

PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Boilers for Toy Locomotives and Horizontal Steam Engines.

We, BING WERKE vorm Gebruder Bing A—G, of 215, Regensburgerstrasse, Nuremberg, Germany, a German Joint Stock Company, 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:—

Boilers for toy locomotives have hitherto been completely cylindrical. This type of construction has the drawback that a considerable amount of the hot gases escapes unused on both sides of the boiler with the result of not only an unfavourable heating effect, but it also causes the lacquering or blueing on the longitudinal sides of the locomotive to soon become discoloured or damaged thereby rendering the toy unsightly after a comparatively short time. Attempts have been made to remedy this drawback by the provision of flame-guard plates, but such plates have been found insufficient and their provision also increases the cost of the toy.

The present invention obviates said drawbacks and relates to a boiler for toy locomotives and horizontal steam engines in which the lateral projection of the flames is prevented and a very favourable utilisation of the heating gases is obtained.

The new boiler differs advantageously from the boilers already known and the invention consists in the provision of a covered channel, extending from the front end of the boiler to about midway of same and forming, in combination with the funnel of the boiler, a continuous flue, into which the exhaust pipes from the engine cylinders project and discharge underneath the funnel.

The invention will be clearly understood from the following description aided by the annexed drawings in which a typical embodiment of the invention is illustrated and in which Figure 1 represents a side elevation of a locomotive boiler, the undercarriage being shown diagrammatically. Figure 2 is a cross section through the boiler along the line A—B of Figure 1 and Figure 3 is a view of the boiler from below.

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The boiler consists of a tubular member 1 with front and rear end walls 2, 3 and with projecting portions 4 representing a steam dome and a sandbox or like fittings. In the vicinity of the front end 2 the boiler is traversed by a smoke stack tube 5, the upper end of which is concentrically surrounded by a funnel 6, mounted on the boiler 1, whilst the lower end opens into a channel 7, which is rolled or pressed parallel to the longitudinal axis of the boiler, in the boiler shell. From the front end 2 to beyond about midway of its length, the channel 7 is covered by a plate 8 which is traversed below the mouth of the smokestack tube by a tube 9.

The exhaust pipes of the engine cylinders are connected to the tube 9, which enters like an injector nozzle underneath the tube 5.

The arrangement operates in the following manner. The spirit burner 10 which in consequence of the new heating channel 7, 8 can be kept shorter than heretofore is—as indicated by the dot and dash lines in Figure 1—inserted and secured in the undercarriage of the locomotive in such a way that the flames strike into the unscreened portion of the channel 7. Hence the flames do not as in the case of the customary cylindrical boilers, diverge laterally from the wall of the boiler, but their heating power is fully utilised. In consequence of the draught set up by the channel 7, 8 and the smokestack tube 5, the collected heating gases are drawn through the channel 7 along the lower wall of the boiler, so that an extremely effective and rapid heating effect is produced which is still further intensified as soon as the boiler is under steam and the locomotive is running, because the cylinders then begin to discharge their exhaust steam, through the tube 9 into the stack tube 5 and the injection effect occurring at the lower and upper ends of the stack tube considerably increases the draught in the channel 7, which facilitates the heating action and the supply of fresh air so that the flames attain their maximum development.

The new design of boiler can also be

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applied with advantage to horizontal steam engines.

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

10 1. In a Boiler for toy locomotives and horizontal steam engines providing a channel which is hollowed out along the boiler and covered from the front end of same to about midway of its length, and which in conjunction with the smoke-
15 stack tube of the boiler, forms a continuous flue for the collected heating gases.

2. In a Boiler according to Claim 1

connecting the exhaust pipes from the cylinder units into a common tube which passes through the covering plate of the channel, so that, when steam is discharged through said tube, an injector effect is produced which facilitates the suction draught in the channel. 20

25 3. The improvement in boilers for toy locomotives and horizontal steam engines constructed substantially as described with reference to the annexed drawings.

Dated this 15th day of March, 1930.

H. GARDNER & SON,
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Agents for the said Applicants.

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

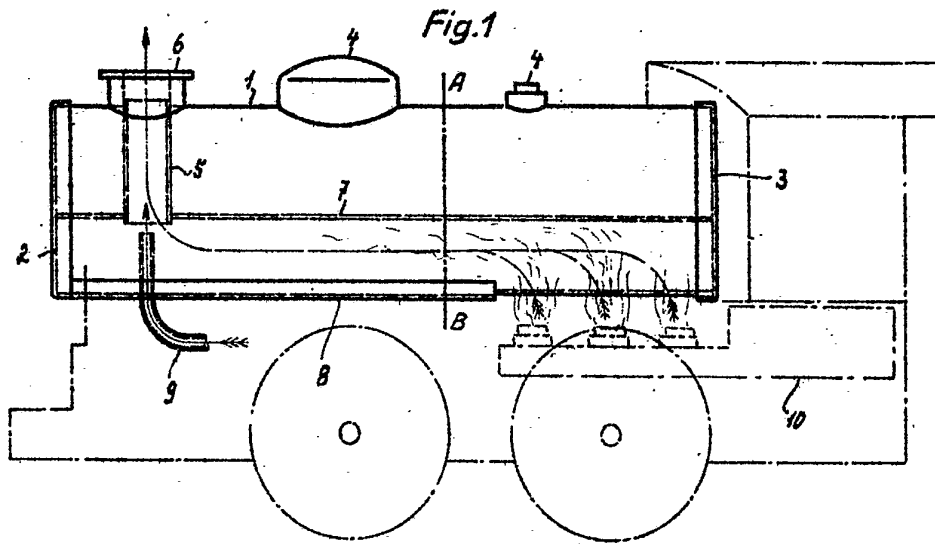


Fig. 1

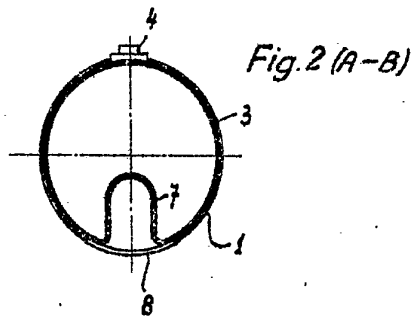


Fig. 2 (A-B)

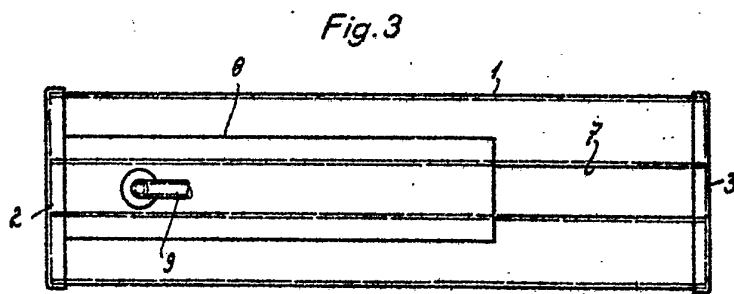


Fig. 3