No. 677,468. Patented July 2, 1901.

C. F. PRESLAR.

PACKING DEVICE FOR TUBULAR WELLS.

(No Model.) (Application filed Aug. 13, 1900.)

Fig. 1.

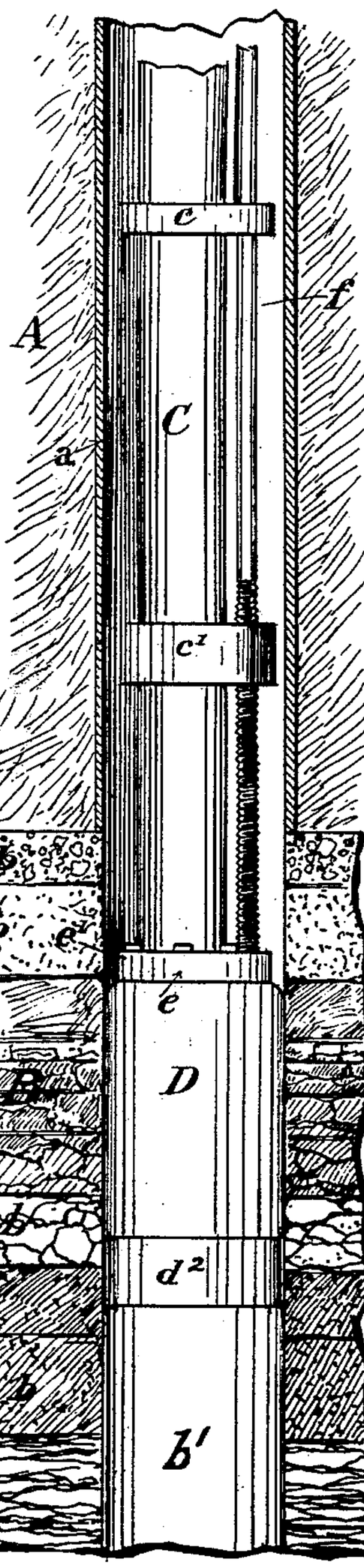


Fig. 2.

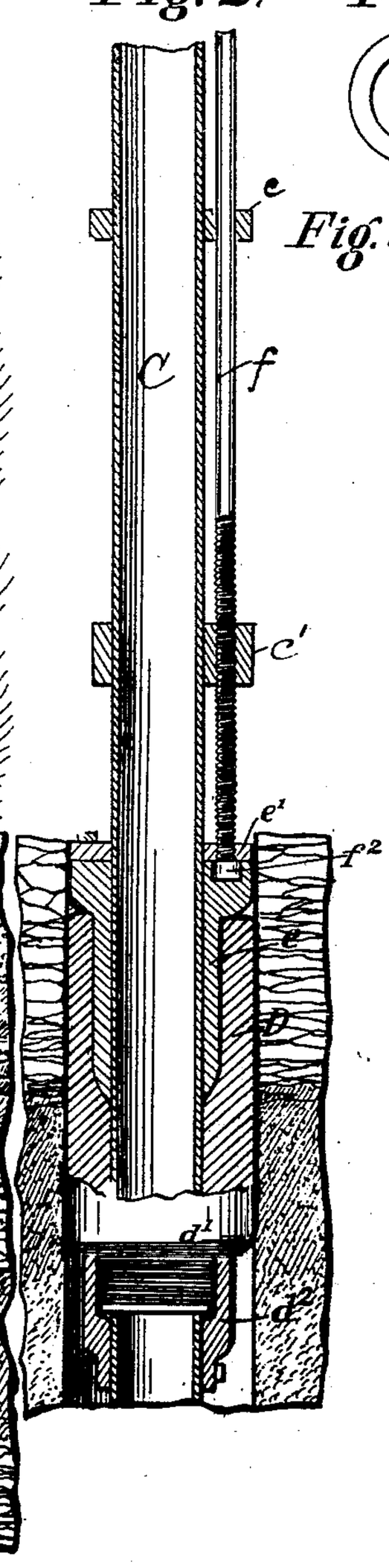


Fig. 5.

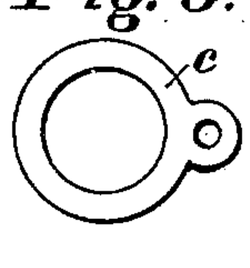


Fig. 4.

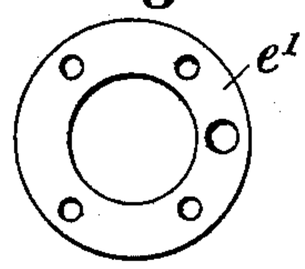


Fig. 3.

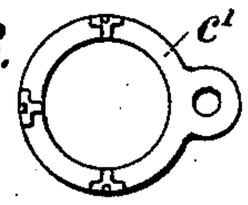
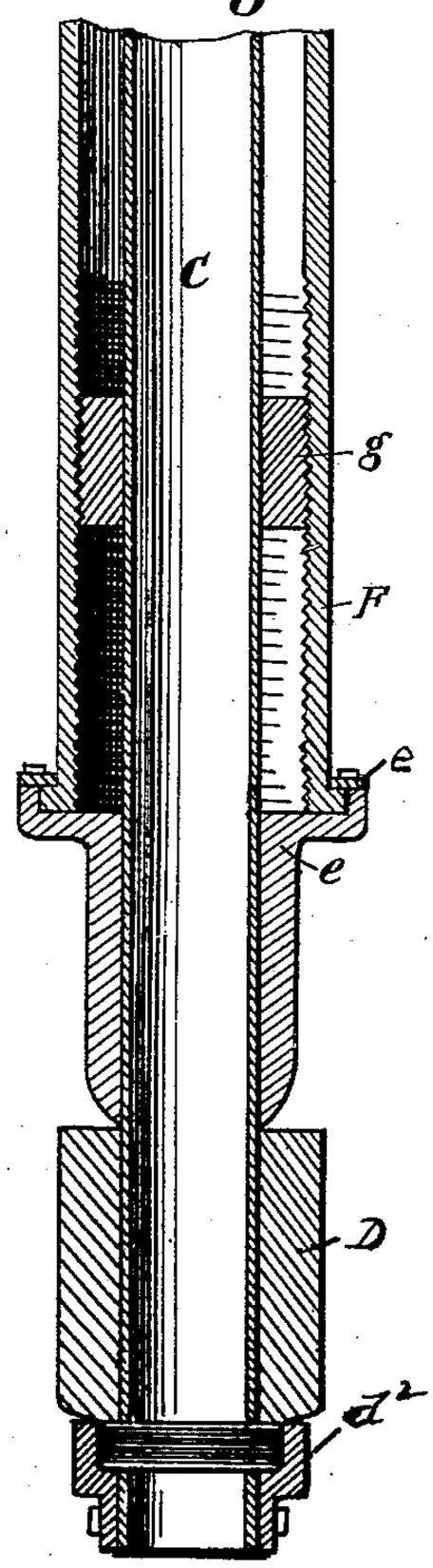


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES F. PRESLAR, OF CINCINNATI, OHIO.

PACKING DEVICE FOR TUBULAR WELLS.

SPECIFICATION forming part of Letters Patent No. 677,468, dated July 2, 1901.

Application filed August 13, 1900. Serial No. 26,784. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. PRESLAR, a citizen of the United States, residing at Cincinnati, Hamilton county, Ohio, have invented new and useful Improvements in Packing Devices for Tubular Wells, of which the following is a specification.

My invention relates to devices for use in tubular or "drilled" wells for shutting off leakage from higher to lower levels, and is particularly useful as a testing apparatus to ascertain the condition of given strata.

To this end it consists in a shield of caoutchouc or other suitable material secured to the lower end of the service-tube, combined with an adjustable sleeve or collar and an adjusting device adapted to be operated from the ground-surface to expand the shield outwardly against the circular wall of the aperture and form a seal shutting off all seepage from higher levels from the pocket occupied by the mouth of the service-tube.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is an axial section of a tubular well carried downward through earthy material into and through rocky strata, showing the usual casing extending to the rocky strata and the service-tube in position with my improvement applied thereto; Fig. 2, an axial section of the service-tube detached with my improvement applied, all shown in axial section to exhibit construction; Fig. 3, a plan of the screw-collar attached to the service-tube and through which the operating-rod is threading; Fig. 4, a plan of the retaining-flange attached to the annular spreader and through which the rod passes and by means of which it is enabled to release the spreader; Fig. 5, a plan of one of the guides; Fig. 6, a section of a modified construction used in deep wells.

Referring now to the drawings, A designates the body of earthy material through which a tubular shaft is driven and a casing *a* inserted, extending to the rocky stratum B. On reaching the solid stratum of rock the tubular shaft is continued downward by suitable drilling-tools operating through the casing *a* and passes frequently through various layers *b*, between which water or other liquids (of impure quality) often seep into the lower pocket *b'*, formed by the drilling-tools.

Extending into the shaft a service-tube C is inserted, through which water or oil, &c., may be pumped or is caused to flow by pressure.

To prevent the flow of seepage from above, I have devised the following additions to the apparatus: At the lower end of the service-pipe C, I attach a shield D of caoutchouc or similar expansible and impervious material securely fastened in an air and water tight joint—as, for example, by wiring and cementing, as indicated in the drawings. Above the shield D and adjustable in relation thereto I fit upon the tube C an annular sleeve or collar *e*, which is preferably formed, as shown, with a wedge-shaped lower edge and is adapted to be moved up or down by suitable means. When moved down, its lower edge enters between the tube C and shield D and "spreads" the latter outward against the surrounding wall of rock B. The means I employ for this purpose may consist in a rod *f*, passed down at the side of the tube C through suitable guides *c c'*, &c., which may form lock-nuts at tube-joints, the lower one of which, *c'*, is threaded to engage the threaded lower end of the rod *f*. The rod *f* terminates below in a head f^2, resting upon the upper edge of the spreader *e* and is held by a flange *e'*, bolted thereto, permitting the rotation of the rod. It will be seen that the initial effects of operating the rod *f* will be to expand the upper edge of the shield D so long as the spreader *e* is free to move downward; but that as soon as the shield D is expanded into contact with the rocky wall surrounding it friction is developed, which arrests further progress of the spreader downward, and the resulting effect is to transfer the fulcrum of leverage from the threaded guide *c'* to the spreader *e*, and by consequence the further action of the screw tends to lift the entire tube C. This action in turn (the upper edge of the shield D being securely held against the rocky wall B) tends to compress the shield longitudinally and expand it radially, causing the caoutchouc to enter and fill all the recesses and crevices of the rock and form an effective seal throughout its

length to prevent either liquids or gases from reaching the extreme lower pocket of the well from above. The reversal of these operations enables the shield D to resume its former proportions and relations, and the tube may then be withdrawn.

Where the well is very deep and the extreme length of a small rod, such as *f*, may impair its efficiency, I may employ in place of it a tube F, surrounding the service-tube C. The tube F is threaded interiorly for a suitable distance from its lower end and engages a threaded reinforcing-band *g* upon the service-tube. The extreme lower end of the tube F engages the sleeve *e*, as shown, and the operation is substantially the same as in the case of the rod. In Fig. 6, illustrating this construction as a modification, I have also shown the sleeve or compressor *e* without the wedge-formed extremity, but abutting directly against the upper surface of the rubber shield D. In this case the radial expansion of the shield D is by longitudinal compression solely.

The device as a whole is especially useful in testing operations where the existence, character, and quantity of seepage in a given stratum is to be ascertained.

I claim as my invention and desire to secure by Letters Patent of the United States—

In a tubular well apparatus, the combination of a terminal tube-section; an annulus of rubber or similar material secured at its lower end upon said tube-section; a conical expander guided and vertically adjustable upon said tube-section above said rubber annulus; a fixed collar secured to said tube-section above the expander, and a screw-threaded operating element connected rotatively with the expander and operatively engaging the collar by screw-threads in or upon the same, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES F. PRESLAR.

Witnesses:
J. H. BARKER,
CHAS. HERBERT JONES.