

April 8, 1941.

H. R. MARK

2,237,680

WELL CAP

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Fig:1.

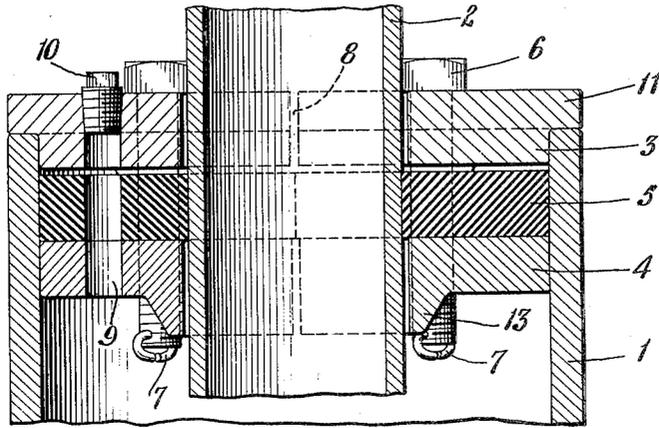


Fig:2.

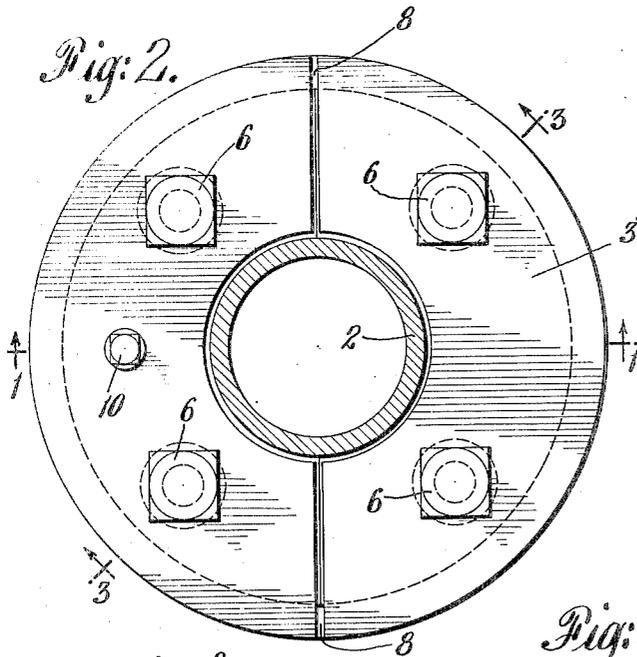


Fig:4.

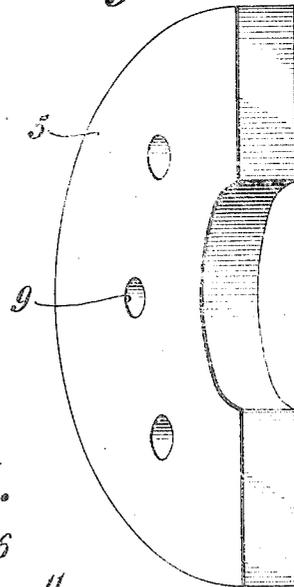
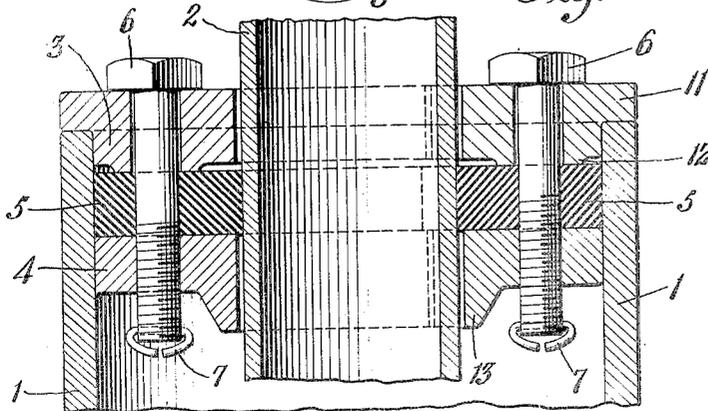


Fig:3.



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WELL CAP

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1 Claim. (Cl. 285—22)

The invention relates to water well construction and particularly to sealing heads or caps therefor.

Sanitation requirements relating to the construction of water wells and appurtenances make it necessary to provide an effective seal between the drop pipe and well casing in order to eliminate the possibility of contamination resulting from water seepage or the entry of other bacteria laden foreign substances at this point. This problem has assumed such proportions in the last few years that some states have passed laws requiring the provision of water well seals. A number of seals have been developed for this purpose but these prior constructions have been cumbersome and expensive and their design has been such as to necessitate the removal of the pump and drop pipe before installation can be made. It is an object of my invention to provide a well cap assembly which is simpler in construction than those heretofore known and which can be manufactured at low cost.

A further object is to provide a water well cap assembly which in addition to being of unusually simple construction is so designed as to permit installation and removal after the well has been constructed and without disturbing the position of the drop pipe.

A more specific object is to provide a well cap of the character described which is so constructed that the packing element seats against the inner surface of the well casing thus avoiding the necessity of providing an auxiliary sleeve or extension of the casing pipe.

A still further object is to provide a cap which will eliminate vibration when the pump is operating. It is also an object of my invention to provide a sanitary well cap in which a rubber packing extends entirely across the opening between the well casing and the drop pipe and yet which embodies means for venting the casing in order to equalize the pressure inside and out. Other objects and advantages will appear as the description proceeds.

In the drawing I have illustrated by way of example my preferred construction. Fig. 1 is a central vertical sectional view showing my cap assembly as applied to a drop pipe and well casing. This view is taken as indicated at 1—1 in Fig. 2 which is a plan view of the cap with the drop pipe shown in transverse section.

Fig. 3 is a vertical section taken on line 3—3 of Fig. 2; and Fig. 4 is a perspective view of a packing ring segment which is used in the construction shown in the other views.

The upper end of a well casing pipe is shown

at 1. Projecting into the well casing is a drop pipe 2 which connects the well casing to the pump (not shown). The cap assembly consists generally of upper and lower split rings or discs 3 and 4, preferably of cast iron. Each of these is preferably annular in form as will be seen in Fig. 2—and is divided along the diameter to form two separate segments each having a cylindrical inner surface for engagement with the outside of the drop pipe 2. A packing 5 is carried between the members 3 and 4 and it likewise is in the form of a divided annular ring or disc. The packer 5 is made of a resilient material, preferably rubber.

The packer 5 is clamped between the ring members 3 and 4 by means of bolts 6 which extend thru apertures formed in these members and in the packer. Bolts 6 have a threaded engagement with the lower ring member 4 and may be provided at their lower ends with cotter pins 7 preventing the loss of the lower parts of the assembly when the bolts 6 are unscrewed to remove the cap. It will be observed that the respective ring and packer segments are held together in two units separable at 8 for convenient installation and removal with the drop pipe 2 in place in the well casing 1.

Extending thru the ring and packer segments forming one side of the cap is a vent passage 9 closed at its upper end by a removable plug 10 threaded into the upper cap member 3. When the plug 10 is removed a vent tube may be attached in its place thus providing means for equalizing the pressure within and without the casing.

An essential feature of the construction shown is the provision of a flange 11 extending outwardly from the upper cap member 3, forming a shoulder arranged to rest on the upper end of the well casing 1 to support the cap assembly thereon. This flange 11 preferably extends around the entire periphery of the cap member 3.

I prefer to provide one or both of the ring members 3 and 4 with raised portions surrounding the apertures therein for engagement with the packer 5. Thus in the construction shown the upper ring 3 has projections 12 on its lower surface surrounding the apertures for the bolts 6. An increased guiding engagement between the segments of the cap assembly and the drop pipe 2 may be obtained without appreciable increase in weight of the assembly by providing a downwardly extending flange 13 on the segments of the ring 4.

When installing the cap, bolts 6 are retracted to a position loosely holding the parts together

and the assembled segments are placed around the drop pipe 2 with the cylindrical inner surfaces of the ring segments 3 and 4 in engagement with the pipe just above the end of the casing 1 and dropped into position in the end of the casing. Bolts 6 are then tightened, drawing the ring 4 up toward the ring 3 and forcing the resilient material of the packer 5 to flow laterally into holding and sealing engagement with both the casing 1 and drop pipe 2, as shown in Figs. 1 and 3, forming an effective seal and providing a resilient connection between the casing and drop pipe which serves to absorb vibrations emanating from the pump. The plug 10 can then be removed and if desired a vent pipe attached thereto, such vent pipe being opened to the atmosphere at some point where there is no danger of contamination by the entry of foreign substances.

It will be seen that by my construction I have provided an effective sanitary seal which prevents air or water leaks and insures that the well will be proof against contamination by surface drainage or from other sources. The construction, moreover, eliminates or greatly reduces vibration or "lifting" when the pump is operating. Installation and removal of the assembly can be made easily and rapidly either before or after the pump is connected and the drop pipe is

in place. It will also be apparent that these various objectives have been attained with a construction of unusual simplicity and which can be applied directly to the drop pipe and well casing without the provision of auxiliary sleeves or extensions.

The terms and expressions which I have employed are used as terms of description and not of limitation and I have no intention of excluding such equivalents or minor variations of the invention shown and described as may fall within the purview of the claim.

I claim:

A sealing cap for a water well casing, comprising upper and lower split discs, a divided resilient packer arranged between said discs, said discs and packer having cylindrical inner and outer surfaces for engagement with a drop pipe and well casing, respectively, said upper disc having a peripheral flange forming a shoulder for engagement with the end of a well casing to support the cap assembly thereon, and means passing through the assembled discs and packer for drawing said discs toward each other whereby the resilient packer is forced to flow laterally into holding and sealing engagement with the drop pipe and well casing.

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