

A. S. CAMERON.

Bushings for Pump and other Cylinders.

No. 146,871.

Patented Jan. 27, 1874.

Fig. 1.

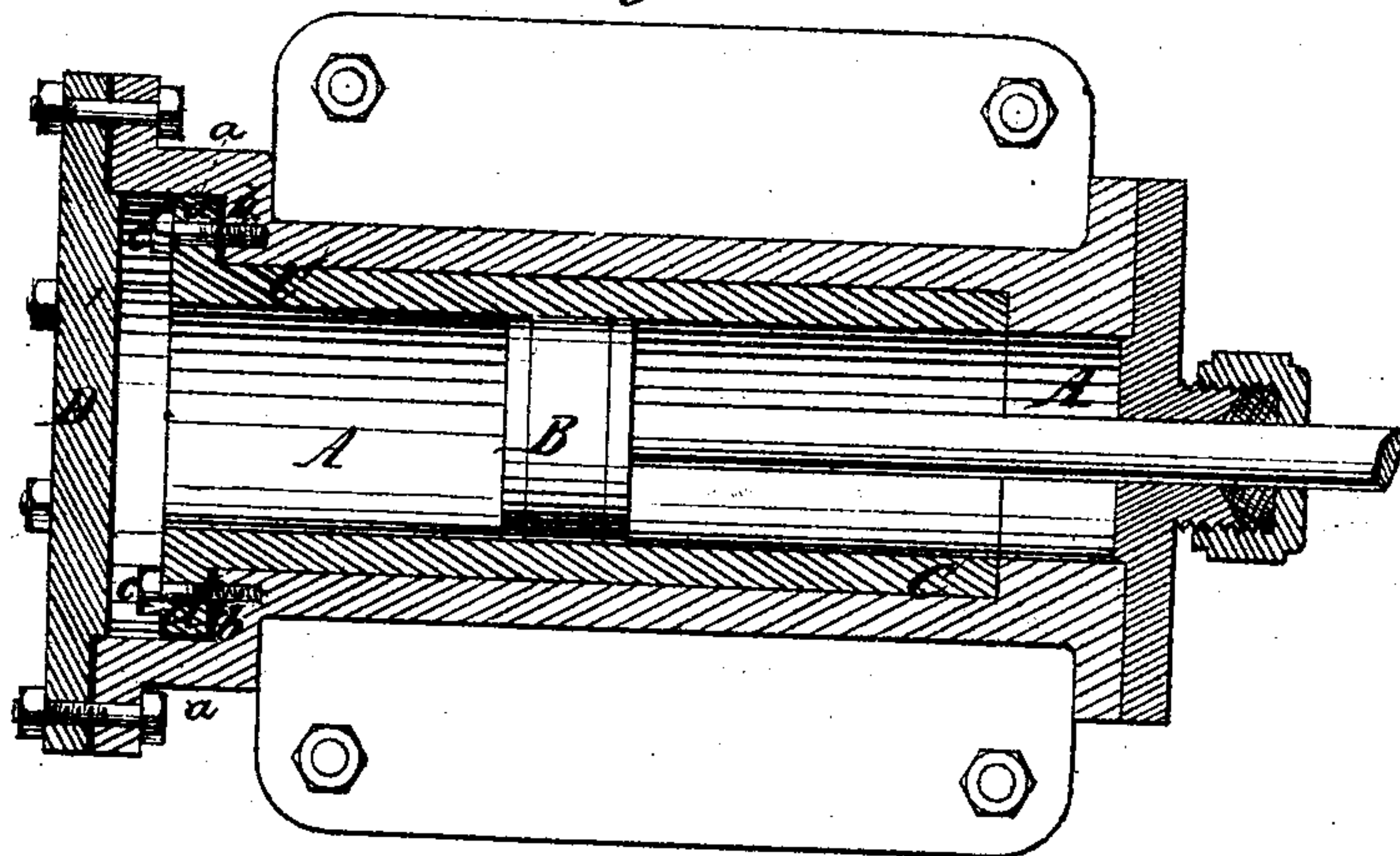


Fig. 2.

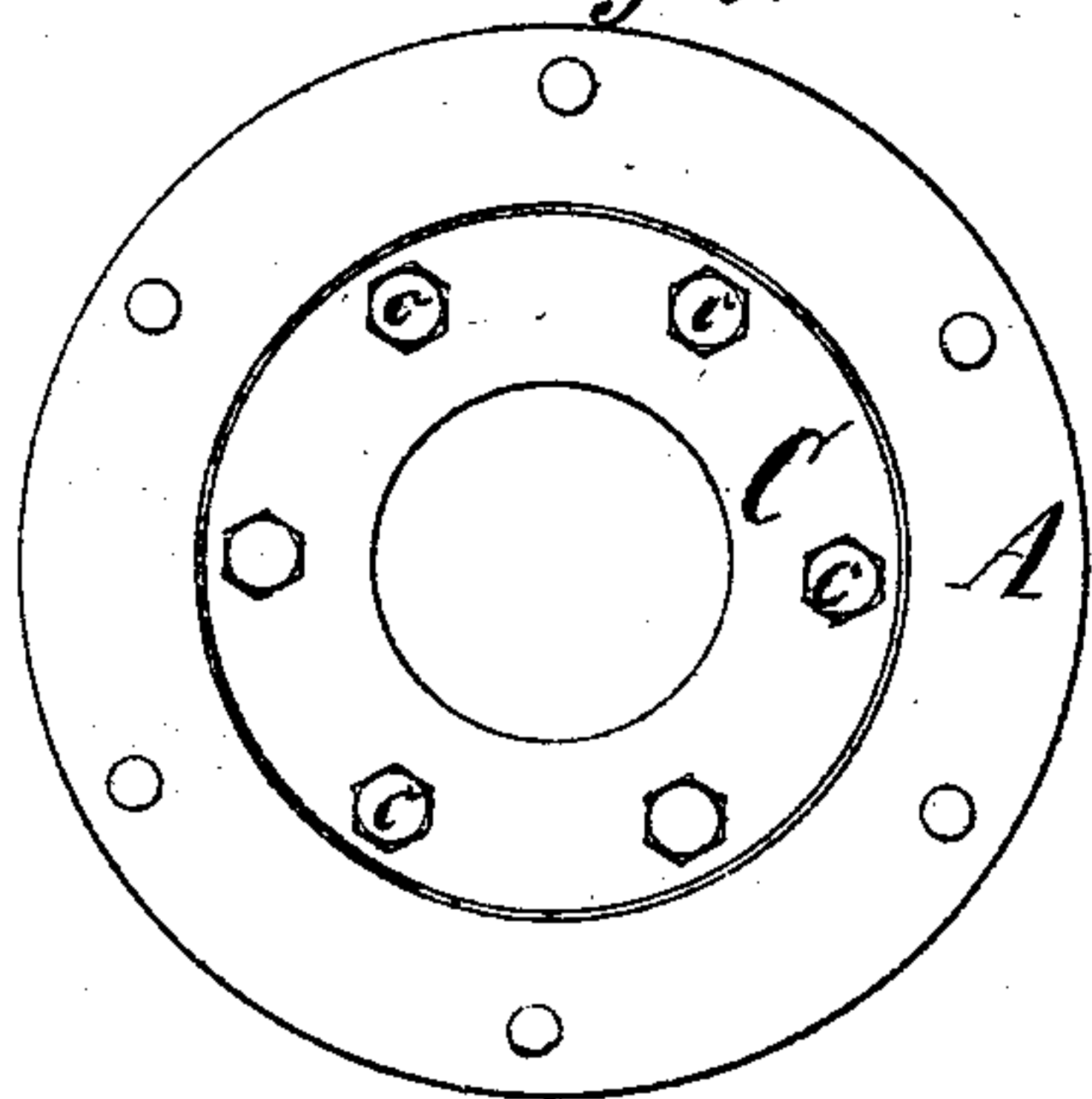
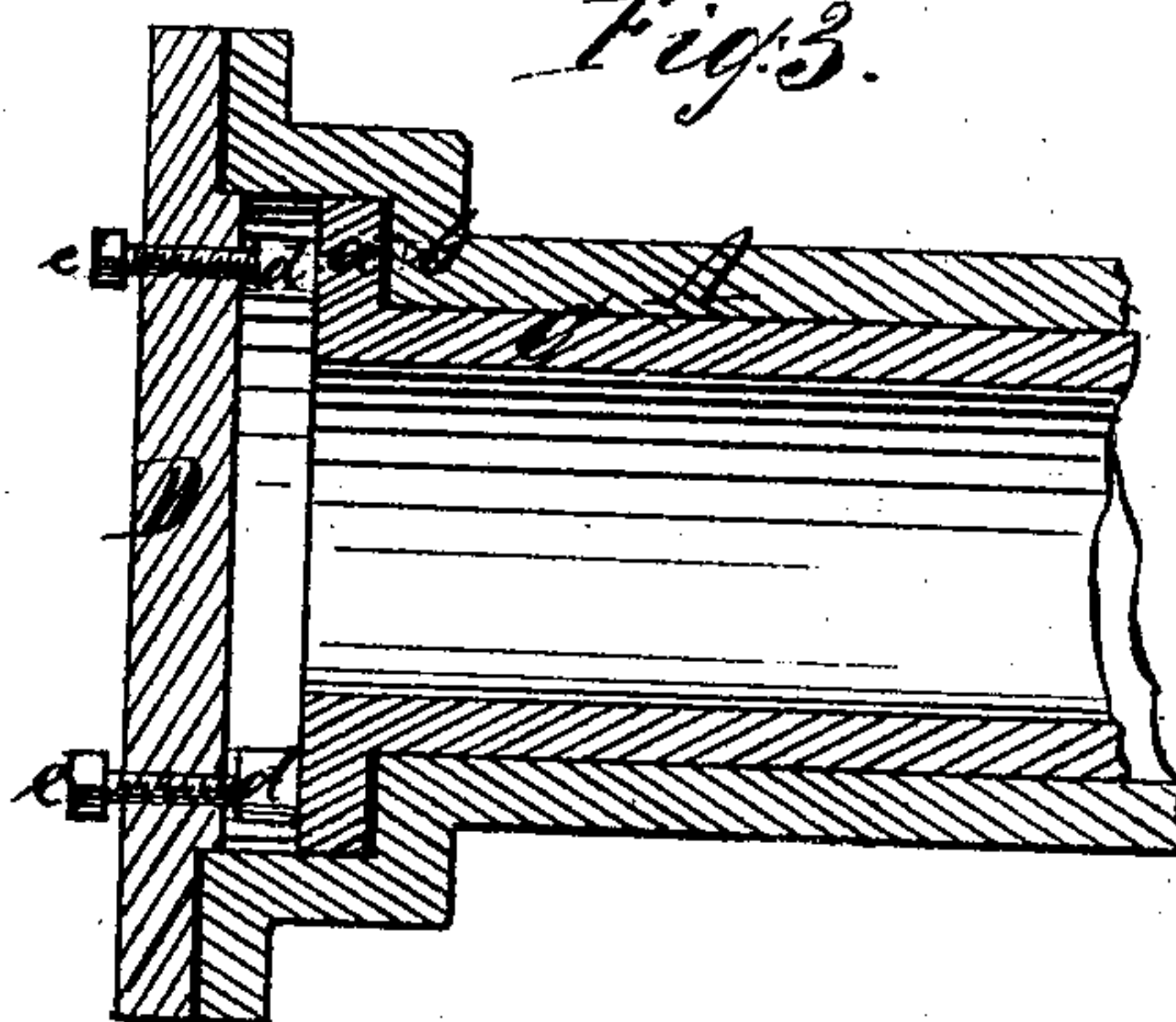


Fig. 3.



Witnesses:

Ernst Bilhuler
Henry Ginter.

Inventor:

Adam S. Cameron
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his attys

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN BUSHINGS FOR PUMP AND OTHER CYLINDERS.

Specification forming part of Letters Patent No. **146,871**, dated January 27, 1874; application filed December 3, 1873.

To all whom it may concern:

Be it known that I, ADAM SCOTT CAMERON, of the city, county, and State of New York, have invented a new and Improved Bushing for Pump and other Cylinders; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a longitudinal section of my invention. Fig. 2 is a transverse section of the same, and Fig. 3 is a modification of the bushing shown in Figs. 1 and 2.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the arrangement of a removable bushing in the interior of a pump-cylinder, or of any other cylinder containing a reciprocating piston, said bushing being provided at one end with a flange which has a series of screw-threaded openings to receive screws for confining the bushing in place and for lifting it out of its seat, when desired, said flange bearing upon a shoulder formed in the cylinder, so that the bushing can be retained in position by means of screws, and when injured and worn it can be readily removed and replaced by another with the aid of said lifting-screws, and the tedious operation of re-boring the cylinder is saved.

In the drawing, the letter A designates a cylinder, in which works a piston, B. By the action of this piston the cylinder is liable to wear out, particularly if it is used for pumping impure water, and if the cylinder is worn out it has to be taken off and re-bored. This operation requires much time and labor, particularly if the cylinder is heavy, and during the time required for re-boring the pump and engine cannot be used, so that the whole operation is of great inconvenience. These difficulties I have overcome by fitting into the cylinder A a bushing, C, which is bored out to receive the piston B, and which is provided with a flange, *a*, near one of its ends. This flange is received in the enlarged bore of the end of the cylinder, and it bears against a shoulder, *b*, provided for this purpose in the cylinder,

so that, by means of screws *c* passing through said flange, the bushing can be firmly and securely held in place. When the bushing is worn out, the bonnet or cylinder-head D is taken off, the screws *c* are taken out, and the bushing can be withdrawn and replaced by another provided for this purpose, so that the pump or engine can be brought in working order again in an hour or less, and no stoppage is required.

In order to effect such removal after the bushing has been embedded and tightly fixed in position from use, the screw-threaded openings formed on the flange serve to receive a series of screws, *h*, whereby a connection and hold are afforded for starting and withdrawing the bushing. Such is an important feature, since requisite force can be applied to the screws *c* for starting and effecting the removal of the bushing C, the withdrawal of which could not be expeditiously effected unless such or analogous means were provided.

Instead of securing the bushing by screws *c* passing through the flange *a*, said flange may be provided with lugs *d*, which abut against the inner surface of the bonnet D, when the latter is fastened in position, and by means of screws *e*, passing through the bonnet into the lugs, and thus the bushing can be retained in position, and it can be readily removed and replaced by another, the openings in the lugs serving to receive the screws for withdrawing the bushing, as hereinbefore stated.

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

1. The bushing C of a cylinder, A, provided with a series of openings on its extreme end to receive screws for confining it in place, the openings serving to receive lifting-screws to effect its withdrawal, substantially as described.

2. In combination with the cylinder A and piston B, the bonnet D, removable flanged bushing C, and fastening and confining bolts, substantially as and for the purpose described.

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Witnesses:

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E. F. KASTENHUBER.