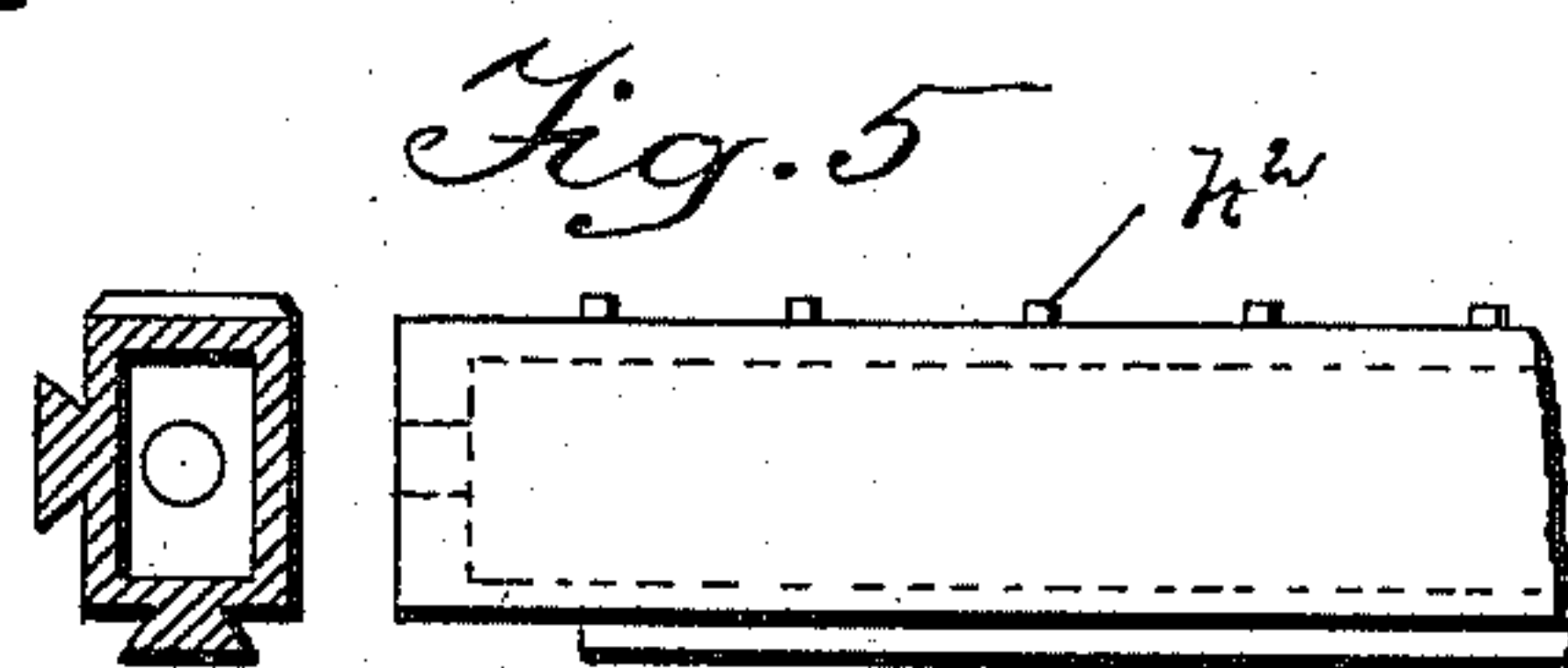
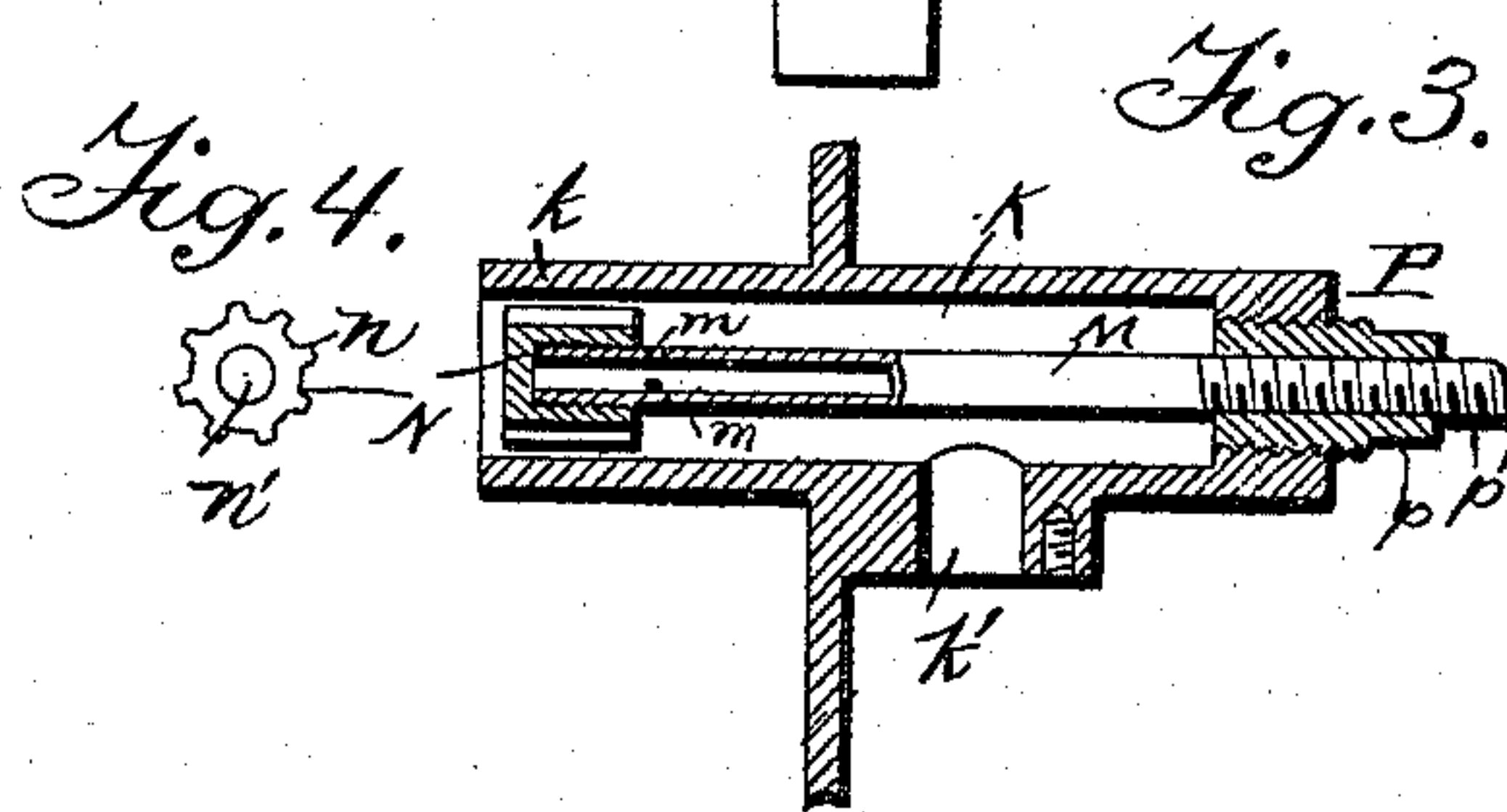
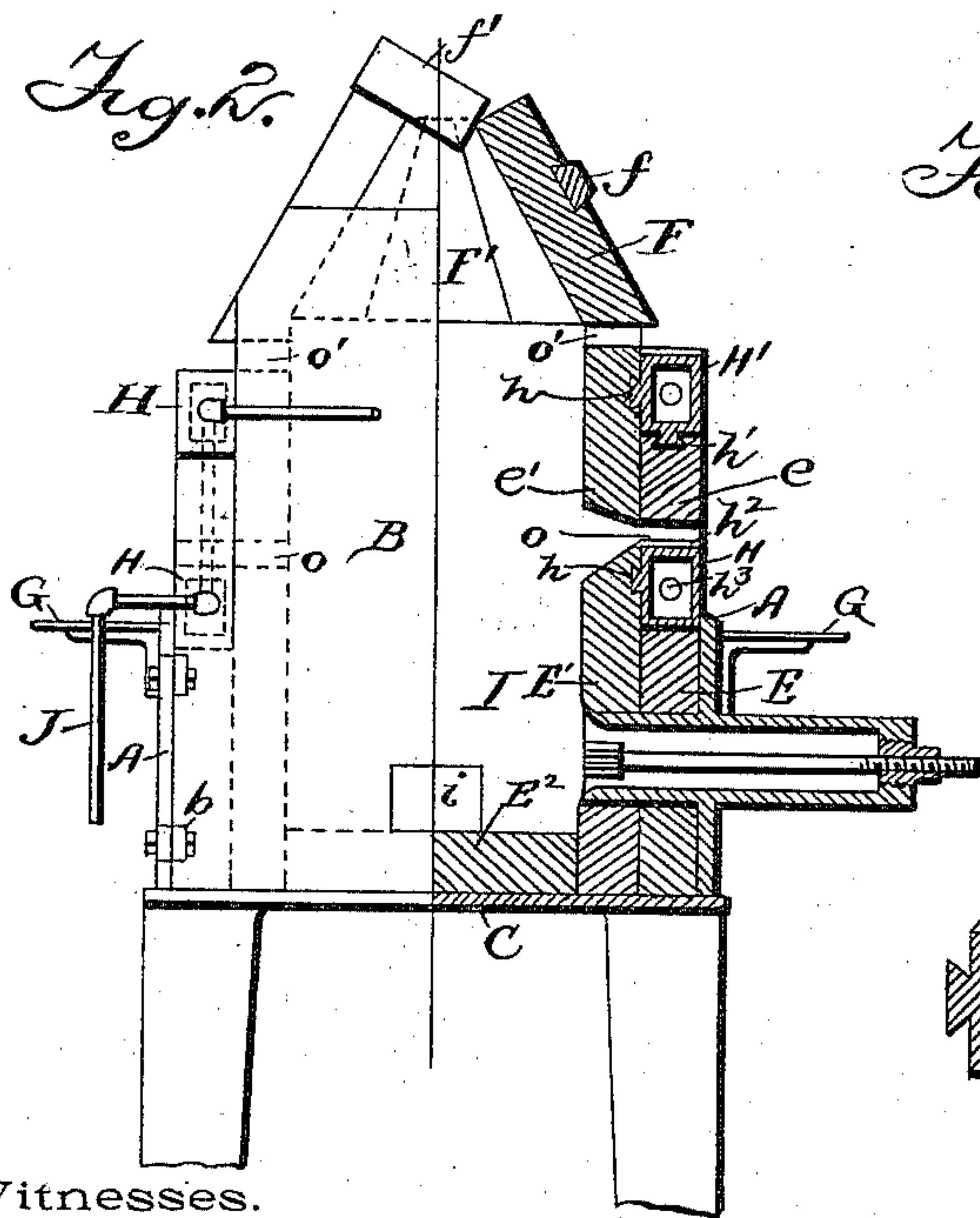
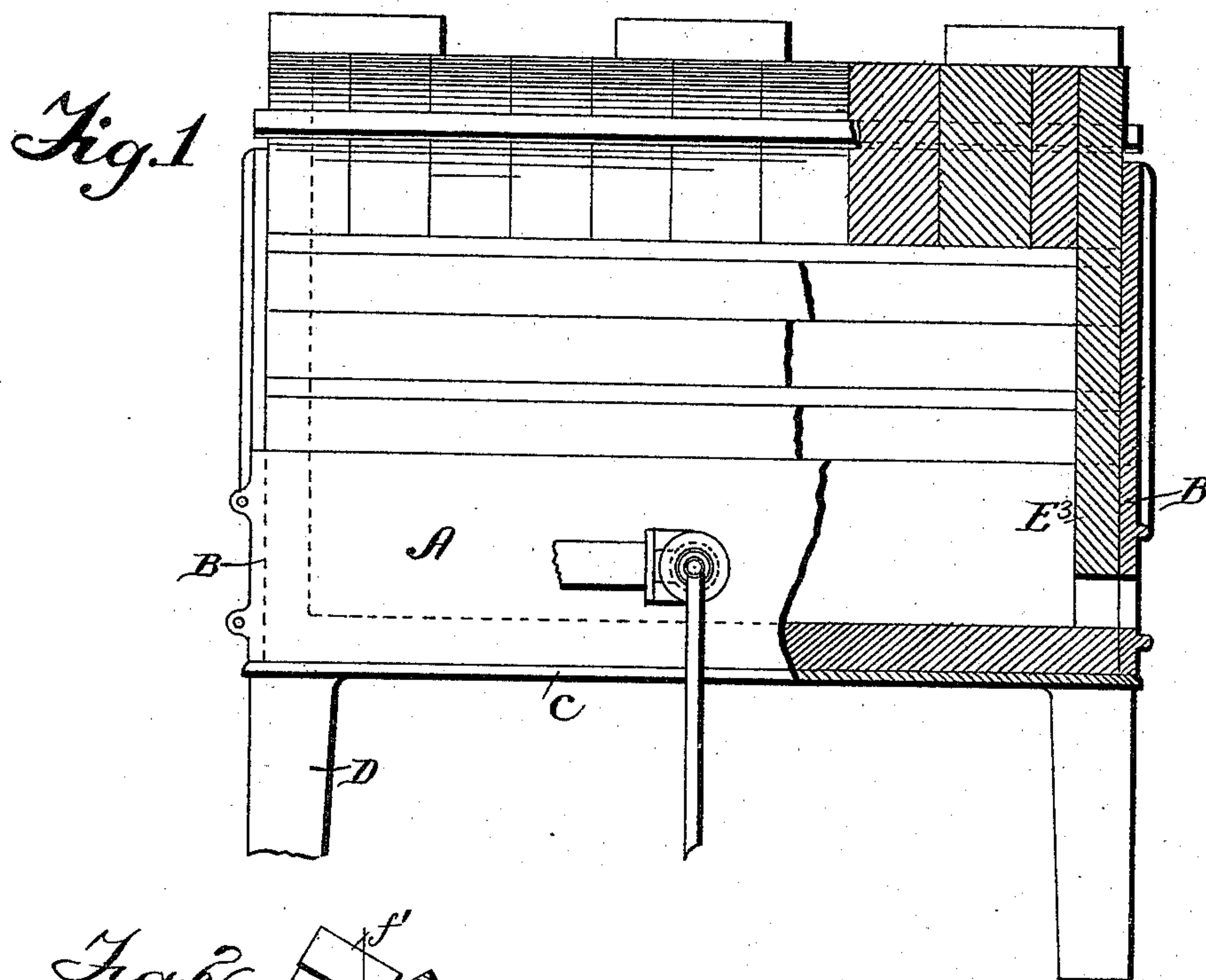


(No Model.)

H. E. AUMAN.
BLANK FURNACE AND BURNER.

No. 573,126.

Patented Dec. 15, 1896.



Witnesses.

H. M. Stewart

A.B. DeGger

Inventor.

Harvey E. Auman

By J. H. Newcomb

Attorney:

UNITED STATES PATENT OFFICE.

HARVEY E. AUMAN, OF READING, PENNSYLVANIA.

BLANK FURNACE AND BURNER.

SPECIFICATION forming part of Letters Patent No. 573,126, dated December 15, 1896.

Application filed July 24, 1896. Serial No. 600,438. (No model.)

To all whom it may concern:

Be it known that I, HARVEY E. AUMAN, a citizen of the United States, residing at Reading, county of Berks, State of Pennsylvania, have invented certain Improvements in Blank Furnaces and Burners, of which the following is a specification.

My invention relates to hydrocarbon-furnaces; and it consists in certain improvements in details and also in the general construction and arrangement of the furnace, which are fully described in connection with the accompanying drawings and specifically set forth in the claims.

Figure 1 is a front elevation, partly in longitudinal section, of my improved furnace with burner attachment. Fig. 2 is an end elevation of the same, partly in cross-section. Fig. 3 is an enlarged sectional view of the burner, and Fig. 4 is a separate view of the spraying-tip for same. Fig. 5 shows the chill in partial elevation and in cross-section.

The fire-box I is formed by means of front and rear plates A A and end plates B B, which are preferably clamped together by means of lugs b b, and a bottom plate C, supported upon legs D D, the interior being lined throughout with fire-brick. These latter form a layer E² upon the bottom plate C and also a lining E³ for the end plates B B, extending to the top of the furnace. The front and rear plates A A are lined with a layer of brick E, upon the top surface of which are supported similar cast-iron chills H H, upon which the blanks to be heated are placed, ribs h² being provided thereon, as usual, to properly space the blanks. These chills in the front and rear walls of the furnaces are placed at somewhat different heights, so that blanks may be inserted into the fire-box in opposite directions and extend past each other without coming in contact. As shown in the drawings, two of these chills are employed in each wall, so as to enable two series of blanks to be heated simultaneously both at front and rear. These are located one above the other, and each top chill H' is formed with a dovetail rib h' on the bottom face, by means of which a layer of fire-brick e is suspended therefrom, the lower face of which forms the top of the lower feed-opening or blank-hole o. Similar dovetail ribs h h are also provided on the inner faces

of the chills for the purpose of positively attaching thereto inner layers e' E' of fire-brick, which prevent contact of the fire with the chill. The top blank-holes o' o' are covered by two series of fire-brick F, which are united by iron bars f f, dovetailed therein, and which are inclined toward each other, so as to form a contracted top opening for the final escape of the products of combustion, this outlet being further reduced, as desired, by suitably placed cover-bricks f'. Water or other cooling medium is constantly circulated through the whole series of chills by means of piping J, connected to the ends thereof.

The front plate A of the fire-box has formed integral therewith an air-chamber K, which forms the body of a hydrocarbon-burner. The inner portion k of this body extends through the fire-brick lining of the furnace, while the projecting outer portion is provided with a side air-inlet k', to which a blast-pipe may be attached, and with a perforated head or outer end through which the oil is introduced. An adjustable plug P, having a squared end p, screws into this head and is itself interiorly screw-threaded to receive the burner-pipe M, which projects therefrom centrally through the air-chamber K to near the inner extremity of the same. A separate piece of pipe p', which forms a nipple for the connection of the oil-supply pipe, also screws into the plug P from the exterior.

The inner end of the pipe M is screw-threaded for the attachment of a spraying-tip N. This is merely a cylindrical cap which loosely enters the air-chamber K and is interiorly screw-threaded to fit the pipe and provided with axial ribs n on its outer surface. The pipe M is provided with openings m near the inner face of the spraying-tip, through which the oil fed into the pipe finds its only outlet into the chamber K between the spraying-tip and the blast-inlet k'. The ribbed tip then forms an obstruction in the annular outlet from the chamber K into the fire-box, through which the escaping oil is forced by the air-blast with which it is thus thoroughly blended before ignition at the mouth of the burner. The flame thus produced is spread throughout the fire-box and is effective in heating blanks introduced at one or all of the holes o o' o' before escaping at the contracted

top of the furnace. There is no possibility of oil escaping from the air-chamber K, and the chills H H' are thoroughly protected, so as to last indefinitely. The fire-box may be
5 thoroughly cleaned, when required, by opening the end holes i.

What I claim is—

1. A blank-furnace, comprising a rectangular fire-chamber, a burner entering the same,
10 chills supported upon bricks, the inner faces of said chills being formed with ribs, bricks having grooves receiving said ribs, a second series of chills, situated above the other chills and having ribs on both their inner and lower
15 faces, bricks supported by said ribs on the inner and lower faces of the latter chills, the bricks pendent from the upper chills and the top surfaces of the lower chills being relatively located to provide open spaces between
20 them, and the walls of the chamber being formed with inlets to said spaces, and inlets to the spaces above the upper chills.

2. A blank-furnace, comprising end plates B, B, front and rear plates A A clamped to
25 said end plates, a bottom plate, a fire-brick lining for said end and bottom plates, brick layers for the front and rear plates, chills supported on said layers and having ribs on their inner faces, bricks having grooves receiving
30 said ribs, a second series of chills, situated above the other chills and formed with ribs on both their inner and lower surfaces, bricks supported by said ribs, the bricks pendent from the upper chills being located relatively

to the lower chills to provide open spaces between them, fire-bricks forming the top of the chamber and inclined toward each other to form a contracted top opening, the bottoms of the latter bricks being located relatively
35 to the tops of the upper chills to provide open spaces above the latter, cover-bricks for reducing the size of the contracted top opening, inlets to the spaces above the chills, and a burner entering the chamber, substantially
40 as described. 45

3. A blank-furnace, comprising end and front and rear plates, one of said plates being formed integral with a tube extending inward into the fire-chamber and outward beyond said plate, said tube forming the body
50 of a hydrocarbon-burner and being formed with a lateral inlet at a point outside the wall of the fire-chamber, a burner-pipe extending through said tube and having spraying means, fire-bricks forming linings for the inner walls
55 of the furnace, said bricks being arranged around the inner projecting end of said tube, and chills supported at different points and lined on their inner surfaces by said bricks, said bricks being arranged to provide open
60 spaces above the chills and said walls being formed to provide inlets to said spaces.

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

HARVEY E. AUMAN.

Witnesses:

W. G. STEWART,
F. PIERCE HUMMEL.