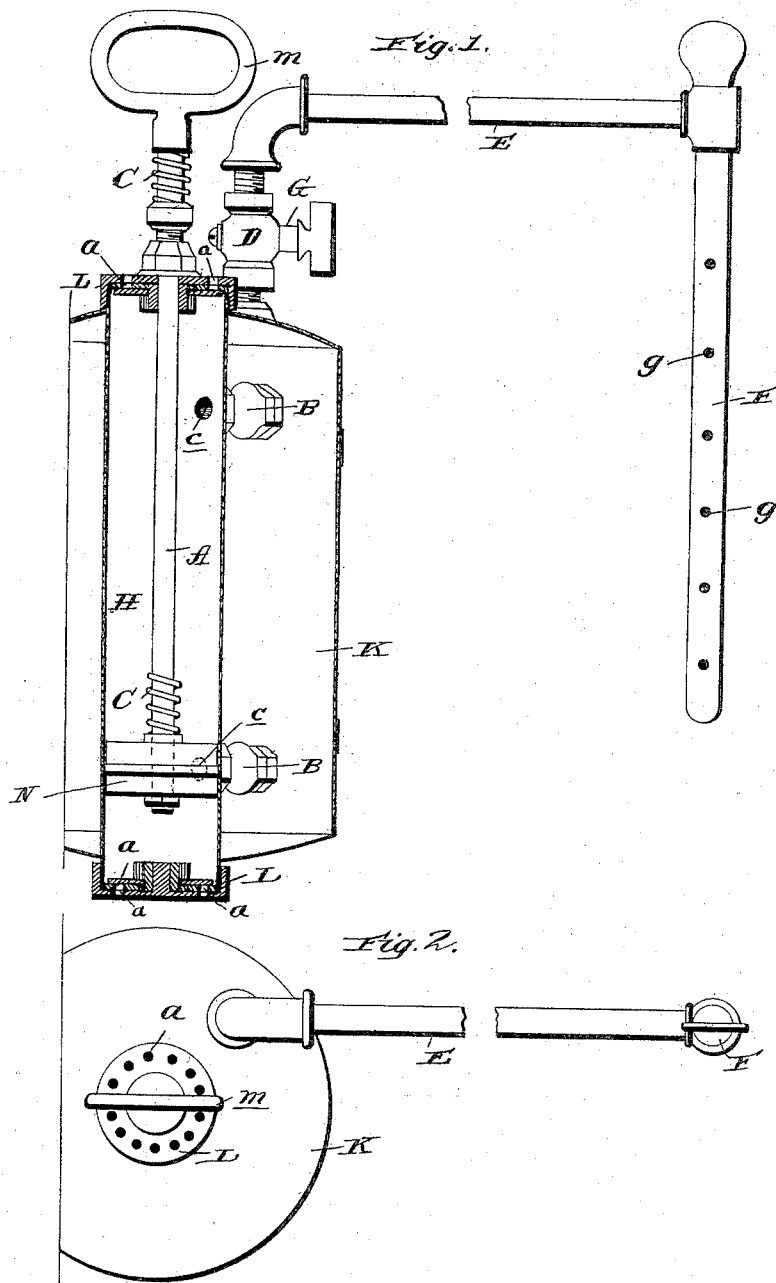


G. S. BOYLER & F. ROTHWELL.
AIR PUMP ATTACHMENT FOR STOVES OR FURNACES.

No. 493,967.

Patented Mar. 21, 1893.



Witnesses:

C. H. Raeder
W. F. Matthews.

Inventors

George S. Boyler &
Frederick Rothwell
By James Sheehy
Attorney.

(No Model.)

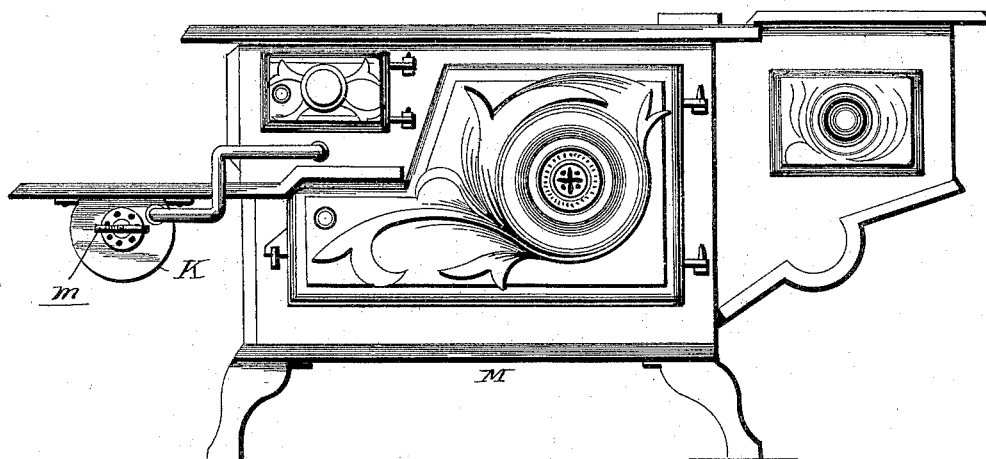
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Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE SAMUEL BOYLER AND FREDERICK ROTHWELL, OF HAVELOCK,
CANADA.

AIR-PUMP ATTACHMENT FOR STOVES OR FURNACES.

SPECIFICATION forming part of Letters Patent No. 493,967, dated March 21, 1893.

Application filed January 2, 1892. Serial No. 416,899. (No model.) Patented in Canada November 26, 1891, No. 37,849.

To all whom it may concern:

Be it known that we, GEORGE SAMUEL BOYLER, boiler-maker, and FREDERICK ROTHWELL, machinist, both subjects of the Queen of Great Britain, and both residing at Havelock, in the county of Peterborough and Province of Ontario, Canada, have invented new and useful Improvements in Air-Pump Attachments for Stoves or Furnaces, (for which we have obtained a patent in Canada, No. 37,849, bearing date November 26, 1891,) of which the following is a specification.

Our invention has relation to improvements in stoves and furnaces, and it has for its general object to provide a cheap and simple means for feeding a continuous blast of air to the fire box or fuel chamber when a fire is started so as to facilitate combustion.

For the attainment of the foregoing and other objects the invention consists, in combination with a stove or furnace of a compressed air reservoir, a pipe leading from said reservoir to the fire box or fuel chamber of the stove, and a pump for replenishing the reservoir.

The invention further consists in the peculiar construction, certain novel combinations and the adaptation of parts hereinafter described and particularly pointed out in the claims appended.

In the accompanying drawings:—Figure 1, is an elevation, partly in section, of the reservoir, the pump, and the pipe, removed from the stove. Fig. 2, is an end elevation of the same, and:—Fig. 3, is a side elevation of a stove embodying our invention.

In the said drawings similar letters designate corresponding parts throughout the several views referring to which:—M, indicates a stove which may be of any ordinary or approved construction, and K, indicates the compressed air reservoir, which may be formed integral with or suitably connected to the stove at any suitable point, although we prefer to arrange it beneath the hearth as shown in the accompanying drawings so as not to increase the area of the stove.

Arranged within the reservoir K, is the casing H, of the air pump which casing extends through the ends of the reservoir K, and is

provided at its ends with inlet ports *a*, which are controlled by suitable diaphragms or valves L, which are formed from rubber, leather or other flexible material, and are adapted to open and close properly with respect to the direction of the piston strokes so as to permit of the ingress and prevent the egress of the air.

B, indicates check valves, which may be of any ordinary or approved construction, and are designed to close the pump and reservoir connecting ports *c*, so as to permit the air to pass from the pump to the reservoir but prevent the return of such air into the pump. These ports *c*, are preferably arranged adjacent to the ends of the casing H, so that air will be forced through them alternately when the piston N, is in motion.

Connected to the piston N, and extending through a suitably packed opening in one end of the pump casing H, is the piston rod A, which is provided at its outer free end with a hand grasp *m*, through the medium of which the rod A, may be conveniently reciprocated.

In order to prevent damage to the ends or heads of the casing H, as well as to prevent the piston from passing the ports we have provided the cushion springs C; one of which is mounted upon the rod A, between the hand grasp *m*, and the end or head of the casing H, and the other is mounted upon said rod A, between the piston and the end of the casing as shown in Fig. 1, so that they will engage the inner and outer sides of one end or head of the casing and prevent the hand grasp *m*, and the piston N, from damaging the same.

Leading from the reservoir K, at a suitable point is a pipe E, which is provided with a stop cock G, as shown and connected to or formed integral with the pipe E, is a pipe F, which rests within the fire box or fuel chamber and is provided at suitable intervals in its length with egress apertures *g*, for the compressed air.

The preferred manner of operating our improvement, is as follows:—Before the fire is started, the cock G, is closed so as to shut off communication between the reservoir and the pipe F, and the piston N, is then reciprocated until the reservoir is well charged with com-

pressed air. The fire is then started, and after it has gained some headway, the cock G, is opened when an even and continuous blast of compressed air will pass from the reservoir K, through the pipes E, F, and the apertures g, into the stove where it will feed the fire and greatly facilitate combustion. Thus it will be seen that a hot fire may be attained in a short time which is a great desideratum. If a long continuous blast of air is desired, the piston may be reciprocated as soon as the cock G, is opened, so as to retain a maximum charge of air in the reservoir. When the reservoir K, has been exhausted of compressed air, it may be quickly replenished by closing the cock G, and reciprocating the piston as before described.

From the foregoing description taken in connection with the accompanying drawings it will be readily perceived that we have provided a means for feeding a fire with an even and continuous blast of compressed air which assures a high even heat, instead of the uneven heat which is attained when a fire is fed with spasmodic blasts of air.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A stove or furnace, substantially as described, comprising a fire box or fuel chamber, a compressed air reservoir, a pipe leading from the reservoir to the fire box or fuel chamber and adapted to discharge in the latter, and a suitable means for replenishing the compressed air reservoir, substantially as specified.

2. In a stove or furnace, substantially as described, the combination with a fire box or fuel chamber, a compressed air reservoir, a pipe leading from the reservoir into the fire box or fuel chamber, a series of apertures formed in said pipe within the fire box or fuel chamber, and a stop cock for controlling the passage of said pipe; of a pump casing seated in the reservoir and extending through the ends of the same and having valve controlled ports in its ends or heads and also having the ports c, in its side, check valves controlling the said ports c, and a reciprocatory piston within the pump casing, substantially as specified.

3. A device adapted to feed a continuous and even blast of compressed air to a stove or furnace, comprising a reservoir adapted to be connected to a stove or furnace, the pipe leading from the reservoir and having the egress apertures g, and the stop cock G, the pump casing arranged in the reservoir and extending through the ends of the same and having valve controlled ports in its ends or heads and also having the ports c, in its side, check valves controlling the said ports c, a reciprocatory piston within the pump casing the piston rod connected thereto and the cushion springs mounted on said rod, substantially as specified.

GEORGE SAMUEL BOYLER.
FREDERICK ROTHWELL.

Witnesses:

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THOS. MILNE.