

(No Model.)

J. A. CLINTON.
DRAFT PRODUCER.

No. 560,475.

Patented May 19, 1896.

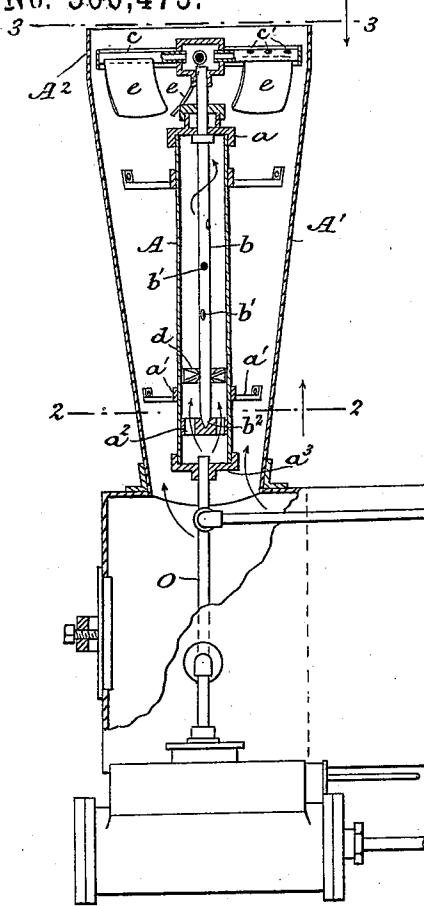


Fig. 1.

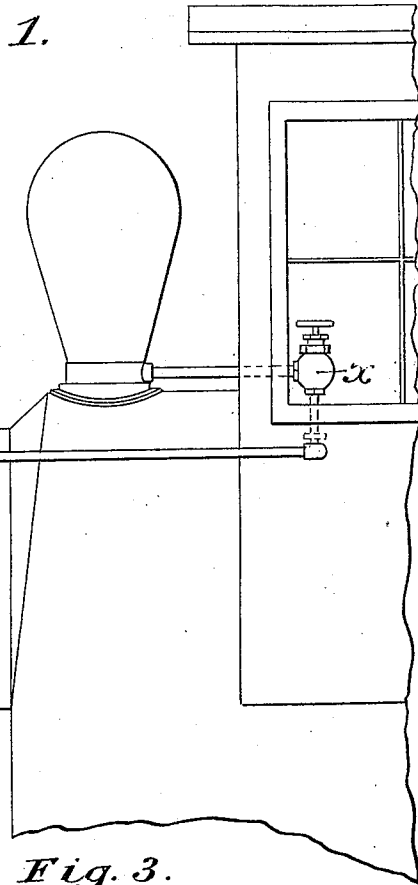
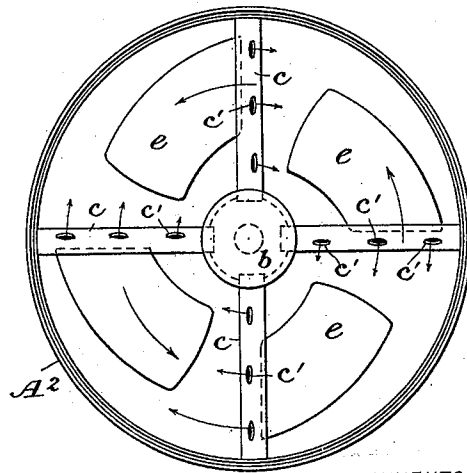
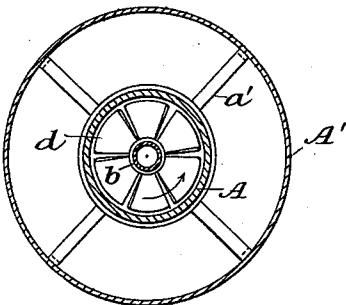


Fig. 3.

Fig. 2.



WITNESSES:

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DRAFT-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 560,475, dated May 19, 1896.

Application filed August 10, 1895. Serial No. 558,943. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. CLINTON, a citizen of the United States, residing in Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Draft-Producers, of which the following is a specification.

My invention relates to draft-producers, and has for its object the construction of an improved mechanism for creating a heavy and regular draft in engine-furnaces.

Referring to the accompanying drawings, Figure 1 is a sectional view of the smoke-stack of an engine, showing my invention applied thereto. Fig. 2 is a plan view of the same, taken from the top and showing the fan-beaters; and Fig. 3 is a similar view taken from the bottom, showing the propeller-wheel and arrangement of fastening the device to the smoke-stack.

A represents a cylinder, which is adapted to be placed bodily in a smoke-stack A' of any ordinary construction, but preferably one provided with an enlarged portion A² at its upper end. The invention is shown herein as applied to the smoke-stack of an engine where it may be operated by the exhaust-steam; but it is to be understood that it is preferred to operate it with live steam from the boiler, the latter giving far better and different results than heretofore attained. The upper end of the cylinder A is closed by a cap a, and near the lower end of the cylinder are arranged supporting-arms a', which meet in a common center piece, which is so constructed as to form a bearing-surface a². The cylinder A is closed at its lower end by a cap-piece a³. The steam-supply pipe O enters the cylinder through this cap-piece a³. An upright hollow shaft b, closed at its lower end and sharpened to a point b' or otherwise arranged for turning in the bearing-surface a² at the center of the supporting-arms a', extends upward through the bearing in cap a and at its upper end carries a plurality of horizontally-projecting arms c. The arms c are hollow, but closed at their outer ends, and the upper end of shaft b is closed, so that it opens only into each arm c c, &c. Shaft b, at one or more points below cap a, is pierced by inlet-holes b' b', and each horizontal arm c is pierced in one or more places, preferably three, as shown by outlet-holes c'

c' c' on the side of the arm. The purpose of these holes will presently more fully appear. Upon the lower end of shaft b, immediately above the supporting-arms a', is mounted a screw propeller-wheel d, which fits within the interior of the cylinder A, whereby when steam passes through the latter the wheel will be rotated and motion imparted to shaft b and horizontal arms c. Wings e e are hung upon the upper end of shaft b immediately below the horizontal arms. These wings are shaped somewhat similarly to the blades of a propeller, and are placed upon the shaft for the purpose of creating a draft when the shaft is rotated, and are placed below the horizontal arms for the reason that the air and products of combustion will be given an upward impetus, which is greatly increased by the steam from the outer holes c' c' in the manner hereinafter described.

In operation the device is placed preferably within the smoke-stack, as shown, and live steam from the boiler introduced into the lower end of the cylinder A by means of a suitable steam-supply pipe O, which may take the steam from any desired part of the boiler. This causes propeller-wheel d to revolve, which rotates shaft b and arms c c c. After the steam has passed the propeller-wheel d it has no escape from the cylinder A except through inlet-holes b' b' in shaft b, and thus passes through the hollow shaft b and into the hollow horizontal arms c c c and out through the outlet-holes c' c' c' in the latter. The holes c' c' c' are so arranged in the horizontal arms c c c with reference to the wings e e that the steam in escaping from the holes greatly assists in creating an upward draft at the top of the stack. The upward escape of the steam causes a blast and vacuum, which is aided by the draft created immediately under it by the wings e e.

The above device will when applied to an engine create a powerful and regular blast in the furnace, and can easily be regulated by regulating in any usual manner the amount of steam introduced therein for operating it. I have shown in the drawings an ordinary cut-off valve x for regulating the steam introduced into the device for operating it; but any other equivalent device may be used instead thereof.

In the drawings I have shown the cylinder A as secured to the smoke-stack A' by means of the arms A³, projecting outwardly and laterally from the top and bottom of the cylinder A to the sides of the smoke-stack A', to which said arms are secured by rivets; but it may be secured in place in any other preferred way without departing from the spirit of my invention.

10 Having thus described my invention, I claim—

1. In combination, the stack, an upright hollow shaft having inlet-openings therein, hollow arms projecting from the upper ends of the shaft and having outlet-openings, wings connected to the shaft, and a steam-supply pipe leading to the stack for rotating the shaft with its wings and arms.

2. In combination, the stack, the rotary draft-producing device consisting of the radial arms having outlet-openings, and wings, and a steam-supply pipe leading thereto, substantially as described.

3. In combination, the stack, the cylinder

in the same closed at the top and bottom, the perforated shaft in said cylinder, the arms at the top of the shaft having outlet-openings, the propeller on the shaft and the steam-supply pipe leading into the cylinder, substantially as described.

4. The combination of a stack, a cylinder within the stack, cap-pieces closing the ends of the cylinder, a rotatable hollow shaft arranged upon suitable bearings within the cylinder its upper part passing through the top cap of said cylinder and terminating in hollow arms arranged outside said cylinder, a screw propelling-wheel mounted upon said shaft, the said hollow shaft having inlet-openings and the hollow arms having outlet-openings, and wings attached to the shaft, substantially as shown and described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JAMES A. CLINTON.

Witnesses:

DANL. JANEWAY,

ARTHUR L. SHERER.