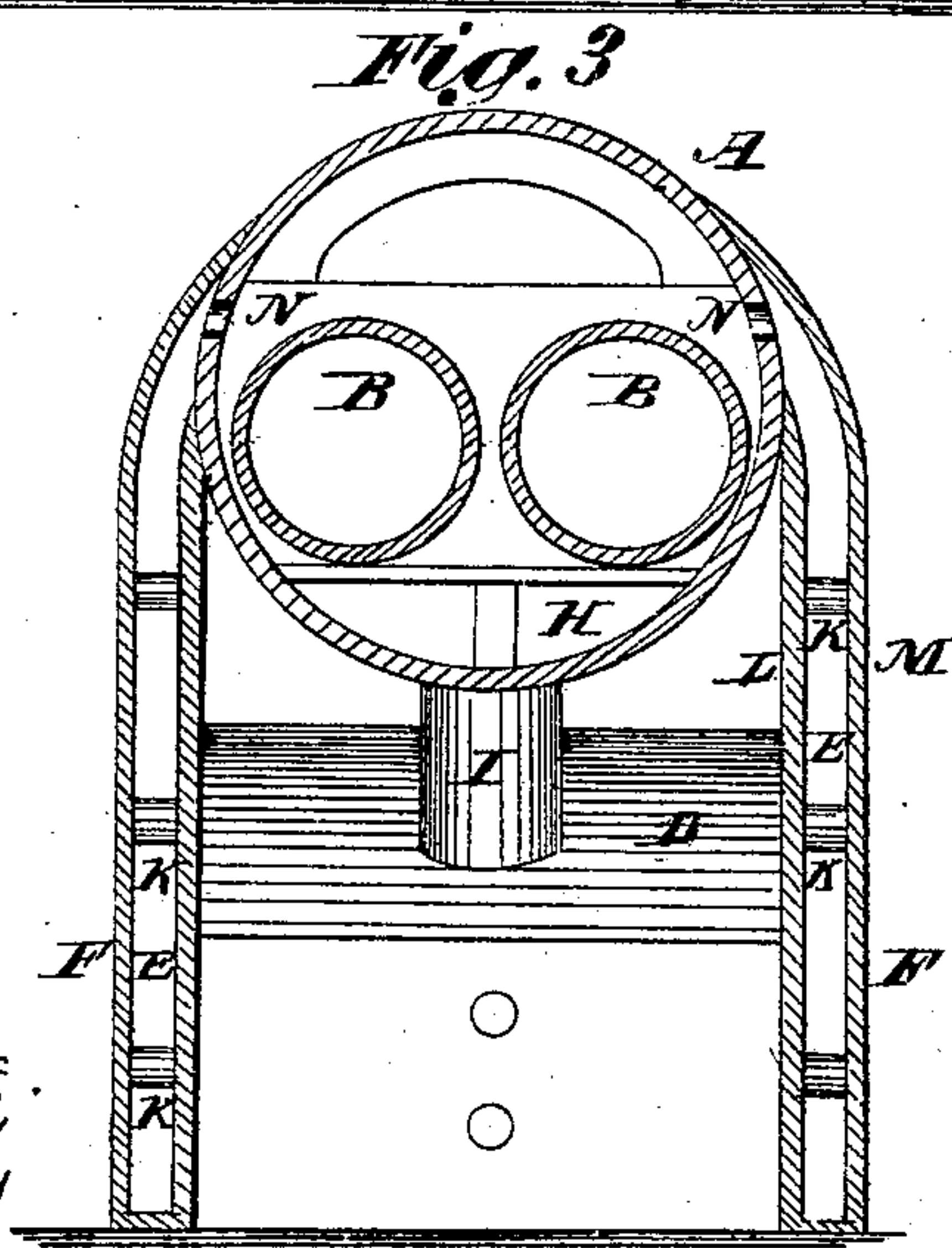
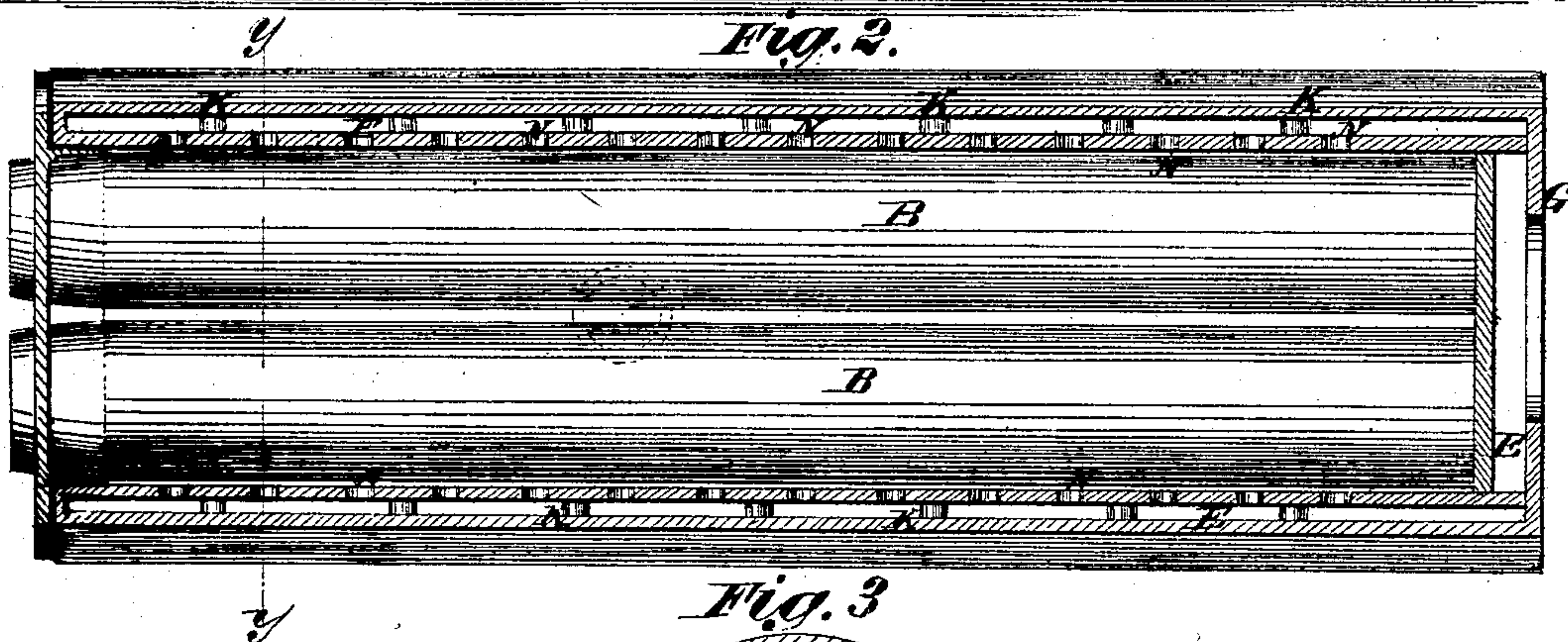
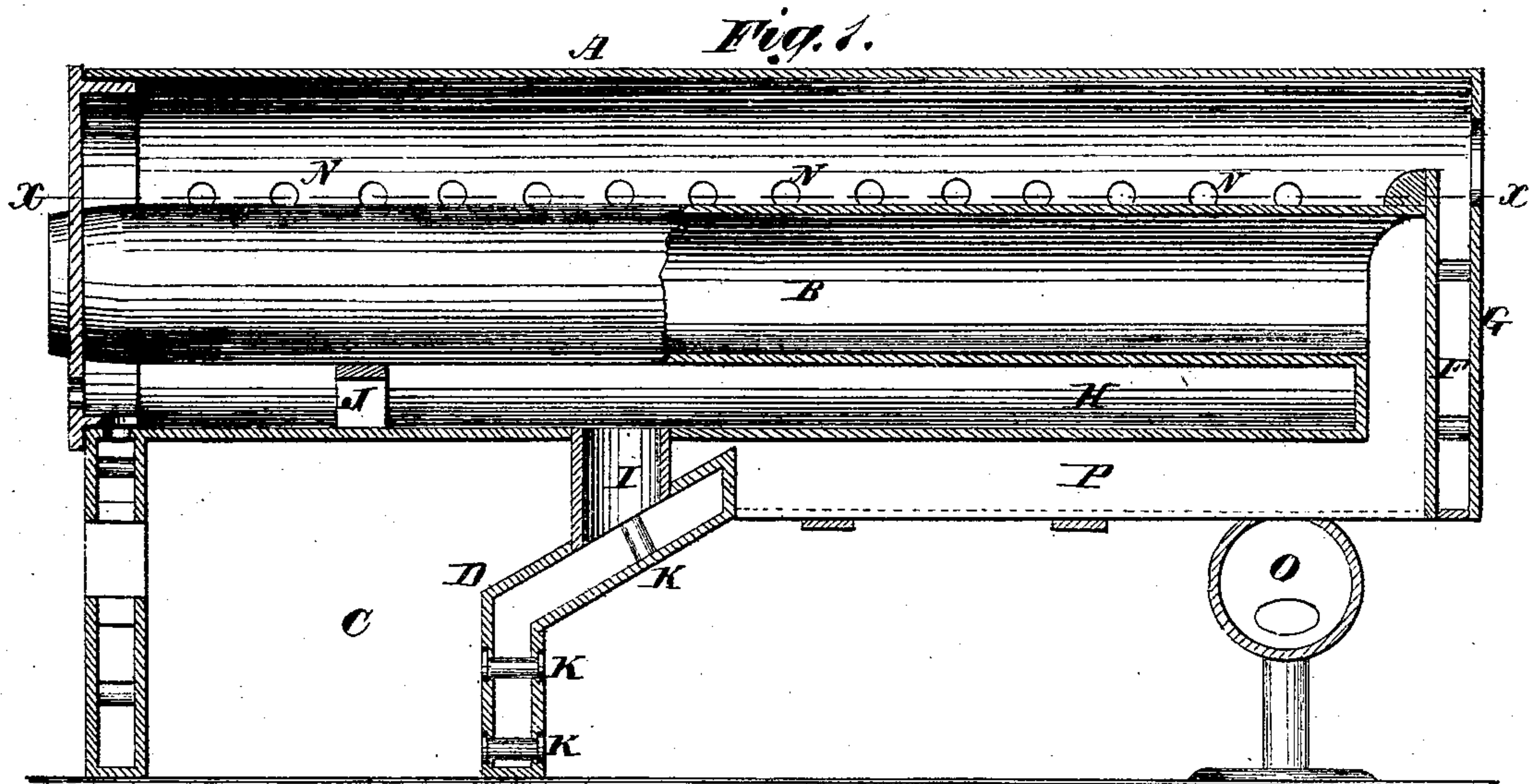


N. D. HARVEY.  
Steam-Boilers.

No. 149,395.

Patented April 7, 1874.



Witnesses:  
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*Alex. F. Roberts*

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# UNITED STATES PATENT OFFICE.

NICOLAS D. HARVEY, OF NEW ORLEANS, LOUISIANA.

## IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **149,395**, dated April 7, 1874; application filed January 17, 1874.

*To all whom it may concern:*

Be it known that I, NICOLAS D. HARVEY, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Improvement in Steam-Boilers, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claim.

In the accompanying drawing, Figure 1 represents a sectional side elevation of my improved boiler. Fig. 2 is a horizontal section of Fig. 1, taken on the line *x x*. Fig. 3 is a vertical cross-section taken on the line *y y* of Fig. 2.

Similar letters of reference indicate corresponding parts.

A is an ordinary flue-boiler, of any desired length and diameter. B B are the flues. C is the fire-box. D is the bridge-wall. The feature which distinguishes this boiler from boilers of similar construction is its water-jacket E. This jacket forms the water-legs F F, and extends back to the other end of the boiler and across the end, as seen at G. The bridge-wall is also a water-back, connected with the water-space H of the boiler by the water-connecting tube I. J is a stand under the flues B B, which rests on the bottom of the boiler. K are stays, by means of which the plates of the jacket are connected together. The inner plate L of the jacket is riveted to the shell A. The outer plate M extends farther up, or near to the top of the shell A, where it is also riveted, or a steam-tight joint is made. N represents a series of holes, by which the steam-space of the jacket is brought in communication with the steam-space of the boiler. O is a mud-drum, connected at the top, near the ends, with the jacket. It will be observed that the jacket extends down on each side of the boiler, from the inclined bridge-wall to the end jacket, so that the side of the fire-flue P is rendered steam-generating surface. As seen in Fig. 3, the

boiler is almost entirely enveloped by the water-jacket. The lower side of the fire-flue P may be covered with sheet-iron or rendered tight in any suitable manner, so that such covering may be removed for repairs or other purposes without difficulty.

This boiler may be readily put up and rendered very effective without mason-work, and is specially adapted for steamboats, and for all situations where weight as well as space is an object.

I am aware that boilers have been constructed with a water-jacket to form the sides of the fire-box, and also a bridge-wall, but I am not aware that the sides of the fire-flue back of the bridge-wall, or the back ends of such boilers, have been thus jacketed; nor am I aware that the mud-drum has been connected with such jacket.

In this arrangement the feed-water is pumped into the jacket, and not directly into the boiler. Before the feed-water enters the boiler it is heated to the boiling temperature, and the sediment is deposited in the jacket, and readily finds its way to the mud-drum, and is blown off. The water in the boiler is, therefore, kept comparatively pure. The generation of steam is greatly facilitated when the boiler is kept free from scale.

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

The combination, with the furnace, of a boiler having the flues P B, water-bridge wall D, connected by pipes I to the boiler, the water-legs E, connected by mud-drum O, and the water-space H, substantially as described, and for the purpose set forth.

N. D. HARVEY.

Witnesses:

CHS. LOUGUE,  
CH. E. FRAMDAIS.