

(No Model.)

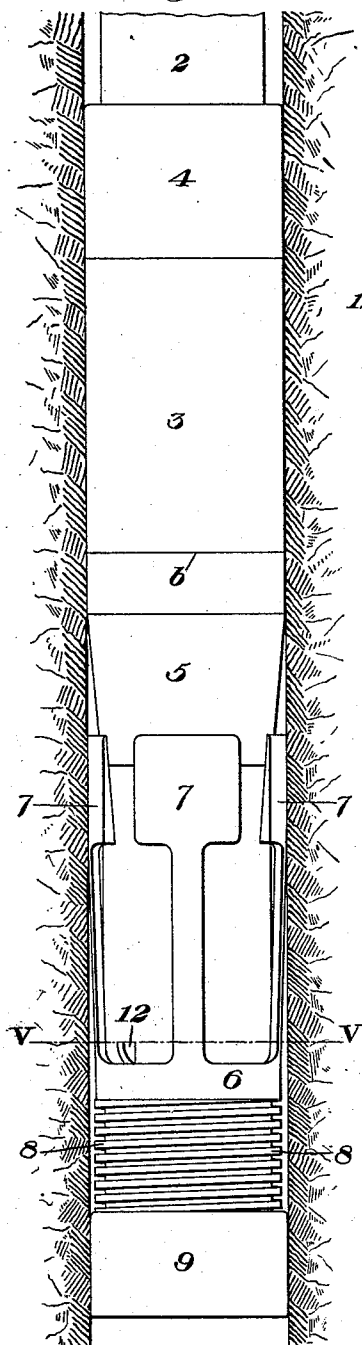
2 Sheets—Sheet 1.

D. W. BLACK.
PACKER.

No. 578,388.

Patented Mar. 9, 1897.

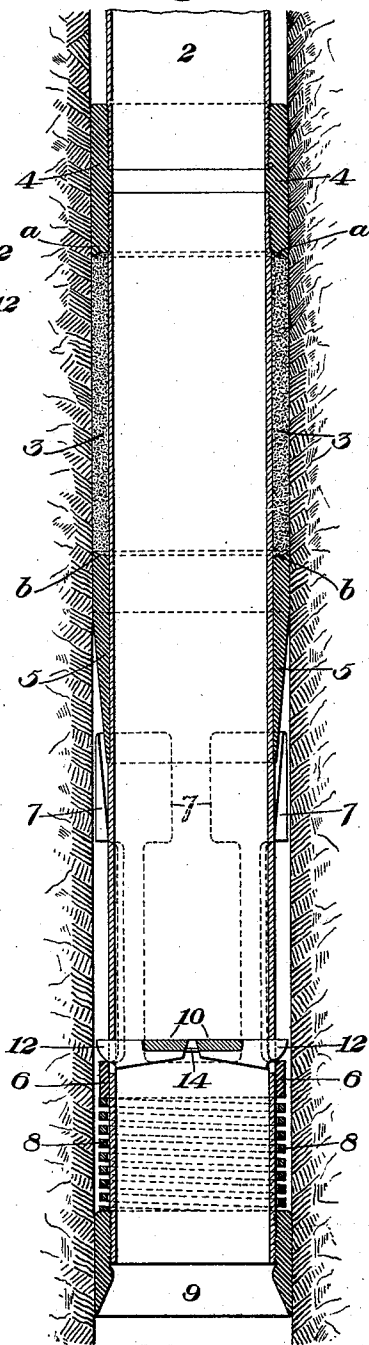
Fig. 1.



WITNESSES

Wm. W. Swartz
J. M. Corwin

Fig. 2.



INVENTOR

David W. Black
by Behrman & Behrman
his attys.

Fig. 5.

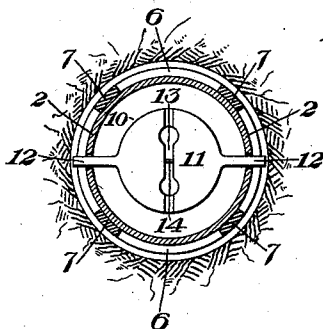
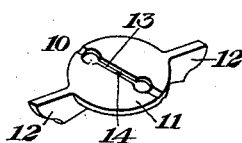


Fig. 6.



(No Model.)

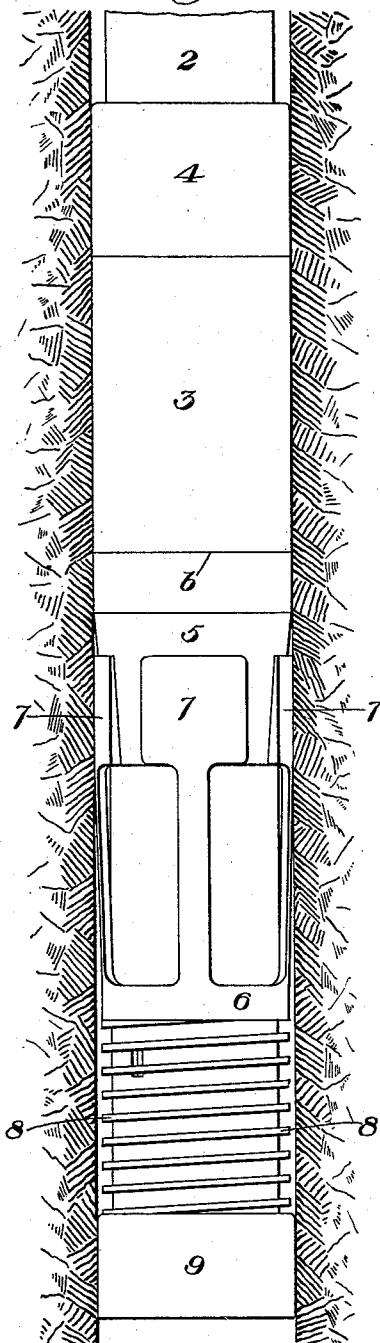
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Fig. 3.



WITNESSES

Warren W. Swartz
H. M. Conium

Fig. 7.

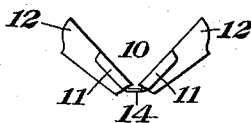


Fig. 8.

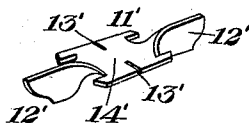
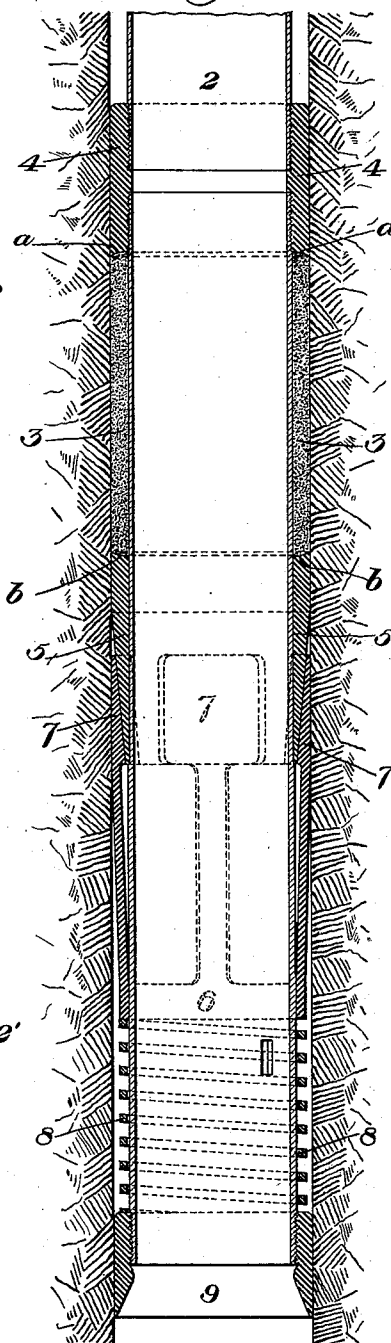


Fig. 4.



INVENTOR

David W. Black
by Rahewell & Rahewell
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UNITED STATES PATENT OFFICE.

DAVID W. BLACK, OF BUTLER, PENNSYLVANIA, ASSIGNOR TO BENJAMIN MASSETH, OF SAME PLACE.

PACKER.

SPECIFICATION forming part of Letters Patent No. 578,388, dated March 9, 1897.

Application filed May 2, 1896. Serial No. 589,977. (No model.)

To all whom it may concern:

Be it known that I, DAVID W. BLACK, of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Packers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a packer provided with my improved lock and inserted in the well, but as yet unpacked. Fig. 2 is a vertical section of the same. Figs. 3 and 4 are similar views to Figs. 1 and 2, respectively, but showing the lock broken and the packer expanded. Fig. 5 is a cross-section on the line V V of Fig. 1. Fig. 6 is a perspective view of one form of my improved lock. Fig. 7 is a side elevation of the same as fractured to unlock the packer, and Fig. 8 is a perspective view of another form of my lock.

My invention relates to that class of expandible packers for deep wells wherein a lock is employed to hold the spring which acts upon the slips or arms and is designed to provide an improved construction of the lock, whereby its action is made positive and certain.

It consists in a lock of this character which is arranged to bend downwardly in its intermediate portion when struck by the weight, thus insuring the withdrawing of its ends from the holes in the casing.

In the drawings, in which similar characters indicate corresponding parts, 2 represents a portion of the well-casing, and 3 the expandible packing-tube, made, preferably, of rubber, which fits around the casing and bears at one end against a shoulder *a*, formed, preferably, by a coupling-sleeve 4 on the casing. At its other end the packer bears against a shoulder *b*, formed, preferably, by the end of a tubular, conical, or wedge-shaped section 5, which surrounds and slides loosely upon the casing.

6 is a collar or band which encircles the casing below the section 5 and is provided

with upwardly-projecting spring arms or slips 7, arranged to wedge between the tapered surface of the cone 5 and the sides of the well.

A spiral spring 8 encircles the casing below the band 6 and bearing upon a lower sleeve 9, secured to the casing, acts to force the collar or band 6 upwardly. The spring is normally held compressed by a lock or cross bar 10, which projects through holes in the sides of the casing and engages the collar 6, thus preventing its upward movement, this lock being broken after the packer is lowered to the desired point by a weight dropped into the top of the casing. This locking-bar constitutes the feature of my invention, which consists in forming it with an intermediate bending portion instead of cast-iron or some easily-broken metal, as formerly. Thus in the form of Figs. 2, 5, and 6 I cast a disk 11, having projecting arms 12, this disk being weakened by a slot 13. Crossing this slot and cast into the disk is a flexible wire 14, which, when the weight strikes the lock, will bend downwardly, causing the arms 12 to be drawn out of the holes in the casing, the lock assuming the shape of Fig. 7..

In Fig. 8 I show another form of my lock, which is made of wrought-iron, the central portion 11', having arms 12' and being slotted inwardly at 13', leaving a connecting-neck 14', which will bend in the same manner as the wire of the first form.

The advantages of my invention will be appreciated by those skilled in the art, since the unlocking of the packer is made positive and uniformly certain, the arms being positively drawn from the holes in every case.

Many changes may be made in the material employed and the form of the lock without departing from my invention, since I consider myself the first to employ a lock of this character having an intermediate bending or flexible portion.

I claim—

1. A lock for oil-well packers, consisting of a body portion having arms arranged to project through slots in the packer, said body

portion being provided with an intermediate hinging or bending portion arranged to be actuated by a falling weight; substantially as described.

- 5 2. A lock for oil-well packers, consisting of a body portion having arms extending through slots in the packer, said body portion being weakened transversely, and having a bending or flexible strip crossing the weak-

ened portion and connecting the parts on 10 each side thereof; substantially as described.

In testimony whereof I have hereunto set my hand.

DAVID W. BLACK.

Witnesses:

ALEX. MITCHELL,

ANDREW G. WILLIAMS.