

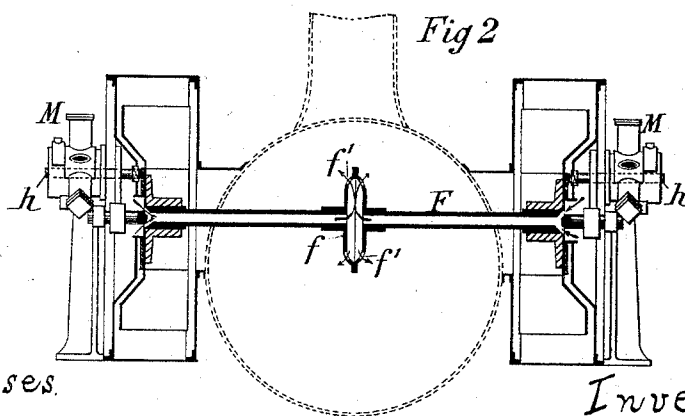
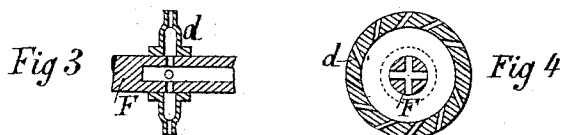
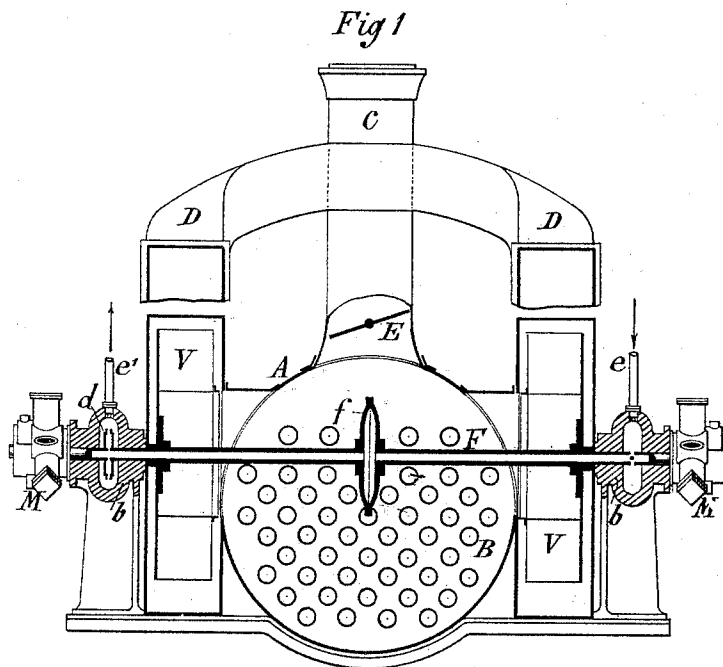
(No Model.)

2 Sheets—Sheet 1.

J. P. SERVE.
LOCOMOTIVE DRAFT DEVICE.

No. 498,034.

Patented May 23, 1893.



Witnesses

A. M. Gardner

Lecadia M. Lennan.

Inventor.

Jean Pierre Serre.

By his Attorney

Edward P. Thompson

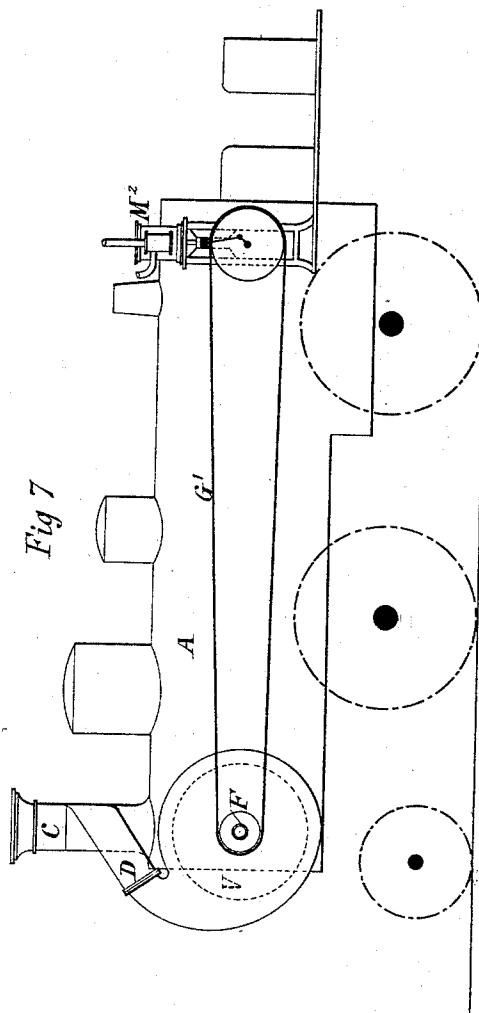
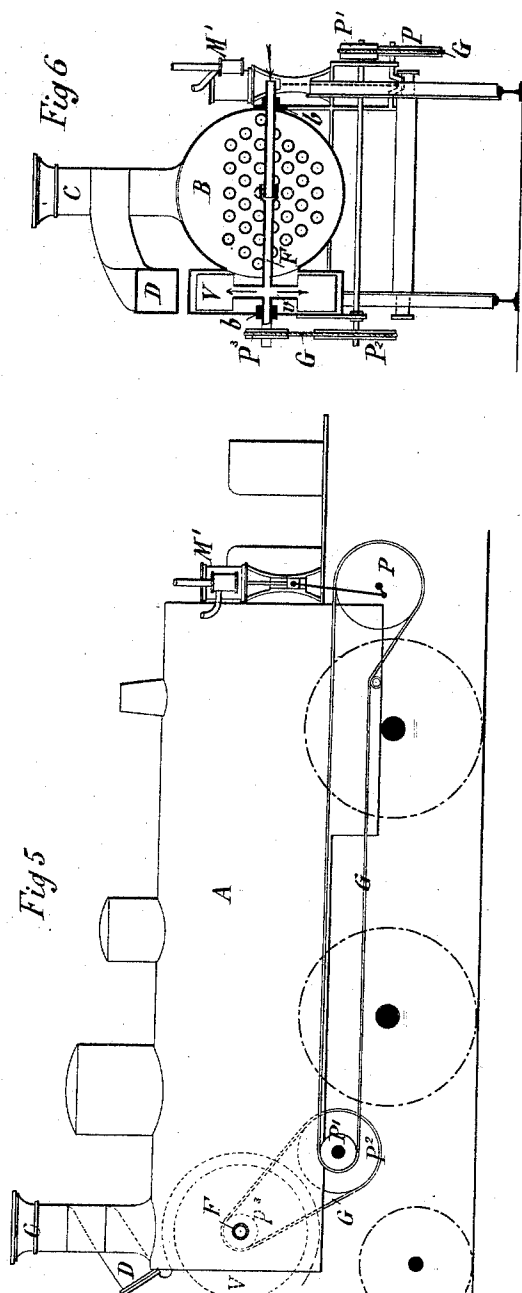
(No Model.)

2 Sheets—Sheet 2.

J. P. SERVE.
LOCOMOTIVE DRAFT DEVICE.

No. 498,034.

Patented May 23, 1893.



Witnesses:

Edith L. Thompson
Emily M. Smith

Inventor:

Jean Pierre Serve
By his Attorney
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UNITED STATES PATENT OFFICE.

JEAN PIERRE SERVE, OF CALUIRE ET CUIRE, FRANCE.

LOCOMOTIVE DRAFT DEVICE.

SPECIFICATION forming part of Letters Patent No. 498,034, dated May 23, 1893.

Application filed August 20, 1892. Serial No. 443,570. (No model.)

To all whom it may concern:

Be it known that I, JEAN PIERRE SERVE, engineer, a citizen of the Republic of France, residing at Caluire et Cuire, in the Department of Rhône, in the Republic of France, have invented certain new and useful Improvements in Locomotive Draft Devices, of which the following is a specification.

The invention is relative to the blowers employed for effecting the forced draft in locomotives, and it has for its object to secure this result in a simple and practical manner.

I am aware that, for the object of being able to promote, at will, the combustion of the furnace of steam boilers of all kinds, there have been employed blowers drawing the gases produced by combustion, but the arrangements proposed were not practically applicable to locomotives.

My invention consists essentially in the particular position and the means of mounting and controlling one or several blowers drawing by their center the hot gases of the smoke box and projecting them into the chimney or into any other suitable place according to the object which may be proposed.

The invention will be completely described with reference to the annexed drawings, in which—

Figure 1 is a vertical section showing the smoke box of a locomotive furnished with two blowers mounted on a hollow axle traversed by a current of water. Fig. 2 is a vertical section showing a modification of the preceding arrangement in which the axle of the blowers is cooled by a current of air. Figs. 3 and 4 are views in section to a larger scale of the turbine mounted at the extremities of the axle of the blowers. Fig. 5 is a view in elevation showing the employment of a single blower actuated by means of a motor placed near to the furnace of the locomotive. Fig. 6 is a transverse section of this same arrangement. Fig. 7 is a view in elevation showing a modification of the control of the blowers.

On referring to the drawings and specially to Figs. 1, 2 and 6, it will be seen that the system consists essentially in arranging on one or two sides of the smoke box of the locomotive, one or two drawing blowers and in actuating them by means of one or several

motors independent of the motor of the locomotive, and finally in fixing and in cooling in a special manner the axle of these blowers.

On Fig. 1, two vertical blowers V V communicating by their center with the smoke box B of the locomotive A, draw the hot gases on their exit from the tubes and crowd them by means of the curved conduits D into the chimney C which is furnished at its lower part with a valve E intended to prevent the return of air during the working of the blowers, but which a person can open when these apparatuses are not being made use of. The two blowers V V are mounted on a common axle F which is by preference formed in two parts connected in their middle in a supple manner so as to permit of the lateral play necessary for preventing stiffness in the bearings. On the drawings I have shown the employment of two disks *f* connected at their periphery, any other equivalent arrangement can be employed for this object.

With the object of avoiding the heating of the axle F, this axle is hollow and constantly cooled by a strong current of cold water, to effect this one of its extremities is placed in communication by a tuyere *e* with the tender of the locomotive, and its other extremity carries a little turbine *d* represented in section, to a larger scale, in Figs. 5 and 6, and the central part of which communicates with the central part of the axle F, while its periphery communicates with the tender by means of the tuyere *e'*. This turbine, while turning, affords in the interior of the axle F a very active circulation of water which prevents it from becoming heated and secures efficiency in the lubrication of its bearings *b b*. This circulation of water could be equally produced by means of a pump, or by an injector placed in a manner that the cold water which it draws through into the tender passes at first in the hollow axle F. It will be understood finally that in place of cooling the axle, the bearings of this axis could be cooled by means of a circulation of water obtained in one of the manners above indicated.

With a view of rendering the action of the blowers independent of the progress of the locomotive, the axle F is operated by means of one or two motors M M, of the brother-

hood kind, any other kind of rotary or other machine, may be employed for the same object.

In the variety shown in Fig. 2, the motors 5 M M actuate an intermediate axle *h* which operates the axis F by means of a cog wheel and pinion, which permits of giving to the blowers a great rotary speed without increasing that of the motors M M. In this modification, the cooling of the axle F is obtained 10 by means of a current of cold air; for this purpose the axle F is pierced at its extremities with holes communicating with the exterior air, and in its middle it communicates 15 by means of other holes *f'* applied in the part *f* or in any other place, with the interior of the smoke box B where the blowers produce a relative vacuity; in this manner there is established in the interior of the axle a rapid 20 circulation of cold air in the direction indicated by the arrows.

In the modification shown in Figs. 5 and 6, I have shown the employment of a single 25 drawing blower V placed at the side of the smoke box B, and the cooling of the axle is produced likewise by the action of this blower. With this object, the rods *v* which carry the wings of the blower V are hollow, and communicate with the interior of the hollow 30 axle F, the other extremity of which opens in the free air, so that there is thus established a circulation of cold air in the direction of the arrows. In this arrangement, I have indicated the employment of an independent motor M' placed near to the driver 35 and actuating the blower by means of transmission pulleys P P' P² P³ and of straps G.

In the modification shown in Fig. 7, the motor M² placed at the side of the driver controls directly the axle F by means of a single 40 strap G' which may be inclosed in a metallic sheath applied on the locomotive A; any other equivalent arrangement can be employed for the same object.

It will be understood that I do not limit 45 myself to the particular forms and arrangements of the apparatus represented by way of example on the annexed drawings, and thus, for instance, the arrangements and agencies of motors M can be varied according to each 50 case, and they can be actuated as desired by steam, compressed air, or electricity.

I declare that what I claim is—

1. In order to effect the draft of a locomotive the combination with one or more drawing 55 blowers, directing the heated gases from the smoke box, of an axle consisting of two parts connected by a coupling allowing a certain side play of these parts in their bearings, as has been explained above. 60

2. In order to effect the draft of a locomotive; two blowers such as V, a hollow axle such as F, controlled by two motors such as M and a turbine such as *d* mounted on one 65 of the extremities of this hollow axle and causing a rapid current of cold water, as has been hereinbefore explained and shown.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JEAN PIERRE SERVE.

Witnesses:

EUGENE LOUIS DUMAS,
CHARLES PIERRE BAILLY.