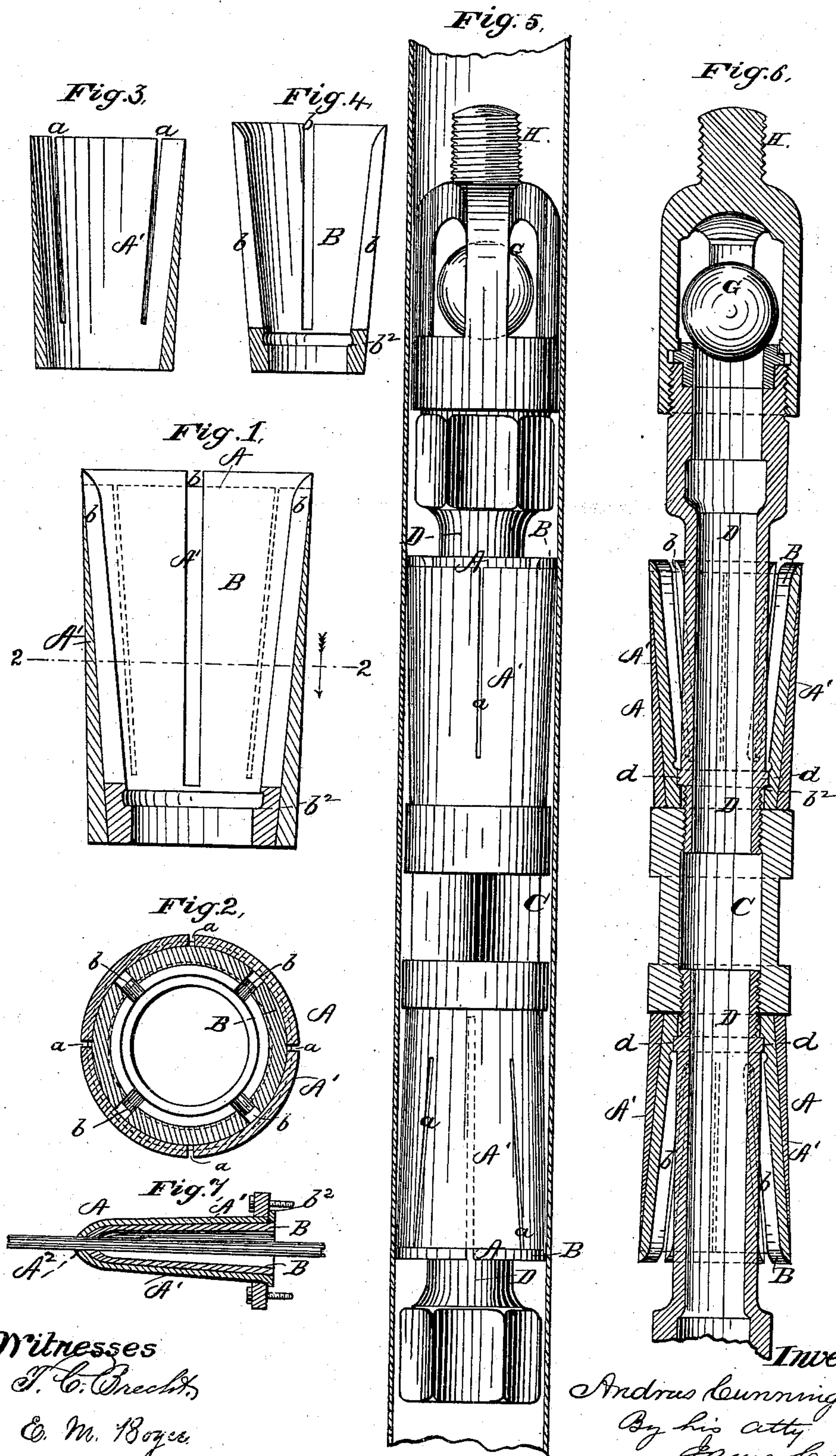


A. CUNNINGHAM.  
Metallic-Packer.

No. 216,946.

Patented July 1, 1879.



Witnesses  
J. C. Brecht,  
C. M. Boyce.

Inventor.  
Andrus Cunningham  
By his atty  
James B. Boyce

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Fig. 8.

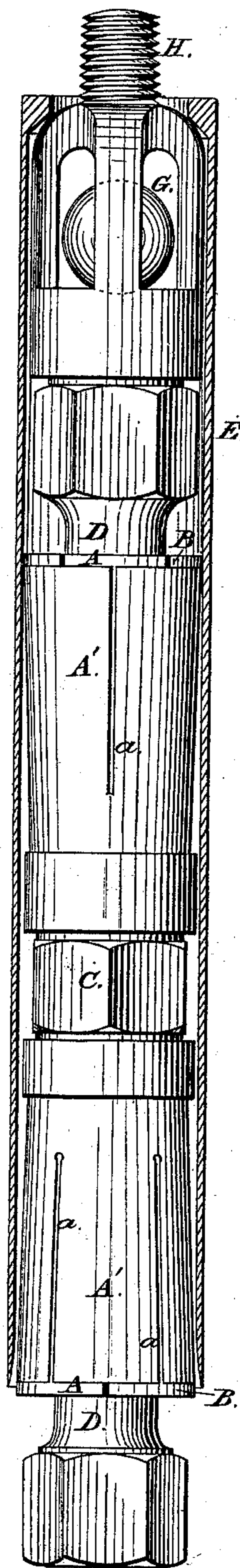
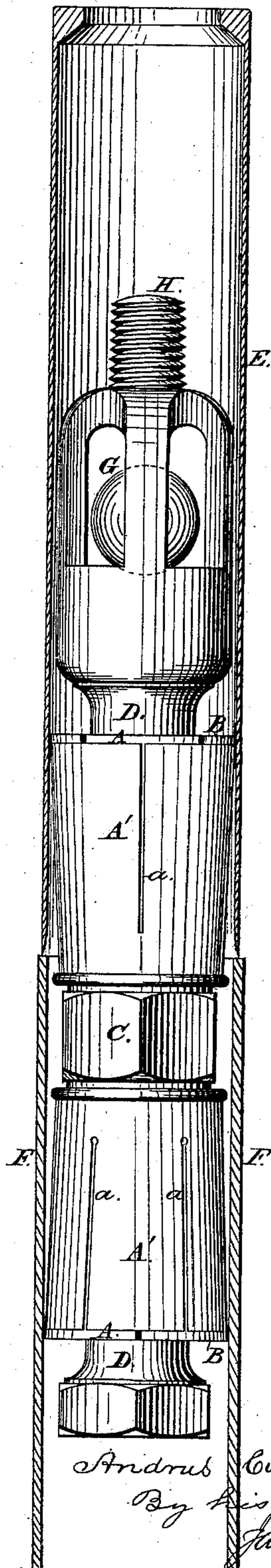


Fig. 9.



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# UNITED STATES PATENT OFFICE.

ANDRUS CUNNINGHAM, OF PLEASANTVILLE, PENNSYLVANIA.

## IMPROVEMENT IN METALLIC PACKERS.

Specification forming part of Letters Patent No. **216,946**, dated July 1, 1879; application filed October 4, 1878.

*To all whom it may concern:*

Be it known that I, ANDRUS CUNNINGHAM, of Pleasantville, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Metallic Packers; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a vertical section of my improved packer with both cups in working position. Fig. 2 is a cross-section of the same, taken through line 2 2 of Fig. 1. Fig. 3 is a vertical section of the outside cup. Fig. 4 is a vertical section of the inside cup. Fig. 5 is an elevation of my improved packer as applied to the working-barrel of a pump. Fig. 6 represents a vertical section of the same detached from the pump. Fig. 7 represents my packer as applied to a piston-rod or plunger. Figs. 8 and 9 are modifications.

My invention consists in the novel construction and arrangement of metallic cups for packing pistons, pumps, stuffing-boxes, and for any suitable position or place where a packer can be available.

It further consists in the arrangement of the cups, being so slotted that the joints can be broken, making a perfectly tight and also self-cleaning packer.

A represents my cup-packer, provided with outside and inside cups, A<sup>1</sup> and B. The outside cup on the inside is conical or tapering, while the inside cup is also conical or tapering. The inclination or angle of the inside of the outside cup and the outside of the inside cup are exactly the same, fitting so snugly as to be water and steam tight.

The outside cup is provided with vertical grooves *a a a a*. The inside cup is also provided with the same number of vertical grooves *b b b b*.

When the cups are in working position the grooves or slots of one cup are ninety degrees and one hundred and eighty degrees, and the grooves or slots on the other cup are forty-five degrees, thus breaking the joints and packing as tightly as an unbroken packing.

The packing of the cups is governed by

the length of the slots or grooves, the cups being turned out of solid material, somewhat larger in diameter on the outside than the inside of the piston or packing-barrel.

In using my packer for a steam-engine I make an elongated annular groove on the inside and contract the length of the cups, the annular groove thus governing the elasticity in a short cup, and producing the same results as deep slots without an annular groove.

When using a piston-rod or plunger I employ the inside of the cups, as shown at A<sup>2</sup>, Fig. 7. The cups can extend on the inside or outside of the cylinder or pump, as occasion may demand.

Figs. 5 and 6 illustrate my packers as applied to a pump-barrel. The packers A A are secured to the opposite ends of an elongated nut, C, said nut being provided with screw-threads for receiving the ends of valve-stems D D. Said stems have projections *d d*, forming an annular flange, which impinge on the flanges or shoulders *b<sup>2</sup> b<sup>2</sup>* of the inside cups, B B, thus holding them securely to the nut C. The stem D has secured thereon a cage inclosing an ordinary ball-valve, G.

In oil-wells and mining-pumps the valves are constantly wearing, from the friction of sand, grit, and other foreign substances, and the great loss of time and expense for repairing the same is a consideration to be regarded, especially in deep working wells.

In my improved cup-packer all the difficulty is obviated. The sand and grit are forced up and down with every motion of the pump-rod by the action of the sharp edges on the flared ends of the cups. They hug the pump-barrel so closely that fluid of any kind cannot pass, thus cleaning the pump at every stroke.

I do not confine myself to any number of cups, as two or more can be used; nor do I confine myself to any number of slots, as one or more can be used and produce the same results.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a well-packer, the combination of an external conical cup, provided with longitudinal slots and a sharp edge, with an internal conical cup, also provided with longitudinal

slots and an internal shoulder,  $b^2$ , substantially as and for the purpose described.

2. The combination of an external conical cup, provided with longitudinal slots, and an internal cup, having longitudinal slots and a shoulder,  $b^2$ , with a valve-stem, D, provided with a shoulder,  $d$ , and an elongated nut, C,

forming a pipe-coupling, all constructed to operate substantially as and for the purpose described.

ANDRUS CUNNINGHAM.

Witnesses:

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W. R. EDELEN.