A. BUCKMAN.

Improvement in Steam Toy Engines.

No. 124,194. Patented March 5, 1872.

Fig. 1.

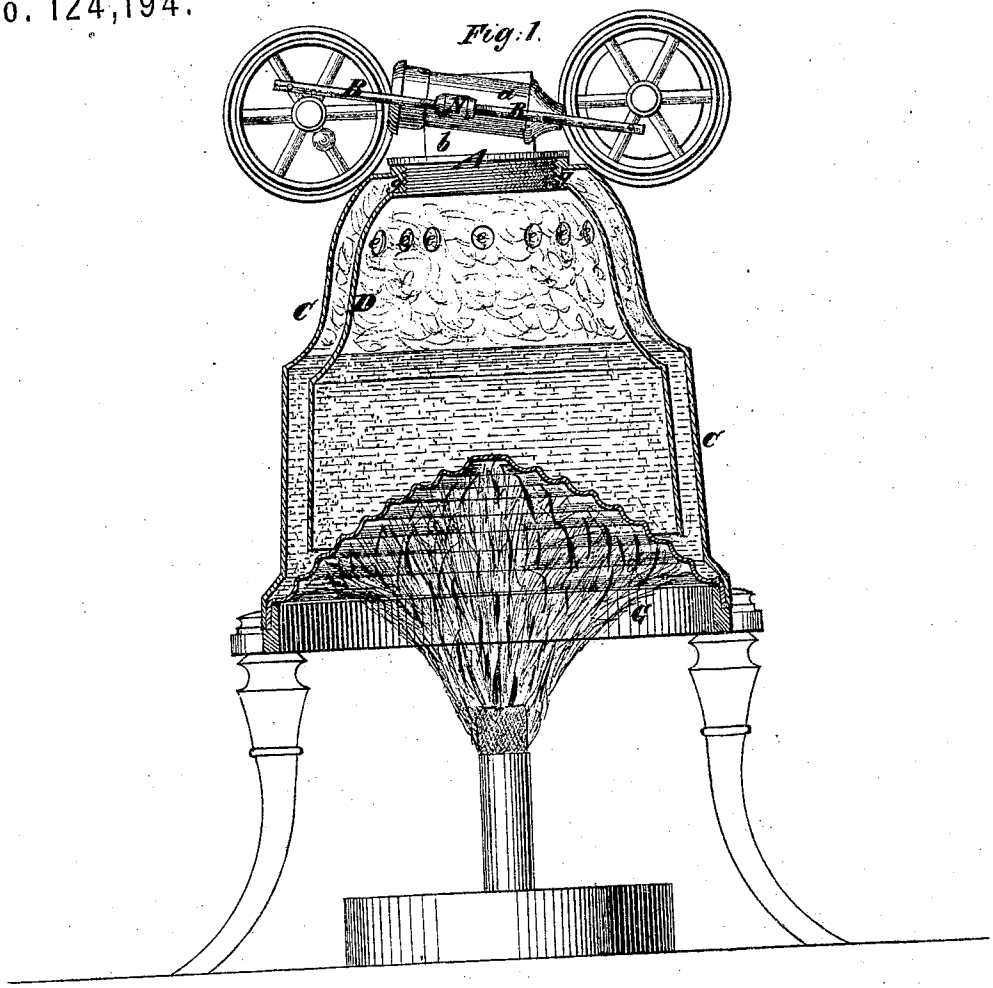
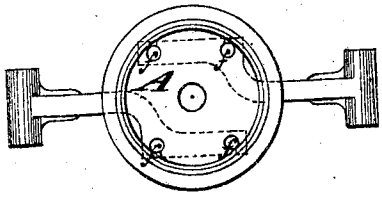


Fig. 2.



Witnesses:

Fred Haynes

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124,194

UNITED STATES PATENT OFFICE.

ALEXANDER BUCKMAN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN TOY STEAM-ENGINES.

Specification forming part of Letters Patent No. 124,194, dated March 5, 1872; antedated February 15, 1872.

To all whom it may concern:

Be it known that I, ALEXANDER BUCKMAN, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Toy Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming part of this specification.

This invention consists in a novel construction of the boiler of the engine with an inner shell and a corrugated conoidal bottom, whereby the temperature of water in the boiler is prevented from being so easily affected by differences in the external temperature and a greater heating-surface is obtained. It also consists in a removable top or cap to the boiler, which constitutes the bed-plate of the engine, and contains the steam-passages from the boiler to the engine, whereby provision is made for cleaning out said passages from the ends communicating with the inside of the boiler; also, in an adjustable connecting-rod, by which two engines are connected, and which can be adjusted while in place to get the proper stroke.

In the accompanying drawing, Figure 1 is a side view of an engine made according to my invention, showing its boiler in section; and Fig. 2 is an inverted plan of the top of the boiler.

Similar letters of reference indicate corresponding parts in both figures.

The engine proper is substantially like that for which I filed an application for Letters Patent on the 4th day of April, 1871, consisting of two oscillating cylinders, *a a*, whose trunnions are supported in hollow standards *b b*, and are kept in place by an interjacent spring. This engine is arranged on the removable head A of the boiler, and its two crank-shafts are connected by a crank on each and an adjustable rod, B. This rod B is made in two pieces, which are screw-threaded on their adjacent ends, the one having a right-hand and the other a left-hand thread, and are secured together by a right and left hand nut, N, which may be turned while the rod is in place to shorten or lengthen the rod, to adjust it to the stroke of the engines. C is the boiler, the shape of which is represented in the drawing, and which has a corrugated bottom, E, of conoidal form, and is provided with an inner shell, D. This shell is perforated with a series of holes, *e e*, near its upper edge, and is there secured to the socket *g*, which is provided for the reception of the removable head A, but does not touch the bottom of the boiler, a space being left for the circulation of the water to and from its outer and inner sides. The socket *g* is internally screw-threaded for the reception of a screw-threaded ring or collar on the removable head A. The head is provided with a filling mouth or nozzle, which is fitted with a cock, and through which the boiler may be filled without removing the head therefrom. The steam-passages *f f* through the hollow standards extend to the interior of the head. The stand G consists of a brass or other metal ring provided with lugs having holes in them, into which the legs are cast.

Great difficulty is experienced with toy engines having boilers of ordinary construction in getting up steam when located in a draught of cold air, on account of the small steam-space and the small amount of heating-surface compared with the surface exposed to the air. This difficulty I obviate by means of the inner shell D, which separates the main body of water and steam from those portions immediately adjacent to the outer shell; and, by means of the corrugated conoidal bottom, I obtain a greater heating-surface, and economize the heat by preventing its escape around the sides of the boiler. Another difficulty with those engines is that the connecting-rod on some of the parts of the engine is apt to become bent, and thereby lengthened or shortened, so as to alter its stroke. This I remedy by making the connecting-rod of adjustable length, as described, whereby, if the stroke of either of the engines be altered, the rod may be adjusted, without removing it, simply by turning the nut to shorten or lengthen it. Still another difficulty is experienced, which is of more importance than either of those just mentioned—that of clogging up or incrusting of the ports, so as to prevent the passage of steam through them. To remedy this, I provide the boiler with a removable head, on which the engines are arranged, and which may be removed for the purpose of cleaning the ports. This may be done, on the removal of the cylinders from their standards, by inserting a pin or wisp of broom-corn first at one end of the ports

and then at the other, and working it round till they are cleared.

Claims.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The boiler provided with a corrugated conoidal bottom and with an inner shell which is open at top and bottom to the surrounding water-space, substantially as herein described.

2. The removable head A, constituting the cap of the boiler and the bed-plate of the engine, and containing the steam-passages, as and for the purpose described.

3. The adjustable connecting-rod formed in two parts, and connected by right and left hand screws and a nut, substantially as and for the purpose herein specified.

ALEXANDER BUCKMAN.

Witnesses:

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