

(No Model.)

A. BERNEY.
Saddle and Stack for Locomotives.
No. 238,273. Patented March 1, 1881.

FIG. I.

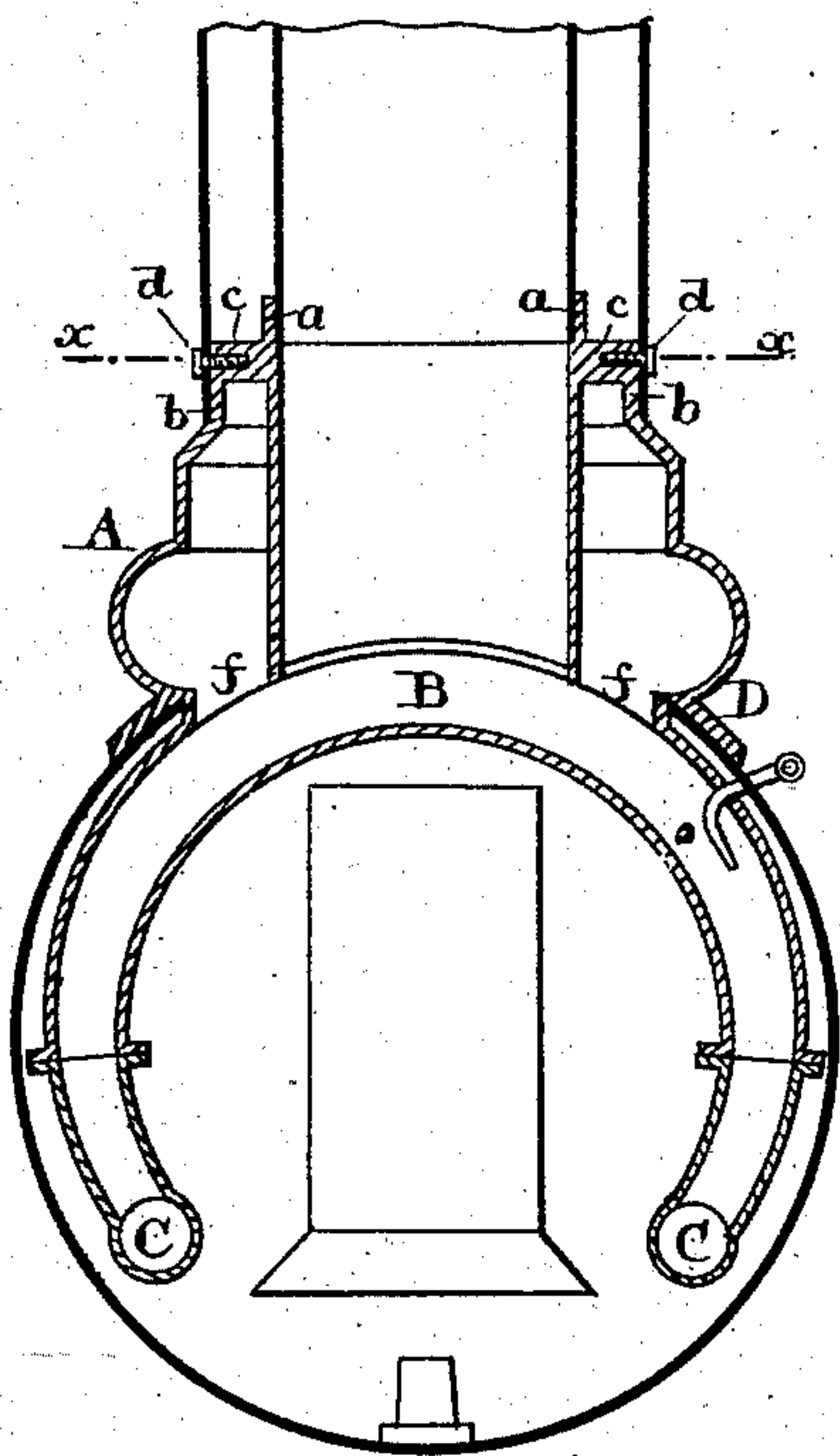


FIG. II.

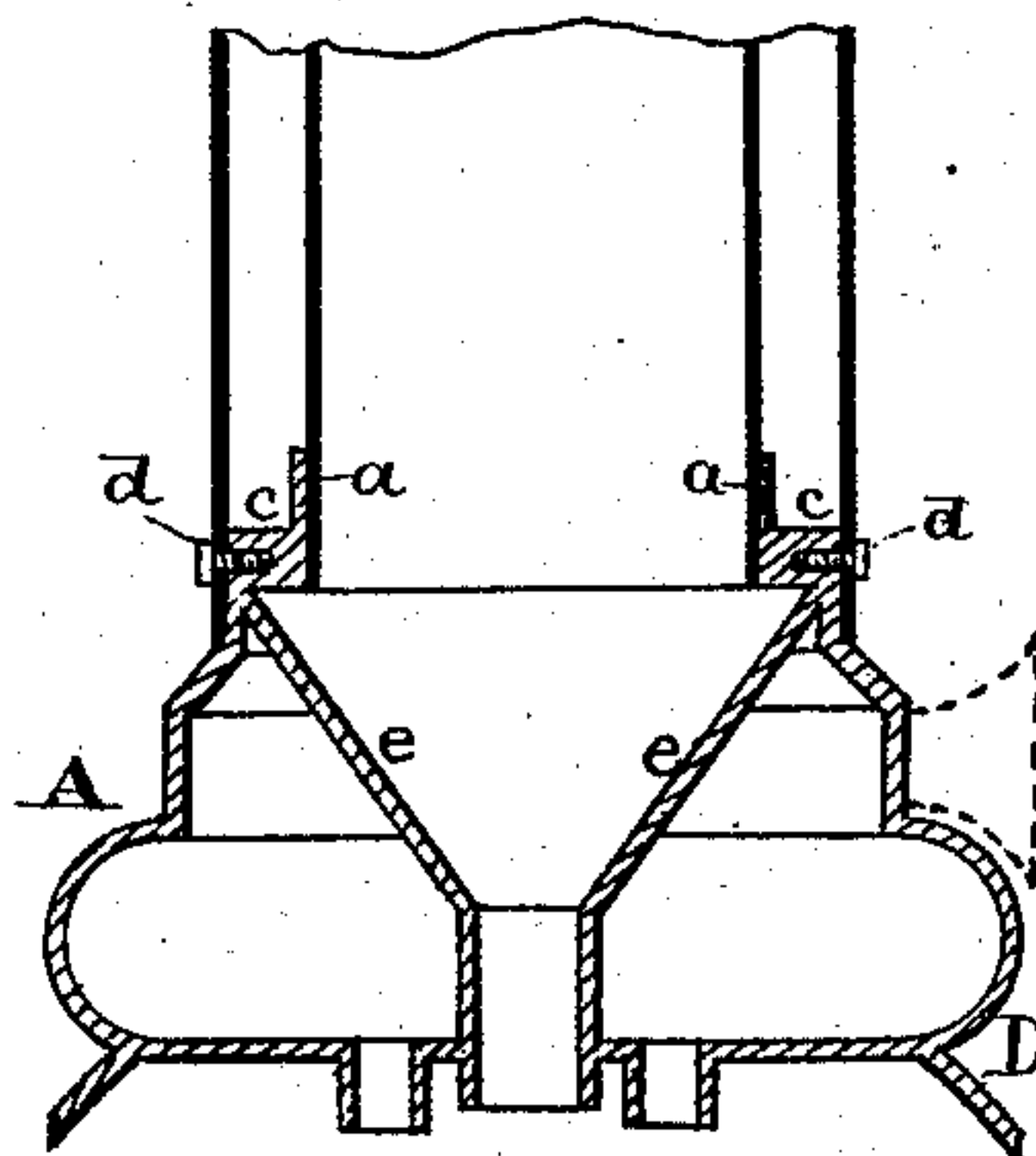


FIG. IV.

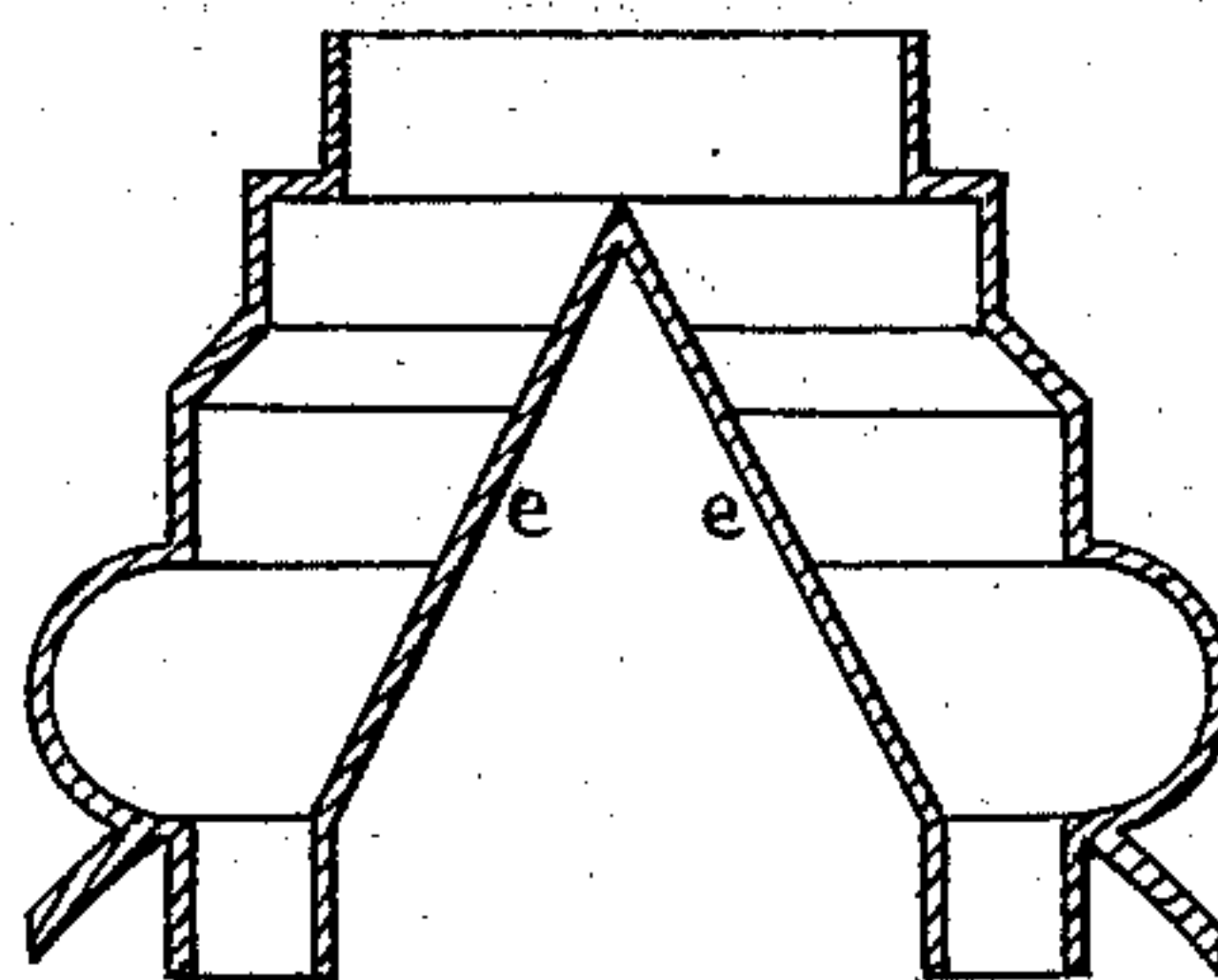


FIG. III.

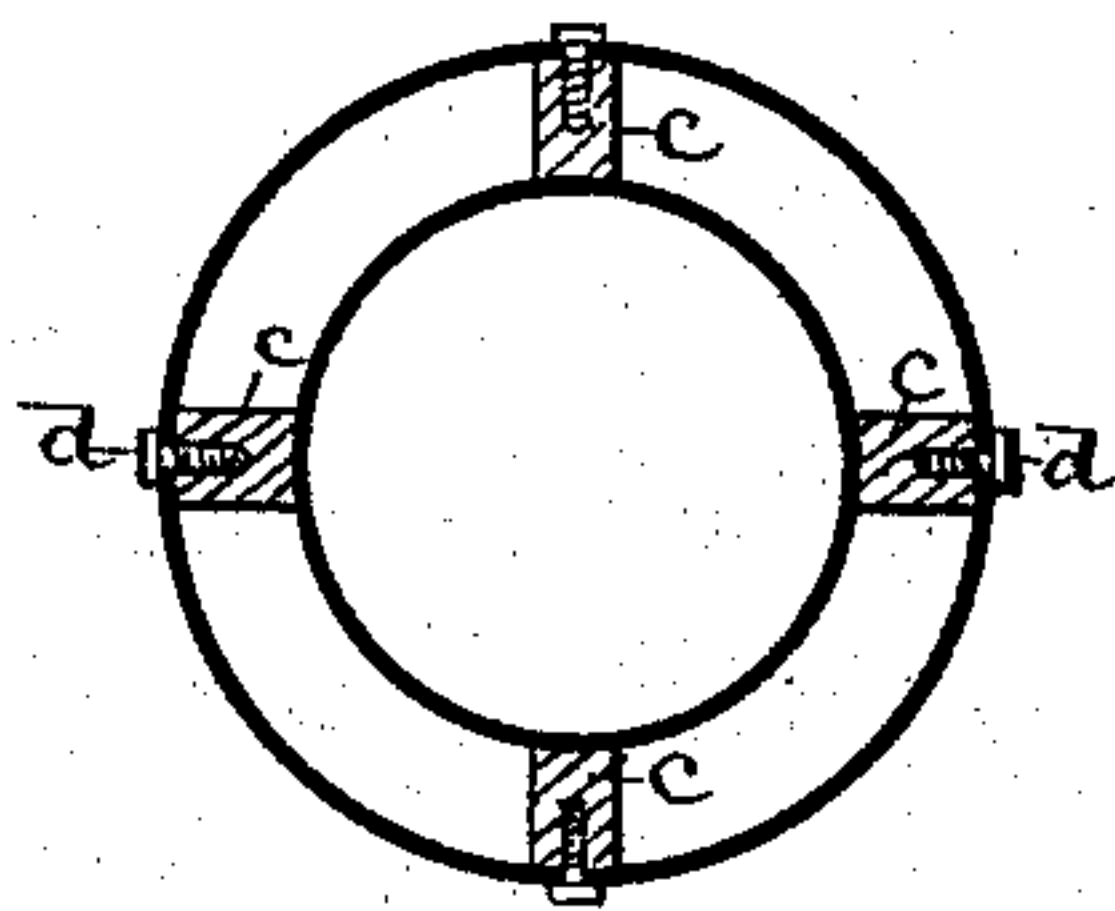


FIG. V.

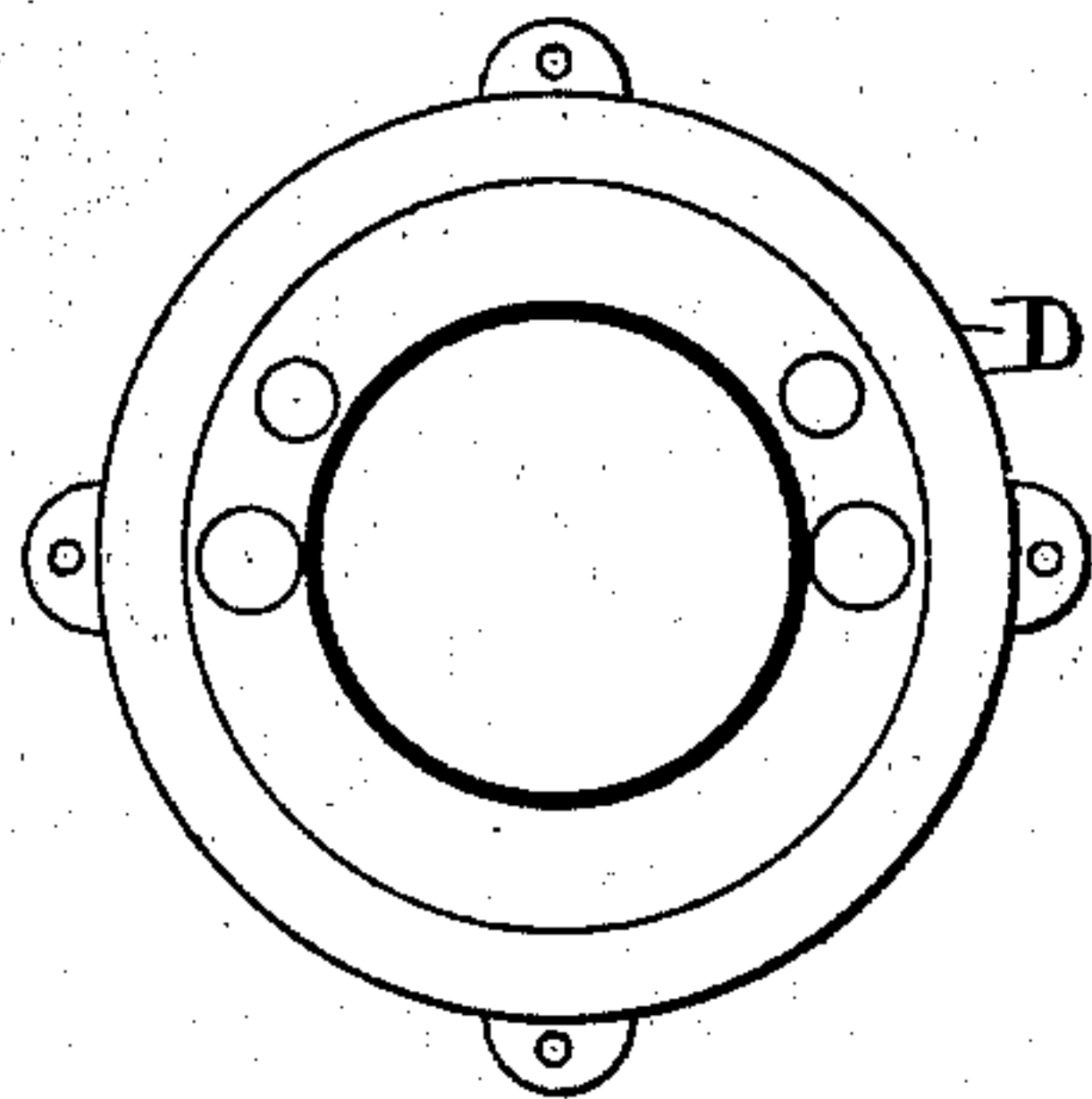
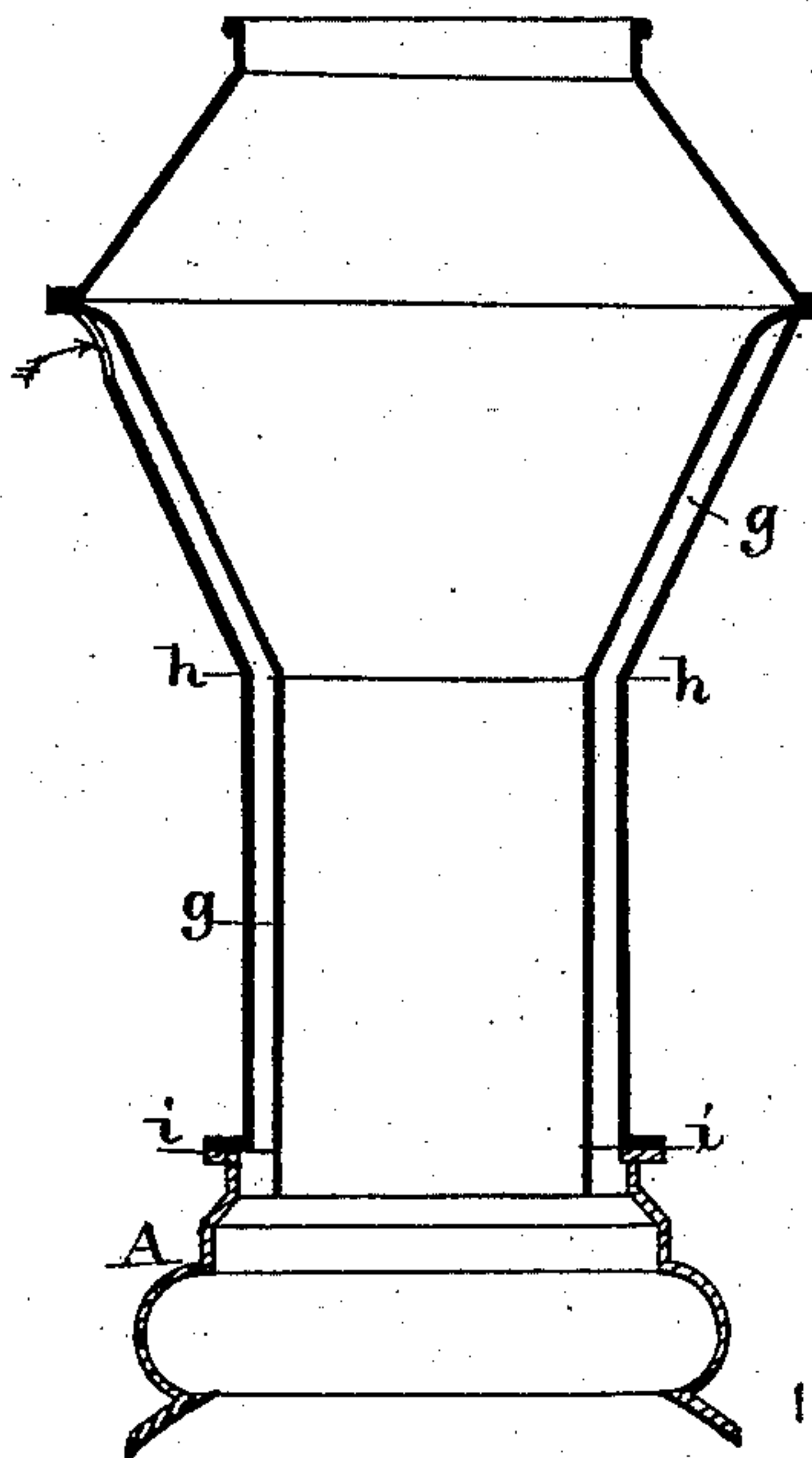


FIG. VI.



WITNESSES:

For my witness
Robert Ward

INVENTOR.

Alfred Bernay

UNITED STATES PATENT OFFICE.

ALFRED BERNEY, OF BOSTON, MASS., ASSIGNOR TO THE GLOBE COMPANY
AND THE SPARK AND WASTE COMPANY, BOTH OF HARTFORD, CONN.

SADDLE AND STACK FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 238,273, dated March 1, 1881.

Application filed September 28, 1880. (No model.)

To all whom it may concern:

Be it known that I, ALFRED BERNEY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Saddles and Stacks for Locomotives, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in saddles and stacks for locomotive, portable, fire, or stationary boilers; and the object is to form a heating-chamber in the stack or saddle, by which the air to be used in the furnace is heated, and also for conducting the sparks arrested in the stack back to the furnace, and, by being heated, prevent chilling of the fire. The air-chamber is to be connected in any suitable manner to pipes with receptacles or the fire-box, or to any other place desired. As is well known, the smoke-arch, saddle, and stack are very hot when in use, and as it is desirable to consume or prevent smoke and sparks and aid proper combustion with heated air and steam, to force it to the furnace, it can be in a great measure avoided by this invention.

The invention consists in forming in the saddle or stack a hollow chamber for the reception of air to be heated by the products of combustion passing through it.

It also consists in forming inclines or conduits leading to openings to be connected with suitable pipes in the saddle.

It also consists in the construction and arrangement of certain other parts, as will be more fully described hereinafter, reference being had to the accompanying drawings, in which—

Figure I is a vertical cross-section of a saddle connected to a heating-chamber in the smoke-arch. Fig. II is a vertical section, showing the inclines toward the outlets. Fig. III is a section on line *x x* of Fig. I. Fig. IV is a section of a modification of saddle. Fig. V is

a top view of the outside collar. Fig. VI is a vertical section of stack with annular air-chamber and saddle.

In the drawings, A represents a saddle for a locomotive-boiler, which may be made as ornamental as desired, and is preferably cast of iron. The upper part of the stack is provided with a flange, *a*, to which the inner barrel of the smoke-stack is secured, while the outer barrel is secured to the flange *b*. The inner shell of the saddle extends down to the smoke-arch, and forms between it and the outer molded part an air-chamber connecting with the annular chamber between the inner and outer barrels. The two parts are held the proper distance apart by four lugs, *c*, into which the bolts *d*, that secure the outer barrel, are tapped. In the annular space are arranged two inclines or guides, *e*, leading to the openings *f*, one on each side, which are to connect either with heating-chamber B in the smoke-arch, which leads to the return-flues C, or directly with pipes connected to the return-flues. The outer collar, D, is provided with four lugs, by which the saddle is secured to the smoke-arch. The chamber B may be extended the entire width of the smoke-arch, so as to give a large amount of heating-surface, and, being placed in the annular space in the forward part of the smoke-arch under the stack, is entirely out of the way. It does not interfere in any way with the door usually employed in the front of the smoke-arch for getting at the interior of the arch or the petticoat-pipe or exhaust-tips.

Another modification of saddle is shown in Fig. IV, in which the inclines are shown in reverse direction of those shown in Fig. II.

If desired, the inclines or conduits may be dispensed with, and the saddles thus form only an annular air-heating chamber, the air from which may be used to assist in the combustion of the fuel.

In the modification shown in Fig. VI an annular air-heating chamber, *g*, may be employed extending to the upper end of the stack, and to create a better circulation of air in said chamber, one or more steam-jets, *o*, may be employed. The cylindrical parts from *h* to *i* of the inner and outer barrels may be cast

separate and provided with flanges, so as to be bolted onto saddle, or they may be cast in one piece.

5 If desired, one or more openings may be made in the saddle itself, to admit air directly into the chambers without losing heat in the stack, and a funnel or screen placed over it.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, 10 is—

1. A saddle for smoke-stacks provided with one or two chambers for heating the air admitted thereto, as and for the purpose specified.

15 2. A saddle for smoke-stacks, with or without an annular chamber for heating the air, provided with inclines or conduits, substantially as shown, and for the purpose set forth.

20 3. A saddle for smoke-stacks having an annular air-chamber and connected to an air-chamber arranged in the smoke-arch, substantially as shown and described.

4. A saddle for smoke-stacks provided with an annular air-chamber connected to an air-chamber arranged in the smoke-arch, and connected to return-flues, substantially as shown 25 and set forth.

5. A saddle for smoke-stacks having an annular chamber connected to return-flues leading to the furnace, and provided with one or 30 more steam-jets, substantially as and for the purpose specified.

6. A saddle for smoke-stacks provided with one or more air-heating chambers and one or more openings to allow the air to be admitted 35 thereto, as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED BERNEY.

Witnesses:

GEO. M. MILLER,
ROBT. GUARD.