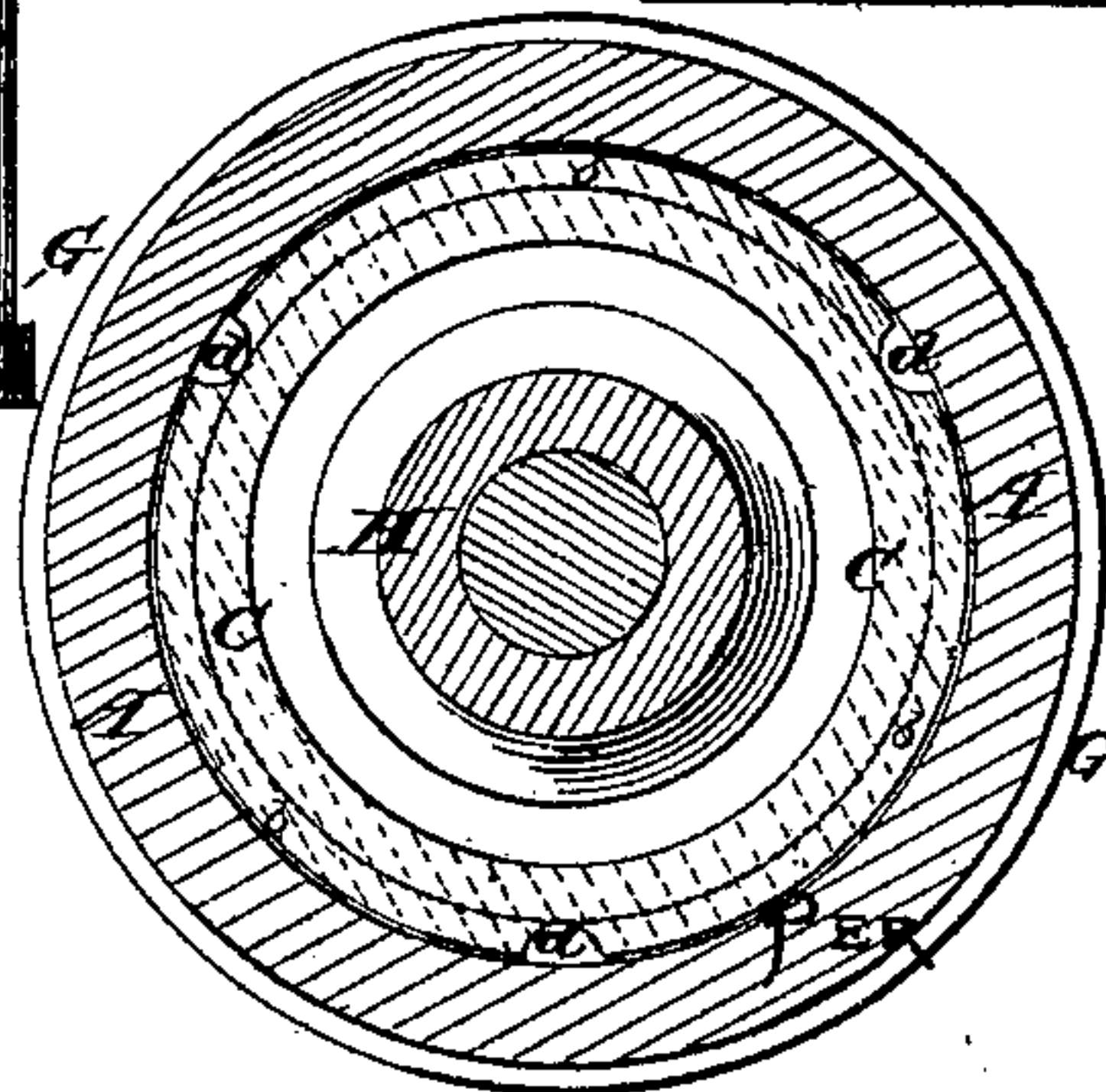
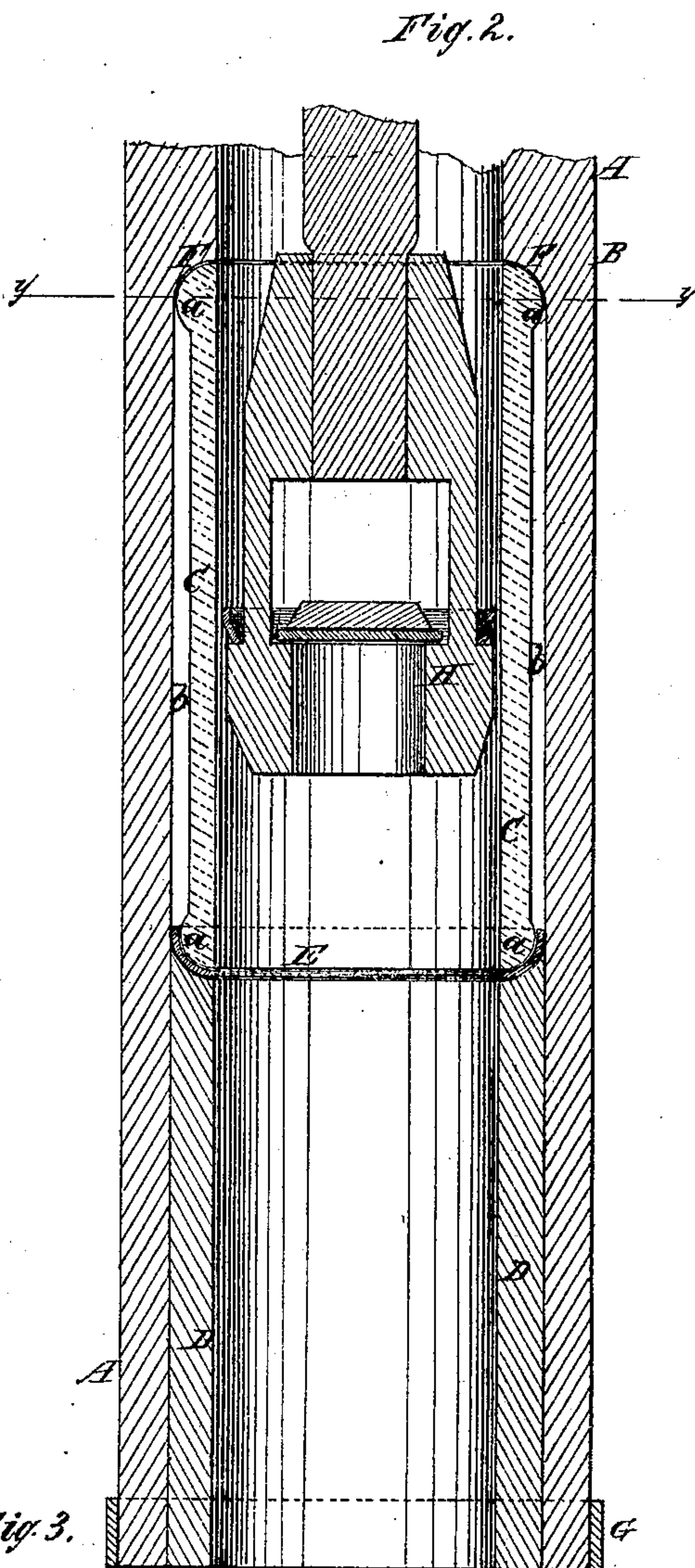
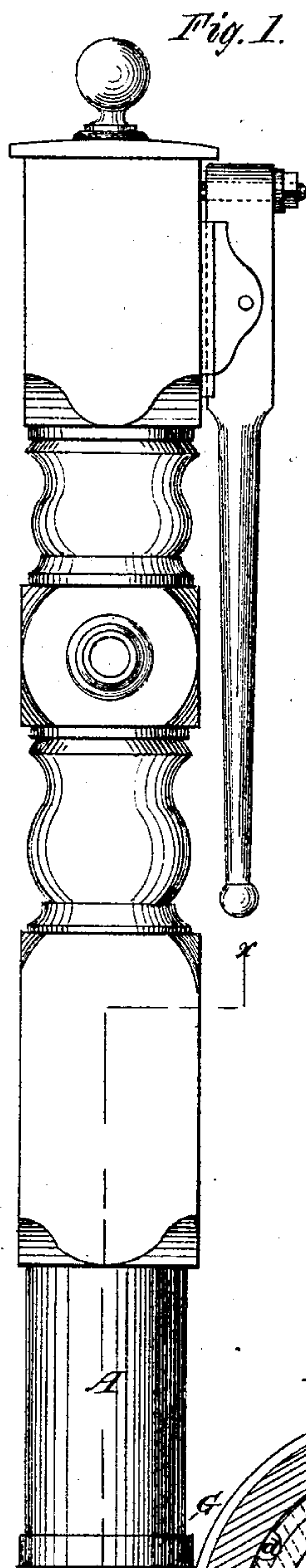


C. D. RATHBONE.

Pumps.

No. 140,643.

Patented July 8, 1873.



Witnesses:  
P. C. Dietrich.  
C. T. Fugwick

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Attorneys.



# UNITED STATES PATENT OFFICE.

CHARLIE D. RATHBONE, OF BELPRE, OHIO.

## IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **140,643**, dated July 8, 1873; application filed November 16, 1872.

*To all whom it may concern:*

Be it known that I, CHARLIE D. RATHBONE, of Belpre, in the county of Washington and State of Ohio, have invented a new and useful Improvement in Pumps, of which the following is a specification:

My invention consists of a novel construction and mode of applying a bush or lining of glass or other hard and durable wearing substance in the pump-cylinder or stock to sustain the wear of the sucker or pump-barrel.

Figure 1 is a side elevation of a pump with a lining constructed and applied according to my improvements. Fig. 2 is a vertical section on the line *x x* of Fig. 1; and Fig. 3 is a horizontal section on the line *y y* of Fig. 2.

Similar letters of reference indicate corresponding parts.

A is the hollow tube or pump-stock, which I ream out from B down to the lower end, or otherwise construct in respect of the bore or size of the interior space as much larger than the bore of the part above as is required to provide the additional space for the bush C, the bore of which I prefer to have of the same size as that of the stock B. This bush C I prefer to make of glass, as the most preferable substance for durability, and grind the bore out true, and I form a bead, *a*, on each end a little larger than the balance of the exterior portion, so that in fitting into the stock, the pressure of the sides of the latter will be sustained at the ends of the bush to prevent unequal action along the bush between the ends; also, to provide a water-space, *b*, between it and the wall of the stock, to which I propose to admit water from above through one or more slight passages, *d*, so that the bush will be relieved of all strain due to the pressure of the water by being surrounded by it. Below the lower end of the bush I introduce a hollow plug, D, from the lower end of the stock fitting it in snugly so as to be retained by friction, and driving it against the lower end of the bush to fit tight against it, or a packing-

gasket, E, between them, and force the top against the shoulder F; and to prevent the plug from splitting the lower end of the stock or swelling it out, I drive a band, G, on it. The ends of the bush are formed on an oval taper, so that it is centered with the bore of the stock by being forced against the correspondingly-shaped shoulder F by a similar shape on the end of the plug; but it is immaterial whether the taper be oval or not. H represents the sucker or working-barrel.

I believe it to be essential to the safety of the lining, in transportation as well as while at work, that it shall come in contact with the pump log only at the ends of lining, and by an obtuse angle, or a short curve. The wooden log swells and shrinks but little endwise; but if the glass cylinder be tight or cemented in a dry log, the water will swell the wood and the lining become loose. If the lining be cemented or tight in a wet log and left out of water a few days, the log will burst by shrinking on the cement or lining. In glass or equivalent linings, as now used, the entire length of lining is in direct contact either with wooden log or with cement. That arrangement I wish in particular to avoid, because a sudden movement of water in a pump or sudden check of the flow causes a severe strain on all parts with which the water comes in contact.

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

The bush C, having bead *a* on the outside of each end, as described, so that a water-jacket may be formed therearound, when placed in the cylinder, and any contraction of wood, which might break the glass, be prevented.

CHARLIE D. RATHBONE.

Witnesses:

JOHN HADLEY,  
J. G. ELLENWOOD.