Sept. 27, 1932. R. C. WORSWICK 1,880,004

CYLINDER PROTECTOR

Filed July 23, 1931

Fig. 1.

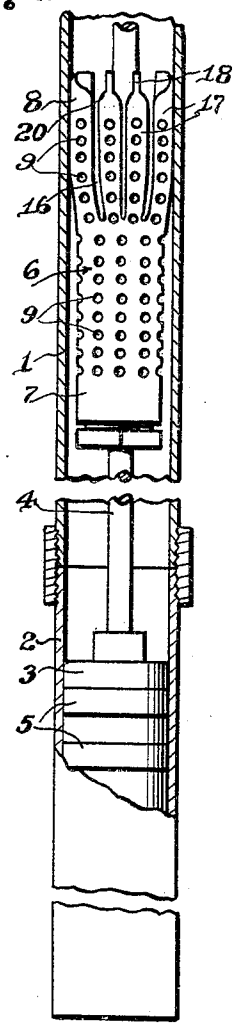


Fig. 2.

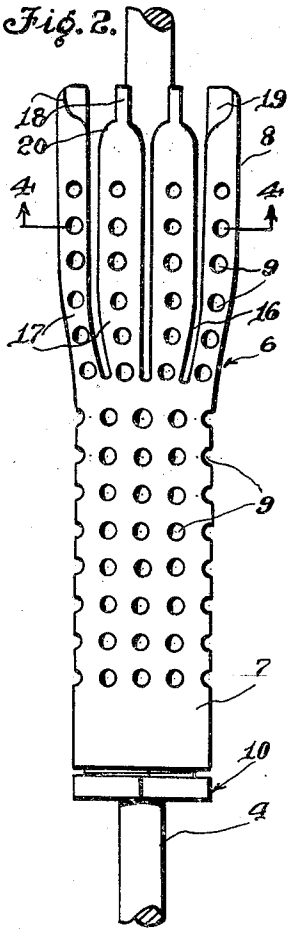


Fig. 3.

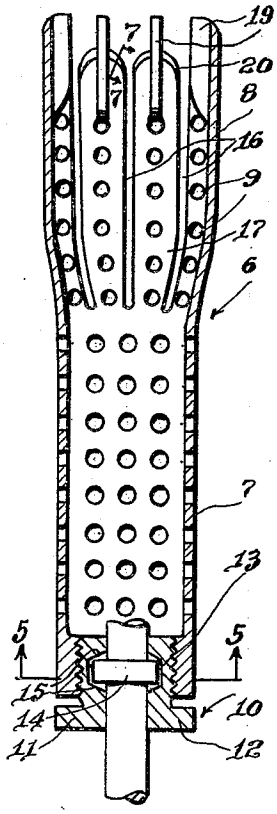


Fig. 4.

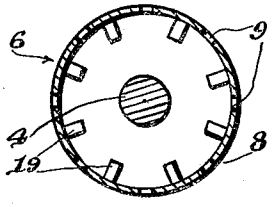


Fig. 5.

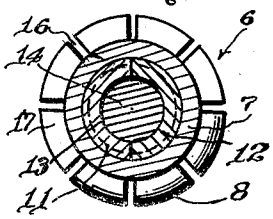


Fig. 6.

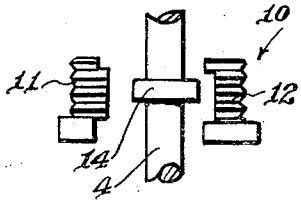


Fig. 7.



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UNITED STATES PATENT OFFICE

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CYLINDER PROTECTOR

Application filed July 23, 1931. Serial No. 552,748.

This invention relates to water wells and more particularly to a device for protecting the pump pipe, pump cylinder and plunger from foreign matter which may accidentally drop into the well.

The main object of the invention is to provide a cup attached to the sucker rod for catching any foreign matter which may fall down the well.

Another object of the invention is to provide a receptacle for holding the accumulation of foreign matter without stopping the flow of water.

Still another object of the invention is to provide a device of this kind having flexible walls which bears against the interior of the casing so that the said interior will be scraped clean when the device is lifted and removed from the well.

Still a further object of the invention is to provide means for easily and quickly attaching the cup to a sucker rod.

Still a further object of the invention is to provide a series of drain holes in the device for allowing the water to pass by.

Other objects will appear as the disclosure progresses. The drawing is intended to merely indicate a possible embodiment of the invention. It is obvious that the actual needs of manufacture may necessitate certain mechanical changes. It is therefore not intended to limit the invention to the embodiment illustrated but rather to define such limits in the appended claims.

For a more general understanding of the invention attention is called to the drawing. In the drawing like reference characters denote like parts throughout the specification. In the drawing

Figure 1 is a view of a well partly in section showing the application of the protecting device.

Figure 2 is a view of the device removed from the well.

Figure 3 is a longitudinal cross sectional view of the protecting device.

Figure 4 is a section on line 4—4 of Figure 2.

Figure 5 is a section on line 5—5 of Figure 3.

Figure 6 is a view of a portion of the sucker rod with the split nut separated from each other.

Figure 7 is a section on line 7—7 of Figure 3.

Referring now to the drawing in detail, numeral 1 designates the pump pipe which is usually placed the full depth of the water well, 2 the pump cylinder and 3 the pump plunger suspended from a line of sucker rods 4. The top of the line of sucker rods is attached to the operating mechanism such as a windmill or other power generating device (not shown). Numeral 5 designates usual leather packing placed around the pump plunger.

All of the parts so far described are of standard construction. The part which is new and is the subject of this application is the protecting device or cup 6. Said device comprises a cylindrical tubular body 7 with a flared out upper section 8. Formed in the body and in the flared out section are a series of holes 9. The lower end of the body is threaded to receive the split nut 10 formed of two sections 11 and 12. Cut in the interior of both sections of the nut are grooves 13 to receive the enlarged ring 14 which is an integral part of the lowermost sucker rod. The grooves 13 are provided with sloping upper and lower walls 15 and is otherwise larger than the ring 14 so the assembled protecting device will be free to slightly swing on its support, namely the ring 14 when operating in a pump pipe which is not true or when the sucker rods are not true.

Cut in the flared out upper section 8 are a series of longitudinal cuts 16 dividing the section into resilient vertical strips 17. Normally the strips slope outwardly but when the device is placed in the pump pipe 1 as shown in Figure 1 the strips will assume a vertical position. At the top of each strip is a restricted portion 18 and in back thereof is a rib 19. Where the restricted neck portion meets the strip there is a curved shoulder 20. The top edge of the shoulder is beveled as shown in Figure 7 so the sharp edge 21 thereof can scrape against the inside of the pump pipe.

It will thus be seen that I have provided a simple, inexpensive and efficient device to keep a well clean. Any foreign matter such as nails, bolts, rivets, rock, taps, etc., which by accident may happen to fall down the pump pipe will be caught by the protecting device. The perforations will allow the water to pass by without stopping its flow. The cup is placed above the pump cylinder 2 so all the foreign matter can be caught before reaching the plunger and damaging the packing 5 or other parts of the cylinder or plunger. When the cup is removed from the pump pipe the edges 21 of the strips 17 will scrape the inside of the pump pipe and remove any rust that might have accumulated during the period of use. The restricted neck portions 18 in conjunction with the ribs 19 will provide reinforcement for the top of the strips so they will not break accidentally or be damaged in any way. From the above description it will be apparent that the cup has a double function, namely that of protecting the bottom parts of the well from damage due to foreign matter and for scraping the inside of the well pipe clean when removing the sucker rods. The cup may be made of bronze, brass or any other suitable non corrosive metal. The protecting device or cup can easily be removed or replaced by simply unscrewing the nut 10 and separating the two parts from the ring 14.

Having described my invention, I claim

1. In a device of the class described, a receptacle comprising a flared out portion at the top, said flared out portion divided into a series of resilient strips, and a restricted portion at the tops of said strips, said restricted portions extending above said resilient strips and thickened on plane at right angles to the plane of said strips.

2. In a device of the class described, a receptacle comprising a flared out portion at the top, said flared out portion divided into a series of resilient strips, and a restricted portion at the tops of said strips, said restricted portions extending above said resilient strips and thickened on a plane at right angles to the plane of said strips, and means to drain said receptacle, said means comprising a series of holes arranged in longitudinal rows in the wall thereof, said thickened part of the restricted portion extending downwardly to the upper row of said holes.

In testimony whereof I affix my signature.

RAY C. WORSWICK.