A.D. 1886, 23rd JUNE. N° 8321.

COMPLETE SPECIFICATION.

Improvements in Steam-engine-boiler Feed-pumps, Part of which Improvements are Applicable to Steam-engines Generally.

We, OTTO LILIENTHAL, of Berlin, in the Empire of Germany, and WILLIAM BASHALL, of 21 Holland Villas Road, Kensington, in the County of Middlesex, Engineers, 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:—

Our invention relates to an improved construction of connecting rod for the feed pumps of steam engines, according to which the plunger of the pump can be made to perform its normal functions without moving the eccentric sheave to which it is connected, as well as to an improved stuffing box for use with a pump fitted with the former part of our invention, and throughout steam engines fitted therewith.

The first part of the invention consists in making the connection between the strap of the eccentric and the connecting rod of the plunger by means of a knuckle joint, instead of rigid as at present. The eccentric strap is prolonged into a hand lever which lies idly by the side of the connecting rod so long as the pump is being worked by the engine and which can therefore be used to work the pump by using it as an ordinary pump handle, a second knuckle joint being introduced to allow of the plunger rod making its usual rectilinear stroke.

In order that our invention and the means by which the same may be carried into practical effect may be thoroughly understood, we will proceed to describe the same in detail, referring in so doing to the accompanying drawings which are to be taken as part of this specification and read therewith, and in which like parts are marked throughout with the same reference letter.

Fig. 1 is a front elevation and Fig. 2 is a side elevation, both partly in section, illustrating our improved connecting rod.

Fig. 3 is a sectional elevation of the improved stuffing box we use with our improved feed pumps.

A is the ordinary eccentric sheave, and B its strap.

The strap (preferably the lower half b) is prolonged downwards into a hand lever C.

D is the plunger rod of the pump and is connected to the eccentric strap by a pair of links E, E^1, connected to the top of the plunger rod by a fork F and knuckle joint G, and to the underside of the strap by a second joint as already stated.

It is not necessary to the success of our invention that two links should be used, but we prefer to use a pair for constructional reasons.

The links E, E^1 produce a space in which the lever C conveniently hangs when not required for its special duty, and in which it is confined by means of a spring detent of any convenient type.

The one illustrated in Fig. 1 consists of a pin *c* working upwards through the shank *f* of the fork. The nose c^1 is forced into a hole in the lever C, made to receive it, by a spiral spring c^2, and can be withdrawn therefrom by the thumb piece c^3.

Figs. 3 to 8 illustrate the second part of our invention.

Fig. 3 is a sectional elevation of our improved stuffing box.

Figs. 4, 5, and 6 are, respectively, plan, elevation, and inverted plan of the split thimble.

Figs. 7 and 8 are, respectively, elevation and inverted plan of the nozzle and saucer.

H is the stuffing box and *h* the cavity containing the packing.

I is the nozzle screwing down upon the packing and having its upper edge expanded into a saucer I'.

Vertical grooves or recesses *i* are made through the nozzle I, the sharp outer edges of which grooves serve, when the nozzle is screwed into the throat of the box, to clear the female threads of the stuffing box of the fragments of packing which work into them.

J is a split thimble entering the nozzle and serving to make and maintain a proper working fit with the surface of the rod.

Fig. 9 is an elevation of a vertical steam engine fitted with our invention throughout.

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:

1. The combination of eccentric strap and rigid prolongation thereof constituting a lever handle with a link connection from the strap to the plunger rod of a steam-engine feed-pump, substantially as and for the purpose described with reference to the accompanying drawings.

2. The combination in the stuffing box of the feed-pump of a steam-engine-boiler, of the closing nozzle having grooves with sharp outer edges formed therein and a split screwed thimble making up between said nozzle and the plunger rod working through the same, substantially as and for the purpose described with reference to the accompanying drawings.

3. In a steam engine in which the eccentric strap of the boiler feed pump is prolonged into a lever handle, the connection of said strap to the plunger rod of the feed pump being by means of a link or links, fitting the stuffing boxes of said engine with a closing nozzle having grooves with sharp outer edges formed therein and a split screwed thimble making up between said nozzle and the rod working through the same, substantially as and for the purpose described with reference to the accompanying drawings.

Dated this 23rd day of June 1886.

PHILLIPS & LEIGH,
Agents for the Applicants.

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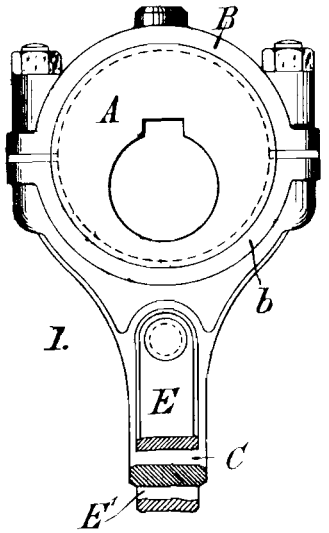
1886.

FIG. 1.



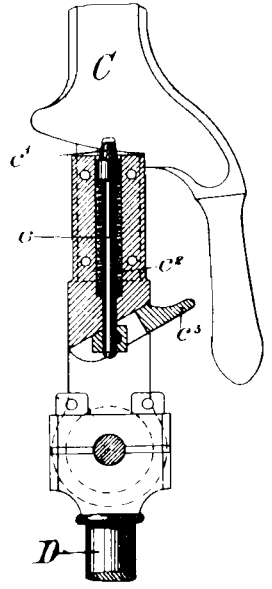
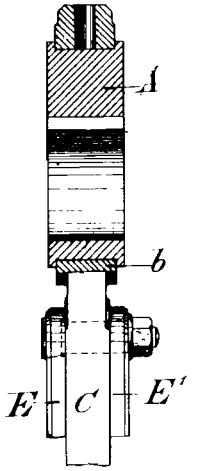


FIG. 2.



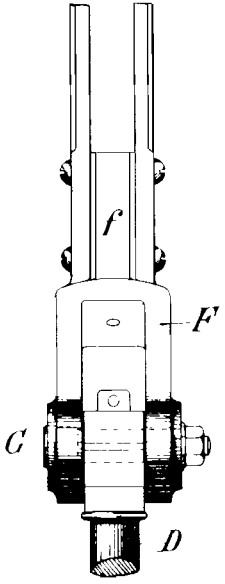
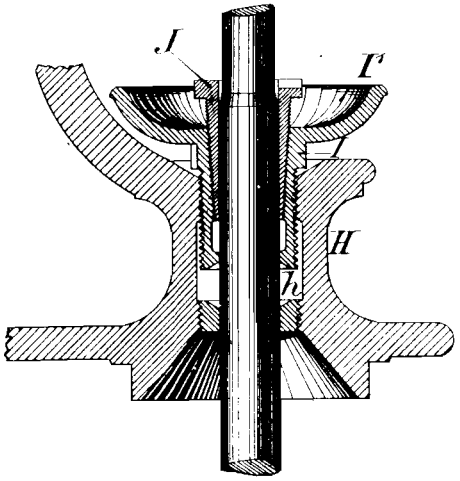


FIG. 3.



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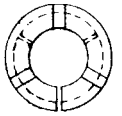

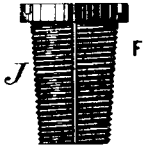

FIG. 5.

FIG. 6.

FIG. 7.

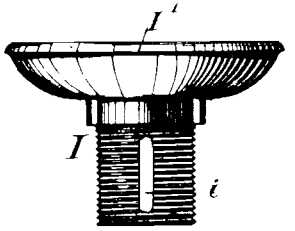

FIG. 8.

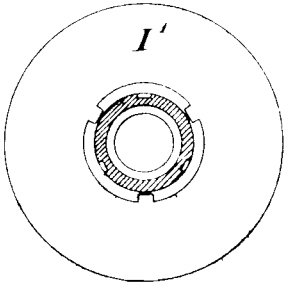

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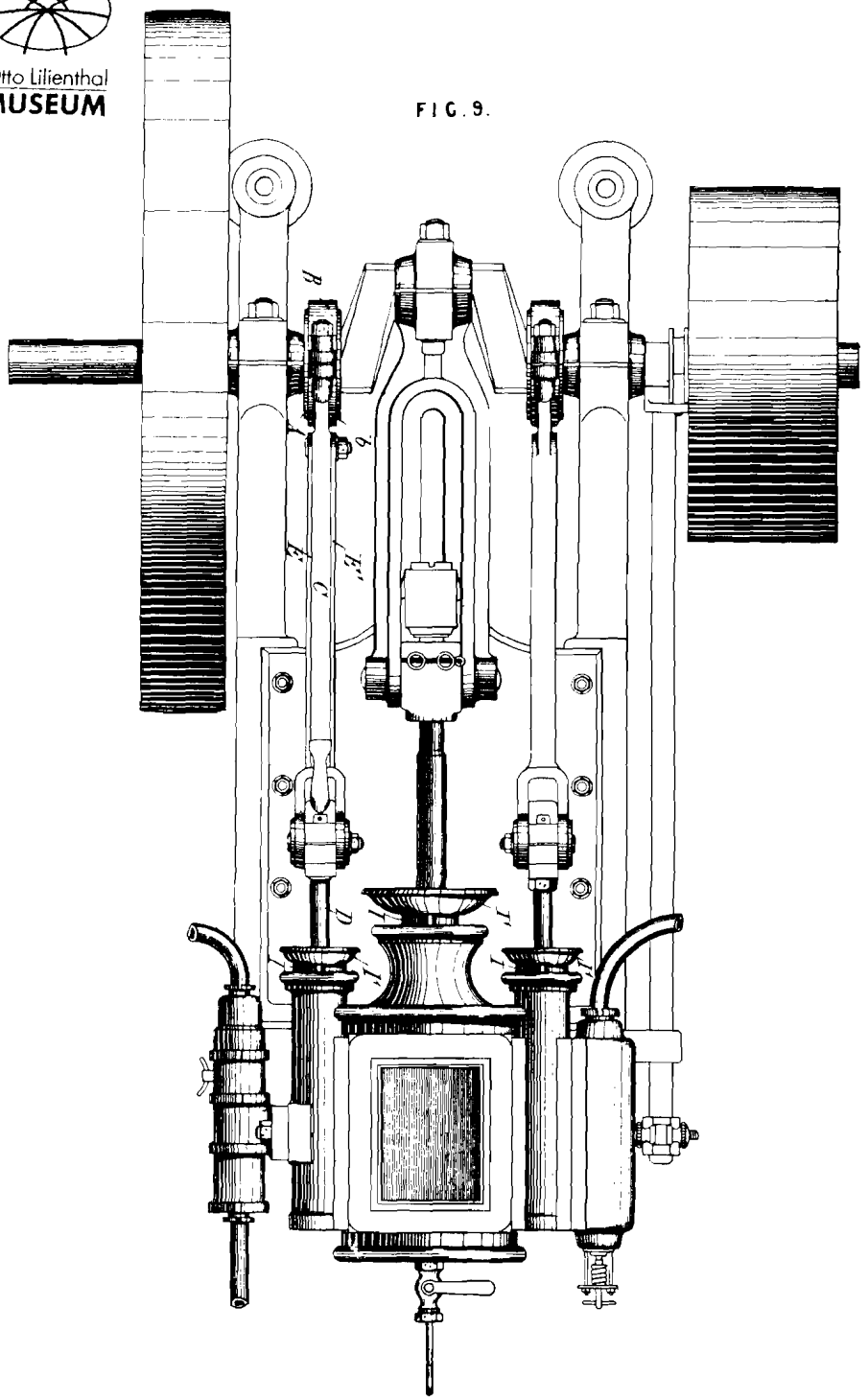
FIG. 9.



A.D. 1866. JUNE 23. N° 8321.
LILIENTHAL & BASHALL'S COMPLETE SPECIFICATION.