

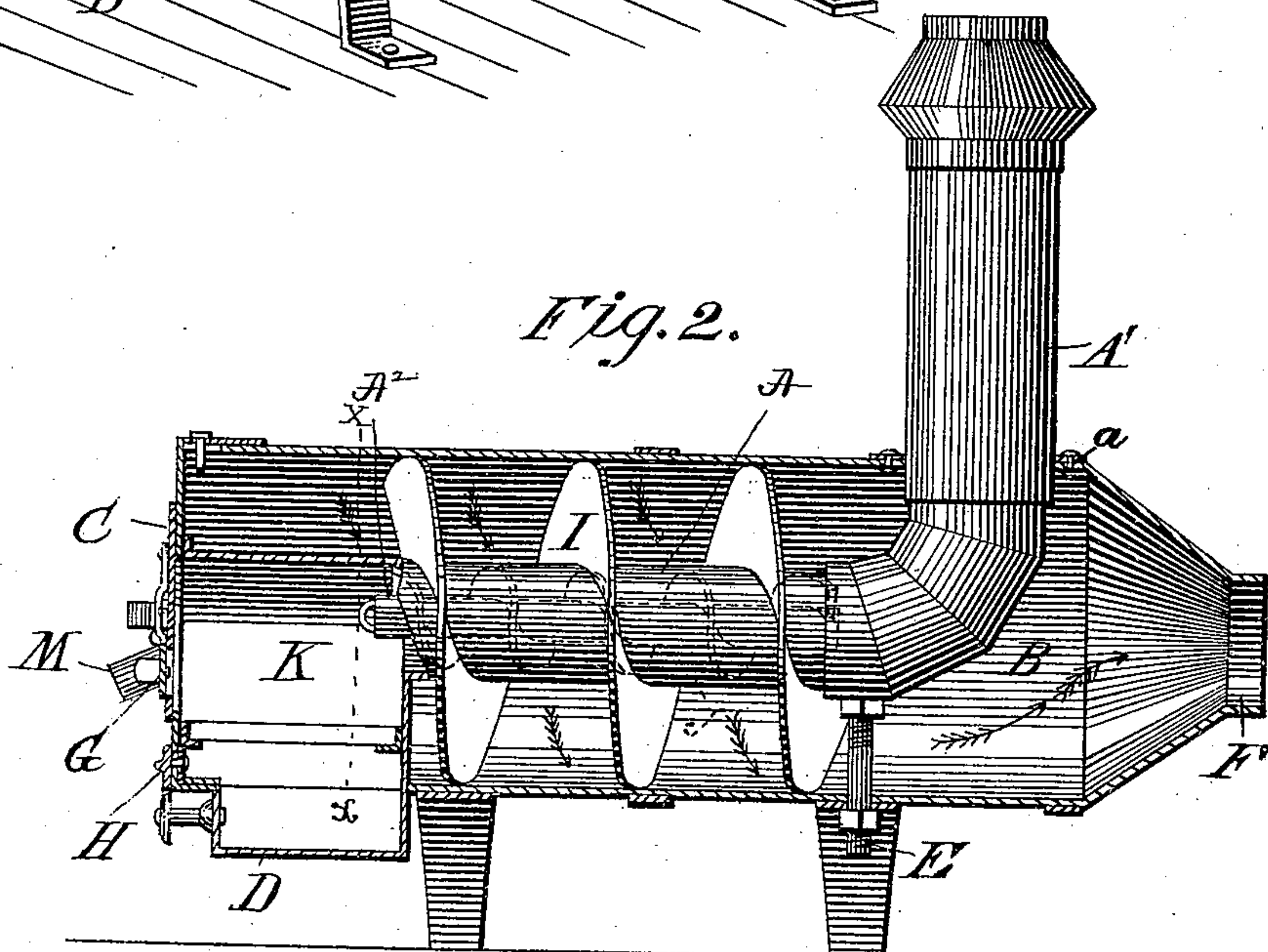
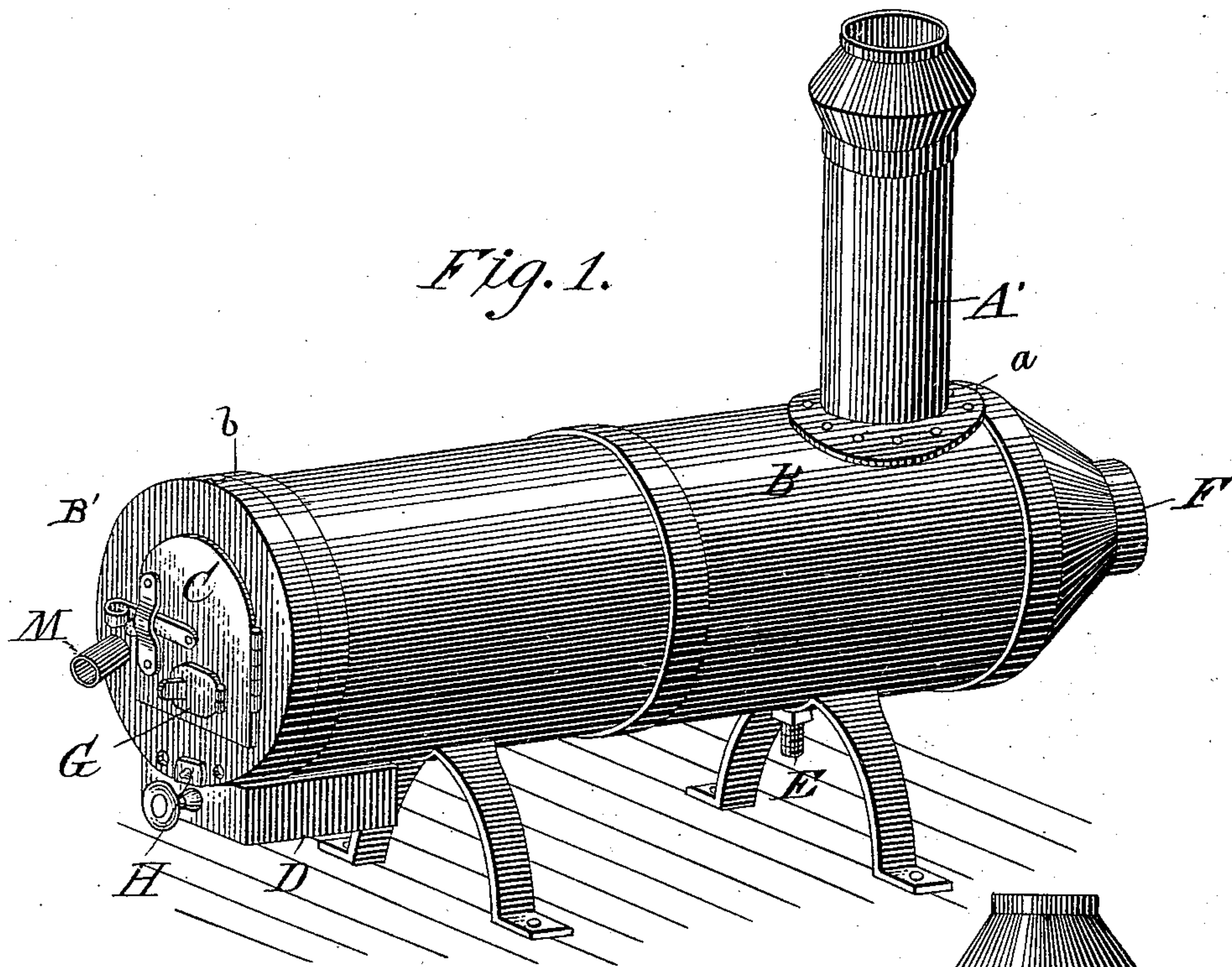
(No Model.)

2 Sheets—Sheet 1.

P. C. HOYT.
HOT AIR FURNACE.

No. 446,222.

Patented Feb. 10, 1891.



Witnesses:
Chas. Warren
Geo. A. Ford

Inventor.

Peter C. Hoyt

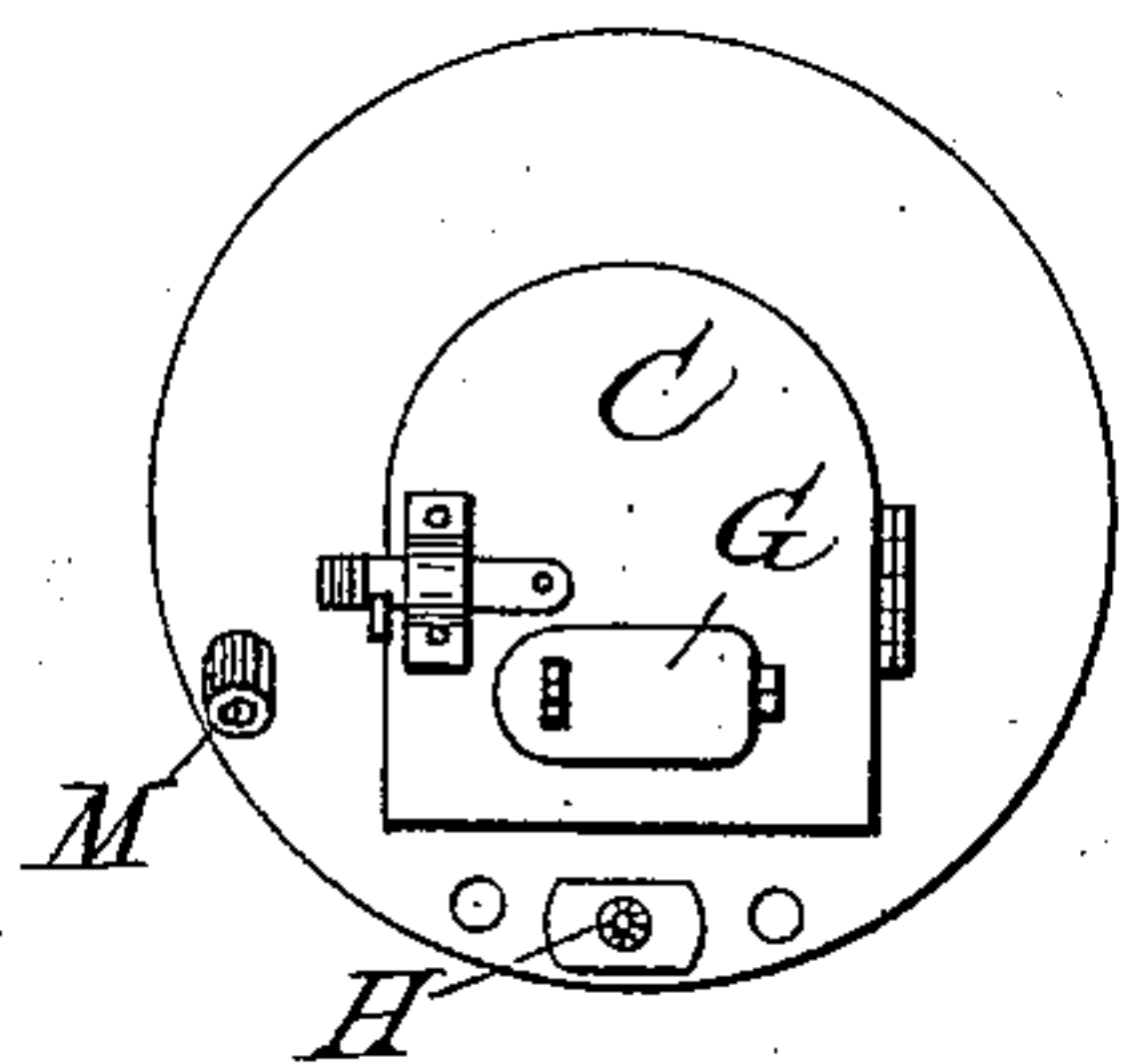
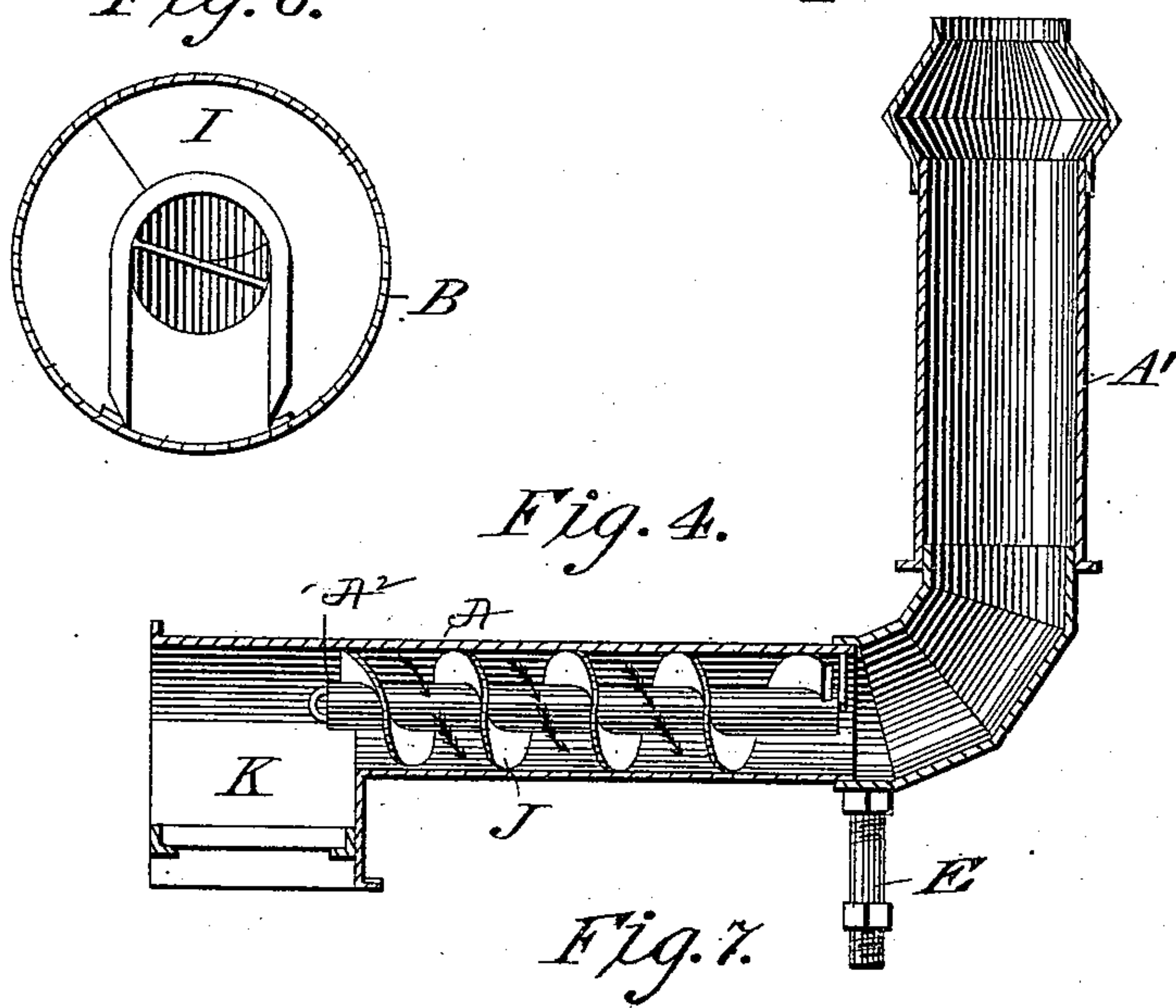
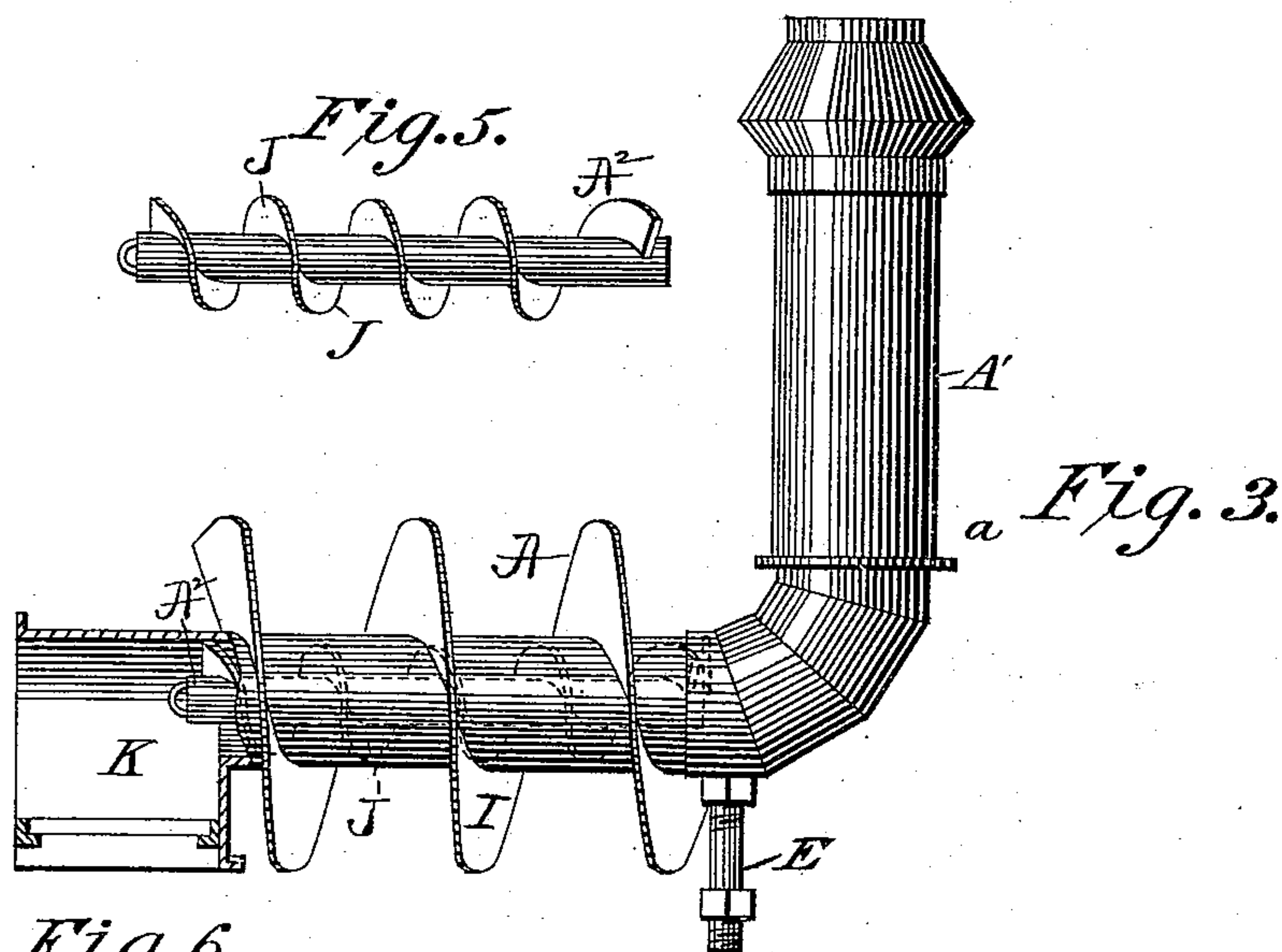
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2 Sheets—Sheet 2.

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No. 446,222.

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Witnesses:
H. A. Warren
J. S. Ford.

Inventor:

Peter C. Hoyt

UNITED STATES PATENT OFFICE.

PETER C. HOYT, OF WATSEKA, ILLINOIS.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 446,222, dated February 10, 1891.

Application filed June 6, 1889. Serial No. 313,535. (No model.)

To all whom it may concern:

Be it known that I, PETER C. HOYT, a citizen of the United States, residing at Watseka, in the county of Iroquois and State of Illinois, have invented certain new and useful Improvements in Hot-Air Furnaces; and I do 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.

My invention relates to improvements in hot-air furnaces; and it consists in the construction, novel combination, and adaptation of parts hereinafter described and claimed, and particularly pointed out in the claims.

The improvements will be fully understood from the following description and claims, when taken in connection with the annexed drawings, in which—

Figure 1 is a perspective view of my improved furnace. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a side elevation of the radiating-cylinder, the spiral flange thereon, and the smoke-pipe, the spiral flange on the inside of smoke-pipe being illustrated in dotted lines and the fire-chamber in vertical section. Fig. 4 is a vertical longitudinal sectional view of the fire-chamber and smoke-pipe, the interior cylinder and its spiral flange being shown in elevation. Fig. 5 is a side elevation of the interior cylinder and spiral flange removed from the smoke-pipe. Fig. 6 is a transverse sectional view taken on the line xx of Fig. 2. Fig. 7 is a front elevation of the exterior cylinder, illustrating the fire-door, the respective dampers, and the cold-air opening.

In carrying out my invention it is obvious that I may employ any suitable material in the construction of the furnace, and that the same may be of any size and form suitable to the requirements placed upon it; but I prefer to construct the device of sheet metal and in the form and proportional size, as illustrated.

The device may be mounted upon any approved foundation; but for convenience and cheapness I prefer to employ the arch-standards illustrated, which serve every purpose.

The exterior cylinder B of my improved furnace, which is attached to the standards in any suitable manner, as by bolts, is reduced,

as illustrated, at its forward end, and provided with a flange or collar F to receive the hot-air flue for the transmission of the heated air to the respective apartments of a dwelling.

In the top of the cylinder B and adjacent to its reduced end I form an opening for the passage of a smoke-pipe, and for the purpose of strength and durability I surround this opening with a re-enforcing annulus a , which is secured to said cylinder in a suitable manner.

The front end or head B' of the cylinder B is provided with a flange b , which takes over the end of the cylinder and is secured thereto by suitable bolts. This head B' is provided with a door-opening adapted to be closed by the door C, which is hinged to said head. The hinged door C is also provided with a door-opening for the introduction of fuel into the fire-box, and this interdoor-opening is provided with a door G, which is hinged to the face of the door C.

At a lower point in the face of the head B', I provide a draft-opening, which may be closed by a pivoted door H or other suitable device.

The fire-chamber K of my furnace is of a construction as better illustrated in Fig. 6, and is a separate apartment from the interior of cylinder B, whereby the cold air is allowed to enter and pass through the said cylinder without mingling with the smoke and gas of the fire-chamber. This chamber K is provided at a suitable point of altitude with a grate of any approved construction and at its bottom below said grate with an ash pan or box D, as illustrated.

A fire or radiating cylinder A leads from the inner wall of the fire-chamber at the top thereof forwardly a sufficient distance and takes into the end of the smoke-pipe A', which is of a slightly larger diameter than said cylinder, and which rests upon a support or standard bolt E, and is attached thereby to the bottom of the cylinder. The smoke-pipe A' is elbowed at a point in advance of its connection with the radiating-cylinder and rises up through the annular opening in the top of cylinder B, as illustrated.

In the interior of the cylinder A, I place another cylinder or tube A² of a length similar to cylinder A and which carries a spiral flange

J of a width to extend to the wall of cylinder A, whereby the smoke and gas from the fire-chamber are retarded and the radiation upon the exterior surface of the cylinder consequently increased, thus enabling it to thoroughly heat the cold air, which is retarded and carried around the surface of said cylinder by a spiral flange I, attached thereto, which is of a width to extend to the inner wall of the cylinder, and which extends the entire length of cylinder A.

M indicates the cold-air-induction tube, which is placed in the head C at a point to one side of the fire-chamber and by means of which the cold air is fed into cylinder B.

In operation, when a fire has been started in the fire-chamber cold air is forced by a blower or other means through pipe M into the cylinder B, where it is guided and retarded around and upon the radiating-cylinder by the flange I, and finally it is discharged through the opening at F and conveyed by flues to the respective apartments to be heated.

In the placement of the spiral flange-carrying tube within the cylinder A it will be seen that the hot smoke and gas are retarded and the radiation from the surface of the cylinder consequently increased, and by reason of the construction of this tube carrying the flange J and the fact that it is not fastened in the cylinder A it will be seen that the same may be readily removed when desired and the flange cleaned of all soot and dirt, when it may be replaced in a convenient manner without the exercise of mechanical skill.

It is obvious that the construction of the

several elements of my furnace may be materially altered without departing from the spirit of my invention.

Having described my invention, what I claim is—

1. The combination, with a hot-air furnace having a fire-chamber arranged therein and a radiating-cylinder connecting said chamber with a smoke-pipe, of the cylinder arranged within the radiating-cylinder, provided with a spiral flange upon its exterior extending to the wall of said radiating-cylinder and adapted to be readily removed and replaced therein, substantially as and for the purpose specified.

2. The combination, with the outer cylinder having a closed fire-chamber arranged therein and provided with an air-induction opening at one end and a discharge at the other end, of the radiating-cylinder connecting the fire-chamber with the smoke-pipe and provided upon its exterior with a spiral flange, whereby the cold air is retarded about the same and the spiral flange arranged within the radiating cylinder, whereby the heat is retarded and the radiation increased, said flange within the radiating-cylinder being adapted to be readily removed and replaced, whereby the said cylinder may be cleaned of soot and the like, substantially as and for the purpose specified.

In testimony whereof I hereunto affix my signature in presence of the two witnesses whose names are subscribed below.

PETER C. HOYT.

Witnesses:

C. C. GILBERT,
H. A. WARREN.