

G. H. EMERSON.
LOCOMOTIVE.
APPLICATION FILED OCT. 9, 1909.

981,401.

Patented Jan. 10, 1911.

2 SHEETS—SHEET 1.

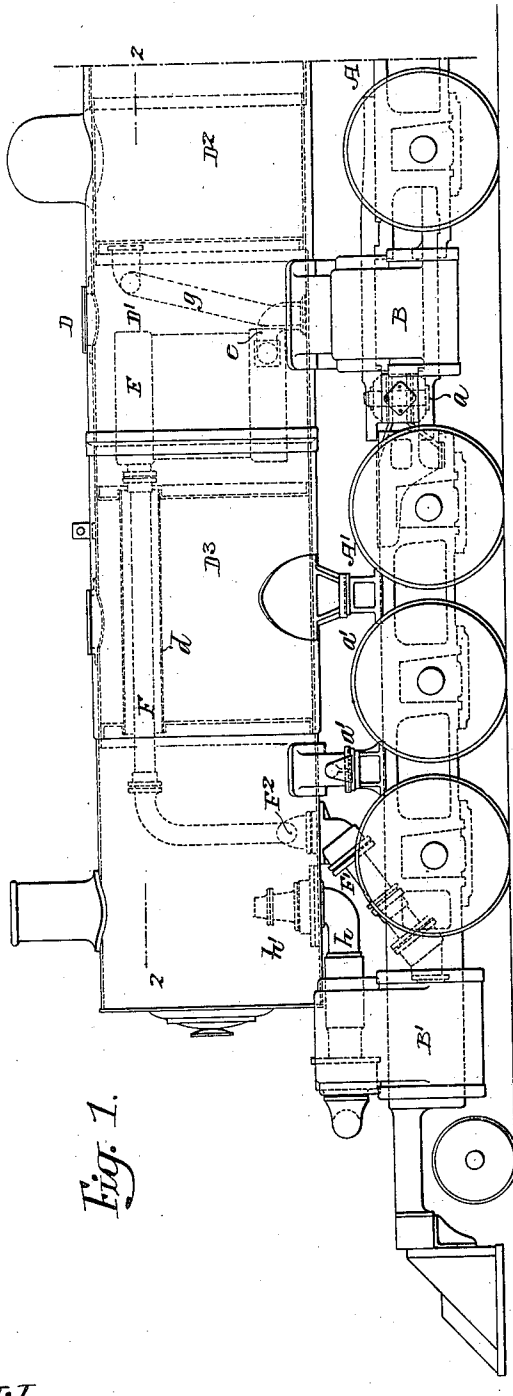


Fig. 1.

Witnesses—
V. A. Curran
Wm. A. Baw.

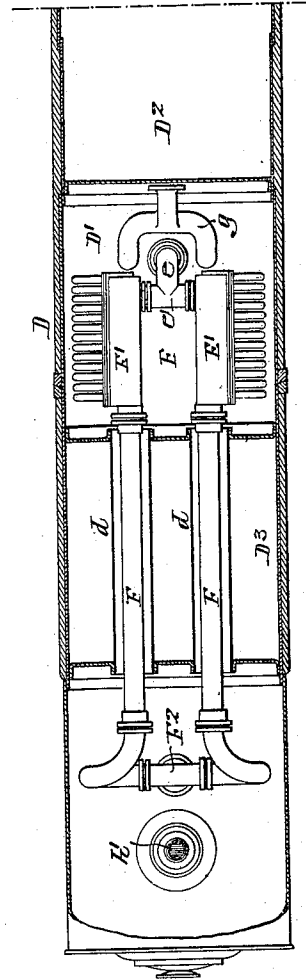


Fig. 2.

Inventor—
George H. Emerson.
By His Attorneys—
H. M. Brown

G. H. EMERSON.
LOCOMOTIVE.
APPLICATION FILED OCT. 9, 1909.

Patented Jan. 10, 1911.

2 SHEETS—SHEET 2.

981,401.

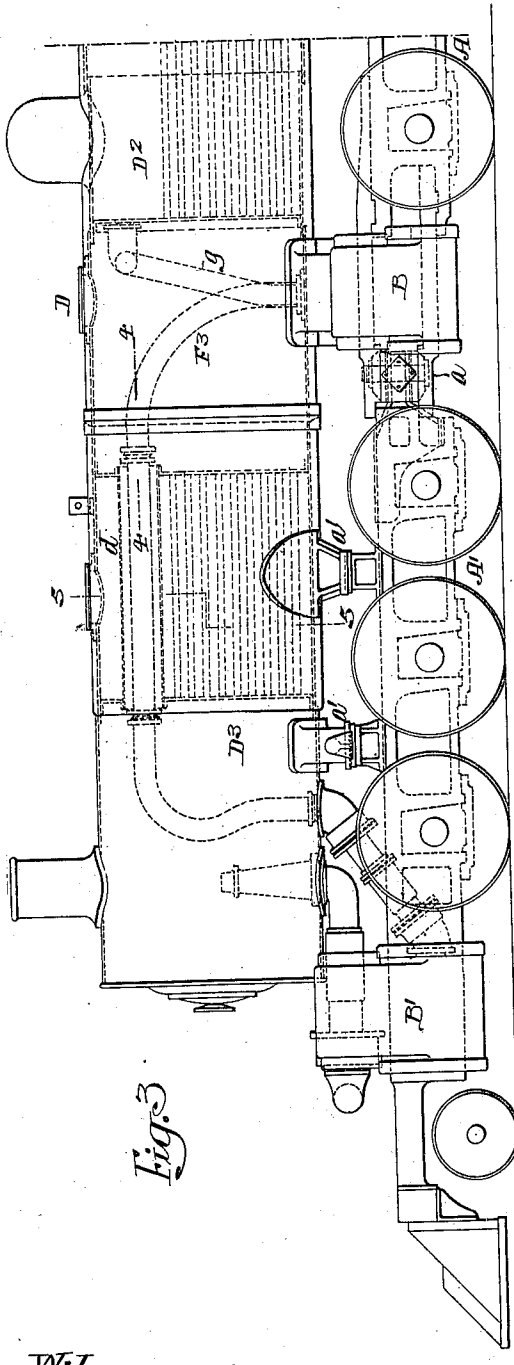


Fig. 3.

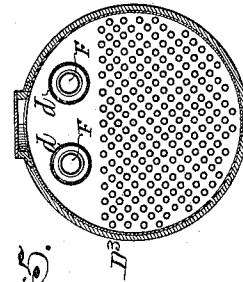


Fig. 5.

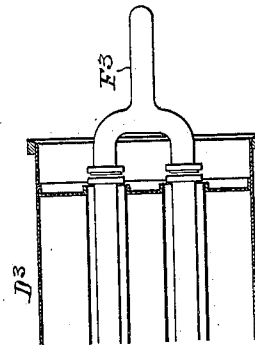


Fig. 4.

Witnesses.—
Wills A. Burrows
Wm. A. Baw.

Inventor—
George H. Emerson.
by his Attorneys—
Howard M. Munn

UNITED STATES PATENT OFFICE.

GEORGE H. EMERSON, OF ST. PAUL, MINNESOTA.

LOCOMOTIVE.

981,401.

Specification of Letters Patent.

Patented Jan. 10, 1911.

Application filed October 9, 1909. Serial No. 521,832.

To all whom it may concern:

Be it known that I, GEORGE H. EMERSON, a citizen of the United States, residing in St. Paul, Minnesota, have invented certain
5 Improvements in Locomotives, of which the following is a specification.

My invention relates to certain improvements in articulated locomotives, that is, a locomotive in which there are two frames
10 pivoted together and a single boiler secured to one frame and overhanging the other.

The object of the invention is to extend the feed pipe for the cylinders on the forward truck through the boiler, so as to prevent the condensation of the steam by exposure of the pipe, as is common in articulated locomotives. This object I attain in the following manner, reference being had to the accompanying drawings, in which:—
15

Figure 1, is a side view of sufficient of a locomotive to illustrate my invention; Fig. 2, is a sectional plan view on the line 2—2, Fig. 1; Fig. 3, is a side view illustrating a modification of the invention; Fig. 4, is a sectional view on the line 4—4, Fig. 3; and Fig. 5, is a transverse sectional view of the boiler on the line 5—5, Fig. 3.
20

A illustrates a portion of the rear frame of an articulated locomotive, A' is a forward frame which is pivoted at *a* to the rear frame in any suitable manner.
30

B, in the present instance, is a high pressure cylinder mounted on the rear frame, and B' is the low pressure cylinder mounted on the forward frame. Mounted in each frame are the axles having driving wheels which are driven independently of each other; the engines being, however, controlled by the ordinary mechanism in the cab of the locomotive. I lay no claim to this particular construction, as it is common in this class of locomotives.
35

D is the boiler which is rigidly mounted on the rear frame A and overhangs the forward frame A', as illustrated clearly in Fig. 1. The overhanging portion is suitably supported by the forward frame at *a'*. The boiler D is preferably made in two sections having a central combustion chamber D' separating the tube section D² from the tube section D³. The tube section D³ may, in some instances, be a boiler section connected to the boiler section D² by tubes, or may be a feed water heater for feeding water as it passes to the tube section of the boiler D².
40

As illustrated in Fig. 1, I have shown a

superheater E mounted in the intermediate combustion chamber D' and this superheater is connected through a pipe *e* to the exhaust passage of the high pressure cylinders B and to the inlet passage of the low pressure cylinders B', through the pipe F. The pipe F it will be noticed, in referring to Fig. 1, extends through a flue *d* in the section D² and is coupled to a flexible connection F' which leads to the steam inlet passages of the low pressure cylinders B'. Heretofore this pipe F extended on the outside of the boiler, which I find is objectionable as it is exposed. The pipe must be thoroughly protected in order to prevent the condensation of the steam as it passes from the high pressure cylinder to the low pressure cylinder.
60

g is a pipe leading from the steam space of the boiler section D² to the inlet passage of the high pressure cylinders.
65

h is a pipe leading from the exhaust passage of the low pressure cylinder to the smoke box of the locomotive and terminating in a nozzle *h'* within the smoke box.
70

The flue *d* may be a plain flue, or corrugated, as desired, and of sufficient size to allow for the free flow of the products of combustion through the flue, as well as through the tubes of the section, so that this not only adds a heating surface to the feed water heater, but also heats the steam tube F.
75

I preferably arrange the tubes and the superheater as shown in Fig. 2; the superheater having two sections E' connected by a pipe *e'*, which in turn is connected to the pipe *e* leading from the exhaust passage of the high pressure cylinders, and there are two tubes F, which pass through the two flues *d*; these tubes F, F are coupled to a union F² which in turn is connected to the flexible pipe F'. By making the pipes F' and *h* flexible they will have the independent movement of the forward truck and the overhanging portion of the boiler D.
80

In some instances the superheater E may be dispensed with. In this case I preferably extend the pipe, as illustrated at F³, direct from the exhaust passage of the high pressure cylinder through the flue *d* and connect it as shown in Fig. 3, and where two tubes are used, as illustrated in Fig. 4, the pipe F³ is forked before entering the flues.
85

Other modifications of the method of arranging the device may be resorted to without departing from the essential features of the invention.
90

Thus it will be seen that I do not expose the steam pipes leading from the high pressure cylinders to the low pressure cylinders, but protect them by carrying them through a section of the boiler and the steam does not come in contact with the flues, but there is a space for the free passage of the products of combustion between the pipes and the flues.

10 I claim:—

1. The combination in an articulated locomotive having a smoke box, of a boiler having two tube sections spaced apart to form an intermediate chamber, a superheater mounted in the intermediate chamber, a high pressure cylinder adjacent the intermediate chamber, a steam inlet connecting the rear tube section with the high pressure cylinder, a flue pipe of large diameter connecting the intermediate chamber with the smoke box, said flue pipe being open at both ends, a low pressure cylinder adjacent the forward tube section, a pipe connecting the exhaust of the high pressure cylinder with the superheater, and a second pipe connecting the superheater with the low pressure cylinder and passing through the said flue.

2. The combination, in an articulated locomotive having a smoke box, of a boiler having two tube sections or compartments

spaced apart to form an intermediate chamber, a plurality of superheaters in the intermediate chamber, high pressure cylinders mounted adjacent the intermediate chamber, a steam connection leading from the rear tube compartment to the inlet of the high pressure cylinders, a plurality of flue pipes of large diameter connecting intermediate chamber with the smoke box, each of said flues being open at both ends, low pressure cylinders adjacent the forward tube compartment and mounted independent of the boiler, steam pipes connecting the exhaust ports of the high pressure cylinders to one end of the superheaters, a plurality of steam conduits connecting the other ends of the superheaters and passing through the said flues, and an extension pipe leading from the smoke box of the boiler to the inlet of the low pressure cylinders and connecting the ends of the steam conduits in the smoke box.

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

GEORGE H. EMERSON.

Witnesses:

P. C. FLAHERTY,
A. C. SMITH.