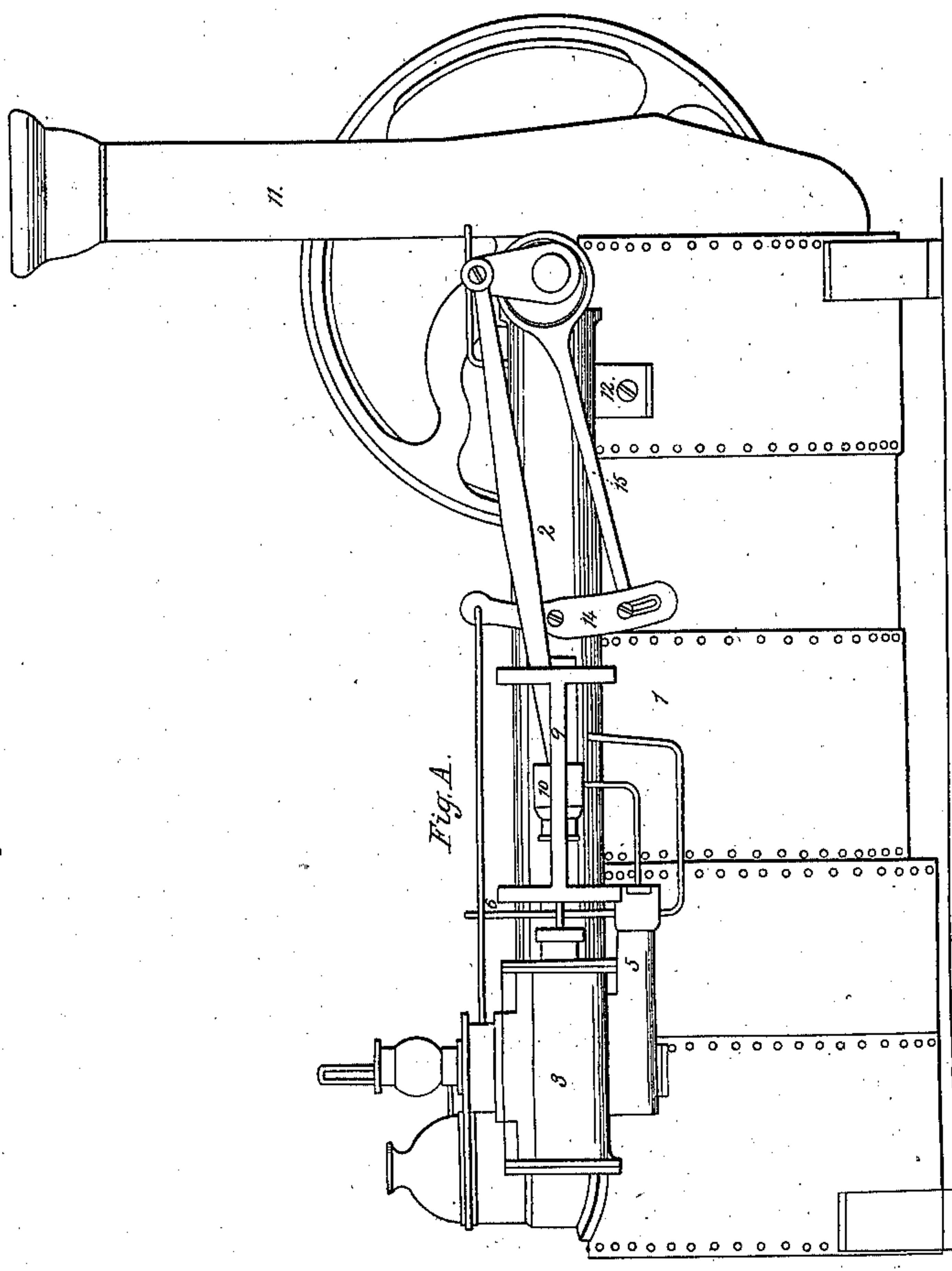
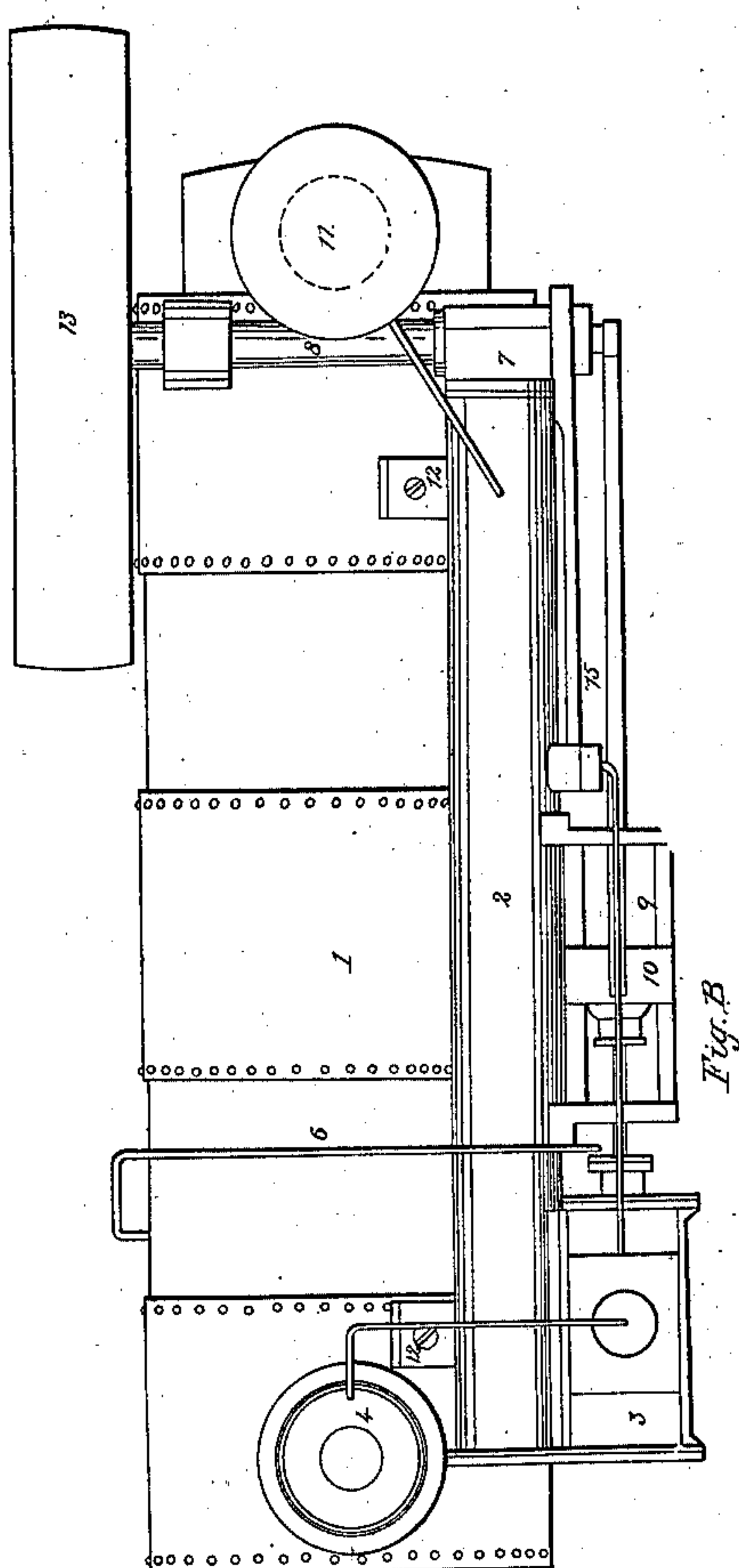
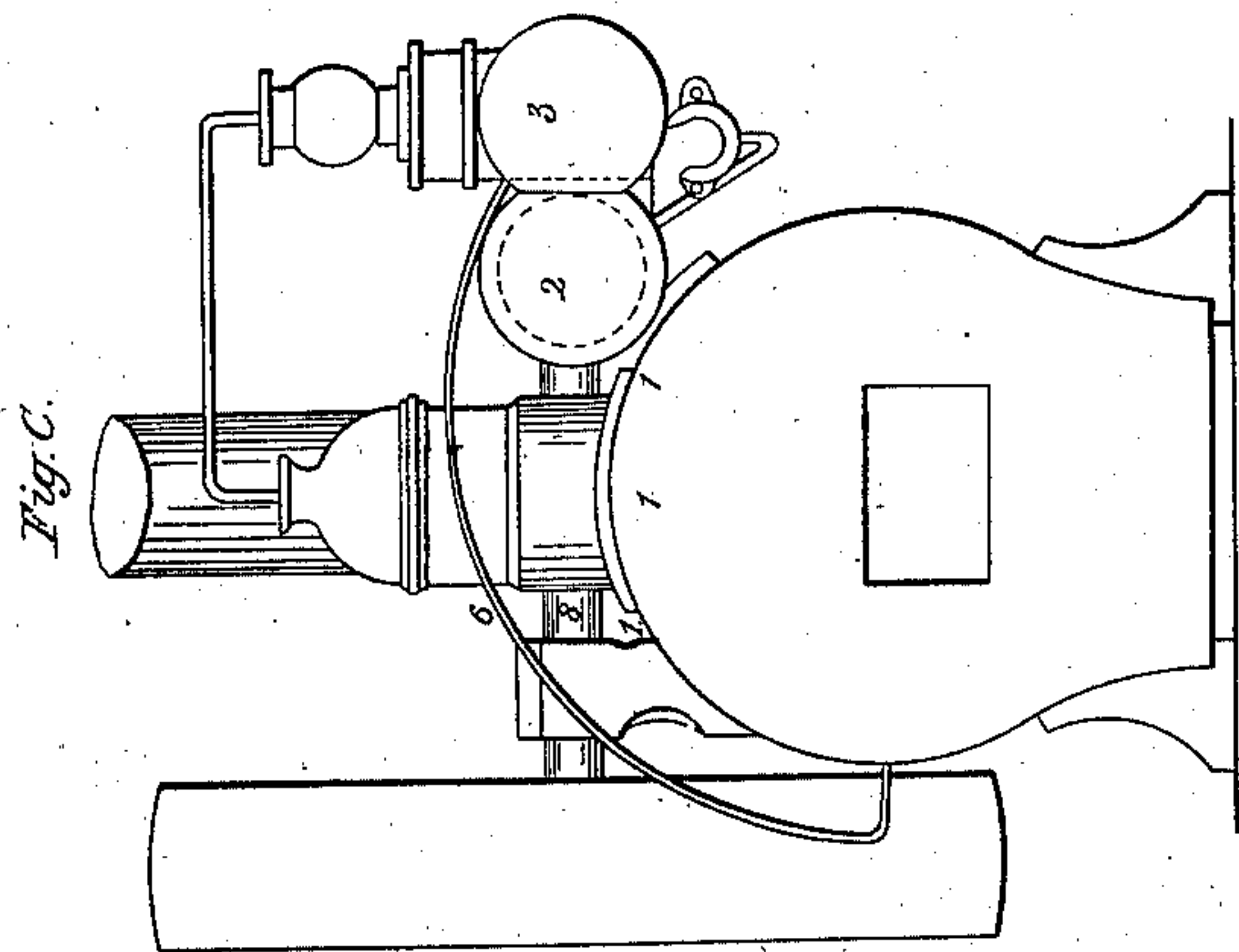


H. & F. L. Blandy,
Portable Steam Engine.

N^o 21,059.

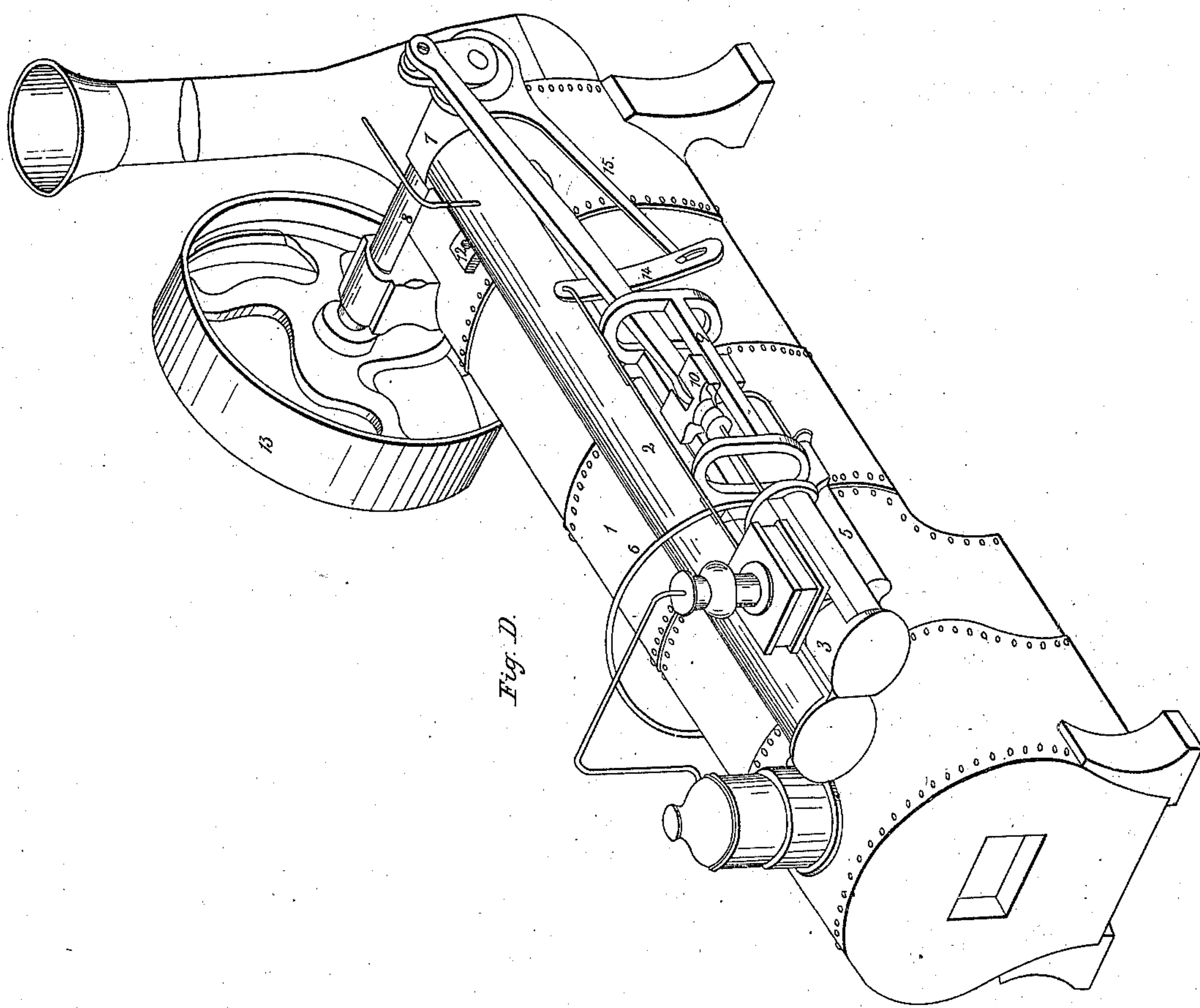
Patented Aug. 3, 1858.



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UNITED STATES PATENT OFFICE.

H. BLANDY AND F. I. L. BLANDY, OF ZANESVILLE, OHIO.

STEAM-ENGINE.

Specification of Letters Patent No. 21,059, dated August 3, 1858.

To all whom it may concern:

Be it known that we, HENRY BLANDY and FREDERICK I. L. BLANDY, of Zanesville, in the county of Muskingum and State of Ohio, have invented a new and useful Improvement in Portable Steam-Engines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Our improvement relates mainly to the construction of portable steam engines. The great desideratum in this class of machines is to construct them so as to render them at once compact yet simple, light yet strong, and hence available for the purposes of transportation. In view of which it has been customary for builders to mount the engine on the boiler, and thus dispense with the usual frame work required for its support. To this plan however there is an insuperable objection, as the expansion and contraction of the boiler, as its temperature is raised or lowered, necessarily affect the relative position of the working parts of the engine to each other, and consequently prevent that regular and easy working of the parts so essential to the proper performance of the machine. While on the other hand, the disturbance of the relative position of the parts of the engine and consequent straining when at work naturally causes the engine injuriously to affect the boiler so as to impair its strength and durability unless it has previously been constructed of a strength and consequent weight much greater than was absolutely necessary for the power of the engine, thus not only lessening its portability, but materially increasing its cost. For these reasons many builders prefer to arrange the working parts of the machine wholly independent of the boiler; notwithstanding that such a construction requires additional frame work for the support and attachment of the engine, thus not only greatly increasing its cost but rendering the whole machine much heavier, and less portable and manageable.

The nature of our improvement consists in the arrangement of a hollow continuous bed plate between the boiler and the engine upon which, and to which, the entire working parts of the latter are supported and attached; the hollow bed plate being for this purpose provided with suitable flanges cast on its upper and outer sides by which the

operative parts of the engine are supported and secured to it; there being others cast on its under side by means of which the bed plate itself is attached or riveted to the boiler. This hollow continuous casting or bed plate may be also used as a heater for the supply water. By this plan the engine will be rendered insulated as it were from the boiler, so that the relative position of its working parts to each other can not be affected by the expansion and contraction of the boiler so as to impair their regular and easy working; and on the other hand the boiler will not be subject to the injurious effects of the vibration and direct straining of the operative parts when at work.

To enable others skilled in the art to make, construct and use our invention we will now proceed to describe it in detail omitting the description of such parts of the machine as are non-essential to the full understanding of our present improvement.

In the accompanying drawings—Figure A represents a side elevation of the boiler, bed plate and working parts of a portable steam engine. Fig. B represents a top view of the same. Fig. C, an end view of the same. Fig. D, represents a perspective view of a portable steam engine, embracing our improvement.

To the boiler (1,) a bed plate (2,) is riveted or bolted by means of flanges (12) cast upon its under surface; or seats or saddles may be secured to the boiler, and the flanges of the bed plate secured to them by dovetail and key or screw bolts; or in any other suitable manner. In this instance the bed plate is represented as of a cylindrical form, forming a hollow continuous casting, and as having its outer side in a longitudinal direction slightly flattened so as to facilitate the application and attachment of the cylinder (3) of the engine to it, and to render it more compact. This bed plate may be made of any convenient size, either as regards its length or diameter. Instead of being round or cylindrical, it may be made in any other suitable form so long as it is made hollow. Upon it are cast the seats, legs or flanges (12) so curved as to fit the exterior of the boiler, there being also cast and suitably arranged upon it seats or faces for the support and attachment to it of the working parts of the engine, that is to say, for the cylinder (3) the guides or slides (9) for the cross-head (10) and rocker arm lever (14) eccen-

tric rod (15,) &c. Underneath the cylinder (3) seats are provided for the pump (5) and on the top of the bed plate (2,) for the governor when required; perforations are also provided for the pipes passing to or from the interior of the bed plate at suitable distance.—One end of the bed plate is represented as being capped or covered in the same way as a cylinder, and the other by the plumber block (7) of the main shaft (8). As there is no arbitrary rule by which lugs or flanges are arranged for the support of these parts, but rather a matter of judgment on the part of the builder, is deemed unnecessary here to enter into a detailed description of them.

The bed plate may if desired be used as a heater for the supply water by passing the exhaust steam as it escapes from the cylinder through a pipe suitably arranged within the bed plate, it (the bed plate), having been previously supplied with water; whence the steam is carried to the smoke stack (11,) so

as to increase the draft of the furnace, and the heated water conducted to the force pump (5) to be forced into the boiler through the supply pipe (6).

Having thus described our improvement what we claim as new and desire to secure by Letters Patent is—

The application to portable steam engines of a hollow continuous bed plate, in the manner substantially as described for the support and attachment of the operative parts of the engine, whereby the latter in working is rendered independent of the contraction and expansion of the former, and the boiler relieved from the direct strain of the engine as set forth.

In testimony thereof we hereunto set our hands.

HENRY BLANDY.
F. I. L. BLANDY.

Witnesses:

JAMES COCHRAN,
W. WOOD.