N. M. LOWER.

LOCOMOTIVE DRAFT APPLIANCE.

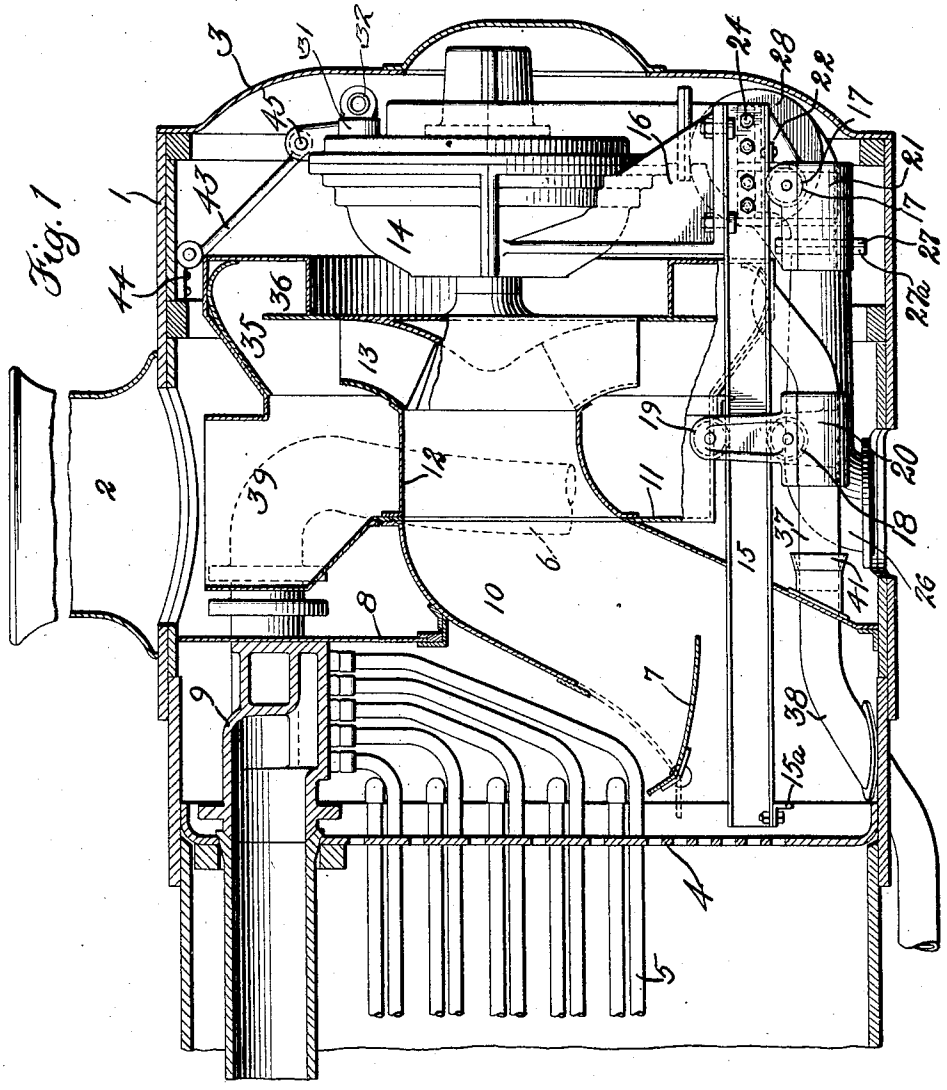
APPLICATION FILED JULY 3, 1919.

1,388,655.

Patented Aug. 23, 1921.

3 SHEETS—SHEET 1.

Fig. 1



WITNESS

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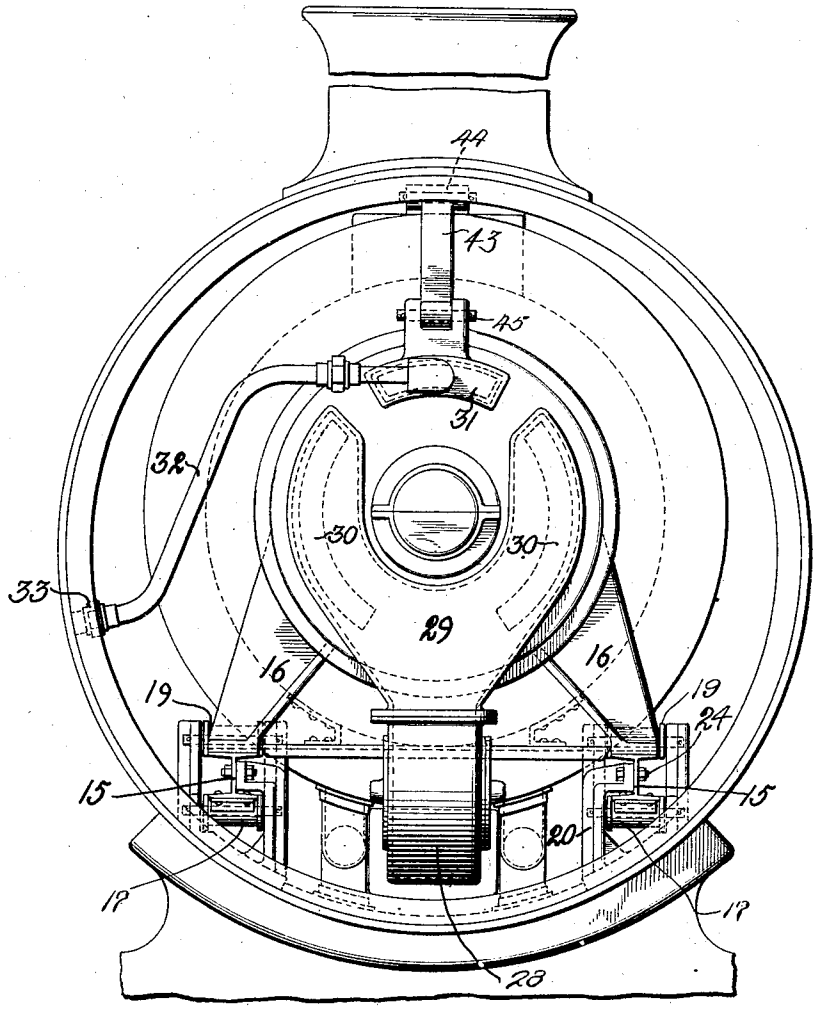


Fig. 2

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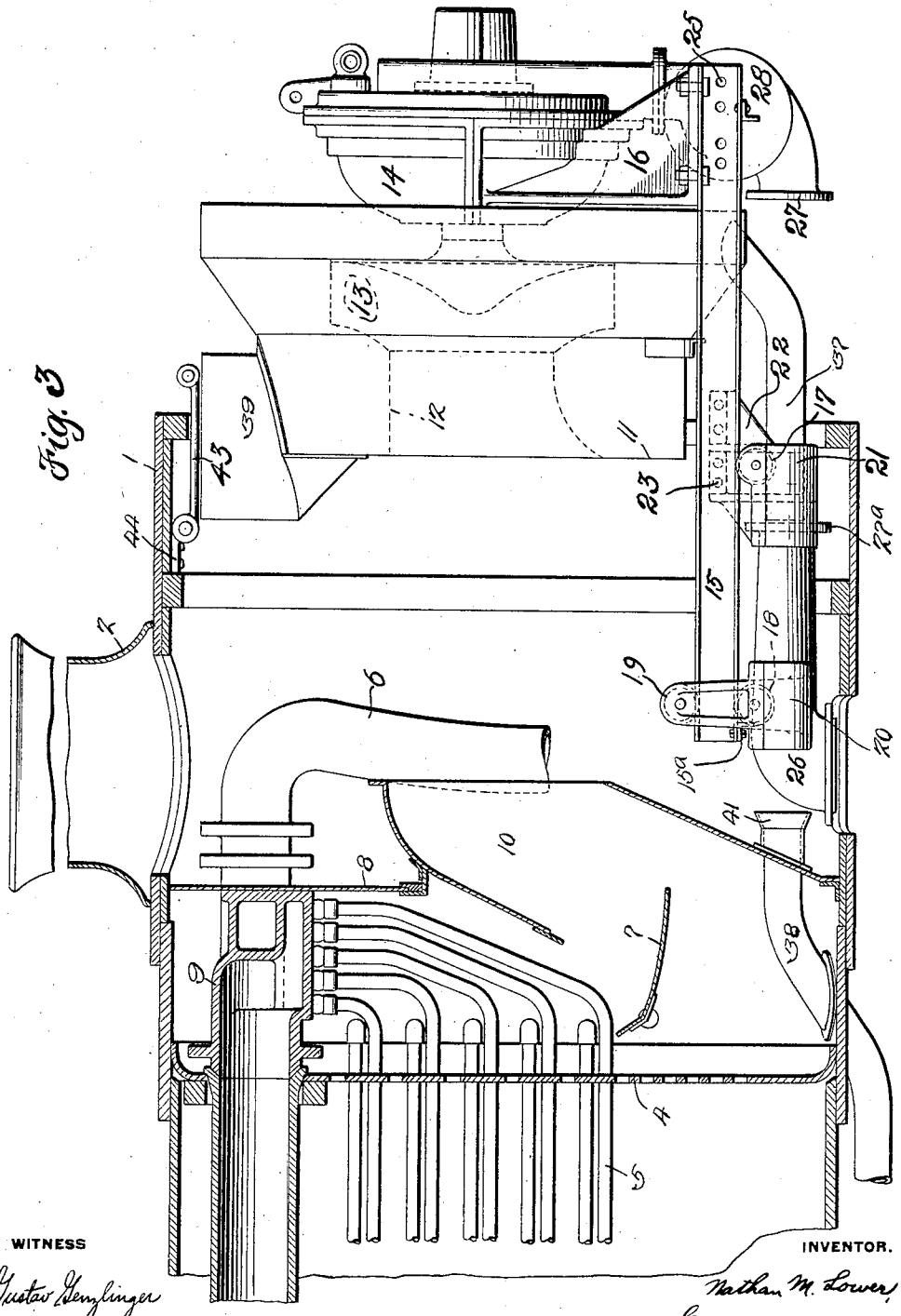
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3 SHEETS—SHEET 3.

Fig. 3



WITNESS

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UNITED STATES PATENT OFFICE.

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LOCOMOTIVE DRAFT APPLIANCE.

1,388,655. Specification of Letters Patent. Patented Aug. 23, 1921.

Application filed July 3, 1919. Serial No. 308,683.

To all whom it may concern:

Be it known that I, NATHAN M. LOWER, a citizen of the United States, residing at Bellevue, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Locomotive Draft Appliances, of which the following is a specification.

This invention has reference to an improvement in that form of draft appliance in which an exhaust fan driven by an actuating motor or turbine or other power device is employed which is ordinarily mounted in the smoke box or front end of a locomotive in association with the stack and the flues thereof.

The first of the objects of this present invention is the provision of an improved form of supporting means for holding the exhaust fan and motor device and maintaining it in proper relation with the other parts when in operation, while at the same time permitting of its ready withdrawal for inspection and repair and which at the same time avoids the need of providing supplemental or outside devices for supporting or transferring the fan and motor and attached parts when it is outside of the front end.

The above as well as such other objects as may hereinafter appear, I obtain by means of a construction which I have illustrated in preferred form in the accompanying drawings, wherein:

Figure 1 is a longitudinal vertical sectional view near the front end of a locomotive showing my improvements applied thereto; Fig. 2 is a front elevation with the end plate removed, and Fig. 3 is a longitudinal sectional view showing the operative mechanism including the fan and motor device drawn out of the front end in position for inspection or repair and supported by my improved carrying platform or frame.

Referring now more particularly to Fig. 1, it will be seen that I have therein indicated the forward end of a locomotive comprising the smoke box 1, the stack 2, the front end cover plate 3, a flue sheet 4 and an ordinary arrangement of superheater tubes 5 with dry pipe 6 and superheater damper 7, all located substantially as is usual in devices of this kind.

A partition 8 which is located just forward of the superheater 9 has an outlet passage 10 which passes through another partition 11. The latter, in association with other parts, forms a chamber or box containing a tube 12 which, with the fan 13 driven by the turbine or other form of motor 14, is mounted upon a supporting frame or platform composed of two I beams 15 secured together and held in proper relation by a cross casting 16 which latter acts particularly as a supporting saddle or bracket for the driving motor 14.

The I beams 15 extend inwardly from the cross casting 16 (to which they are firmly secured) for a considerable distance and rest upon rollers 17 and 18, the upper faces being engaged by rollers 19 the latter with the rollers 18 being mounted in upstanding supports 20 secured in some suitable manner to the boiler shell.

Forward of the support 20 there is another support 21 which carries the roller 17 and which also has an upwardly projecting bracket 22 provided with apertures 23 constructed to receive the retaining bolts 24 shown in Fig. 2 for holding the apparatus in place when the fan is in operative position and the holes 25 register with the apertures 23.

The exhaust from the engine comes up through the elbow 26, indicated in Fig. 3, and is turned through a nozzle in a forward direction, the end of the latter being arranged to engage the flange 27 when the parts are in the front end and the fan in operative position. From this point a connection leads to a valve casing 28 through which the exhaust passes upward into the forked outlet casting 29, arranged to discharge into the turbine to engage a series of turbine blades outlined diagrammatically in dotted lines at 30 in Fig. 2.

Above the part 29 there is a small outlet casting 31 which is connected by a pipe 32

from a coupling union 33, to receive from a pipe at the side of the boiler a supply of live steam for driving the fan and creating draft when the engine is not working steam in the main cylinders.

Referring to Fig. 1, it will be seen that when the parts are in the position therein shown the fan 13 will discharge the gases and products of combustion outwardly into a sloping receiver or circumferentially arranged plate 35 from which the cinders will flow out through the channel 36 and outlet tubes 37 and 38 while the smoke and hot products of combustion will escape through the tubular opening 39, which latter in this position is immediately under the stack 2. It will also be evident from examination of the structure as shown in Fig. 1 that the tubular passage 12 in this position registers with the opening 10 so that the inlet to the fan 13 will act properly in drawing the products of combustion forward. The cinder discharge pipe 37 in this position enters a bell-shaped terminal 41 on the outlet pipe 38.

In the position shown in Fig. 1, the flange 27 is secured to a companion flange 27ª to make a continuous connection for the exhaust steam leading to the motor or to the escape outlet, the flanges 27 and 27ª being of course secured together firmly by suitable means which may be removed when it is desired to withdraw the fan and motor mechanism from the forward end and bring it out to the position shown in Fig. 3.

In order to stay the apparatus and hold it firmly when in operative position, I employ a bracket link 43 attached to the inner face of the smoke box shell by means of a casting 44 and connected by a pin 45 to the motor casting in such manner that the pin may be removed and the link 43 swung up into the position shown in Fig. 3 when the apparatus is pulled out into inspection position.

From the above it will be seen that in carrying out my invention I have mounted together upon a common supporting platform or frame work, the inlet leading to the fan and the pipe which receives the exhaust steam as well as the outlet for the cinders and the outlet which delivers the smoke and products of combustion to the stack all in assembled and detachable relation to the other parts of the locomotive, but in fixed relation with regard to each other and carried upon the common support so that with the slidable mounting or support of the platform, I am enabled to move the whole apparatus from inspection to operative position, or vice versa, with a minimum of trouble and have the whole apparatus presented in suitable position for repair, or attention, or adjustment, without outside supporting appliances.

In order to prevent the supporting beams or rails 15 from being drawn out too far, I provide stop brackets 15ª as shown in Figs. 1 and 2.

From the above description it will be clear that when it is desired to draw the exhaust mechanism out from operative position to inspection position, that is from the position shown in Fig. 1 to the position shown in Fig. 3, all that is necessary to accomplish this is to disconnect the flanges 27 and 27ª, to take out the bolts 24, and the pin 45 and remove the cover plate 3.

I claim:

1. A locomotive draft appliance comprising in combination, an exhaust fan, a driving means for said fan, and a common supporting frame for said fan and driving means, said supporting frame being slidably mounted so as to hold the fan and driving means in operative position at one end of the travel of the supporting frame and to support the fan and driving means in inspection position at the other end of the travel of said supporting frame.

2. A locomotive draft appliance comprising in combination an exhaust fan, a driving means for said fan, a pair of sliding supporting rails carrying said fan and driving means and means adapted to be secured to a locomotive boiler shell for supporting said supporting rails in longitudinally movable relation to the boiler.

3. In a locomotive draft appliance comprising a fan and driving means therefor located in the smoke box, the combination of a frame to which the fan and its driving means are secured, means for slidably mounting said frame for movement longitudinally of the locomotive, and means for securing the frame to the adjacent structure when moved inwardly to place the fan and its driving means in their operative positions, said frame being adapted to support the fan and its driving means in inspection position substantially outside of the smoke box when moved outwardly on the slidable mounting.

4. Supporting means for locomotive fan exhausting apparatus, comprising a frame and means for slidably mounting said frame for movement into or out of the smoke box.

5. Supporting means for locomotive fan exhausting apparatus, comprising a frame and means for slidably mounting said frame for movement into or out of the smoke box and means for securing the frame to the adjacent structure when moved into the smoke box.

6. Supporting means for locomotive fan exhausting apparatus, comprising a frame and means for slidably mounting said frame for movement into or out of the smoke box and means for securing the frame to the adjacent structure when moved into the smoke box together with means for limiting the outward movement of the frame.

7. In a fan exhausting apparatus for locomotives the combination of a fan, a housing therefor provided with an opening into which the products of combustion are drawn, a driving means for the fan, a frame for supporting the fan, the housing and the driving means, and a mounting for said frame permitting sliding movement thereof and of said parts into or out of the smoke box.

In testimony whereof, I have hereunto signed my name.

NATHAN M. LOWER.