

(No Model.)

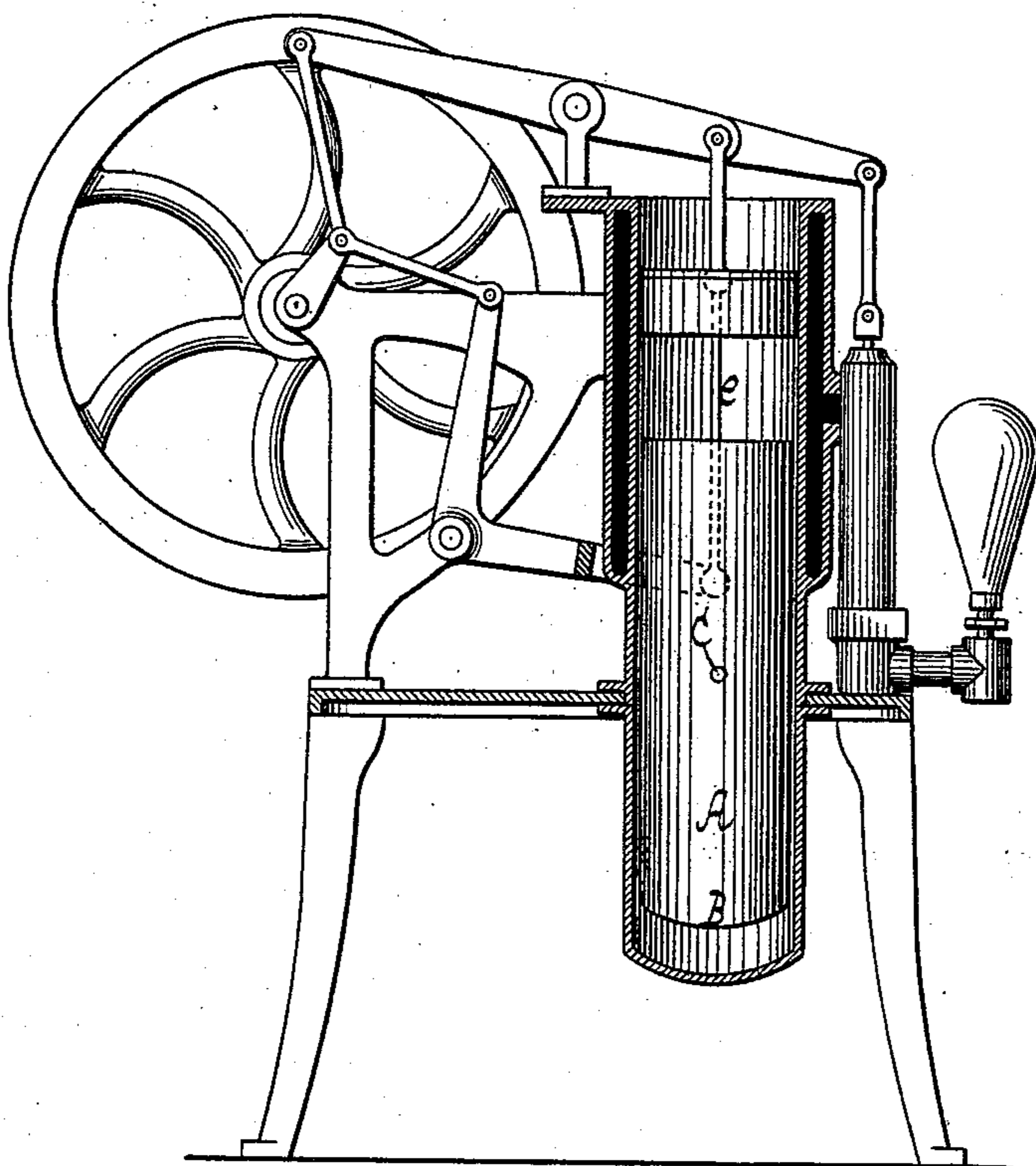
2 Sheets—Sheet 1.

R. S. SAYER.
PISTON FOR AIR ENGINES.

No. 540,460.

Patented June 4, 1895.

Fig. 1



WITNESSES:

Chas. Wahlers
W. H. Hough

INVENTOR

Richard S. Sayer

BY

Charles S. Fox

ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

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Fig. II

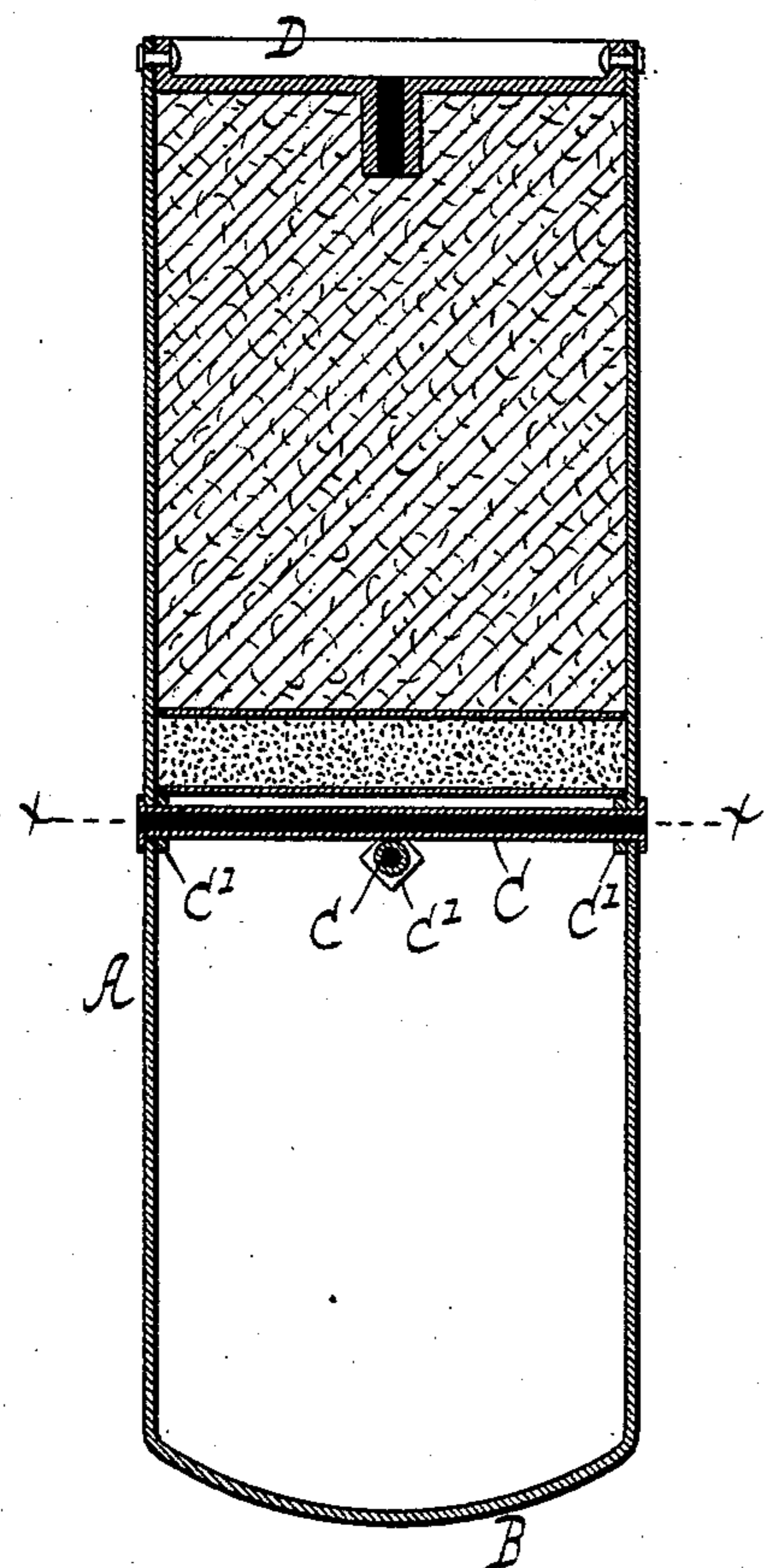


Fig. III

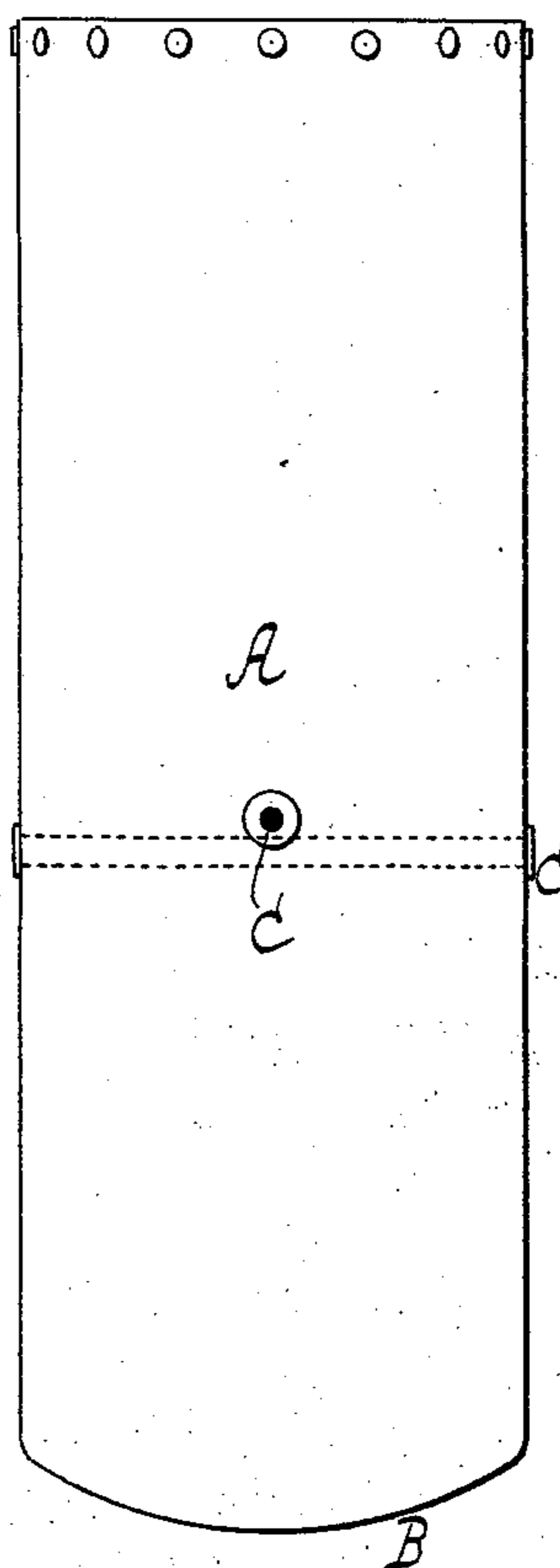
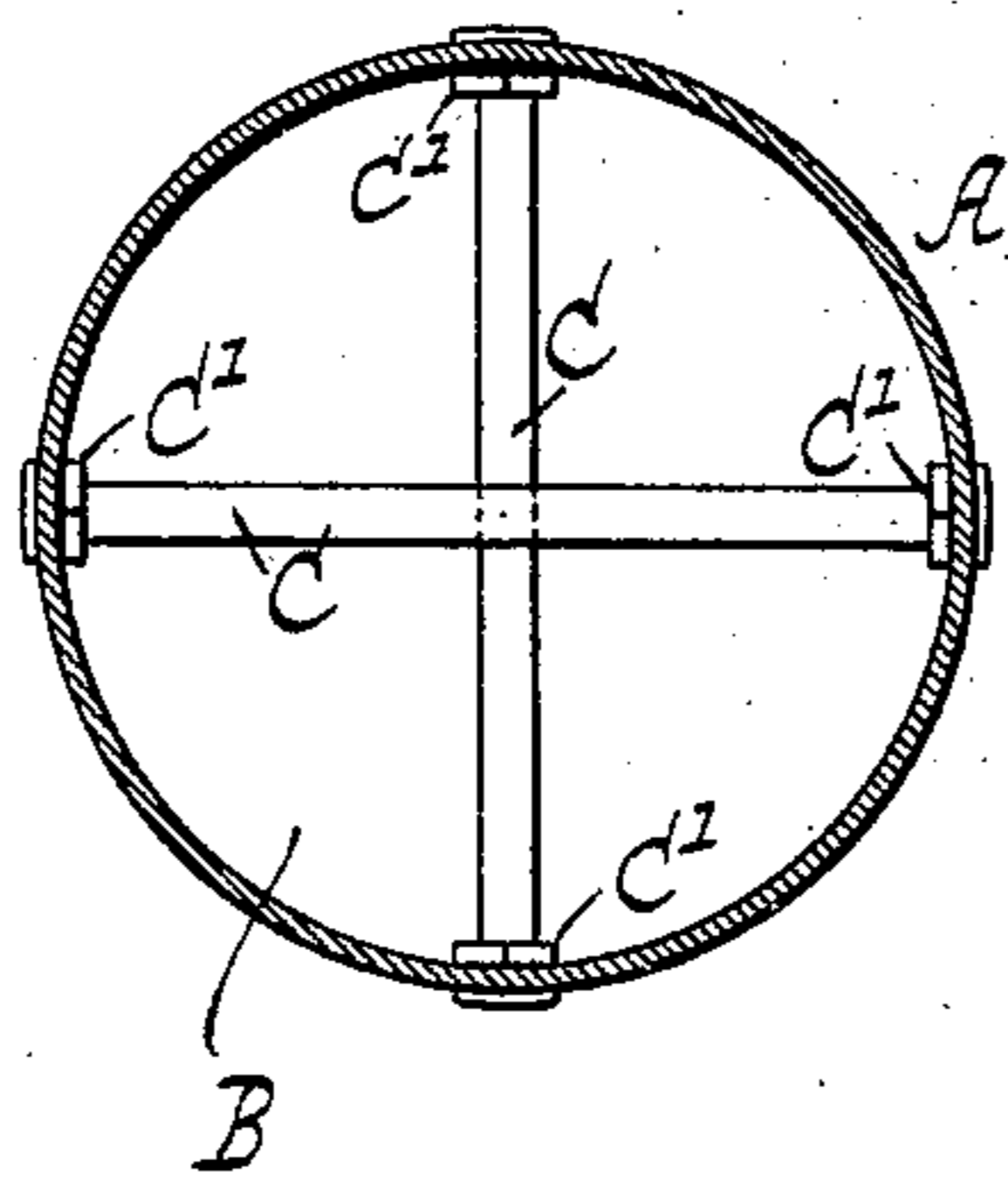


Fig. IV



WITNESSES:

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UNITED STATES PATENT OFFICE.

RICHARD S. SAYER, OF ENGLEWOOD, NEW JERSEY, ASSIGNOR TO THE
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PISTON FOR AIR-ENGINES.

SPECIFICATION forming part of Letters Patent No. 540,460, dated June 4, 1895.

Application filed December 10, 1894. Serial No. 531,399. (No model.)

To all whom it may concern:

Be it known that I, RICHARD S. SAYER, a citizen of the United States, and a resident of Englewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Pistons for Air-Engines, of which the following is a specification.

My invention relates especially to the construction of the "exchange" or "transfer" piston of what is known as the Ericsson hot-air engine, and generally used for pumping purposes.

The piston referred to, is composed essentially, of a hollow cylinder of metal, as, sheet steel, which is closed at one end (where it is exposed to the action of the hot-air in the engine) by what may be termed a main or permanent head, usually of convex shape, and closed at the other end by a secondary attached head, substantially flat, serving to connect the exchange piston to the "working" piston and other parts.

The object of my invention is to obtain such results as may be attributable to the structure hereinafter described and illustrated in the accompanying drawings, in which—

Figure I is a partial side view and partial vertical section of a hot-air engine, showing the connections of the exchange and working pistons. Fig. II is a longitudinal section of the exchange piston detached, showing my invention. Fig. III is a side view thereof. Fig. IV is a cross-section thereof in the plane of the line $x x$, Fig. II.

Similar letters of reference indicate similar parts.

The letter A indicates the side portion or body of the piston-cylinder and B the main head thereof, formed, integral, of a single piece of sheet steel or other proper metal; suitable dies being employed for bringing the same into the required shape.

The letter C indicates the transverse air-circulation tubes, in this example, two in number, open at both ends exteriorly of the cylinder; these tubes being preferably riveted at such ends and fitted with nuts C' interiorly of the cylinder, to produce an air tight joint.

The letter D indicates the secondary head of the cylinder, located at the end thereof opposite to the main head B; this secondary head being attached to the cylinder and to it being connected the piston-rod e , (Fig. I) forming one of the working parts of the engine.

The piston, as used in the Ericsson engine, is generally supplied at its upper part, farthest from the main head B and hot-air space, with a filling of cotton or other fibrous material, and below such filling with a stratum or box of charcoal, or similar material, as indicated in the drawings; but these features form no essential part of my invention.

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

1. A piston for an air engine comprising a hollow metal cylinder and a transverse tube or tubes therein, open at both ends exteriorly of the cylinder, to afford a uniform distribution of air around the cylinder, substantially as shown and described.

2. A piston for a hot air engine comprising a hollow metal cylinder which is formed in one piece integral with the main head at one end thereof, and a transverse air tube or tubes open at both ends exteriorly of the cylinder, substantially as and for the purpose herein described.

RICHARD S. SAYER.

Witnesses:

CHARLES G. COE,
CHAS. WAHLERS.