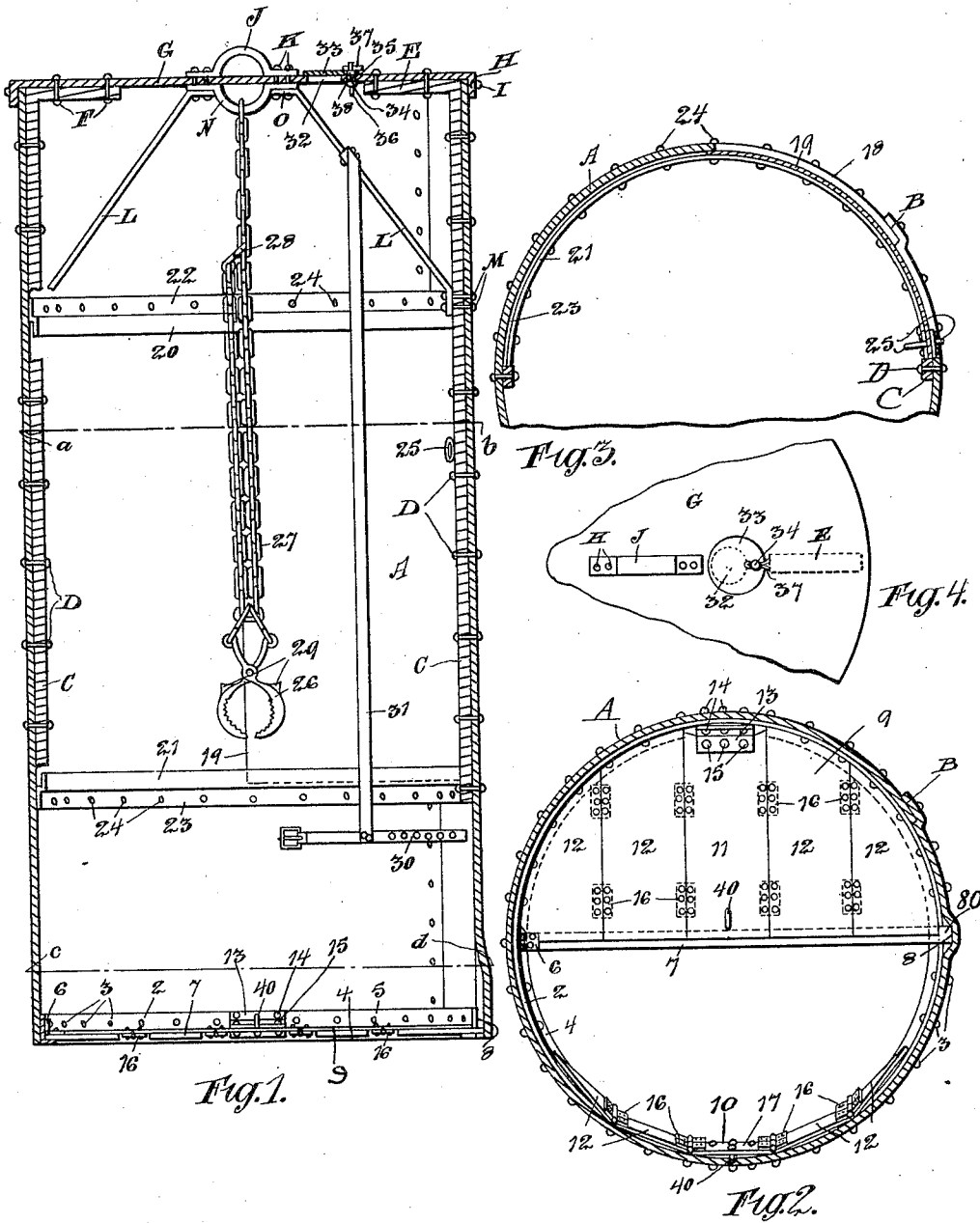


S. PEPPER.
WELL DIGGER'S CAGE.
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UNITED STATES PATENT OFFICE.

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WELL-DIGGER'S CAGE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SIDNEY PEPPER, of the town of Edam, Province of Saskatchewan, Canada, a subject of the King of Great Britain, have invented certain new and useful Improvements in Well-Diggers' Cages, of which the following is a specification.

My invention relates to improvements in well-diggers' cages, and the object of my invention is to design a cage to be used in connection with well-boring machines, so that a man may enter the same and be lowered to the bottom of the well in order that he may remove obstacles, such as stones from the bottom of the well being bored, and be drawn with the same and the cage up to the surface.

Another object of my invention is to provide a cage of the class set forth which will protect well-diggers from getting wet and muddy as a result of having to go down to the bottom of the boring or well. As far as I know, there is no apparatus for lowering and raising a man into and out of a well or bore, and as wells are oftentimes sunk in cold weather, without a cage such as I have invented, a well-digger gets wet, and when he is brought to the surface of the ground he is very apt to catch cold.

Another object of my invention is to provide a cage so that the man therein will be protected from missiles falling into the well.

In boring a well, gas is often met, and when a man has to go down into the well he oftentimes is overcome by the gas and consequently he loses his senses, and it has at times been impossible to remove him from the well. Now although my cage will not prevent a man being overcome by gas, still since he will be within the cage, and furthermore since I provide the cage with a suitable life-belt, he can positively be drawn up to the surface within the cage.

A still further object of my invention is to provide my cage with a pair of tongs which may be detachably suspended from a chain or cable so that should a stone be too heavy for the man to lift, the same may be drawn up with the man and the cage by the power at the top of the well or boring, and my invention consists of a cylindrical body provided in its side with an opening through which a man may pass; a sliding door for closing said opening; a bottom

provided with two hinged-members each composed of a plurality of hinged sections whereby when either of the said members is opened inward, the same may fold against the inner side of the said body; a cover provided with a hand-hole, and suitable braces and coupling attachment as hereinafter more particularly explained.

Figure 1 is a vertical central cross section through my cage, the supporting bar for the hinged members being shown in side elevation, and broken away in several places for clearness of illustration of other parts. Fig. 2 is a horizontal cross section on the line *c-d*, Fig. 1. Fig. 3 is a horizontal cross section on the line *a-b*, Fig. 1, part being broken away; and Fig. 4 is a plan view of portion of the top or cover.

In the drawings like characters of reference indicate corresponding parts in each figure.

As a usual thing, the diameter of the bore of a well drilled by the ordinary boring-machine is about 18 inches, and since the bore is of course more or less circular in cross section, it follows that my cage will be made circular in cross section and of the desired length so that a man may freely stand up within the same. As the diameter of the cage will not permit a man to bend over much, the tongs in question mounted on the chain will permit of a stone being removed from the bore which could not be removed by the workman either because of the awkward placing of the same and its size, and also because of the constricted place in which the workman has to move. The body-portion A is substantially circular in cross section, and the same is preferably made of sheet iron, the edges of which have been riveted together as shown at E.

C are a pair of bars which are positioned opposite each other, and are preferably secured to the body-portion A by the rivets D, and on the inner side of the said body-portion. The upper ends E of the said bars extend inward and are secured by the rivets F to the top or cover G. This top or cover is provided with a flange H which fits around and over the top of the body-portion A, and is secured to said body-portion by the rivets I.

J is a coupling-ring or eye secured by the rivets K to the top or cover G, and cen-

trally thereon. The cable or rope or chain (not shown) whereby the cage is lowered and raised is coupled to the ring or eye J.

L are a pair of brace-rods which are secured by the rivets M to the bars C and body-portion A.

N is a coupling-ring or eye which is positioned against the under side of the top or cover G, and directly underneath the coupling-ring or eye J. The rivets K also pass through the said coupling-ring or eye N and through the upper ends O of the brace-rods L, thereby firmly securing these parts to the top or cover G. The bars C not only stiffen the body-portion A, but they also receive the lifting strain when the cage is being raised and lowered.

2 is an angle iron secured by the rivets 3 to the inner side of the body-portion A and at the bottom thereof. This angle iron is provided with a horizontal flange 4 extending inward. Hinged to the vertical flange 5 of the angle iron 2 by means of the hinge 6 is a supporting-bar 7, the free end of which normally rests in the pocket 8 formed in one side of the body-portion A. In the normal position of the bar 7, the corners of the end 80 thereof will contact with the sides of the pocket 8 and so keep this end of the bar in alinement with the hinged end. The pocket 8 extends high enough so that the said bar 7 may be moved around its hinge 6 and against the inner side of the body portion A when occasion demands.

The bottom of the cage is composed of two hinged-members 9 and 10. These hinged-members are composed of a plurality of sections 11 and 12. The central sections are each hinged by hinges 13 to the body-portion A by means of the rivets 14. 15 are rivets securing the said central sections to the said hinges. Since the cage is of necessity substantially circular in cross section, and since the space within the cage is very limited in which the workman has to operate, the hinged-members 9 and 10 must be constructed to fold as closely as possible against the vertical walls of the body-portion A when the said hinged-members are open. Therefore the sections 12 are hinged to the adjacent sections by the hinges 16, and also to the central sections 11 and 17. These hinges may be of any suitable construction and are to be placed so that they will coact with the said sections to give the best results. In Fig. 2 the hinged-member 9 is shown closed, and the hinged-member 10 is shown open. By constructing the hinged-members of the sections already described, when the said hinged-members are open they permit the workman to have the maximum amount of room. It will be noticed upon referring particularly to Fig. 2 that the inner ends of said sections are supported upon the supporting bar 7, and that the outer

sides of the end sections 12, and the outer ends of the intermediate sections 12, rest upon the horizontal flange 4, of the angle-iron 2, when the hinged-members 9 and 10 are closed.

18 is an opening formed in the side of the body-portion A through which the workman passes into and out of the said cage. Closing this opening is a sliding door 19, the top and bottom edges of which operate respectively between the vertical flanges 20 and 21 and the body-portion A from which these flanges are spaced apart. The said flanges are carried by the semi-circular plates 22 and 23 which are secured by the rivets 24 to the body-portion A. These semi-circular plates extend around one side of the body-portion A as far as the bars C, and it will be therefore understood that when the said door is open or closed, it will contact with one of the said bars and so be limited in its movement.

25 are hand grips bolted to the door 19.

I shall now describe the use to which my cage is put. The workman opens the door 19 and enters the cage, the hinged-members 9 and 10 of course being closed. The cage is then lowered to the bottom of the well or boring. The workman then lifts up either of the said hinged-members to get at the obstruction, and should the same require more than his strength to remove, he uses the tongs 26. These tongs are mounted on the chain or cable 27, and by adjusting the position of the hook 28, the tongs can be lowered and placed around the stone. As each jaw of the tongs is provided with a foot-rest 29, the tongs may be firmly gripped around the stone. As the chain or cable 27 is carried by the coupling-ring or eye N, the stone will be removed by the power which draws up the cage and its occupant.

Should it be necessary, of course both of the hinged sections 9 and 10 and the supporting-bar 7 can be lifted up.

Oftentimes in drilling wells, a gas vein is cut, consequently the well fills with gas. When the workman descends into the well or boring in the cage, he will be overcome by the gas if it is powerful enough, and therefore I suspend within the said cage a life-belt 30 by the strap 31 from the upper part of the cage, for instance, one of the brace-rods L. Where gas is at all suspected, the workman should buckle the life-belt 30 around his body and under his arms and should he be overcome at any time by gas, he can be readily drawn up with the cage.

On the top or cover G is formed a hole 32, which is normally closed by the sliding cover 33 which is pivoted to the said top by the bolt 34. This bolt is provided with a square portion 35 which fits a correspondingly shaped hole in the cover 33, and when this bolt is turned by the hand-grip end 36, said

cover can be moved. 37 is a split-pin passing through the upper end of the said bolt and whereby the same is retained in place. The part 38 of the bolt 34 where it passes through the top or cover G is round so as to permit of the said bolt being readily moved. The object of the hole 32 is to permit light to enter the cage, and in case the coupling means for the raising and lowering cable should become disconnected with the coupling-ring or eye J, the workman may pass his arm through the hole 32 and make the necessary coupling.

Each hinged section 9 and 10 is provided with a hand-grip 40.

From the foregoing specification it will be clear to one skilled in this art that a workman descending into a well or boring in my cage will be as well protected as it is possible to protect him, and should any missiles such as iron bars or hammers accidentally fall into the well or boring, the same cannot ordinarily strike the workman. Many fatal accidents have been caused by missiles falling down into a well upon the well-digger.

While I have described what I consider to be the best embodiment of my invention, I desire it to be understood that the principles can be embodied in different forms, and I desire not to be limited beyond the requirements of the prior art, and the terms of my claims.

Of course any suitable type or style of tongs may be used by me in connection with my invention.

What I claim as my invention is:

1. A well-digger's cage comprising a cylindrical-shaped body-portion having an opening in its side; a sliding-door closing said opening; a cover closing the top of said body-portion, and a hinged-bottom which may be opened inwardly.

2. A well-digger's cage comprising a cylindrical-shaped body-portion having an opening in its side; a sliding-door closing said opening; a cover closing the top of said body-portion, and provided with a hole; a sliding cover pivoted to said cover and designed to close said hole and a hinged bottom.

3. A well-digger's cage comprising a cylindrical-shaped body-portion having an opening in its side; a sliding door closing said opening; a cover closing the top of said body-portion, and provided with a hole; a sliding cover pivoted to said cover and designed to close said hole; a hinged bottom; a pair of tongs provided with foot-rests; a flexible adjustable supports carrying said tongs, and a coupling member secured to said top or cover to which said flexible support is connected.

4. A well-digger's cage comprising a cylindrical-shaped body-portion having an opening in its side; a sliding door closing

said opening; a cover closing the top of said body-portion, and a hinged bottom composed of two independent members each hinged to said body-portion, and each composed of a plurality of sections hinged together; a supporting-bar hinged at one end to said body-portion and upon which the inner ends of said hinged-members rest, and a flange carried by the bottom of said body-portion for supporting said supporting-bar and the said hinged-members.

5. A well-digger's cage comprising a cylindrical-shaped body-portion having an opening in its side; a sliding-door closing said opening; a cover closing the top of said body-portion; a coupling-member carried by said cover; a pair of vertical strengthening-bars secured to said body-portion and opposite each other, the upper ends of said bars extending inward and being secured to said cover; brace-rods supporting the said cover from said vertical-bars; a pair of members independently hinged to said body-portion and designed to close the bottom thereof, and each composed of a plurality of sections hinged together, and supporting means for said hinged-members carried by the bottom of said body-portion.

6. A well-digger's cage comprising a cylindrical-shaped body-portion having an opening in its side; a sliding-door closing said opening; a cover closing the top of said body-portion and provided with a hole; a sliding cover pivoted to said cover, closing said hole; a coupling-member carried by said cover; means for strengthening said body-portion and bracing it; a pair of members independently hinged to said body-portion and designed to close the bottom thereof, and each composed of a plurality of sections hinged together; supporting means for said hinged-members carried by the bottom of the said body-portion, and a life-belt secured within said cage.

7. In a well-digger's cage the combination of a cylindrical-shaped body-portion; a bottom made of two members each hinged to said body-portion and each composed of a plurality of sections hinged together, and means carried by said body-portion for supporting said members when down.

8. In a well-digger's cage the combination of a cylindrical-shaped body-portion; a horizontal flange permanently carried by the bottom thereof and on the inner side thereof; a supporting-bar hinged at one end and resting upon said flange when down; a pair of members closing the bottom of the cage and each composed of a plurality of sections; means whereby the sections of each of the said members are hinged together, and means whereby the central sections of the said members are independently hinged to the said body-portion, as set forth.

9. In a well-digger's cage the combination

of a cylindrical-shaped body-portion provided at its bottom with a vertically disposed pocket; a horizontal flange permanently carried by the bottom of said
5 body-portion and on the inner side thereof; a supporting-bar hinged at one end to said flange and having its free end resting in said pocket when closed and upon said flange; a pair of members closing the bottom
10 of the cage and each composed of a plurality of sections; means whereby the sections of

each of the said members are hinged together, and means whereby the central sections of the said members are independently hinged to the said body-portion, as set forth. 15

In testimony whereof I have affixed my signature in presence of two witnesses.

SIDNEY PEPPER.

Witnesses:

H. KNEEN,
A. KNEEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."