J. E. WOOTTEN.

LOCOMOTIVE.

No. 192,725. Patented July 3, 1877.

Fig 1.

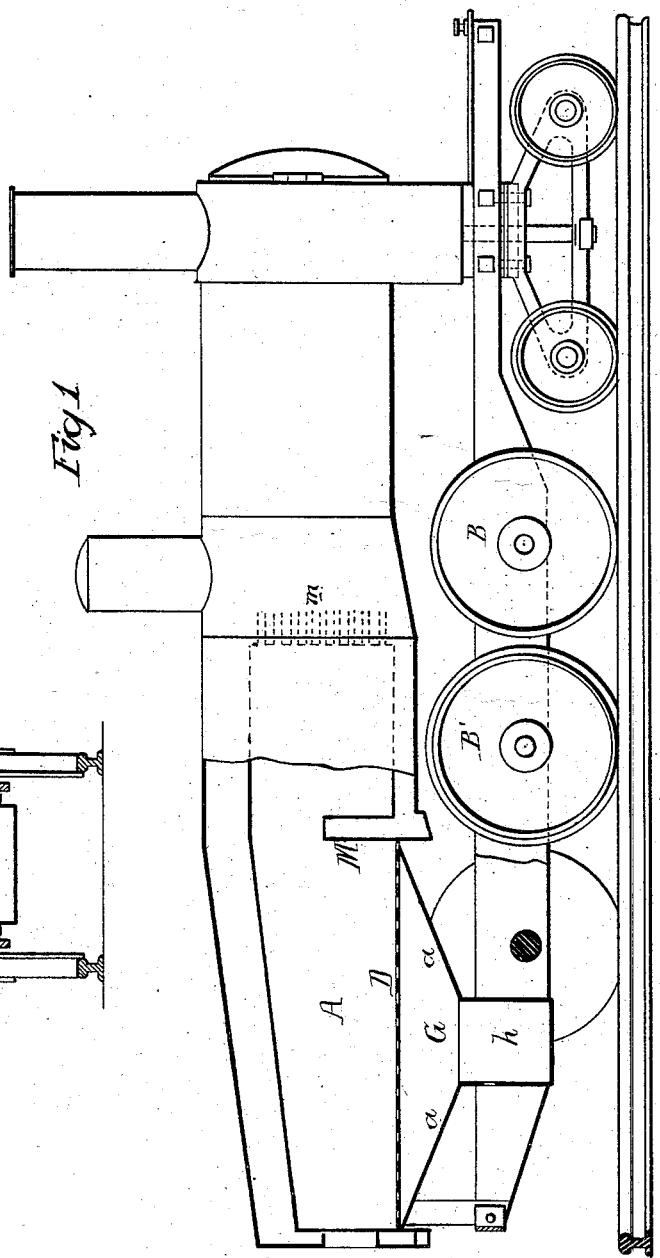
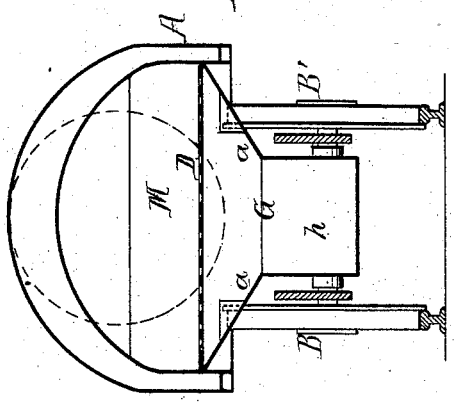


Fig 2.



Witnesses,
Jas. L. Skidmore,
F. O. McCleary

John E. Wootten
by his attorneys
Howson and Son

UNITED STATES PATENT OFFICE.

JOHN E. WOOTTEN, OF READING, PENNSYLVANIA.

IMPROVEMENT IN LOCOMOTIVES.

Specification forming part of Letters Patent No. **192,725**, dated July 3, 1877; application filed June 16, 1877.

To all whom it may concern:

Be it known that I, JOHN E. WOOTTEN, of Reading, Pennsylvania, have invented a new and useful Improvement in Locomotives, of which the following is a specification:

The object of my invention is to increase the area of the grate of a locomotive-boiler by arranging the fire-box and grate above and extending them laterally over the driving-wheels, without raising the body of the boiler to any material extent.

In building locomotives it has hitherto been the general practice to make the fire-boxes of a width determined by the distance between the inner faces of the opposite driving-wheels, or, more generally, by the distance between the insides of the opposite frames.

Where an attempt has been made to arrange the fire-box and grate above the wheels, and to make them as wide as, or wider than, the distance between the outer faces of the said wheels, the body of the boiler has been elevated to accord with the elevated grate, so that the tubes might be at a proper height above the fuel. This raising of the body of the boiler rendered the locomotive top-heavy—a defect which I obviate in the manner which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of a locomotive made in accordance with my improvement; and Fig. 2 is a transverse section.

It will be seen that the fire-box A laterally overhangs the driving-wheels B B′, its width being determined by that of ordinary cars used on the line; in other words, the fire-box need only be narrow enough to permit two locomotives to pass each other freely on a double track.

The grate D also overhangs the wheels, and extends entirely across the interior of the fire-box, and to the under side of the latter is secured an ash-pan, G, the inclined sides *a a* of which are constructed to clear the wheels, and to direct the ashes into the central receptacle *h*.

In carrying out my invention, the bridge M, which either extends across the interior of the fire-box or across the combustion-chamber at the front of the same, and which may be either a water-space or made of fire-brick, plays an important part, for the grate being necessarily elevated, a corresponding elevation of the body of the boiler would be demanded in the absence of the bridge, in order that the tubes *m* might be at a proper height above the said grate, to prevent the direct escape of fuel through the said tubes, and this elevation of the body of the boiler would render the locomotive top-heavy.

The bridge M and the auxiliary combustion-chamber at the front of the same permit the arrangement of the tubes so low down that while there is always water enough above the tubes, the body of the boiler may be as low, or nearly as low, as usual, and hence cannot be top-heavy.

Important advantages are attained by the increased grate-bar area due to the lateral extension of the fire-box. The fuel can be consumed in comparatively thin layers more gently and economically, and with less injury to the fire-box than the thick mass of intensely-heated fuel in an ordinary contracted fire-box. The increased grate-area, moreover, enables me to dispense with the usual contracted exhaust-opening for creating an artificial draft, a larger exhaust-opening being adopted, and, consequently, the tearing up of the fuel in the fire-box is avoided, the forcible expulsion of hard particles of fuel through the tubes, and the consequent waste of fuel, is prevented, and the usual spark-arrester dispensed with.

All these advantages are attained without rendering the locomotive top-heavy by the combination of the laterally-extended fire-box with the bridge M.

I wish it to be understood that I do not claim either the laterally-extended fire-box and grate or bridge, separately considered; but

I claim as my invention—

A locomotive-engine in which a fire-box wider than, and a grate as wide as or wider than, the distance between the driving-wheels, and arranged above the same, are combined with a bridge, M, extending across the said fire-box, and with the auxiliary combustion-chamber, all substantially as set forth.

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

J. E. WOOTTEN.

Witnesses:

HERMANN MOESSNER,

HARRY SMITH.