

No. 652,964.

Patented July 3, 1900.

H. H. HUFF.
AUTOMATIC BLOWER.
(Application filed Nov. 6, 1899.)

(No Model.)

2 Sheets—Sheet 1.

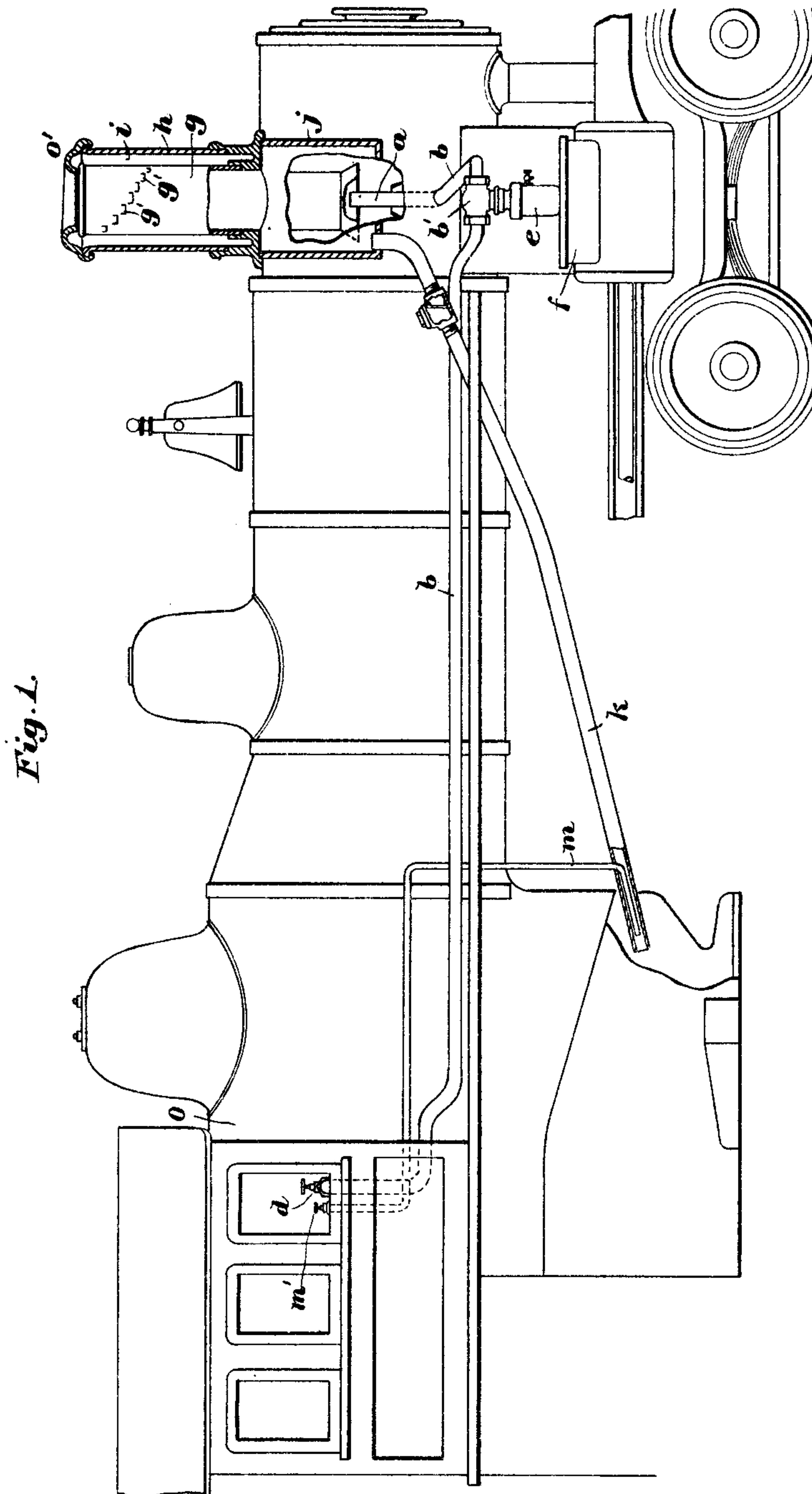


Fig. 1.

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Inventor:
H. H. Huff
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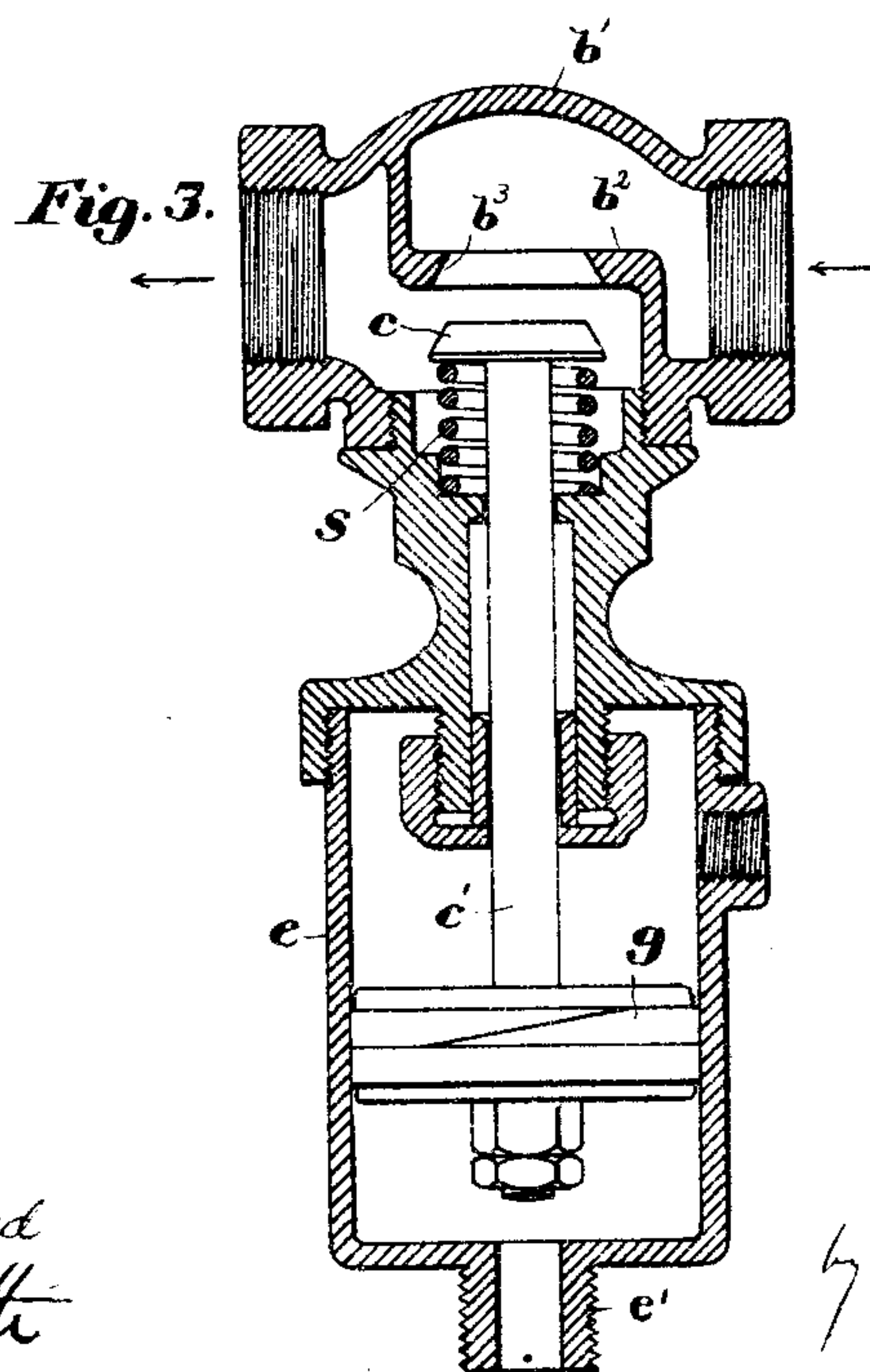
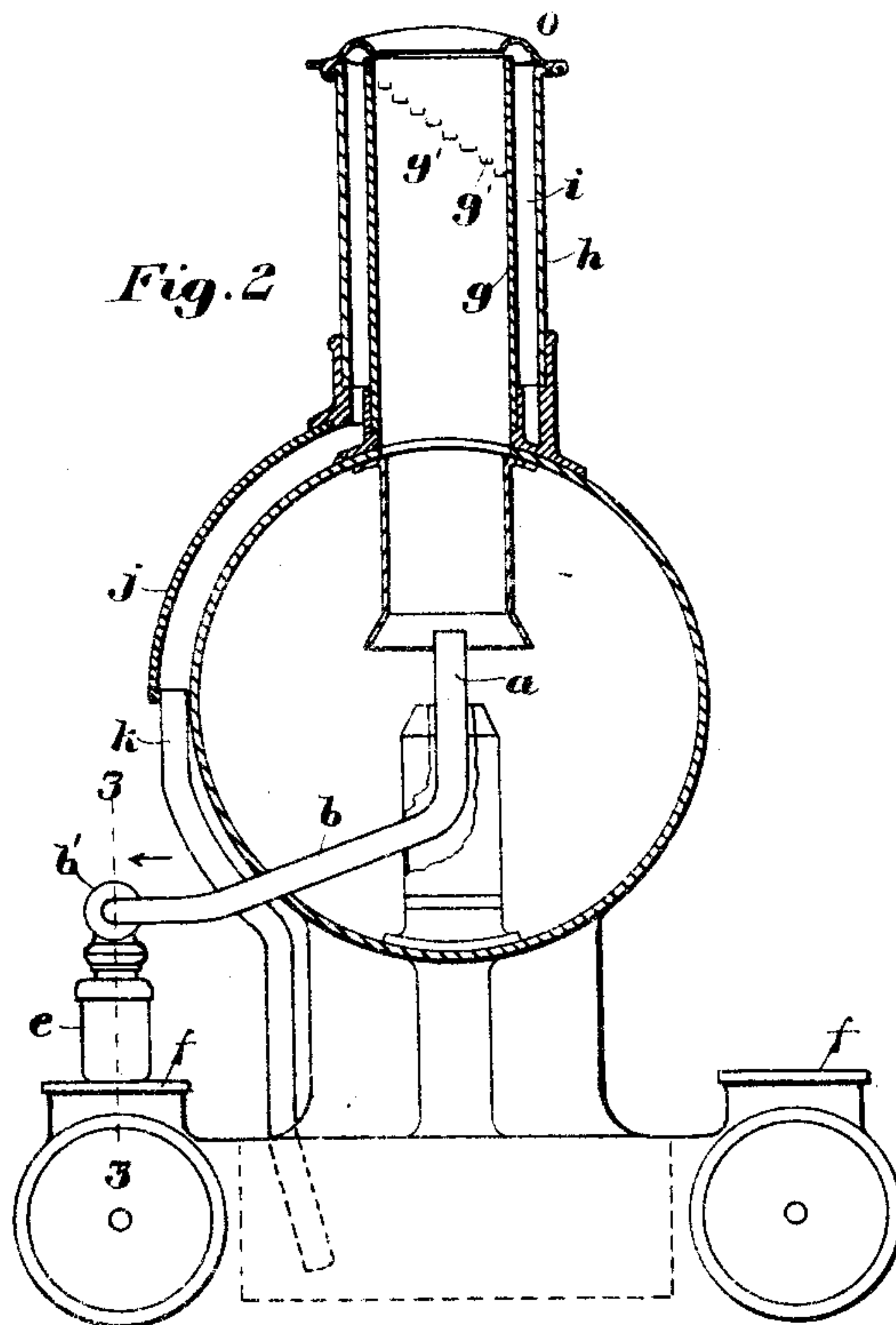
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2 Sheets—Sheet 2.



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Inventor:
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UNITED STATES PATENT OFFICE.

HENRY H. HUFF, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS
TO ARTHUR D. CURRAN, OF SAME PLACE, AND SMITH P. BURTON, JR.,
OF READING, MASSACHUSETTS.

AUTOMATIC BLOWER.

SPECIFICATION forming part of Letters Patent No. 652,964, dated July 3, 1900.

Application filed November 6, 1899. Serial No. 735,902. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. HUFF, of Boston, (Dorchester,) in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Automatic Blowers, of which the following is a specification.

This invention has for its object to provide automatic means for creating a forced draft in a locomotive when steam is shut off from the steam-chests of the cylinders, so that the exhaust cannot be utilized for this purpose.

The invention consists in a locomotive having a blower-nozzle, a conduit connecting it with the boiler, and means controlled alternately by pressure in a steam-chest of the locomotive and by pressure in the boiler for alternately closing and opening said conduit, the arrangement being such that when the locomotive is running under steam the conduit is kept closed by steam-pressure in one of the steam-chests, draft being supplied in the usual way by the exhaust from the cylinders, but when steam is shut off from the steam-chest the conduit is opened by the boiler-pressure and steam is supplied to the blower.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation showing portions of a locomotive provided with my improved automatic blower. Fig. 2 represents a front elevation of the same. Fig. 3 represents an enlarged section on line 3 3 of Fig. 2.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents a blower-nozzle located as usual in the smoke-box of a locomotive.

b represents a conduit connecting the nozzle *a* with the boiler *o*, so that when said conduit is open steam passes from the boiler to the blower-nozzle *a*. The conduit *b* is preferably provided with a valve *d*, arranged to be operated from within the cab, whereby the conduit may be closed when the automatic supply of steam from the boiler to the nozzle *a*, as hereinafter described, is not de-

sired. Said valve ordinarily remains open, however.

The conduit *b* includes a valve-casing *b'*, having a partition *b''*, containing a valve-seat *b'''*, to which is fitted a valve *c*. Said valve is arranged so that it can be forced from its seat by steam-pressure in the conduit.

e represents a cylinder connected by a pipe *e'* with one of the steam-chests *f* of the locomotive. A piston *g*, fitted to move in said cylinder, is attached to or bears against the stem *c'* of the valve *c*. There is a constant pressure of steam from the boiler on the valve *c*, tending to open it; but as the area of the piston exposed to steam-pressure in the steam-chest is greater than the area of the surface of the valve exposed to the steam-pressure in the conduit and as the piston is arranged so that the steam-pressure against it tends to close the valve *c* it follows that while steam is admitted to the steam-chest the valve will be held closed and when steam is shut off from the steam-chest the valve yields to and is opened by the steam-pressure in the conduit. It will be seen, therefore, that the conduit *b* is alternately closed by steam-pressure in the steam-chest and opened by steam-pressure in the boiler, the blower-nozzle being thus automatically connected with and shut off from the boiler. A spring *s* is arranged to cushion the valve when it is opened by the boiler-pressure, thus preventing a shock or jar when the valve is opened.

I do not limit myself to the means here shown for causing the steam-pressure in the cylinder to close the conduit, as any other suitable means may be employed for this purpose without departing from the spirit of my invention.

I have here shown the smoke-stack *g* of the engine surrounded by a casing *h*, between which and the stack is an annular chamber *i*. The stack is provided with numerous small perforations, over each of which is an inclined lip or flange *g'*. Said perforations connect the interior of the stack with the chamber *i*, and the lips *g'* guide or deflect into the perforations the cinders, sparks, and particles

of coal that are forced through the stack by the exhaust and by the blower *a*. The said cinders, &c., in their upward course pass along close to or in contact with the inner surface of the stack in position to be deflected by the lips *g'* and caused to pass through the perforations in the stack and thus enter the chamber *i*. The lips *g'* and the perforations are arranged helically, so that the cinders moving along the inner surface of the stack cannot pass upwardly between the lips. It will be seen, therefore, that a considerable percentage of the cinders, &c., that enter the smoke-stack are deflected into the chamber *i*, from which they fall into a receptacle *j* at one side of the smoke-box. A pipe *k* extends from the receptacle *j* to the ash-pit of the fire-box or other suitable receptacle and conducts the cinders to the latter. To induce a flow of cinders, a small steam-pipe *m* is introduced into the pipe *k* near its delivery end and discharges a jet of steam in the direction required to exhaust the cinders from the pipe *k*, said pipe *m* being connected with the boiler and provided with a valve *m'*. An annular cover *o* closes the upper end of the chamber *i*.

I claim—

1. A locomotive having a blower-nozzle, a conduit connecting it with the boiler, and means controlled alternately by pressure in a steam-chest of the locomotive, and by pres-

sure in the boiler, for alternately closing and opening said conduit.

2. In a locomotive, the combination of a blower-nozzle, a steam-conduit connecting said nozzle with the boiler, a valve adapted to control the said conduit, and means acted on by steam-pressure in a steam-chest of the locomotive, to hold the valve in its closed position, the valve and its closing means being adapted to yield to the steam-pressure in the boiler and permit the passage of steam to the blower when steam is shut off from the steam-chest.

3. In a locomotive, the combination of a blower-nozzle, a steam-conduit connecting said nozzle with the boiler, a valve arranged to close said conduit against the boiler-pressure therein, a cylinder communicating with a steam-chest of the locomotive, and a piston in said chamber connected with the said valve, the steam-pressure in the steam-chest acting on the piston to hold the valve closed until steam is shut off from the steam-chest, when the piston and valve yield to the boiler-pressure and permit steam to pass to the blower.

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

HENRY H. HUFF.

Witnesses:

C. F. BROWN,

GEO. M. CARPENTER.