A novel well cap device, designated generally by the reference numeral 10, is shown. The well cap device 10 is for use in closing the open upper end of a well casing 11, such as those used in water wells. Ordinarily, the well casing 11 projects upwardly above the surface of the ground approximately twelve to eighteen inches and this open top must be closed in sealing relation with respect to the exterior to prevent the entrance of pollutants into the well casing. A conventional electrical pump will be positioned within the well casing 11 adjacent the water table for pumping water upwardly through the conduit in a well-known manner.

The well cap device 10 includes a well cap base 11 which as shown is of generally oval flat configuration and which has a relatively large circular opening 13 therein. It will be noted that the opening 13 is offset with respect to the center of the well cap base and this opening has a diameter slightly larger than the exterior diameter of the well casing 11 to permit the well cap base to be positioned over the well casing. The well cap base has an upturned rather shallow peripheral flange 14 integrally formed therewith and presenting a flat upper surface. The peripheral flange 14 has a plurality of threaded apertures 15 therethrough. It will also be noted that the well cap base 12 has a smaller opening 16 therethrough, the function of which will be set forth more fully hereinbelow.

The well cap base 12 has a downwardly projecting generally cylindrical flange 17 integrally formed therewith and disposed in substantially concentric relation with respect to the opening 13. It will be noted that the inner circumferential surface 18 of the cylindrical flange 17 is uniformly tapered downwardly and outwardly from the lower surface of the well cap base. It will further be noted that the inner circumferential surface 18 of the cylindrical flange 17 has a diameter slightly larger than the diameter of the opening 13 so that the downwardly facing shoulder 19 is formed thereon.

The well cap base 10 also includes a well cap cover 20 which as shown is of generally concave convex configuration and when detachably secured to the well cap base has its convex surface presented downwardly. The well cap cover 20 is provided with a substantially flat top wall 21 having a continuous generally oval shaped peripheral wall 22 integrally formed therewith and projecting downwardly and flaring slightly outwardly therefrom. The peripheral wall 22 has a plurality of recesses 23 formed therein so that generally horizontally oriented substantially flat attachment portions are formed adjacent the lower peripheral portions of the peripheral wall. These attachment portions are each provided with an aperture 25 therethrough to accommodate the bolts 26, the latter being provided with suitable washers 27 and threadedly engaging the threaded apertures 15 in the well cap base 12. A suitable gasket 28 is also provided and is interposed between the lower peripheral flat edge surface of the well cap cover 20 and the upper flat surface of the peripheral flange 14 to provide a seal thereat.

The top wall 21 of the well cap cover 20 is provided with an internally threaded boss 29 which projects upwardly from the central portion thereof. The boss 29 communicates with the interior of the cover and is adapted to threadedly engage a vent pipe when a vent pipe is used to vent the interior of the well casing with the exterior. In this regard, in some areas it is required that the interior of the well casing be vented to the exterior and this is accomplished by securing a vent pipe to the well cap cover device. In the event that no such venting requirement is necessary, then the threaded boss may be effectively closed by a threaded plug and the vent pipe is not used.

Suitable sealing means are provided for forming a seal between the well cap base 12 and the exterior surface of the well casing 11 and this means includes an annular sealing element 30 formed of a suitable resilient yieldable material, such as neoprene, rubber or the like, which has...
the diameter slightly smaller than the exterior diameter of the well casing. With this arrangement, the annular sealing element may be positioned in engaging relation with the exterior surface of the well casing as best seen in Fig. 2, and this is accomplished by stretching the sealing element slightly. Thereafter, when the well cap base is positioned upon the well casing, the inner circumferential surface of the cylindrical flange engages the sealing element adjacent the lower portion of this inner tapered surface as best seen in Fig. 3. As the well cap base is urged downwardly, the sealing element will be rolled or pushed downwardly of the well casing and will also be progressively urged upwardly with respect to the inner tapered surface.

When the well cap base is disposed in place, the annular sealing element will be positioned against the downwardly facing shoulder so that a very tight, snug, compressed seal will be formed thereat.

The flange is provided with a plurality of radially extending circumferentially arranged threaded openings therein each accommodating a set screw which may be tightened into place against the exterior surface of the well casing. With this arrangement, the well cap base may be very quickly and easily positioned in mounted relation on the upper open end portion of the well casing and may be positively but releasably locked in place. The annular sealing element and its coaction with the exterior surface of the well casing and the inner circumferential surface of the flange serve to form a highly effective seal between the well cap base and the well casing. The set screws permit the well cap base to be applied and removed as desired.

It will therefore be noted that the well cap device is formed of two essential parts, the well cap base and the well cap cover. The opening in the well cap base accommodates the electrical conduits which extend downwardly into the well casing for connection to the electric pump. With the arrangement shown, the well cap cover may be removed to permit access to the interior of the well casing without requiring removal of the well cap base. This piece construction of the well cap device not only facilitates ease in manufacture but facilitates ease in application and removal from the well casing. It is essential that an effective seal be provided between the well cap device and the well casing being closed, and the present arrangement not only provides a highly effective seal which may easily be applied but the present arrangement may be produced inexpensively.

From the foregoing description, it will therefore be seen that I have provided a novel well cap device which is not only of simple and inexpensive construction, but one which functions in a more efficient manner than any heretofore known comparable device.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What I claim is:

1. A well cap device for closing the upper open end of a cylindrical well casing, comprising an annular sealing element formed of a resilient yieldable material and having an inside diameter slightly smaller than the outside diameter of the well casing whereby the resilient sealing element may be stretched into engaging relation with the upper exterior surface of the well casing, a well cap base having a circular opening therein slightly larger than the exterior diameter of the well casing to permit the well cap base to be positioned around the upper end of the well casing, said well cap base having an annular flange projecting downwardly from the lower surface thereof and being concentrically arranged with respect to said opening, said flange having an inner surface uniformly tapered downwardly from the upper end thereof, the inner surface of the flange at the upper end thereof having a diameter slightly larger than said opening to define a downwardly facing shoulder whereby when said well cap base is applied to the well casing, the tapered inner surface of said flange progressively compresses the sealing element against the outer upper surface of the well casing and against said shoulder of said well cap base as the latter is urged progressively downwardly along the well casing, a concavo-convex well cap cover positioned in engaging relation on said well cap base so that the concave surface is disposed downwardly, and means for releasably securing said well cap cover to said well cap base.

2. A well cap device as defined in claim 1 wherein said means for securing said well cap base to the casing includes a plurality of threaded openings in said flange, and a plurality of threaded elements each threadedly engaging one of said threaded apertures in said flange and each threaded element engaging the exterior surface of the well casing.

3. The well cap device as defined in claim 1 wherein said well cap base is of oval configuration and said opening therein is offset with respect to the center thereof.

4. The well cap device as defined in claim 1 wherein said well cap base has an upwardly projecting relatively shallow peripheral flange integrally formed therewith and presenting a flat upper surface, a sealing element interposed between said upper peripheral flange and the lower peripheral edge of said cover to form a seal thereat.

5. The well cap device as defined in claim 1 wherein said means for securing said well cap cover to said well cap base comprises a plurality of threaded openings in the peripheral marginal portion of said well cap base, a plurality of peripheral openings in said well cap cover each being disposed in registering relation to one of said threaded openings in said well cap base when the cover is positioned upon said well cap base, and a plurality of threaded elements extending through said registering openings and threadedly engaging the threaded apertures in said well cap base whereby said cover may be removed from said well cap base without requiring removal of the base from the well casing.

References Cited

UNITED STATES PATENTS

2,793,699 5/1957 Tubbs 166--75
2,877,849 3/1959 Morrison et al. 166--75 X
2,949,961 8/1960 Anderson 166--85
3,055,732 5/1962 Baker 166--75 X
3,136,362 6/1964 Baker 166--85
3,270,818 9/1966 Pugh 166--85

DAVID H. BROWN, Primary Examiner