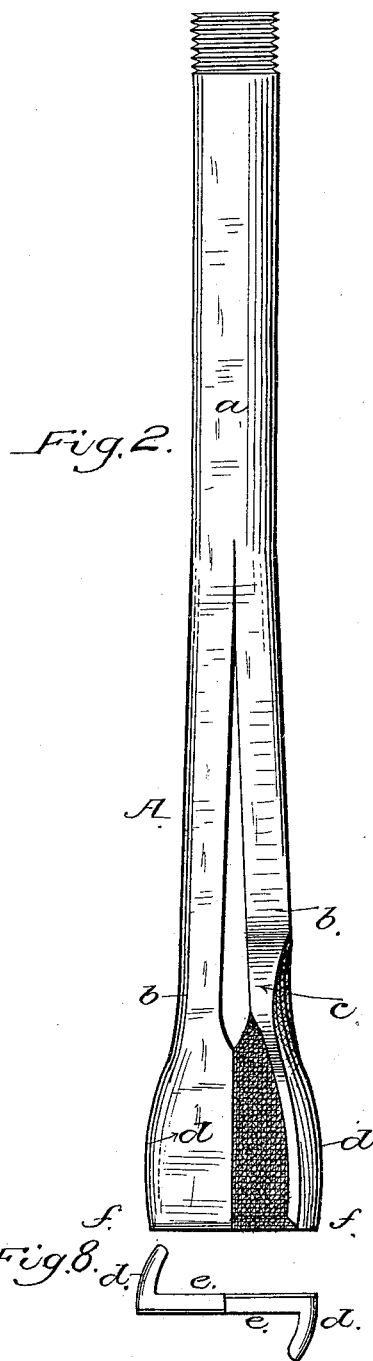
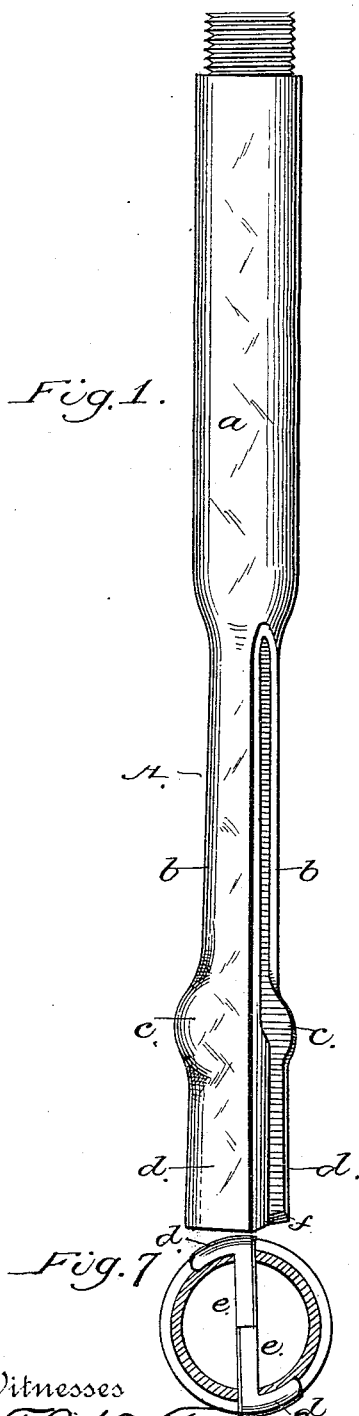


F. H. OBER.  
WELL REAMER.

No. 344,326.

Patented June 22, 1886.



Witnesses  
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*H. B. Applewhite,*

Inventor  
*Frank H. Ober*  
By his Attorneys  
*A. H. Evans & Co*

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Fig. 3.

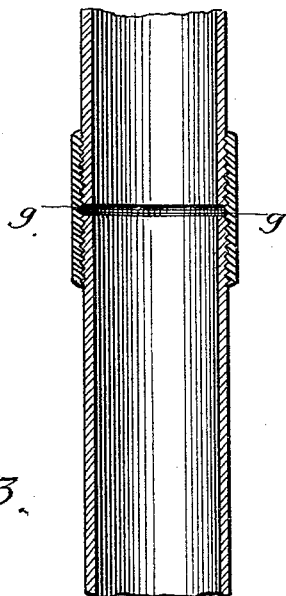


Fig. 4.

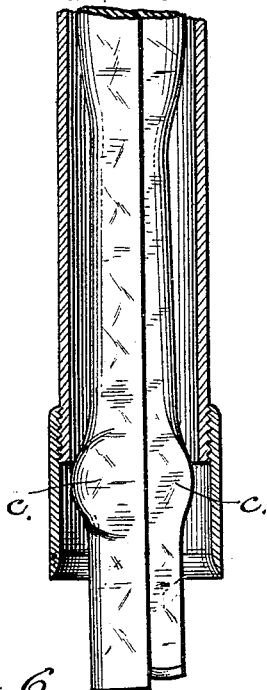
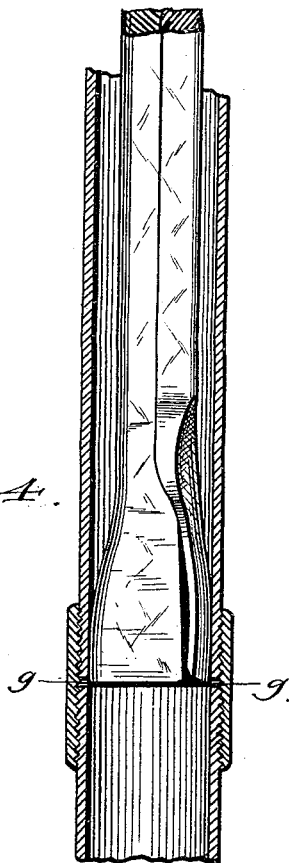


Fig. 5.

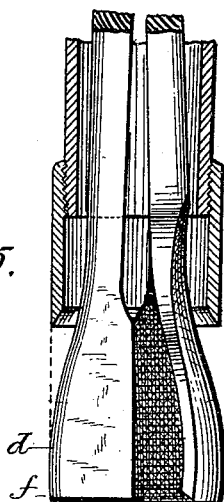


Fig. 6.

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# UNITED STATES PATENT OFFICE.

FRANK H. OBER, OF DENVER, COLORADO, ASSIGNOR TO A. WRIGHT, OF  
SAME PLACE.

## WELL-REAMER.

SPECIFICATION forming part of Letters Patent No. 344,326, dated June 22, 1886.

Application filed March 11, 1886. Serial No. 194,771. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK H. OBER, of Denver, in the county of Arapahoe and State of Colorado, have invented a new and useful Improvement in Well-Reamers, 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 reamer with my improvements attached. Fig. 2 is an elevation presenting a different view. Fig. 3 shows the lugs of the reamer just coming in contact with the casing. Fig. 4 shows the reamer contracted and being withdrawn from the casing. Fig. 5 shows the reamer free from the casing and expanded ready for work. Fig. 6 is a bottom view of Fig. 4. Fig. 7 is a bottom view of Fig. 5. Fig. 8 is a view of the bottom of the reamer detached.

The object of my invention is the production of a reamer that will drill a hole slightly larger than the couplings of the casing, which immediately follows as the reamer works its way down, and a reamer which can be readily withdrawn through the interior of the casing; and it consists in a device of peculiar construction, as will be hereinafter described and claimed.

To enable others skilled in the art to make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the drawings, A represents the reamer itself, which is a steel forging round at its upper end, *a*, and divided at its lower end and for some distance up its stem into the legs *b b*. On each leg of the reamer and at a short distance from the bottom I form a rounded lug or projection, *c*, but formed on the opposite sides of the legs, as shown in Fig. 3, for a purpose hereinafter explained. The lower end of each leg *b b* is curved or widened out, as shown at *d* in Figs. 2 and 5, thereby forming the flanges *e e* at nearly right angles to the curved portion *d*. The legs *b b* are swaged apart, so that when the reamer is in its normal condition, as in Fig. 5, the

flanges *e e* will lie in the same vertical plane, as shown in Figs. 5 and 7; but when the reamer is being drawn up into the casing the beveled lugs or projections *c* coming in contact with the casing the flanges *e e* are forced out of the same vertical plane, as shown in Fig. 6, and the curved portion *d* next coming in contact with the casing the flanges *e e* are snugly folded within the casing, as shown in Fig. 4, and can be withdrawn at pleasure. By this construction I am enabled to drill a hole about an eighth of an inch larger than the diameter of the couplings on the casing, whereby the casing easily follows the reamer and prevents all difficulties caused from caving. When it becomes necessary to remove the reamer from the casing, or to lower it down, it is evident that as soon as the lugs come in contact with the interior diameter of the casing the two lugs *b b* are thrown from the same vertical plane dividing them in the center, while the inclines or cams *d* coming in contact with the inside diameter of the casing the legs *b* and flanges *e* are contracted in opposite directions, enabling the reamer to be withdrawn or lowered, as desired. When the reamer emerges from the casing, the legs *b b* spring into their normal position, as shown in Figs. 5, 7, and 8.

In order to prevent the point of the reamer from hanging at the junctions of the casing at *g*, the diameter of tool at *d* is made slightly in excess of the diameter at the point *f*, as shown in Fig. 2.

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

As an improved article of manufacture, a reamer constructed substantially as described, and consisting essentially of the legs *b b*, provided with the lugs or projections *c*, the curved or cam portions *d*, and flanges *e*, all constructed and arranged to operate substantially as and for the purpose herein set forth.

FRANK H. OBER.

Witnesses:

W. W. COOKE,  
GUY H. THOMPSON.