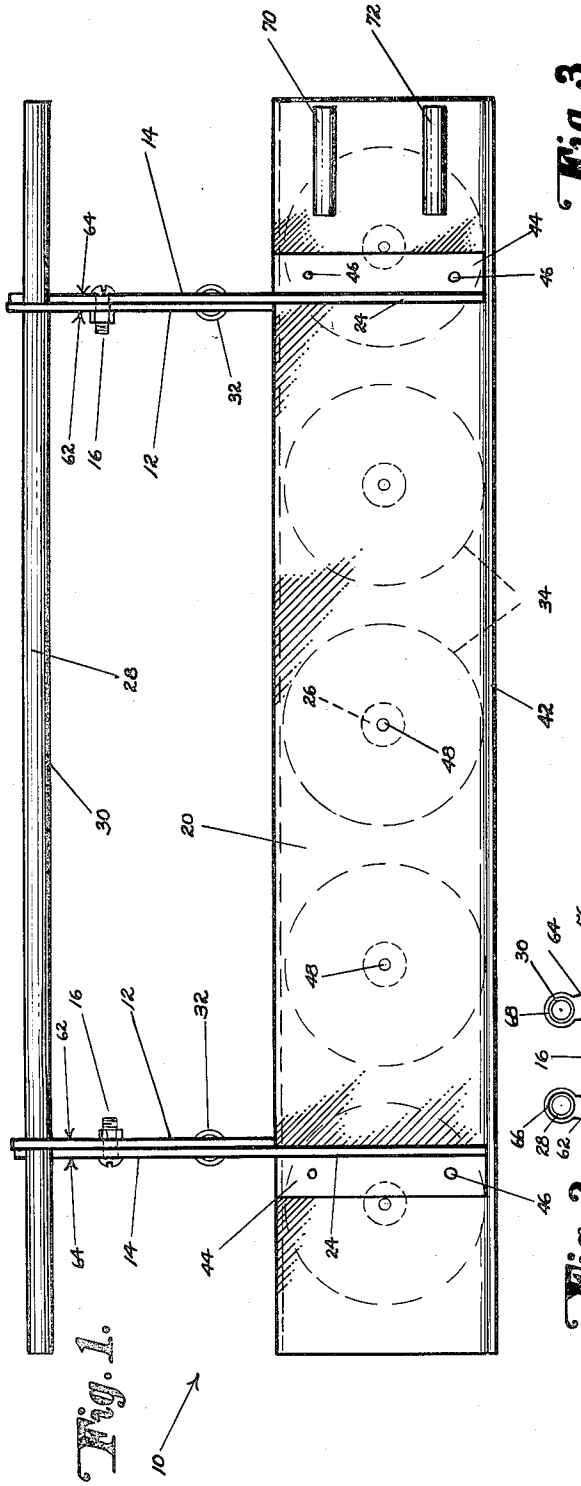


Fig. 1.

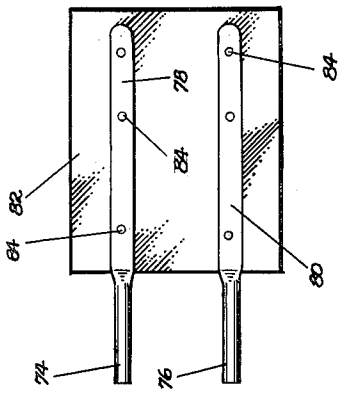


Fig. 3.

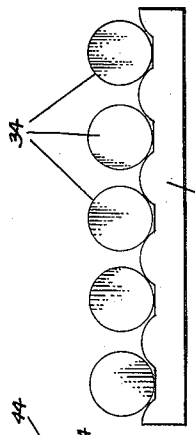


Fig. 4.

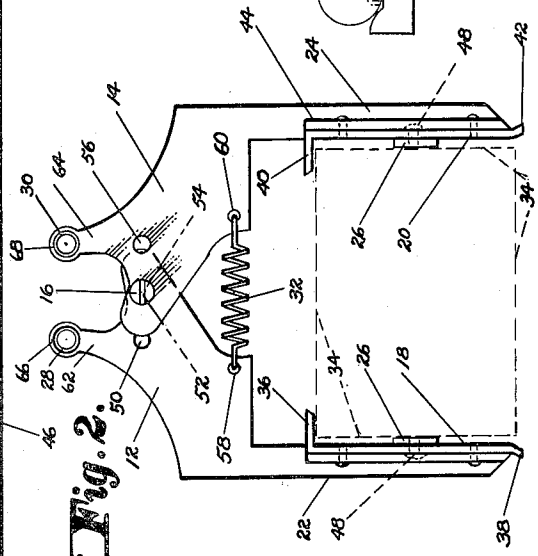


Fig. 2.

INVENTOR.
F. J. Zoerb
BY
Arthur H. Sturges.
Attorney

United States Patent Office 2,728,970 Patented Jan. 3, 1956

2,728,970

CELL HOLDER AND CONCRETE FORM

Fred J. Zoerb, Ainsworth, Nebr.

Application August 6, 1954, Serial No. 448,266

5 Claims. (Cl. 25—1)

This invention relates to building construction particularly of the type formed with concrete walls and in which the walls are provided with open cells to reduce the quantity of concrete used therein, and in particular a tool for picking up and placing a plurality of hollow metal cylinders in position in a wall and wherein the tool is adapted to be used as a form to hold concrete so that areas between and around the cylinders may be filled with concrete to form a concrete wall.

The purpose of this invention is to facilitate the construction of concrete walls of the type having open cells therein by providing a tool with which a row of hollow cylinders may be taken from a rack, positioned in a wall, and surrounded with concrete in a comparatively simple operation.

In constructing concrete walls of the type having open cells therein it is difficult to place or drop the cell forming elements in the forms of the walls without weakening the walls at certain points and in numerous instances such walls crack due to the cells being bunched at points. With this thought in mind this invention contemplates a tool, such as a tool for carrying a row of bricks, in which elongated side plates of the tool are adapted to grip a row of hollow cylinders whereby the cylinders, which have been positioned in a rack, are retained in position and may be deposited in such positions in a wall so that after areas around the cylinders are filled with concrete a complete wall, in which the concrete content is reduced to a minimum, is provided.

The object of this invention is, therefore, to provide means for forming open cells in a concrete wall whereby the cells are evenly distributed throughout the wall.

Another object of the invention is to provide means for positioning hollow cylinders in a concrete wall to provide open cells therein in which a tool for placing the cylinders in the wall is also adapted to be used as a form for retaining concrete poured around the cylinders in position until the concrete sets.

Another important object of the invention is to provide a tool for positioning hollow bodies in a wall to provide open cells in the wall in which the positioning means also provides a form for retaining concrete poured over the hollow bodies in position to form the wall, and in which means may be provided at the end of the tool for forming a corner at a desired angle.

A further object of the invention is to provide a tool for picking up, carrying, and positioning hollow bodies for forming open cells in a concrete wall in which the hollow bodies are retained in the tool by friction and all screws, bolts, or other mechanical fastening elements normally required for holding such devices are obviated.

A still further object of the invention is to provide a manually actuated tool for picking up, carrying and depositing rows of hollow bodies in a concrete wall in which the tool also provides a form for facilitating pouring concrete around the hollow bodies in which the tool is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies pairs of pivotally connected levers, spaced parallel elongated plates carried by arms of the levers, springs connected to the levers for urging the plates against objects positioned to be gripped by the tool, handles extended through upper parts of the levers, corner plates adapted to be attached to ends of the plates, and friction pads positioned on inner surfaces of the plates.

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

Figure 1 is a side elevational view of the tool showing hollow cylinders positioned between the plates of the tool in broken lines.

Figure 2 is an end elevational view of the tool showing hollow cylinders gripped by the side plates of the tool, the hollow cylinders being shown in broken lines.

Figure 3 is a detail showing a corner plate adapted to be held in sockets on the outer surfaces of the plates at one end of the tool.

Figure 4 is a detail showing a plurality of hollow cylinders positioned in a rack, and adapted to be picked up by the tool.

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 pairs of levers pivotally connected by bolts **16** and spaced from the ends of the tool, numerals **18** and **20** elongated plates attached to arms **22** and **24** of the levers, respectively, numeral **26** friction pads positioned on the inner surfaces of the plates, numerals **28** and **30** handles extended through upper ends of the levers, and numeral **32** springs for actuating the levers to urge the plates and friction washers against ends of hollow bodies, as indicated by the broken lines **34**.

As illustrated in Figure 2, the plate **18** is provided with a continuous flange **36** on the upper edge which is positioned to extend over hollow bodies gripped between the plates, and the lower edge is provided with an arcuate lip **38** to guide the plate over the ends of the cell forming shells or hollow bodies **34**. The complementary plate **20** is also provided with a flange **40** similar to the flange **36**, and a lip **42**, similar to the lip **38** of the plate **18**, is provided on the lower edge.

Although the levers **12** and **14** are illustrated as being formed with flat plates, it will be understood that the levers may be formed of tubular material or of material of any other shape in cross section. The arms **22** and **24**, which extend from the lower ends of the levers, are secured such as by welding, to reinforcing plates **44**, and the plates **44** are secured to the plates **18** and **20** by suitable means, such as the rivets **46**, or these plates may also be secured to the plates **18** and **20** by welding. It will also be noted that the plates **18** and **20** may be of such thickness that the reinforcing plates **44** will not be required.

The friction pads **26** are secured to the plates **18** and **20** by suitable means, such as by the rivets **48**.

As illustrated in Figure 2, the lever **12** is provided with spaced openings **50** and **52**, and with similar openings **54** and **56** in the lever **14** the levers are adapted to be adjusted to correspond with the size of the hol-

low bodies to be gripped by the tool. It will be understood that as many of the openings for the pivot bolts **16** may be provided as may be desired. With the bolt **16** positioned in the openings **52** and **54**, as shown in Figure 2, the tool is adapted to hold and carry hollow bodies, such as the cylinders **34**, and when it is desired to use the tool for smaller cylinders the bolt **16** is placed through the openings **50** and **56**.

One end of the spring **32** is secured in an opening **58** in the lever **12** and the opposite end in an opening **60** in the lever **14**.

The levers **12** and **14** are provided with upwardly extended sections **62** and **64**, respectively, and the upper ends of the sections **62** are provided with openings **66** through which a rod forming the handle **28** extends, and a rod forming the handle **30** extends through similar openings **68** in the sections **64**.

The ends of the plates, at one end of the tool are provided with spaced parallel tubular sockets **70** and **72**, and pins **74** and **76** extended at right angles from ends of bars **78** and **80**, which are secured to end plates **82** with fasteners, such as the rivets **84**, are adapted to be held in the sockets whereby the plates **82** may be extended across the ends of the forms provided by the tool so that square corners, or corners at suitable angles may be formed as concrete is poured over the hollow bodies. These end, or corner plates may, or may not be used, as may be desired.

The rack **86**, shown in Figure 4, may be formed of wood, or corrugated material, or of other suitable material, and the corrugations may be spaced according to the spacing desired for the open cells in the concrete wall.

It is preferred to use hollow metal cylinders with closed ends for the hollow bodies, however, it will be understood that the hollow bodies may be of any shape or design, and may be made of any suitable material.

With sections of a wall formed progressively with this tool building walls may be formed rapidly, efficiently, and economically, and with the tool progressively positioned on the wall the side surfaces will be in alignment and the surfaces of the finished walls will be smooth.

In use the handles are drawn together and the plates positioned over a row of hollow cylinders with the cylinders positioned on a rack, as shown in Figure 4, wherein the cylinders are spaced to correspond with the friction gripping pads, and with the cylinders held in position by the pads they are carried to a wall and deposited on the upper surface. The tool is adapted to remain in position with the plates providing forms for retaining concrete poured over the cylinders. As the concrete sets the tool is removed and used to obtain another row of cylinders, and this cycle of operations is continued until the wall is finished.

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. A tool for use in building construction comprising spaced pivotally connected elements having upwardly extending sections on ends thereof on one side of the pivotal connections and arms extended from the ends on the opposite side, rods extending through the sections connecting the elements, elongated parallel plates connected by said arms and spaced gripping pads on inner surfaces of said plates for holding cell forming shells positioned between the plates.

2. A tool for use in building construction comprising spaced pairs of pivotally connected elements, parallel rods extended through elements of the pairs providing handles, parallel plates carried by the elements of the pairs, spaced friction pads on inner surfaces of the plates positioned to grip cell forming shells between the plates, and resilient means connecting elements of the pairs for urging the plates against said cell forming shells.

3. A tool for use in constructing concrete walls comprising pairs of levers, means for pivotally connecting the levers of the pairs, parallel rods extended through upper parts of the levers providing handles, vertically disposed elongated parallel plates having inwardly extended flanges on upper edges thereof carried by lower ends of the levers and positioned to engage ends of cell forming cylinders, means resiliently connecting the levers of the pairs for urging the plates against the ends of the cylinders, vertically spaced horizontally disposed sockets positioned on outer surfaces of said plates, and end plates having spaced pins extended at right angles from one of the ends thereof adapted to be positioned at right angles to the plates carried by the levers at one of the ends of the plates with the pins in said sockets.

4. In a tool for masonry construction, the combination which comprises spaced pairs of levers, adjustable means for pivotally connecting the levers, springs connecting the levers below the pivotal connecting means, elongated parallel plates having flanges on the upper edges carried by the lower ends of the levers, spaced gripping elements on inner surfaces of the plates, elongated rods extended through upper parts of the levers providing handles and adapted to urge the plates apart against the action of the springs, spaced horizontally disposed sockets positioned on outer surfaces of ends of the plates, and plates having paced pins extended at right angles from ends thereof and said pins being adapted to be positioned in said sockets.

5. In a tool for concrete wall construction, the combination which comprises spaced pairs of crossed levers having upwardly extended sections on upper parts thereof, parallel rods extended through the upwardly extended sections providing handles, pivotal means for adjustably connecting the levers of the pairs, springs connecting the levers of the pairs, vertically disposed elongated plates having right angularly disposed flanges on the upper edges and outwardly flared lower edges carried by arms extended downwardly from said levers, said plates being adapted to engage ends of cylindrical elements positioned between the plates, spaced friction pads positioned on inner surfaces of the plates, spaced horizontally disposed tubular sockets positioned on outer surfaces of the plates and spaced inwardly from ends thereof, and corner plates with pins extended angularly from ends thereof adapted to be positioned at ends of the vertically disposed plates with the pins extended into said sockets.

References Cited in the file of this patent

UNITED STATES PATENTS

775,980	Landes	Nov. 29, 1904
811,135	Emerson	Jan. 30, 1906
1,041,991	Frost	Oct. 22, 1912
1,160,033	Ambrose	Nov. 9, 1915
1,757,196	Jaques	May 6, 1930
2,400,852	Stevenson	May 21, 1946

FOREIGN PATENTS

28,296	Great Britain	Aug. 13, 1914
35,645	France	Mar. 26, 1930