

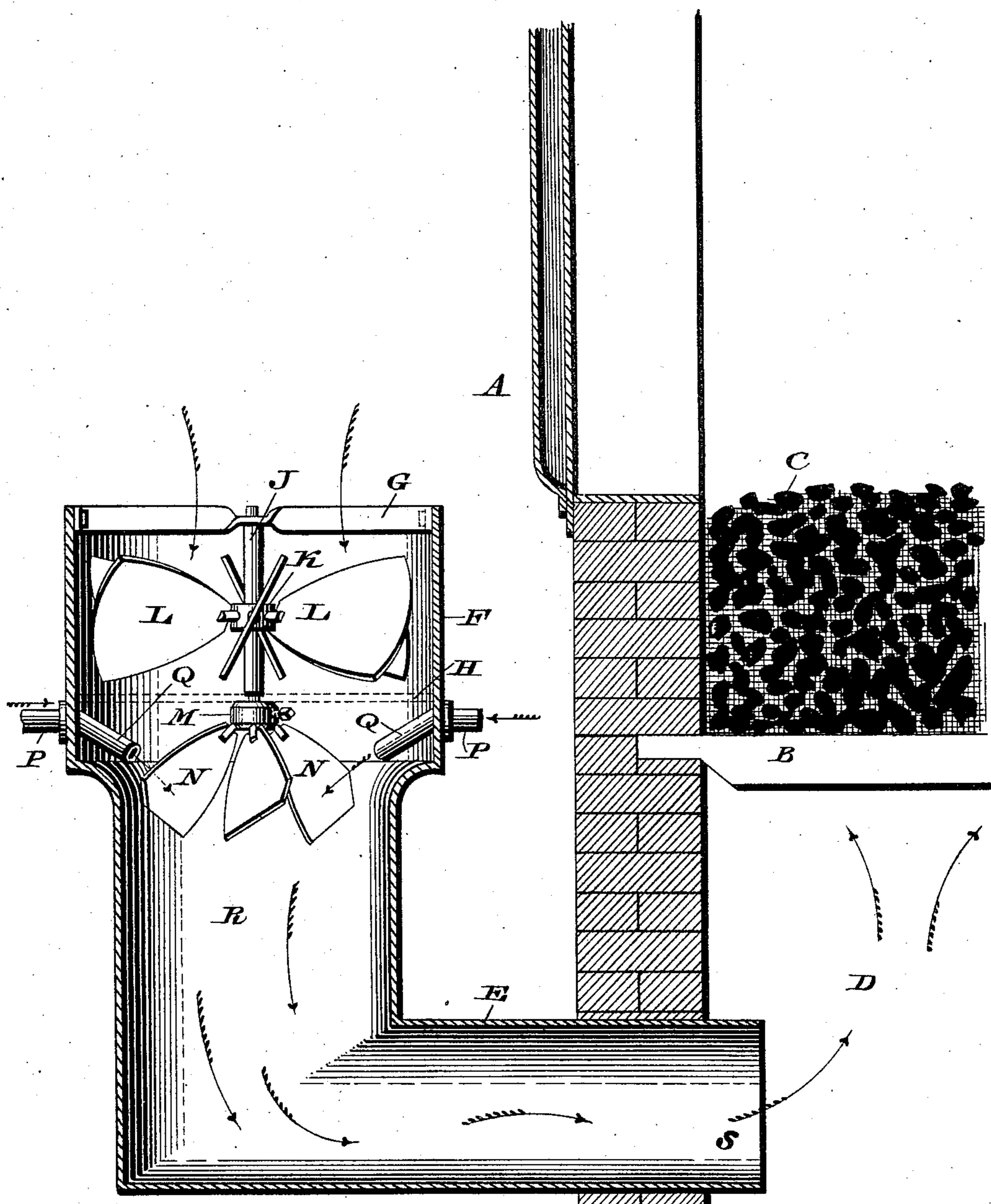
(No Model.)

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APPARATUS FOR PROMOTING COMBUSTION.

No. 575,049.

Patented Jan. 12, 1897.



WITNESSES:

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APPARATUS FOR PROMOTING COMBUSTION.

SPECIFICATION forming part of Letters Patent No. 575,049, dated January 12, 1897.

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To all whom it may concern:

Be it known that I, CHARLES BERND, Jr., a citizen of the United States, residing at Riverside, in the county of Burlington, State of New Jersey, have invented a new and useful Improvement in Apparatus for Promoting Combustion in Furnaces, &c., which improvement is fully set forth in the following specification and accompanying drawing.

My invention consists of a novel construction of apparatus for promoting combustion in furnaces, the same consisting of a casing adapted to be located adjacent a furnace and having supported therein a plurality of fans, one of said fans being operated by the impact of steam directed thereupon, while the other fan is adapted to propel air into the casing, the air and steam meeting in a commingling-chamber below said fans and the commingled steam and air being finally discharged into the furnace.

It further consists of novel details of construction, all as will be hereinafter set forth, and specifically pointed out in the claims.

The figure represents a side elevation, partly in section, of an apparatus for promoting combustion in furnaces embodying my invention.

Referring to the drawing, A designates a furnace of usual construction, the grate B thereof being adapted to support the fuel C, which may be rice coal, screenings, culm-slack, or other combustible material.

D designates the ash-pit of the furnace, into which the casing E is adapted to discharge, the upper portion F of said casing having attached thereto the cross-bars G and H, which serve as bearings for the shaft J, upon which are mounted the fans K and M, each fan being provided with the wings or blades L and N, respectively.

P designates steam-inlet pipes, which are connected with a suitable steam-supply, which may be the boiler heated by the furnace to which the invention is applicable, said steam-pipes having the discharge-outlets Q, entering the portion F of the casing and adapted to direct the incoming steam against the blades of the fan M, it being noted that said latter fan is in the present instance somewhat less in diameter than the fan K and that

the upper part of the casing is of greater width than the portion thereof below the fan M.

It will be noticed that the lower end of the portion F of the casing is contracted where it circumscribes the fan M, forming a nozzle which serves to cause the incoming air to be forcibly impacted against said fan and to be primarily commingled with the steam which operates said fan. Then the air and steam, after being stirred around by said fan, are completely commingled in the chamber R, the commingled air and steam then being forcibly ejected in large volumes from said chamber into the furnace. It will also be seen that the shaft J is supported in said upper portion F of the casing, so that the commingling-chamber R and lower portion of the casing are unobstructed and steam is prevented from condensing on said shaft, as the latter is above the fan M, against which the steam is impacted and from which it is forced downwardly by the incoming air in large quantities, due to the action of the fan K.

The operation is as follows: The incoming steam entering through the pipes P discharges upon the blades of the steam-fan M, thereby causing the same to rapidly revolve, the air-fan K also revolving in unison therewith, while the exterior air is drawn in the upper portion F of the casing through the medium of the fan L, as indicated by the arrows, and discharged upon and by the steam-actuated fan M into the commingling-chamber R. The steam and air are thoroughly commingled in the chamber R and pass thence through the outlet S to the ash-pit D of the furnace, thereby producing a positive and effective draft, and the thoroughly-commingled steam and air serving to promote combustion to a high degree.

It will be seen that I preferably construct the fan M separate from the shaft J for convenience in assembling, said shaft being first placed in position upon the cross-bar H, after which the cross-bar G is secured in place and the hub of the fan M fastened upon that portion of the shaft J which projects below said cross-bar H, especial attention being directed to the fact that the impact of the incoming steam upon one of the fans causes the exterior air to be drawn in and thoroughly commingled

with the steam in the commingling-chamber below the fans.

It will of course be evident that the angle at which the outlets Q of the steam-pipes P discharge upon the fan M may be slightly inclined or varied according to requirements, or the portions Q of the pipe may be curved, if desired. It will further be apparent that various changes may be made by those skilled in the art which will come within the scope of my invention, and I do not therefore desire to be limited in every instance to the exact construction I have herein shown and described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A blower consisting of a casing, a plurality of fans mounted in the upper portion thereof, and a steam-supply pipe leading to the lower fan, said casing being contracted around said fan, forming a nozzle which leads to the commingling-chamber below the same, the discharge portion of the casing being below said chamber.

2. A blower consisting of a casing open at top and adapted to communicate with a furnace and an air-suction and a steam-operated fan in the upper portion of said casing, said fans having their shaft mounted in bearings in said portion, leaving the commingling-chamber below said fans unobstructed, the discharge portion of the blower being below said chamber.

3. A blower consisting of a suitable casing open at its top, a plurality of cross-bars attached to said casing, a shaft having its bearings in said cross-bars and having an air-fan mounted thereon, said shaft having a journal projecting through the lower cross-bar and a steam-actuated fan mounted on said journal, in combination with a steam-pipe adapted to discharge upon said last-mentioned fan, a commingling-chamber below said fans, and means for conducting the commingled steam and air thence to a furnace.

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Witnesses:

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