No. 794,022. PATENTED JULY 4, 1905.

W. H. JORDAN.

DRAFT DRIVEN GENERATOR.

APPLICATION FILED MAR. 8, 1905.

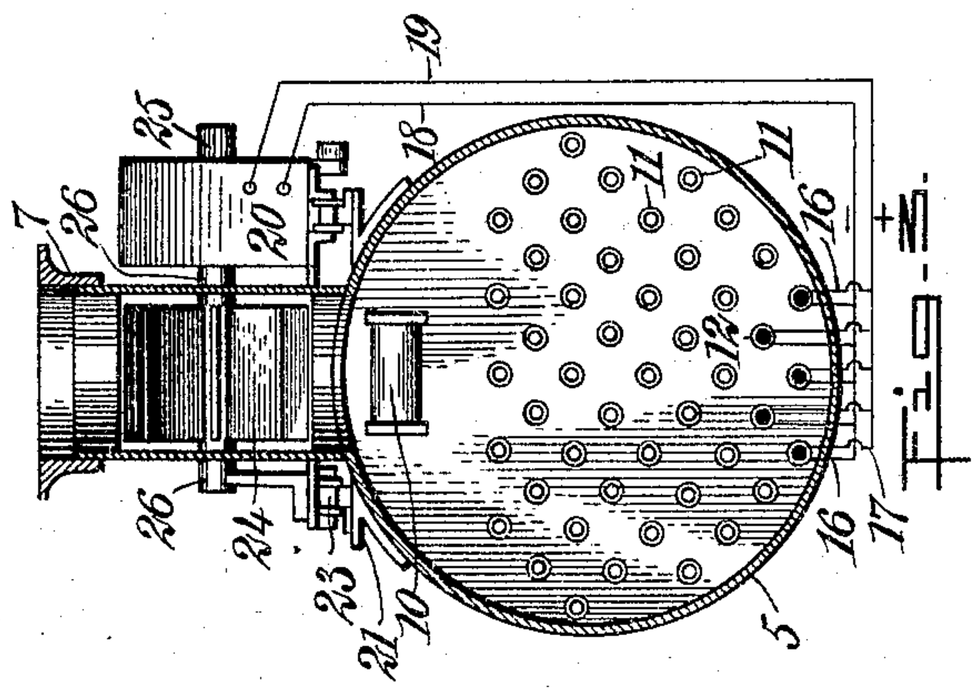

Fig. 1.

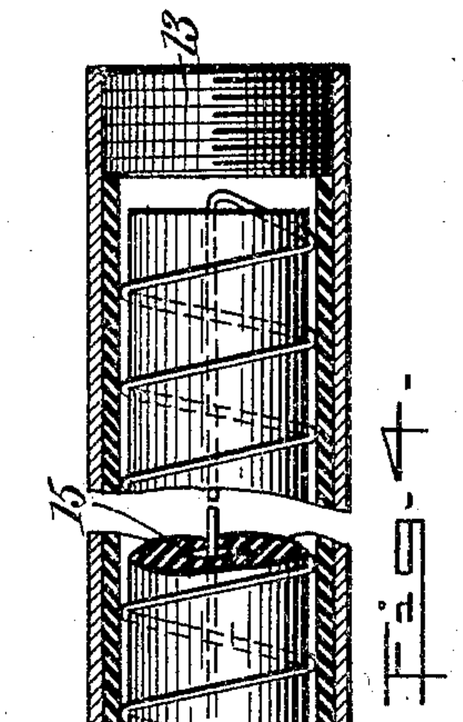

Fig. 4.

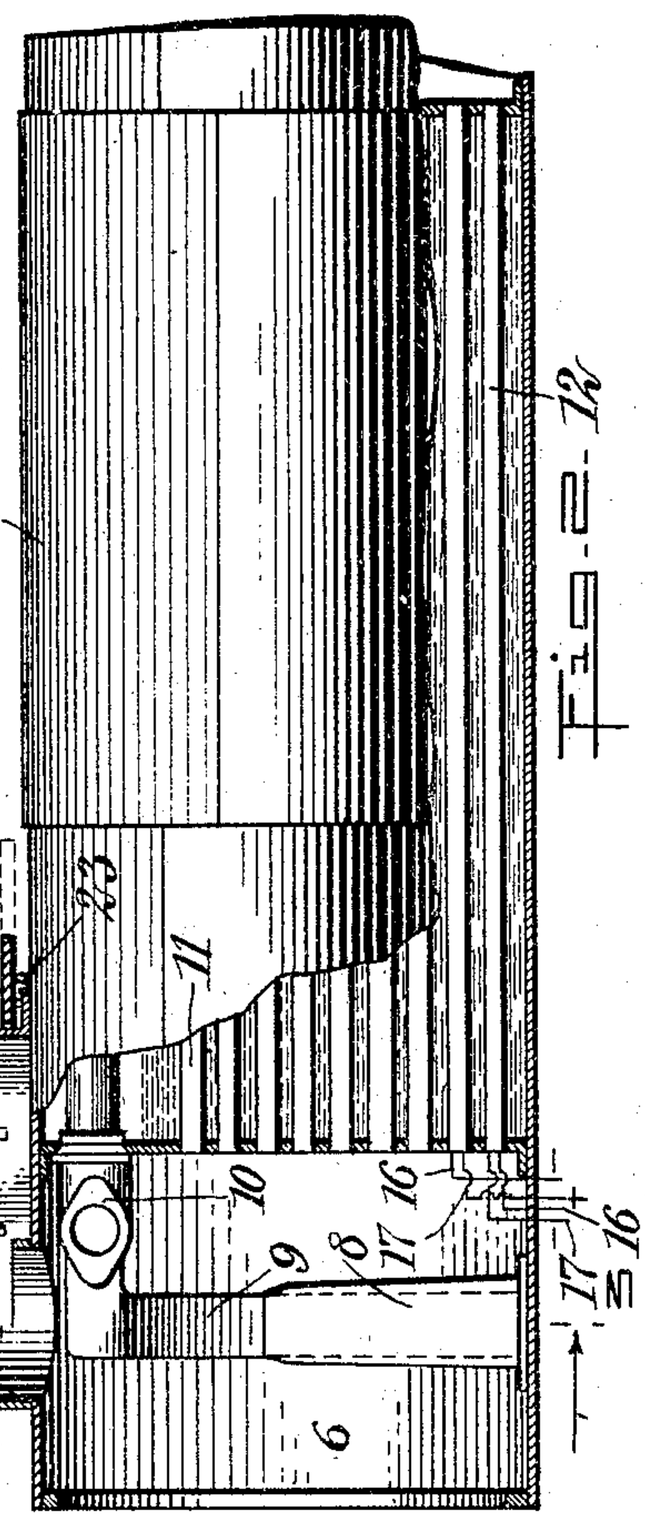

Fig. 2.

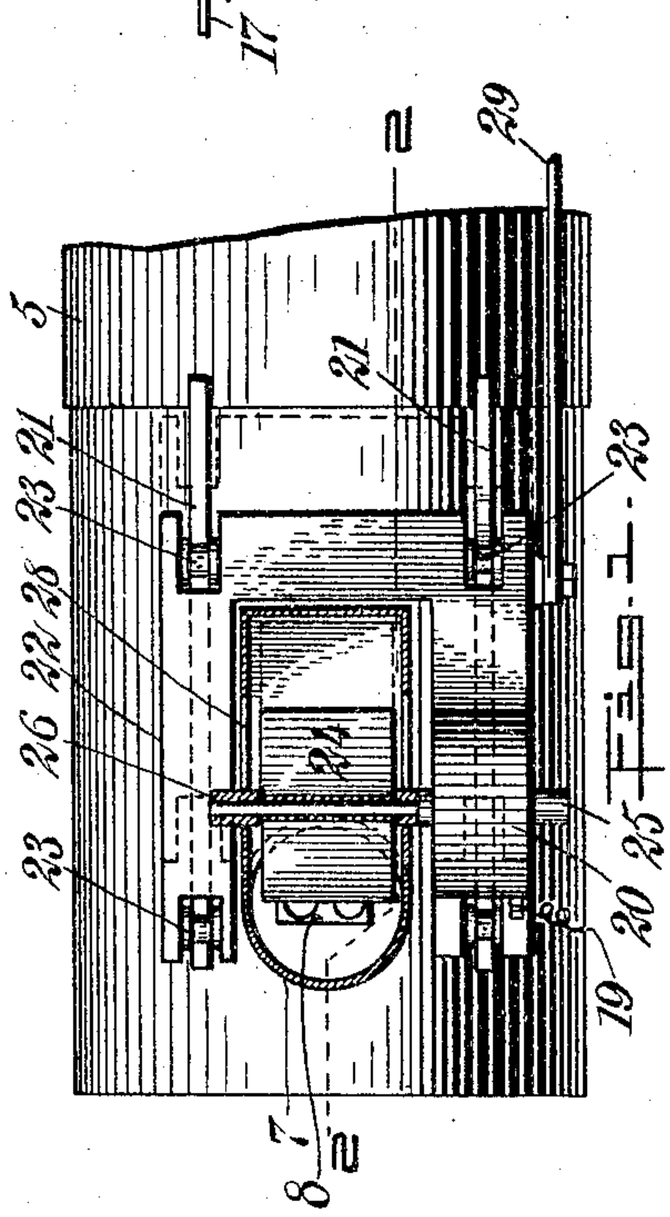

Fig. 3.

WITNESSES:
C. A. Jarvis.
W. Harrison

INVENTOR
William H. Jordan
BY Munn & Co.
ATTORNEYS

No. 794,022. Patented July 4, 1905.

UNITED STATES PATENT OFFICE.

WILLIAM HENRY JORDAN, OF HAYS, KANSAS.

DRAFT-DRIVEN GENERATOR.

SPECIFICATION forming part of Letters Patent No. 794,022, dated July 4, 1905.

Application filed March 8, 1905. Serial No. 248,953.

To all whom it may concern:

Be it known that I, WILLIAM HENRY JORDAN, a citizen of the United States, and a resident of Hays, in the county of Ellis and State of Kansas, have invented a new and Improved Draft-Driven Generator, of which the following is a full, clear, and exact description.

My invention relates to engines, my more particular object being to economize the draft thereof in such manner that when the draft is excessive it may be used to operate machinery, thus utilizing a certain amount of power otherwise wasted.

My invention is of peculiar value upon locomotives, where under certain conditions the draft requires to be frequently shut off.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a fragmentary plan view of the front portion of a locomotive-boiler equipped with my invention, certain parts appertaining to the latter being shown in horizontal section upon the line 1 1 of Fig. 2 looking in the direction of the arrow. Fig. 2 is a side elevation, partly in section, showing my invention as applied to a boiler. Fig. 3 is a sectional view of the same upon the line 3 3 of Fig. 2 looking in the direction of the arrow, the exhaust-nozzles 8 and the steam-pipe 9 being removed; and Fig. 4 is an enlarged fragmentary section through one of the electrically-heated flues 12.

The boiler-shell is shown at 5, the smoke-box at 6, the smoke-stack at 7, the exhaust-nozzle at 8, a steam-pipe at 9, and the union, designated by engineers as the "nigger-head," at 10. The ordinary heating-flues are shown at 11, and at 12 are shown a few flues heated electrically. Each of these flues 12 is of metal and has a tubular form. Immediately within each of these flues is a jacket 12^a, of asbestos or other insulating material. These flues 12 are provided with closure-plugs 13 for retaining the heat generated in them and also with cores 14, which may be of fire-clay or other refractory material. Each core is provided with a hole 15 coincident with its axis, as indicated in Fig. 4. A platinum wire 16 is coiled around each core 14 and is provided with a portion 17, extending through the hole 15. The several wires 16 17 are tapped upon flexible connections 18 19 and disposed in parallel with each other, as indicated in Fig. 3. An electric generator 20, which may be of a type suitable for producing either alternating or direct currents, supplies current to the connections 18 19 and thence to the heating-wires 16 17, so as to raise the temperature of the flues 12.

Mounted upon the front portion of the boiler 5 are tracks 21, and movable relatively to these tracks is a platform 22, provided with wheels 23, which engage the tracks directly. A revoluble fan 24 is connected with the armature-shaft 25 of the generator 20, so as to actuate the armature when the fan is turned. Bearings 26 support the fan and the armature-shaft. The smoke-stack 7 is provided with an extension or hood 27, the latter having in opposite sides a pair of slots 28 parallel with the general direction of the boiler. By this arrangement the platform 21 can be moved forward or backward within certain limits, as indicated in Figs. 1 and 2, so that the fan 24 may be partially exposed to the draft passing upward from the smoke-box 6 through the smoke-stack 7. A shifting rod 29 extends backward from the device and may be operated by the engineer from his cab, so as to shift the position of the revoluble fan 24.

My device is used as follows: The upward draft from the smoke-box turns the fan 24, thereby actuating the armature-shaft 25 of the generator 20 and causing the current to flow through the connections 18 19 and to heat the flues 12. These flues are auxiliary to the ordinary heating-flues 11 and serve to increase the heat of the water in the boiler. As is well known by railway engineers, there are times when the draft is excessive and is difficult to keep within bounds. Of course the engineer can shut off the draft entirely; but it is difficult to regulate it with the nicety sometimes required. In running along a level or down a grade the draft oftentimes becomes a great nuisance, and yet the engineer does not feel inclined to shut it off entirely. In such cases he can by using the shifting rod

29 move the fan 24 into the general position indicated in Fig. 2, thereby causing the fan to be acted upon by the draft. The result is that the draft need not be shut off entirely and that more or less power otherwise going to waste can be utilized so as to heat the boiler, and thus be available for use afterward. The device thus effects an economy of coal. It will be understood, of course, that the engineer is not obliged to use the fan 24 except under conditions where he desires to apply a limited draft, so as to keep the fire in proper condition, but still finds it difficult to regulate this draft in the usual manner. The principle of economy underlying the use of the fan is the fact that under certain conditions when the draft is in action a considerable amount of power is wasted in suddenly throwing into motion enormous volumes of air immediately over the smoke-stack. My idea is instead of using the waste power of the engine to throw this air into violent motion to use a portion of the power for heating the boiler. By means of this arrangement the waste of the exhaust is delivered to heat the water in the part of the boiler which is otherwise only dead space. Further, by delivering the heat near the bottom of the boiler circulation is promoted.

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

1. The combination of a fan, a generator connected therewith and adapted to produce an electric current, and means for directing against said fan the exhaust-gases from an engine.

2. In a locomotive provided with an exhaust, the combination of motor mechanism provided with a revoluble member, and means controllable at will for shifting said revoluble member into and out of the path of said exhaust.

3. The combination of a locomotive provided with a draft having a definite path, a revoluble member adapted to be partially disposed within said path and also adapted to turn in consequence of said draft, means controllable at will for shifting the position of said revoluble member, an electric generator connected with said revoluble member and actuated thereby, and means for utilizing the current produced by said electric generator.

4. The combination of a smoke-box, a smoke-stack mounted thereupon and provided with a hood, a fan mounted within said hood and adapted to project into said smoke-stack, means controllable at will for shifting the position of said fan relatively to said hood and to said smoke-stack, and mechanism connected with said fan and actuated thereby for utilizing the power produced thereby.

5. The combination of a smoke-stack provided with a hood, said hood having oppositely-disposed slots, a fan disposed within said hood and adapted to project partly within said smoke-stack so as to be actuated by the exhaust therefrom, an electric generator connected with said fan, means for shifting the position of said fan and of said electric generator, and an electrically-heated flue connected with said generator and energized thereby.

6. The combination of a locomotive provided with tracks, a platform mounted upon said tracks and movable relatively thereto, a revoluble fan supported upon said platform, an electric generator likewise supported upon said platform, said generator being actuated by movements of said fan, means controllable at will for shifting the position of said platform, and electrical heating mechanism connected with said generator.

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

WILLIAM HENRY JORDAN.

Witnesses:

J. U. GATUDAL,

CHAS. W. MILLER, Jr.