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PATENT



SPECIFICATION

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COMPLETE SPECIFICATION.

Improved Toy Steam Engine with Boiler.

I, EMIL FRIZ, a German citizen, of Goppingen, Wurttemberg, Germany, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 The present invention relates to a toy steam-engine with boiler, which may be employed either in a horizontal or in a vertical position; in the former case the engine will resemble a semi-portable engine, in the latter a stationary engine, and will afford the possibility of coupling it with other working models. The feature of the invention consists in the furnace, which may be a common
10 spirit heater, being so arranged, that it can be fitted to the boiler either at the one end (when the engine is in a vertical position) or to the side of the boiler (when the engine is in a horizontal position). At the same time this furnace will serve as a base for the engine.

15 In the accompanying drawing the present invention is exemplified in various constructional forms.

Figs. 1 and 2 and the detail shown in Fig. 3 show a constructional form, in which the furnace base is arranged to slide beneath the boiler.

Figs. 4 and 5 show two forms of the invention with the base arranged to be hung onto the boiler or pivoted thereto, respectively.

20 Fig. 6 is a longitudinal section through the boiler with a boiler tube arrangement.

Fig. 1 shows the engine according to the present invention of a horizontal type, resembling a portable or semi-portable engine. The heating lamp base *u* forms a stand for the body of the boiler *a*, the bearing of the fly-wheel *b* and the cylinder *c* with the other accessories. *f* is an auxiliary stand. The
25 stack *s* is fitted, as usual, to the boiler by means of an elbow and exchangeable.

d and *d'* in Figs. 1 and 2 are strips of sheet metal (see also Fig. 3) over which the flanges *v* of the base *u* engage, when the latter is slid in beneath the boiler from one end of the same. In such position the base is securely held
30 and will serve to heat the boiler *a* in its horizontal position from below.

When the boiler is to be used in a vertical position, Fig. 2, it is only necessary to draw out the furnace base *u* from the strips *d* and to slide it onto the strips *d'* (Fig. 2) provided at the end of the boiler. Also in such position the furnace will serve as a base for the now vertical boiler with the engine
35 parts. In place of the elbowed stack now a straight stack will be used.

The means for guiding the slidable furnace base *u* on the end or bottom of the boiler may also be different from those hereinbefore described, so long as

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it is possible to exchange the base from the one position to the other. If desirable, the guide, not in use, may be covered by a sliding lid.

Preferably the boiler is constructed according to Fig. 6. In this case a central boiler tube n extends from the furnace chamber m at the rear, with which communicates a transverse tube o . With this arrangement the heating is equally effective from the end, when the boiler is in a vertical position, or from the bottom, when the boiler is in a horizontal position, the inner heating surface chiefly producing the vaporisation of the water.

Fig. 4 is a perspective view of a modified form of the arrangement, the full lines indicating the one and the dotted lines the other position. To the boiler are fitted angle strips t^1, t^2 ; in these pairs of holes are provided, into which engage pins i and j , respectively, fitted to the furnace base, whereby the said base is hung to the boiler. By turning it through an angle of 90° the base may be fitted in the position indicated by dotted lines, so that the boiler may be either used in a horizontal or in a vertical position.

Fig. 5 illustrates another modification of the invention. Here the furnace base u^2 is hinged to the boiler a , the axis of said hinge being $x-x$ at the diagonal corner of the boiler end. This axis is at an angle of 45° to the horizontal, and therefore allows of rocking the base u^2 from one position for the horizontal boiler into the other position, indicated by dotted lines, for the vertical boiler. During such rocking movement the base travels through a cone around the axis $x-x$, for which purpose space need only be provided at the one side of the boiler.

The hereinbefore described exchangeability of the heater constituting the base enables the engine to be employed in the position suitable for operating models of varying forms and may be applied to the small boilers of toy engines generally.

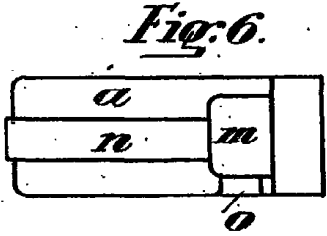
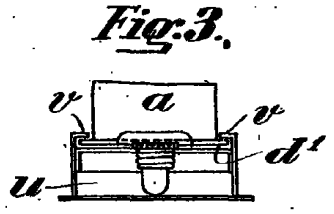
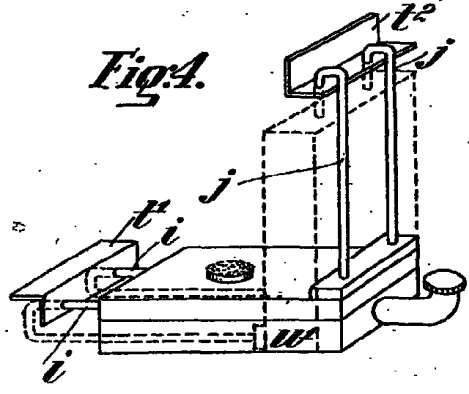
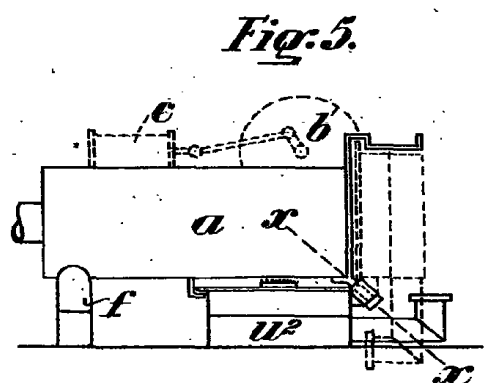
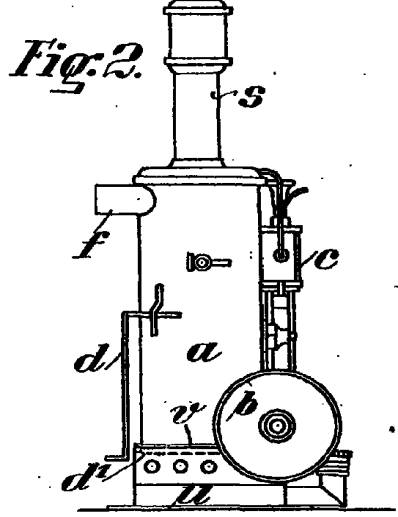
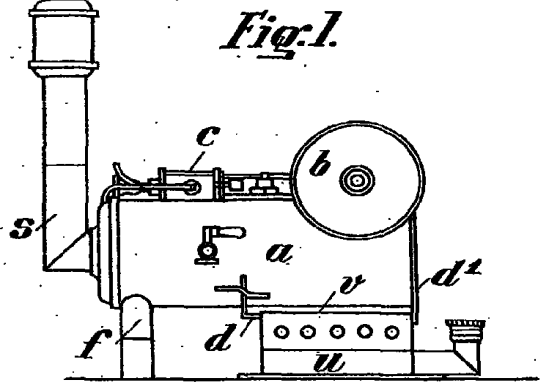
Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. Toy steam-engine with boiler in a horizontal or vertical position, characterized by the provision of a heater which also constitutes the engine base, and which may be alternately fitted either to the one end of the boiler (for a vertical engine) or to the side of the boiler (for a horizontal engine of the semi-portable type).
2. Toy steam-engine according to Claim 1, characterized in that the heater adapted for use in alternate positions, may be slid on guides, fitted to the end or the underside of the boiler, respectively.
3. Toy steam-engine according to Claim 1, characterized in that the heater, being provided with hooks or holding pins or the like for alternate engagement, may be alternately hung to the boiler in its vertical position, or turned through an angle of 90° to the boiler in its horizontal position.
4. Toy steam-engine according to Claim 1, characterized in that the heater is rockable on a hinge pin obliquely disposed to the end of the boiler, and may be thus swung into the one or the other of its alternate positions.
5. Toy steam-engine according to Claim 1, characterized in that the cylindrical boiler having in known manner a concentric boiler tube, is also intersected by a transverse tube passing into the heating chamber.

Dated this 20th day of November, 1919.

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[This Drawing is a reproduction of the Original on a reduced scale.]



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