Dec. 4, 1945. W. RUBLY 2,390,393

WELL CASING CAP

Filed March 22, 1944 2 Sheets-Sheet 1

Fig. 1.

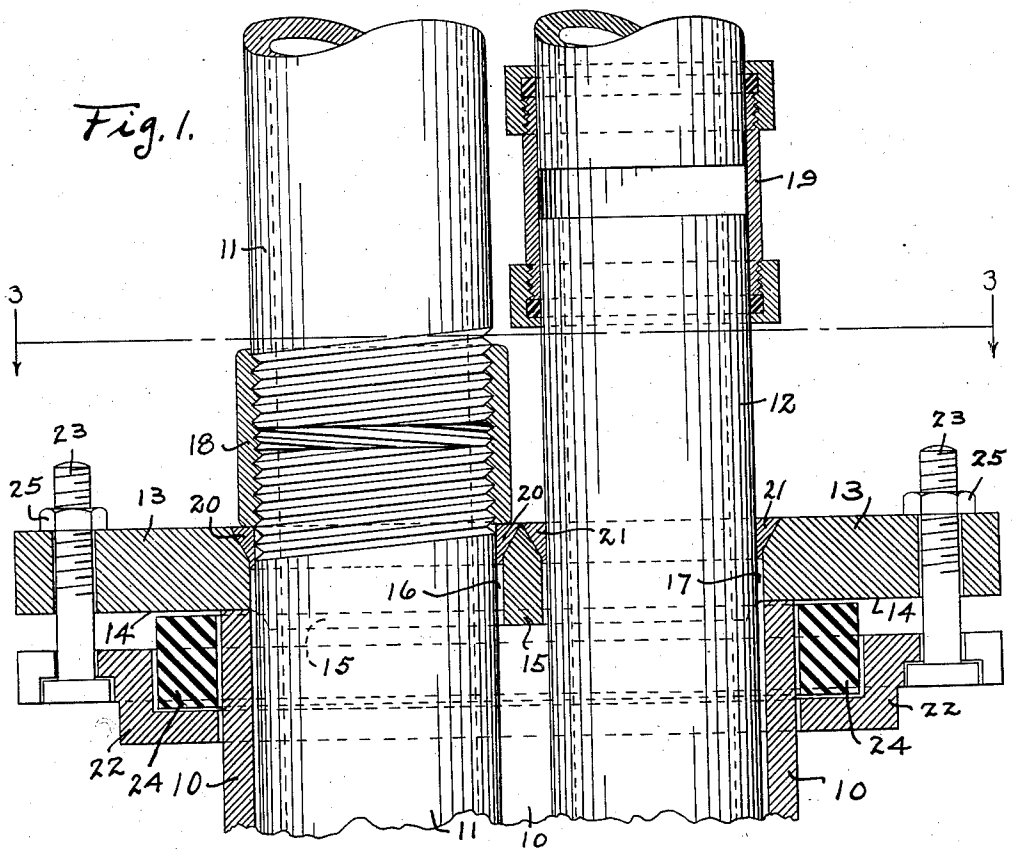
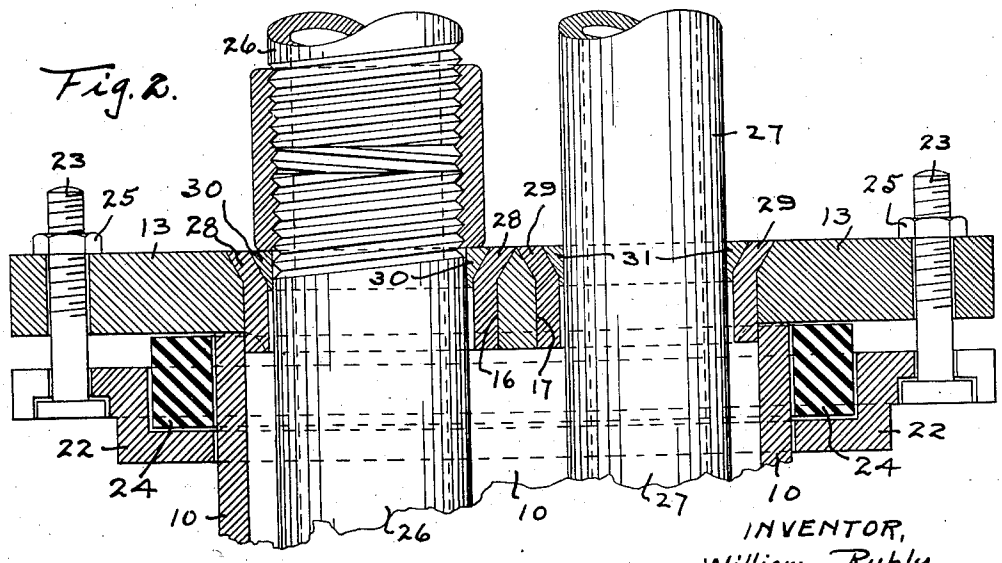


Fig. 2.



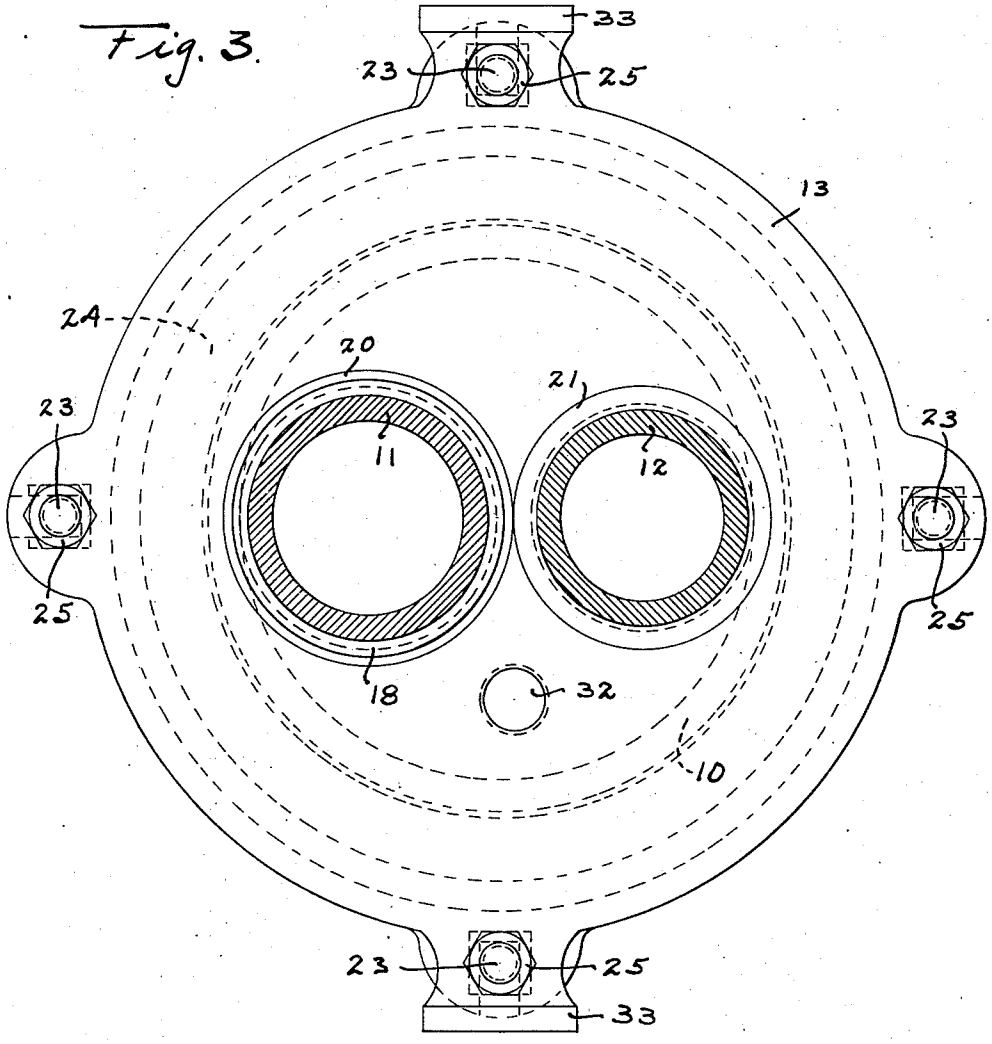
INVENTOR,
William Rubly,
By Herbert A. Minturn,
Attorney.

Dec. 4, 1945. W. RUBLY 2,390,393

WELL CASING CAP

Filed March 22, 1944 2 Sheets-Sheet 2

Fig. 3.



INVENTOR,
William Rubly.
By Herbert A. Minturn,
Attorney.

Patented Dec. 4, 1945

2,390,393

UNITED STATES PATENT OFFICE

2,390,393

WELL CASING CAP

William Rubly, Indianapolis, Ind.

Application March 22, 1944, Serial No. 527,661

1 Claim. (Cl. 285—21)

This invention relates to means for capping well casings, particularly in such installations where pipes extend through the cap into the casing as would be the case when an ejector type pump is used. In ejector pump installations, it is the common practice to employ two pipes of different diameters, one a pressure pipe and the other a discharge pipe, to connect with the ejector nozzle down inside of the casing. The weight of both pipes and the nozzle is carried by the well cap. Considerable difficulty has been encountered in providing a water tight seal at the upper end of the casing to prevent entrance of surface water. Generally, the casing has to be cut off after it is driven or sunk into the ground, and the cut surface is almost without exception uneven due to the fact that it has to be cut down in a pit below the level of the ground. The nozzle connecting pipes carried within the casing have to be made up to the lengths required to correctly position the nozzle in respect to the water level. Not only must a seal be had between the well cap and the casing, but also between the cap and the nozzle connecting pipes. To permit easy connections of the delivery and pressure pipes, tolerance must initially be provided in the cap openings through which these pipes pass. Also it has been necessary to provide a union in each of the pipes, whereas by use of my invention but one union is necessary, and it may be located above the well cap.

By use of my invention, an external seal about the outer face of the top end of the casing and the under face of the cap is had whereby unevenness of the top end of the casing does not interfere with the seal. Also, by use of my invention, the weight of the pipe and nozzle assembly will tend to maintain a seal about at least one of the pipes where it passes through the cap, while the seal about the other pipe is also made from the top side of the cap where it may be readily worked upon and kept under observation.

A further advantage of my invention is found in the fact that after all of the pipe connections are made and tested, the cap may then be sealed without any interference of the pipes or further adjustment thereof.

These and many other objects and advantages of the invention will become apparent to those versed in the art in the following description of one particular form of the invention as illustrated in the accompanying drawings, in which

Fig. 1 is a view in central vertical section through a structure embodying the invention.

Fig. 2 a similar view in section embodying the invention in conjunction with the use of smaller diameter pipes than those indicated in Fig. 1; and

Fig. 3 a top plan view of the well cap.

Like characters of reference indicate like parts throughout the several views in the drawings.

With different sizes and capacities of pumps, different sizes of pipes will be used. Referring to Fig. 1 for the size of casing which I show, the maximum size possible of pipes 11 and 12 is shown, these sizes being limited to the sizes that may be inserted within the casing 10 to carry the necessary coupling fittings of the nozzle (not shown) with which the pipes interconnect. A cap plate 13 is formed to rest across the upper end of the casing 10 and extend outwardly therefrom by an under sealing face 14 extending annularly around the outside of the casing 10. Preferably the underside of the plate 13 is formed with a boss 15 which will drop down inside the casing 10 to center the plate 13 thereover. The plate 13 is provided with a pair of spaced apart holes 16 and 17 therethrough to receive freely the pipes 11 and 12, the pipe 11 in the present showing constituting the delivery pipe and being of a larger diameter than the pipe 12 which constitutes the pressure pipe. The holes 16 and 17 are on a common diameter line of the cap plate 13 and are respectively substantially tangential with the inner wall of the casing 10.

The upper ends of the bore holes 16 and 17 have their marginal walls outwardly flared or bevelled as indicated in Fig. 1. The pipe 11 is made up to have a coupling 18 positioned with its under end at the top side of the plate 13. The pipe 12 is made up to have a length extending above the plate 13, whereby the final connection may be made through any suitable union above the plate 13, such union being herein shown as of that type known as a "Dresser" coupling 19. After the pipes 11 and 12 have been made up and tested, a sealing ring 20 is placed around the pipe 11, and a sealing ring 21 is placed around the pipe 12, to enter into the tapered counter-bore of each of the holes 16 and 17. These seal rings 20 and 21 may be made out of any suitable material, such as soft lead. The weight of the system carried by the pipe 11 will carry the coupling collar 18 downwardly against the ring 20 to force it down into the bevelled portion of the hole 16 and permits some of the ring to even flow downwardly around the pipe within the hole 16. The ring 21 may be

forced to intimate contact between the bevelled portion of the hole 17 and the outer face of the pipe 12 by any suitable means, such as by caulking.

A clamp ring 22 completely encircles the casing 10 under the plate 13 and is suspended therefrom by means of a plurality of bolts 23, herein shown as 4 in number. This collar 22 carries an annular recess therein adjacent to the wall of casing 10. An elastic gasket 24 is mounted within this recess to extend completely around in a continuous ring about the outside of the casing 10. This gasket 24 may be made out of any suitable material, such as rubber or synthetic rubber so that it may be adapted to conform to slight uneven surfaces and flow somewhat under pressure. The clamp ring 22 is drawn upwardly toward the plate 13 by means of the nuts 25 on the bolts 23 to compress the gasket 24 both inwardly against the casing 10 and upwardly against the face 14 of the plate 13 so as to seal across the junction between the casing 10 and the plate 13. The gasket 24 is preferably made to have a considerable cross section in relation to the thickness of the casing wall, as indicated in Figs. 1 and 2, so that there will be an appreciable area of contact not only with the underside of the plate 13, but also along the upper end of the outside face of the casing 10. Thus a seal is effected between the casing 10 and the plate 13 by means of the gasket 24 and also the rings 20 and 21 to form a seal from the top side of the plate 13 around the respective pipes 11 and 12.

In Fig. 2 smaller pipes 26 and 27 are employed with the same cap plate 13. To do so, metal collars 28 and 29 are dropped respectively into the holes 16 and 17. These collars 28 and 29 are outwardly flared by their top ends to conform very closely with the shape of the holes, the flares on the upper ends of the collars causing the collars to sit with a close fit on the bevelled portions of the hole walls. Preferably the hole walls are coated with some sealing medium, such as white lead, before these collars 28 and 29 are seated therein so as to doubly insure a water tight joint between the collars and hole walls. Then these collars 28 and 29, having their upper internal bores counter-bored to flare outwardly receive sealing gaskets 30 and 31 therein about the respective pipes 26 and 27.

Thus by providing the cap plate 13 with the maximum sizes of holes 16 and 17, the same plate may be employed throughout a wide range of smaller pipes. By means of the use of this provision one size of plate 13 may be carried in stock for the particular size of casing 10, and then a number of different sizes of bushings 28 and 29 may be carried in stock to accommodate the different sizes of pipes that may be employed within that size of casing 10.

As indicated in Fig. 3 the cap plate 13 is provided with the usual hole 32 from which a vent pipe is normally carried upwardly above the level of any surface water. Also, the plate 13 is provided with projecting lugs 33 about which chains or wrenches may be engaged to turn the plate 13 in aligning the pipes 11 and 12 circumferentially around the casing 10.

While I have herein shown my invention in one particular form, it is obvious that structural changes may be made without departing from the spirit of the invention, and I, therefore, do not desire to be limited to that precise form beyond the limitations as may be imposed by the following claim.

I claim:

For sealing a casing having a straight external wall end portion and supporting a pair of drop pipes, one of which at least carries a coupling collar, and both connecting to a common member suspended by the pipes within the casing, a plate to rest directly upon the upper end of the casing and extend laterally therebeyond; said plate having a pair of holes to receive said pipes therethrough, centered and spaced apart on a common diameter of the plate; both of said plate holes having their marginal walls outwardly flaring at the top side of the plate; a clamp ring slidable along the casing under said plate; an elastic sealing ring between said plate, casing, and ring; means for compressing the ring between the plate and ring; and a flowable sealing ring in the flared ends of each of said plate holes; whereby said coupling of the one pipe may rest on the sealing ring around it tending to force that ring downwardly into the space between the pipe and the hole wall and the ring carry the load of both of said pipes.

WILLIAM RUBLY.