(No Model.)

C. F. HINRICHS & J. C. BARKER.

STEAM CYLINDER.

No. 458,458. Patented Aug. 25, 1891.

Fig. 1.

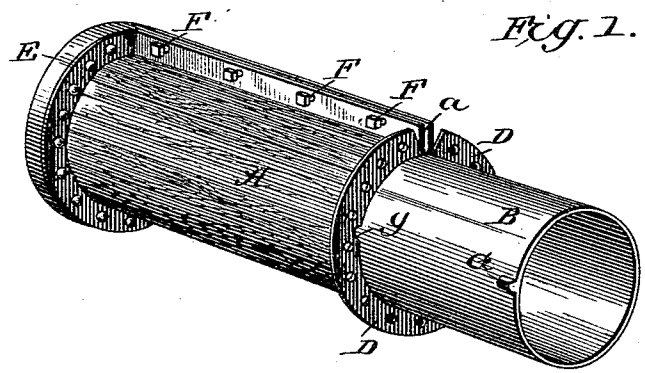


Fig. 2.

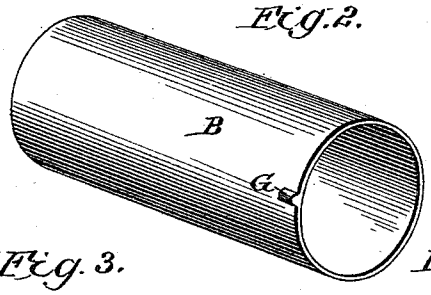


Fig. 3.

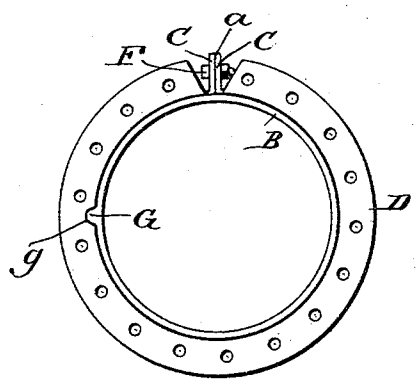
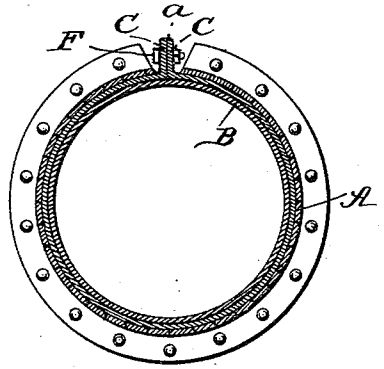


Fig. 4.



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CHARLES F. HINRICHS AND JOEL C. BARKER, OF POPLAR BLUFF, MISSOURI.

STEAM-CYLINDER.

SPECIFICATION forming part of Letters Patent No. 458,458, dated August 25, 1891.

Application filed May 4, 1891. Serial No. 391,573. (No model.)

To all whom it may concern:

Be it known that we, CHARLES F. HINRICHS and JOEL C. BARKER, of Poplar Bluff, in the county of Butler and State of Missouri, have invented a new and useful Improvement in Steam-Cylinders, of which the following is a specification.

This invention is an improvement in cylinders and especially in steam-cylinders, and has for an object to provide a cylinder which when worn by the piston can be easily and quickly repaired without necessitating the rebarring of the cylinder.

The invention consists, broadly, in a cylinder having a removable lining-tube which can be removed when worn and another substituted in its place.

The invention consists, further, in certain novel constructions and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the cylinder with the lining partly inserted. Fig. 2 is a detail view of the lining-tube, and Figs. 3 and 4 are respectively end and cross-sectional views of the improved cylinder.

When an ordinary steam-cylinder becomes so worn that boring out is required, it becomes necessary to detach it from the engine-frame or other machinery and send it off, frequently to a considerable distance, over bad roads, &c., to a repair-shop. During such interval the engine is stopped and business delayed at a cost frequently far in excess of the price of a number of new cylinders.

By our invention we seek to avoid the necessity of boring out the cylinders by providing a removable lining, which receives the wear, and to so secure the said lining in place that when worn it can be quickly removed and a new one substituted.

In the construction shown the cylinder is shown as formed with an outer tube or casing A and an inner tube or lining B. This lining or shell B is fitted in the casing A, and may be conveniently removed and replaced when desired. It is preferred to split the casing A at *a* from end to end, provide flanges C along the opposite edges of such split *a*, and to provide the ends of the casing with flanges D, to which the cylinder-heads E may be bolted in the usual manner. The flanges C may be connected by bolts F, as shown, or in other suitable manner, and when such flanges C are brought together the casing will be clamped tightly upon the lining, the connecting-bolts F being regarded as means for clamping the split casing upon the lining. The lining or shell is provided with a short key or projection G, which enters a groove or notch *g* in the casing and holds the lining from turning therein.

In order to replace a worn lining or shell by a new one, it is only necessary to take off one of the cylinder-heads and loosen the bolts of the other and those on the endwise flanges C, when the old shell may be pulled out, a new one inserted, and the casing and heads rebolted, when a practically new cylinder is provided.

It is proposed in practice to furnish at least one new lining and also an extra set of piston-rings with each cylinder, so that if occasion requires the cylinder may be quickly repaired and a new lining or shell may be procured before the necessity of repairing again arises.

Having thus described our invention, what we claim as new is—

1. A cylinder comprising a split tube or casing, a lining tube or shell fitted removably therein, and means whereby to clamp the casing upon the lining or shell, substantially as set forth.

2. The improved cylinder herein described, consisting of the casing A, split at *a* and provided with longitudinal flanges C, end flanges D, and groove or recess *g*, the lining or shell B, fitted in said casing and having a projection G, entering the recess *g*, and the heads and fastening-bolts, all substantially as and for the purposes set forth.

CHARLES F. HINRICHS.
JOEL C. BARKER.

Witnesses:
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S. E. LOOKINGBILL.