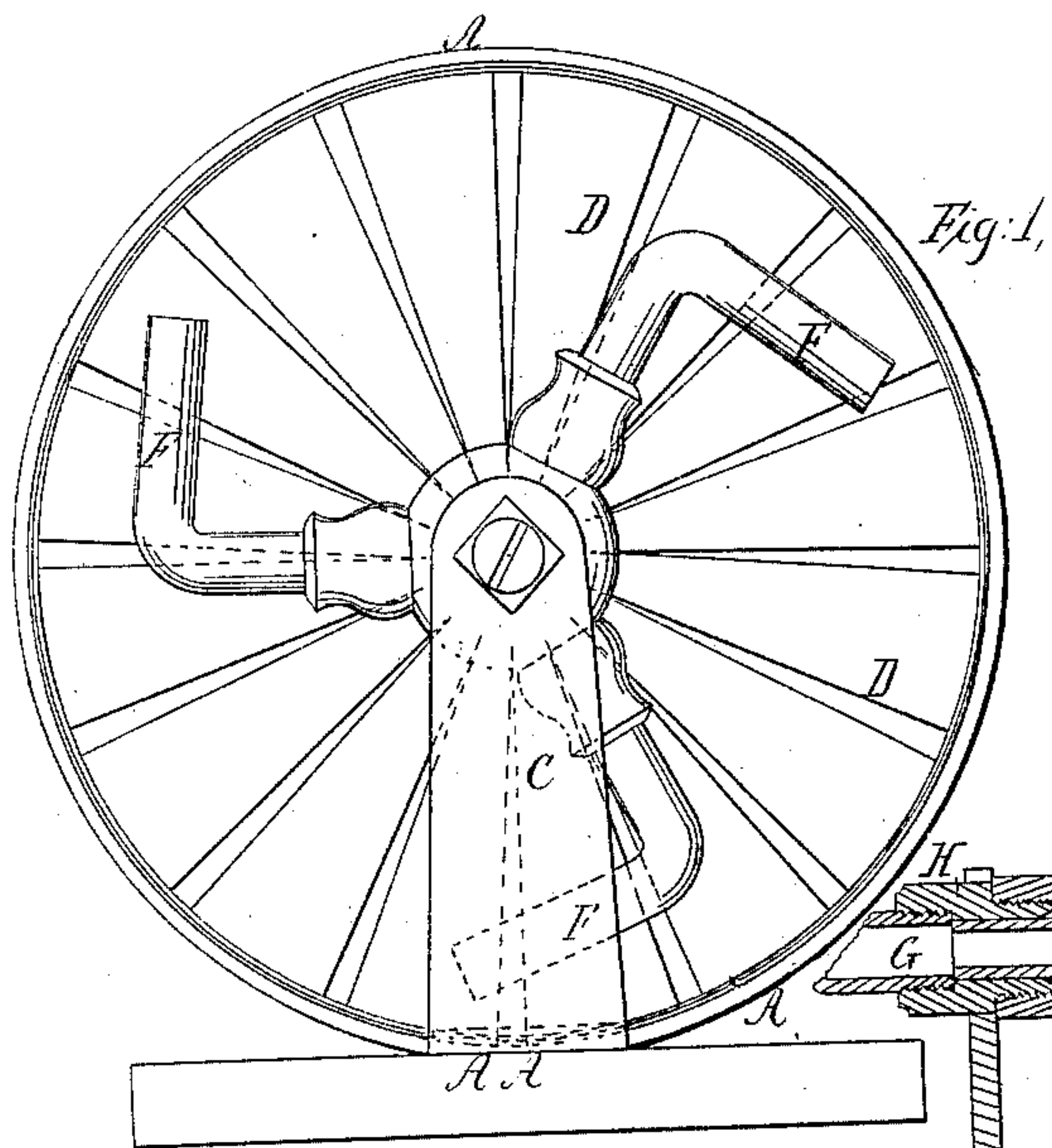


*J. A. Bassett,*

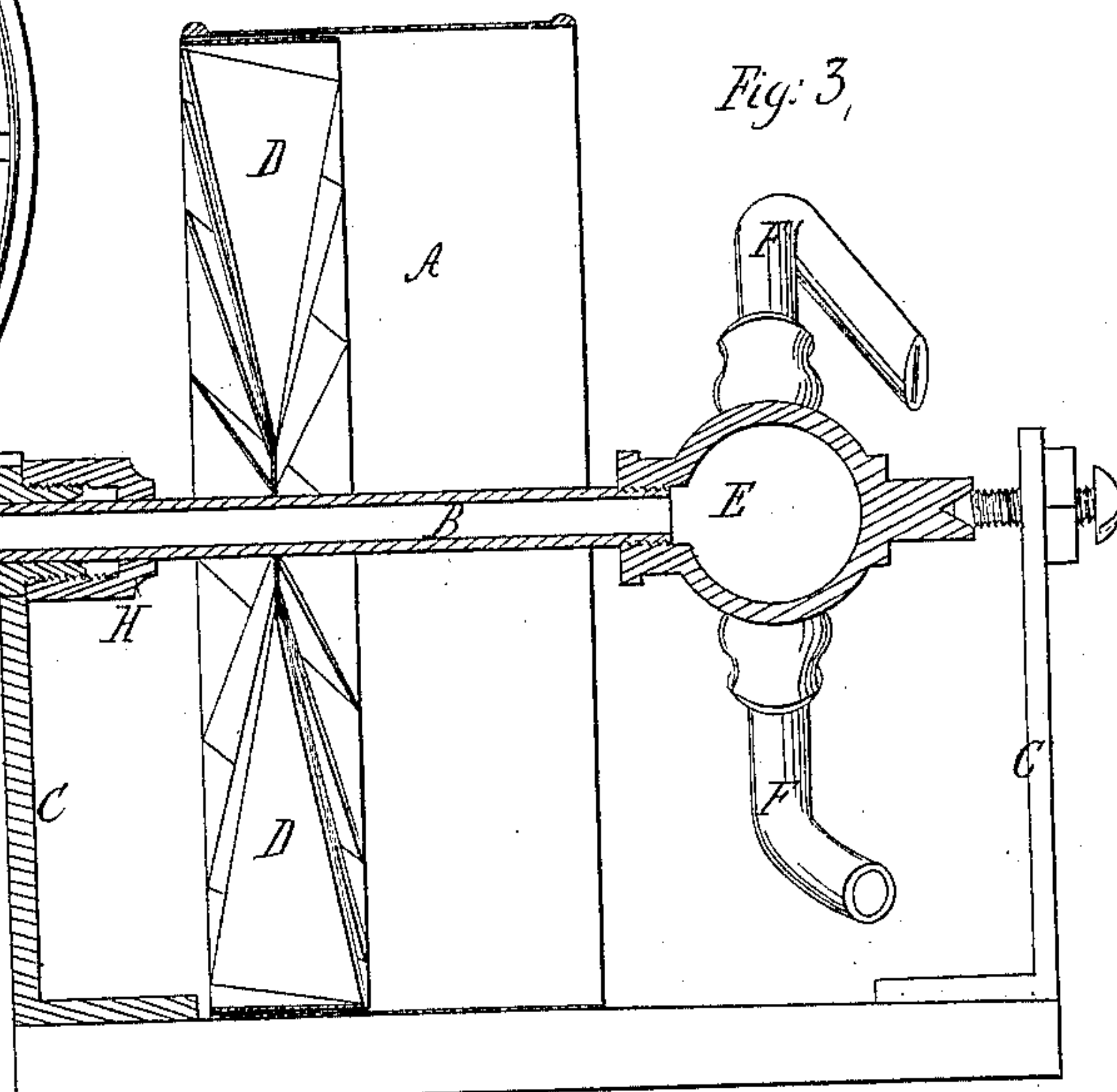
*Steam-Boiler Attachment.*

*N<sup>o</sup> 49,823.*

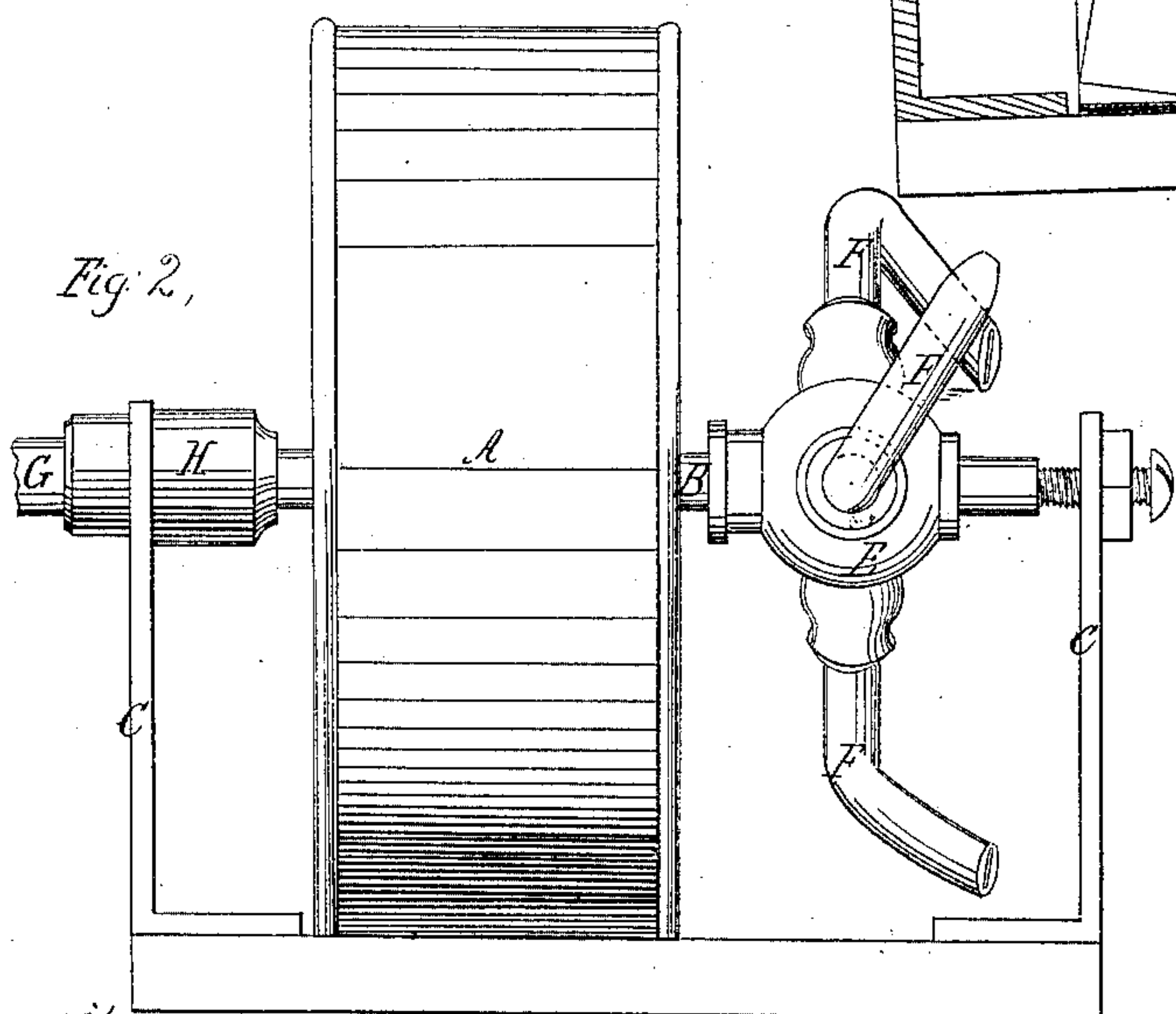
*Patented Sep. 5, 1865.*



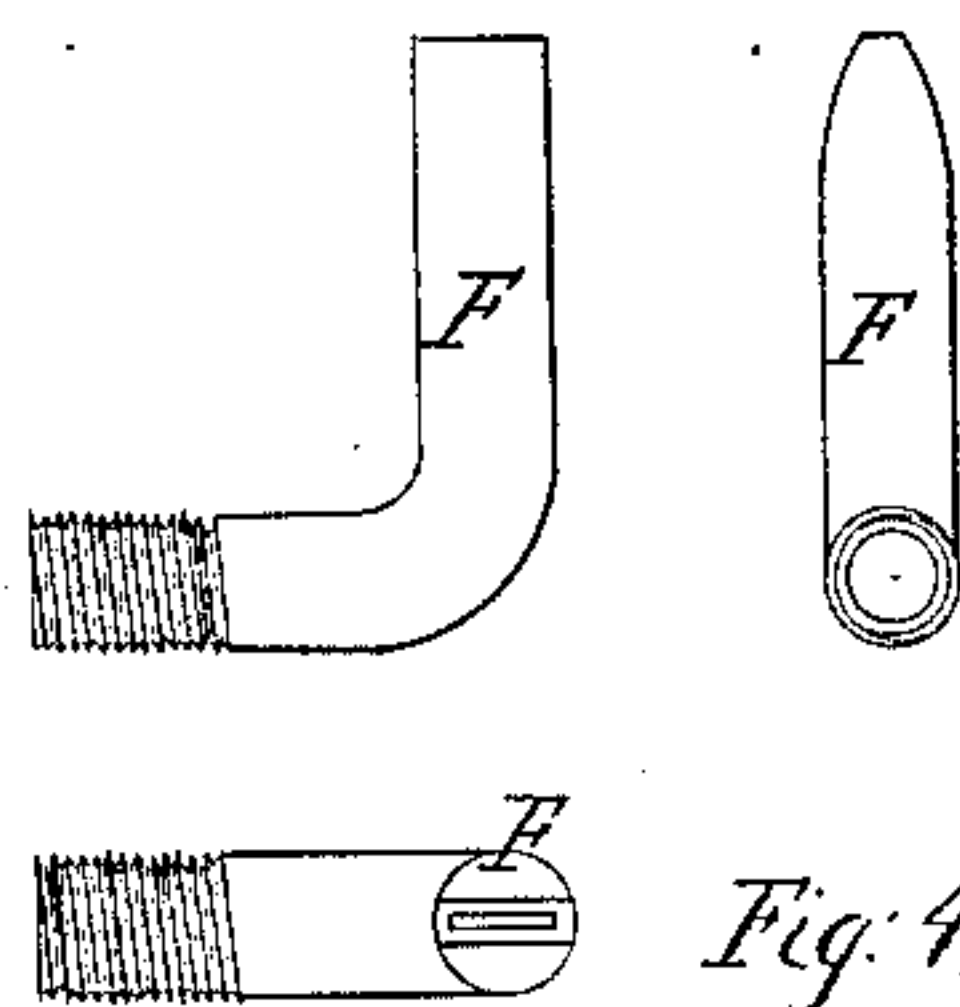
*Fig. 1,*



*Fig. 3,*



*Fig. 2,*



*Fig. 4,*

*Witnesses;*  
*M. B. Mansfield*  
*E. Warren Brown*

*Inventor,*

*John A. Bassett*



# UNITED STATES PATENT OFFICE.

JOHN A. BASSETT, OF SALEM, ASSIGNOR TO OLIVER BENNETT, OF FRAMINGHAM, MASSACHUSETTS.

## IMPROVEMENT IN STEAM-BLOWERS FOR FURNACES.

Specification forming part of Letters Patent No. 49,823, dated September 5, 1865.

*To all whom it may concern:*

Be it known that I, JOHN A. BASSETT, of Salem, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Steam-Blowers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, of which—

Figure 1 represents an end elevation; Fig. 2, a side elevation; Fig. 3, a sectional elevation on line A A; Fig. 4, a detail of the steam-jets.

Similar letters of reference in the several figures refer to like parts.

The nature of my invention consists in a steam-blower composed of a fan-wheel and a reaction rotary steam-engine, so combined and arranged that the steam discharged by such engine while in operation shall not only serve to put it and the fan-wheel in revolution, but be caused to mingle with the current of air induced by the fan-wheel, whereby, when the apparatus may be applied to the ash-pit of a furnace or to an opening leading into the same, the said steam and air may be utilized in promoting combustion by being decomposed upon the carbon of the fuel. The rotary engine employed may be like the Barker mill or Avery engine, and operate by the reactive effect of the pressure of steam, and the direction of the jets may be such as to add to the power of the blast.

The practical result of this invention is that no power except the direct action of the steam from the boiler is taken to drive the blower, and by the combination of the steam with the air and the subsequent decomposition of such steam in the fuel such steam is fully utilized.

The engine may be placed either in front or in rear of the fan-wheel. I prefer to use it in advance thereof, as the full effect of the steam is had to better advantage under this latter arrangement. Of course, other blast-wheels or analogous devices may be used in lieu of that represented by the drawings; but the form as exhibited is a convenient one and takes little power for its operation. By the apparatus a powerful force or degree of blast is obtained,

the apparatus not being dependent upon any engine to drive it and being always ready for use, the steam, when passing through the engine, serving to set it and the fan-wheel in revolution.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Through the side of a furnace, and below the grate, I make an opening of a diameter proportioned to the size of the blower, which should also be proportioned to the surface of the grate. In such opening I place a circular casing, A, having axially within it a hollow shaft, B, supported in bearings C. Upon the shaft, and toward its rear end, a fan-wheel, D, is secured. This wheel may be placed about on a line with the rear extremity of the casing A. Near the front end of the shaft is a hub, E, into which is tapped a series of curved jet-pipes, F F F, which, with the hollow shaft, constitutes the rotary engine.

The steam is to be introduced to the engine by a pipe at G, a stuffing-box, H, being placed on the shaft B, in order that a tight joint may be made between the hollow shaft and the inlet-pipe G. Steam from a boiler, being introduced by the pipe G and through the shaft B, will rush through and out of the pipes F F F and set the engine and the blower in revolution. A few minutes will suffice for the attainment of a very high speed, whereby a large quantity of air with the steam will be driven into the ash-pit of the furnace, and thence into and through the fuel, and in consequence thereof a very intense fire will be produced. In some cases it may be desirable to use a greater number of jets of steam than in others in order to obtain a greater power of blast; but two jets only may be used with very good effect. It is also desirable to arrange the angle of the jets of steam, as far as possible, to project the steam into the furnace, and thus add to the effect of the blower by the propulsive effect of the steam. I prefer the shape of the jets shown at E as giving the best result.

The distance between the jets of steam and the fan-wheel may be varied to suit the con-



venience of applying them to the shaft; or the jets may be placed directly on or against the wheel, if desirable.

I have found by experiment that a blower of six inches diameter, with steam jet-pipes to correspond, is quite sufficient for a grate-surface of twenty inches diameter when used under a steam-boiler. The pressure varying from ten to one hundred and twenty pounds per square inch will give speed varying with the pressure, but sufficient for the wants of the fire at the lowest pressure.

It may be desirable in some cases to incase the steam-jets, so that by means of a regulated outlet the supply to the fire may be under control, and, if necessary, to withhold it from the fire entirely. It may be necessary to make the aperture of the steam-jets adjustable, so that

the volume of steam may be varied with the amount of steam required.

Having thus fully explained the nature of my invention, what I claim therein as new, and desire to secure by Letters Patent, is as follows:

A steam-blower constructed of the mechanical elements and to operate substantially in the manner and by means as hereinbefore specified, such elements being the rotary steam-jet wheel, its hollow arbor, the fan-wheel, and an opening or a case surrounding such fan-wheel, the whole being for application to a furnace, in manner and for the objects as set forth.

JOHN A. BASSETT.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.