No. 790,208. PATENTED MAY 16, 1905.

A. J. HUBBARD.

PACKING FOR OIL WELLS.

APPLICATION FILED MAY 12, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

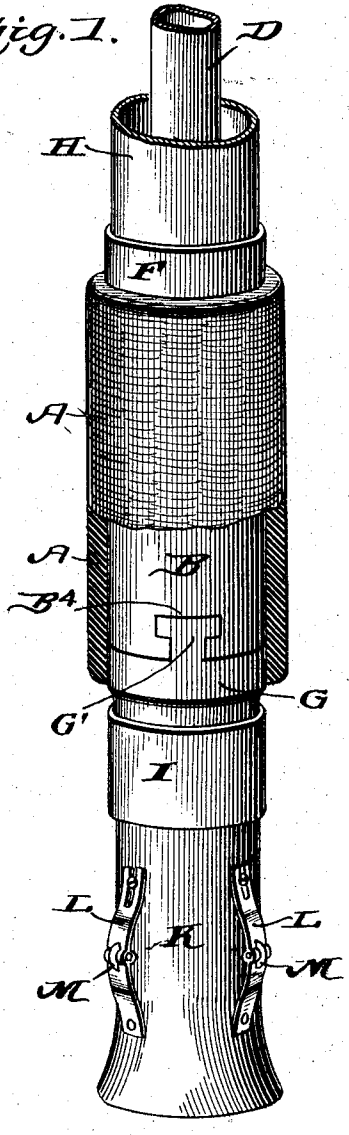


Fig. 2.

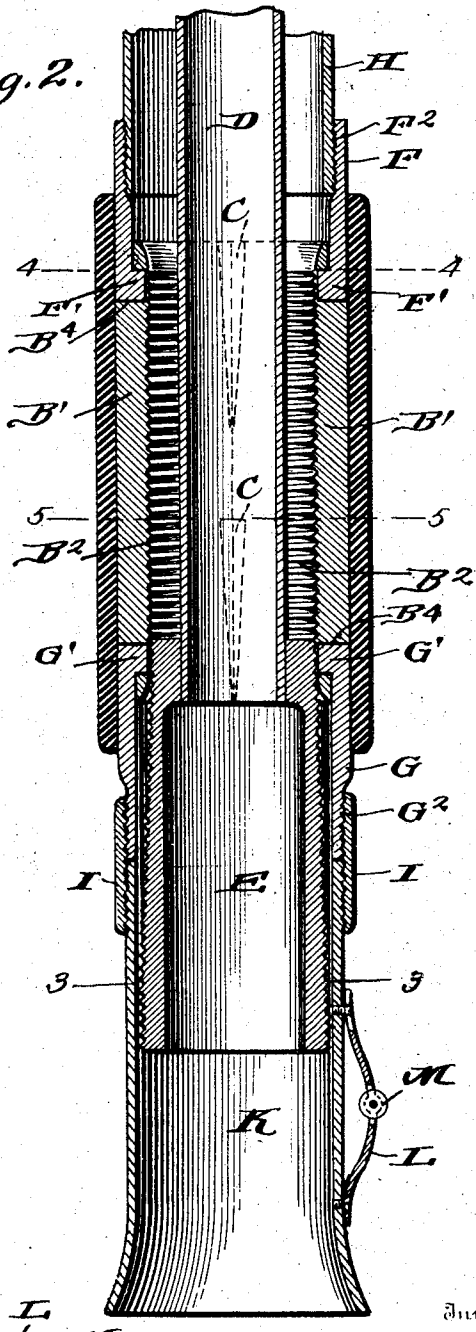
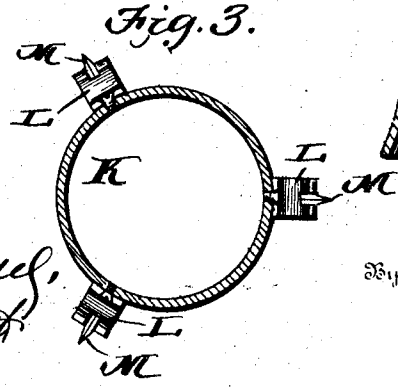


Fig. 3.



Witnesses

M. D. Bloundel,

E. B. McBath.

Inventor

A. J. Hubbard,

By O'Brien & Brock

Attorneys

PHOTO LITHOGRAPHED BY SACHETT & WILHELMS LITHO. CO. NEW YORK.

No. 790,208. PATENTED MAY 16, 1905.

A. J. HUBBARD.

PACKING FOR OIL WELLS.

APPLICATION FILED MAY 12, 1904.

2 SHEETS—SHEET 2.

Fig. 4.

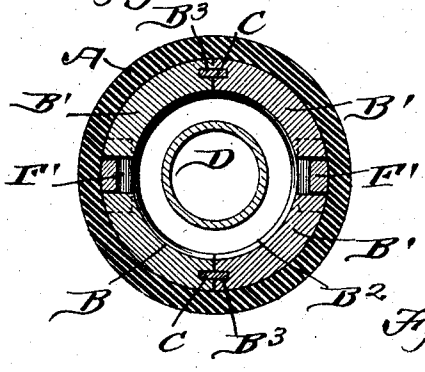


Fig. 5.

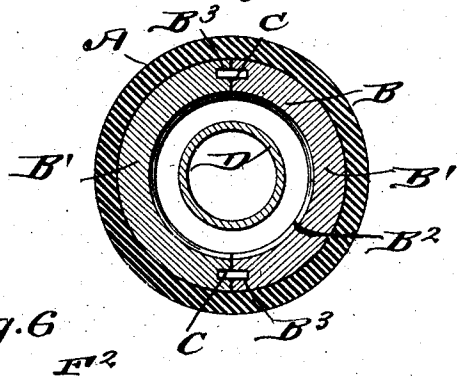


Fig. 6

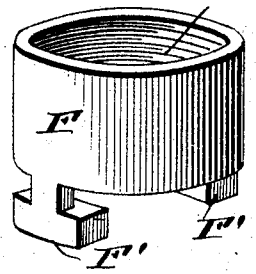


Fig. 8.

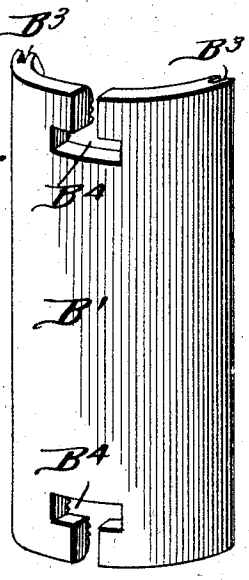


Fig. 9.

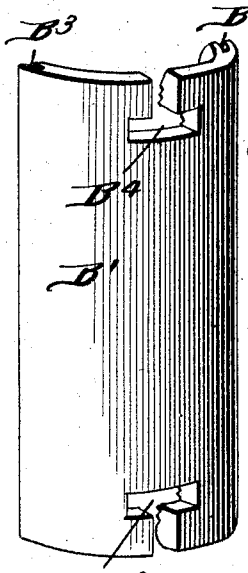


Fig. 10.

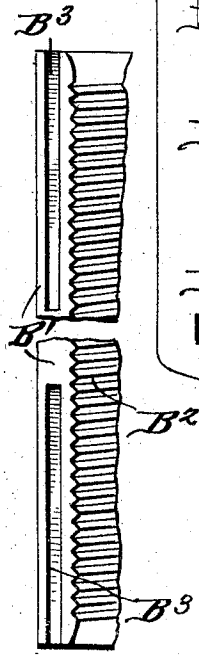


Fig. 11.

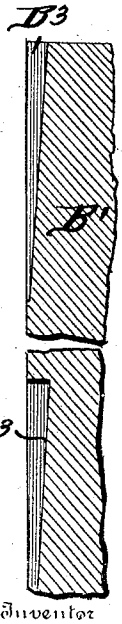


Fig. 7.

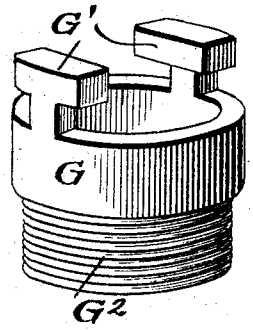


Fig. 12



Witnesses

W. D. Blondel,

E. B. McBath

Inventor

A. J. Hubbard,

By Edward Brock

Attorney

No. 790,208. Patented May 16, 1905.

UNITED STATES PATENT OFFICE.

AIRWINE J. HUBBARD, OF WARREN, PENNSYLVANIA.

PACKING FOR OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 790,208, dated May 16, 1905.

Application filed May 12, 1904. Serial No. 207,430.

To all whom it may concern:

Be it known that I, AIRWINE J. HUBBARD, a citizen of the United States, residing at Warren, in the county of Warren and State of Pennsylvania, have invented a new and useful Improvement in Packing for Oil-Wells, of which the following is a specification.

This invention relates generally to oil-wells, and more particularly to an improved construction of packing used in said wells for the purpose of closing lateral openings or fissures leading into the well proper.

In boring oil or Artesian wells it frequently happens that a lateral stream enters the well proper or a stratum of soft rock or other material is struck, which has a tendency to cave in and fill up the well proper. Various forms of packing devices have been employed for closing these lateral openings; but all of said devices are more or less objectionable; and the object of my invention is to provide an exceedingly cheap, simple, and efficient form of packing which will overcome all of the objectionable features of the packings now in use; and with these objects in view my invention consists, broadly, in the employment of an elastic sleeve having an expansible sectional sleeve arranged therein, which sectional expansible sleeve is adapted to be expanded at the proper time, and said expansible sleeve is provided with means which automatically lock the said sections in their expanded positions, thereby securely holding the elastic sleeve in contact with the side walls of the well for the purpose of closing the openings.

The invention consists also in certain details of construction and novelties of combination, all of which will be fully described hereinafter and pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a sectional elevation of a packing constructed in accordance with my invention. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a horizontal section on the line 3 3 of Fig. 2. Fig. 4 is a horizontal section on the line 4 4 of Fig. 2. Fig. 5 is a horizontal section on the line 5 5 of Fig. 2. Fig. 6 is a detail perspective view of the top coupling. Fig. 7 is a detail perspective view of the bottom coupling. Figs. 8 and 9 are detail views of the sections of the expanding sleeve. Fig. 10 shows an edge view of one of the sections. Fig. 11 shows the sectional view of said edge. Fig. 12 is a detail perspective view of one of the wedges.

In the practical embodiment of my invention I employ an elastic sleeve A, preferably made of rubber, and within this elastic sleeve I arrange a sectional expansible sleeve B, composed of two longitudinal sections B′, threaded internally throughout its entire length, as shown at B^2. When the sections are inserted in the elastic sleeve, their vertical edges contact and the said sleeve is a perfect cylinder. The opposing edges are formed with tapering recesses B^3, in which are located wedge-shaped keys C, said wedge-shaped keys being of such size and shape that they fit within the tapering recesses and permit the sections of the sleeve to join and form a perfect cylinder, as most clearly shown in Figs. 4 and 5. Extending through the sleeve B is the tubing D, having an external threaded expander E at its lower end, said expander E being slightly larger at its lower end than at its upper end, and the threads are cut upon the same pitch as the internal threads of the sectional sleeve, so that by turning the tubing the expander can be drawn up into the sleeve for the purpose of expanding the same, and consequently expanding the elastic sleeve, so as to bring it into contact with the side walls of the well.

The sleeve-sections are each provided with T-shaped slots B^4 at their upper and lower ends, which slots are adapted to receive the T-shaped lugs F′ and G′, carried by the top and bottom couplings F and G, respectively. The top coupling F is internally threaded, as shown at F^2, and has the top shell H connected thereto. The bottom coupling G is threaded externally, as shown at G^2, for the purpose of connecting a collar I thereto, said collar having the bottom shell K connected thereto, as most clearly shown in Fig. 2. This bottom shell has a plurality of spring-arms L connected thereto for the purpose of steadying the device as it is lowered into the well, and each spring-arm carries an edged wheel M, which is adapted to engage the side walls of the well and prevent the device turning

when the tubing is turned for the purpose of drawing the expander up between the sleeve-sections.

In operation the packing constructed as herein shown and described is lowered into the well the proper distance, and then by turning the tubing to the right the threaded expander is drawn up into the sectional sleeve, and thereby expands said sections, which in turn expand the elastic sleeve and bring it into contact with the side walls of the well and close the lateral openings. As the expander is drawn up between the sleeve-sections and said sections separated the wedges held in the tapered recesses drop down and lock the separated sections in that position, thereby preventing the parts contracting after the expander has been removed.

It will thus be seen that I provide an exceedingly cheap and simple form of well-packing which when once set in place will remain firmly seated and will not be contracted by external pressure.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An oil-well packer comprising an elastic sleeve, a sectional expanding sleeve arranged therein, an expander adapted to be forced between the sections of the sleeve, and wedges for holding the sections expanded.

2. An oil-well packer comprising an elastic sleeve, a sectional expanding sleeve threaded internally, an externally-threaded expander, a wedge arranged between the sections of the expanding sleeve, and shells connected to the top and bottom of the expanding sleeve.

3. In an oil-well packer, the combination with an expansible sectional sleeve, and of top and bottom couplings detachably connected thereto.

4. The combination with sleeve-sections having their opposing edges recessed, of wedges arranged in said recesses, and top and bottom couplings connected to the sections.

5. The combination with top and bottom shells, of top and bottom couplings, a longitudinally-divided sleeve adapted to be engaged by the couplings, the meeting edges of the sections being recessed, wedges held in said recesses, an elastic sleeve adapted to fit over the sectional sleeve, a tubing passing through the sectional sleeve, and an expander carried by the tubing, as and for the purpose set forth.

6. The combination with sleeve-sections recessed as described and provided with T-shaped slots at the upper and lower ends, of top and bottom couplings each having a T-shaped lug adapted to fit the T-shaped slots as described.

AIRWINE J. HUBBARD.

Witnesses:
O. C. ALLEN,
R. H. DAVIS.