

(No Model.)

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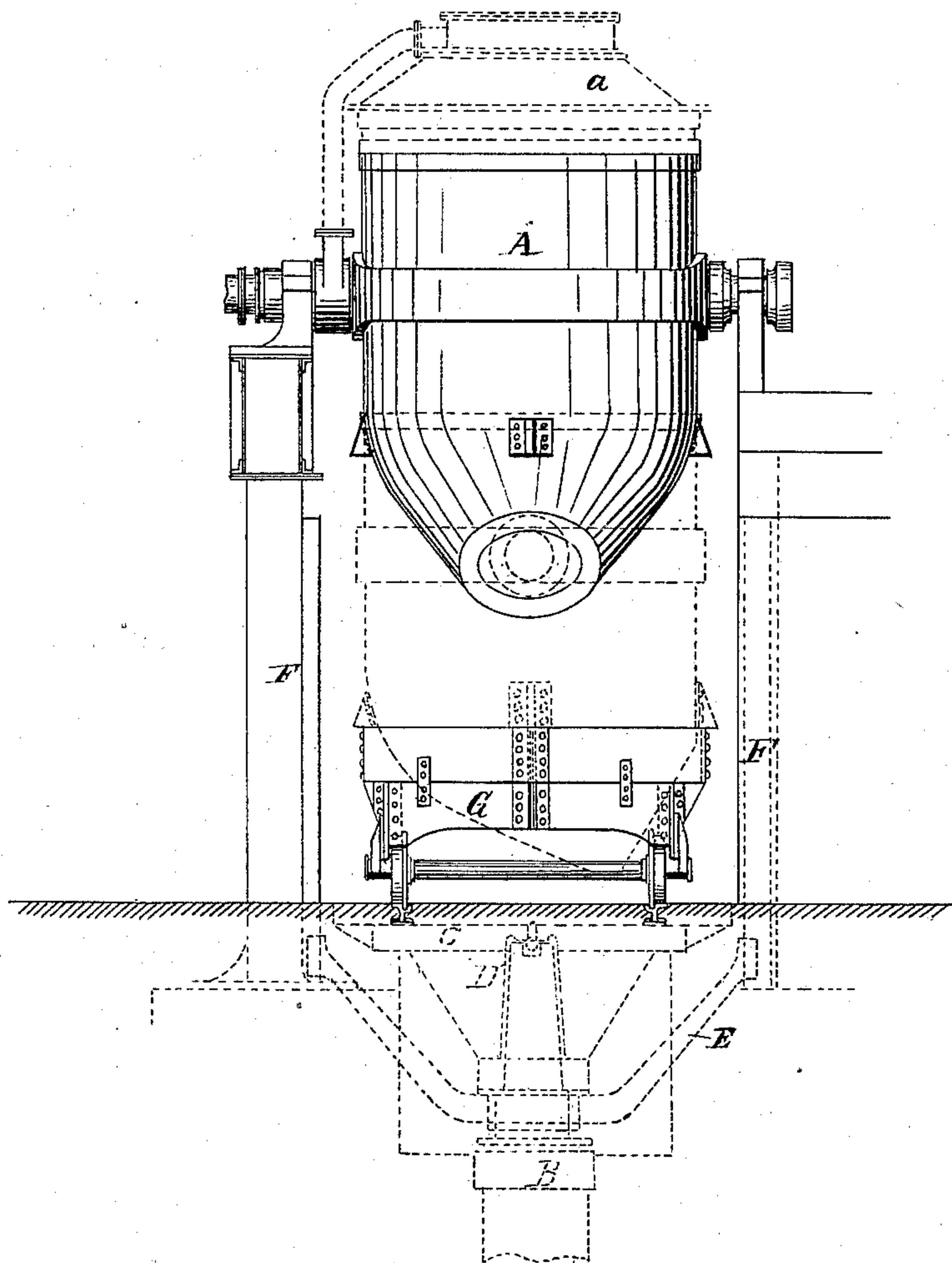
P. C. GILCHRIST & L. G. FITZMAURICE.

APPARATUS FOR MOUNTING AND DISMOUNTING BESSEMER CONVERTERS.

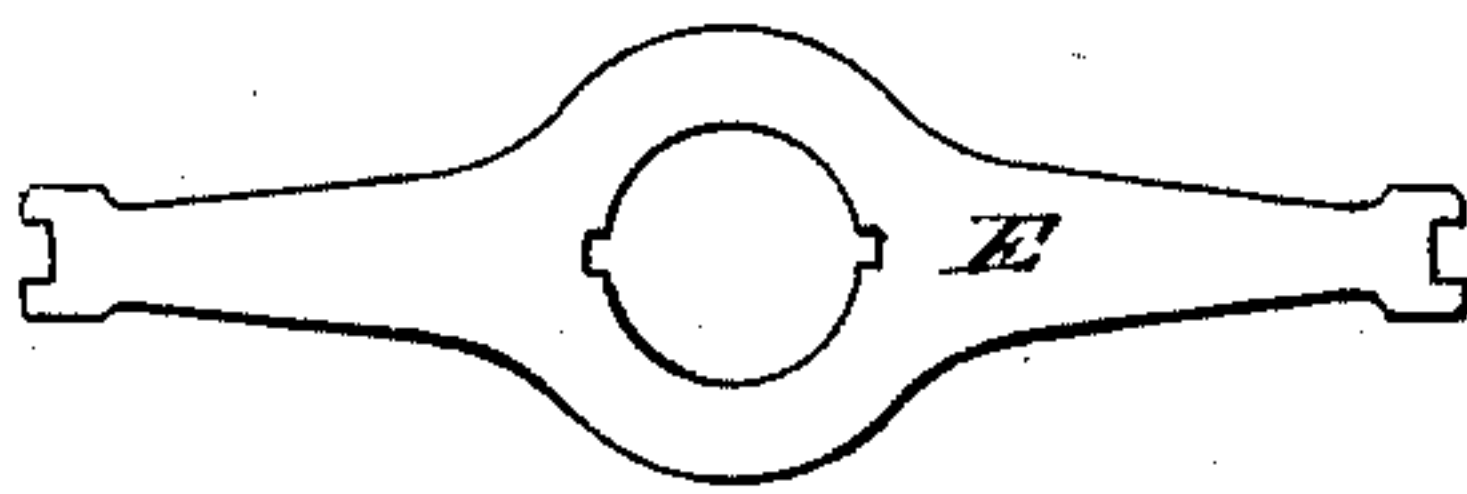
No. 316,537.

Patented Apr. 28, 1885.

*Fig. 1*



*Fig. 2*



— WITNESSES —

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(No Model.)

2 Sheets—Sheet 2.

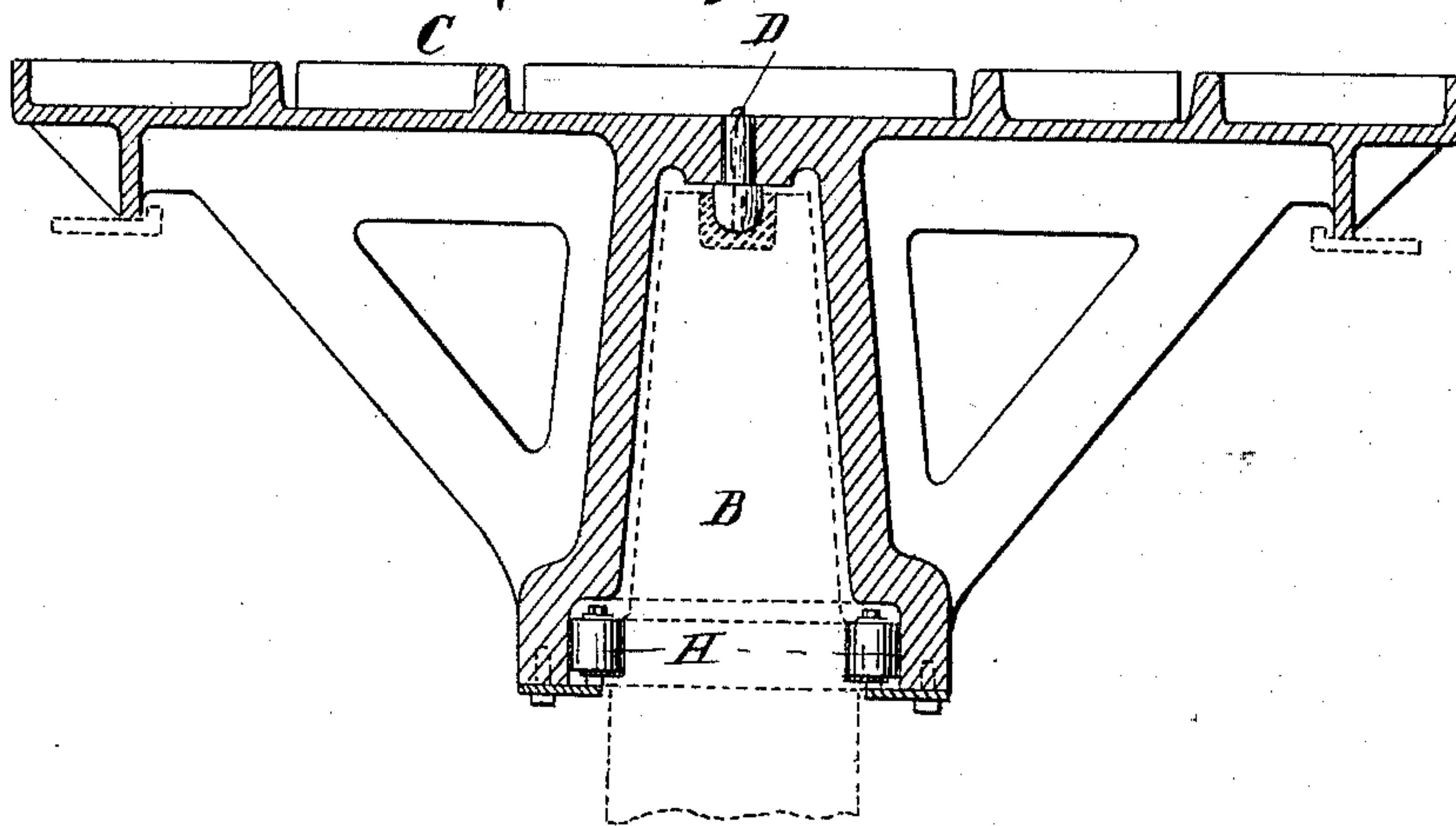
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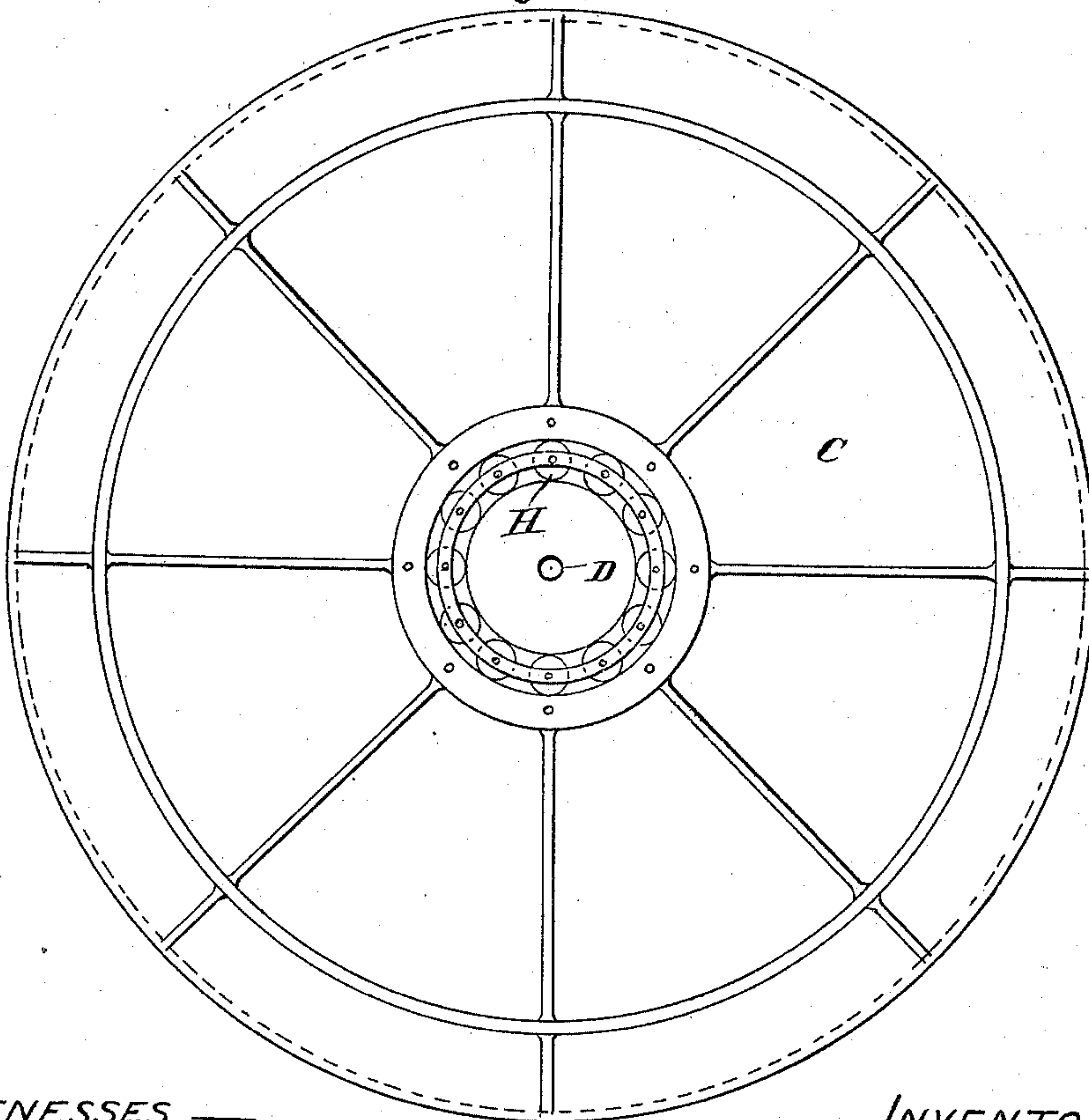
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*Fig. 3*



*Fig. 4*



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# UNITED STATES PATENT OFFICE.

PERCY CARLYLE GILCHRIST, OF LONDON, AND LEWIS GEORGE FITZMAURICE, OF BILSTON, COUNTY OF STAFFORD, ENGLAND.

APPARATUS FOR MOUNTING AND DISMOUNTING BESSEMER CONVERTERS.

SPECIFICATION forming part of Letters Patent No. 316,537, dated April 28, 1885.

Application filed May 14, 1884. (No model.) Patented in England May 16, 1884, No. 7,804; in France May 16, 1884, No. 162,161; in Belgium May 16, 1884, No. 65,181; in Luxemburg May 18, 1884, No. 402, and in Austria-Hungary September 12, 1884, No. 18,720 and No. 39,561.

*To all whom it may concern:*

Be it known that we, PERCY CARLYLE GILCHRIST, residing at 9 Palace Chambers, Westminster, London, England, engineer, and  
5 LEWIS GEORGE FITZMAURICE, residing at 2 Wellesley Terrace, Wellington Road, Bilston, in the county of Stafford, England, engineer, both subjects of Her Majesty the Queen of Great Britain, have invented a certain new  
10 and useful Improved Apparatus for Mounting and Dismounting Bessemer Converters, of which the following is a specification.

Hitherto when it has become necessary to renew the lining of a converter it has been  
15 the custom to follow one of two methods—first, either to relieve the vessel *in situ*; or, second, to have the vessel specially made with a removable shell and separate belt, by the method known as the “Holley system.” Both  
20 of these systems are open to objections. For example, by the first (more especially when working the basic process) a comparatively long time is required for relining, during which time not only is the converter itself idle, but  
25 also the center crane, ingot-molds, ingot-cranes, &c., which should be receiving metal from the converter, so that in order to keep the pit fully employed it is necessary to have a spare converter, which can be worked while  
30 the other is undergoing repairs. This of course necessitates the duplication of much costly machinery in addition to the actual converter, and it also takes up considerable space, necessitating the use of larger pits,  
35 bigger cranes, &c. The second method, known as the “Holley system,” can only be applied to specially-constructed vessels, and requires that the trunnion-bolt should be capable of being removed from the converter-shell.

40 The object of our invention is to obviate these disadvantages, and not only to avoid the great waste of time required at present in renewing the lining with the vessel in position, but also (owing to the rapidity and ease  
45 by which a vessel may be removed by our apparatus) to obviate the necessity of keeping fixed a spare vessel with its attendant machinery and shop. This we effect by removing the vessel to be repaired by the apparatus  
50 hereinafter described to the repairing shop and replacing it by a vessel which has been

already prepared for use, the whole time employed in removing the worn vessel and replacing it by the fresh one being only about three (3) hours from blow to blow.

To clearly explain our invention reference is made to the accompanying drawings, which form part of this specification, and in which similar letters of reference are used to designate corresponding parts.

Figure 1 represents in elevation a Bessemer converter when resting in its bearings, and by dotted lines shows its position when resting upon the truck. Fig. 2 represents in plan the cross-head attached to the ram to keep it perpendicular. Fig. 3 represents upon an enlarged scale the turn-table and head of the hydraulic ram. Fig. 4 represents a plan of Fig. 3.

Under each converter A is placed an hydraulic ram, B, on which rests a turn-table, C, supported on a pivot, D, on which it is capable of rotating. This turn-table is provided with rails to receive a converter carriage or trolley, G, which rails form a movable section  
75 of a track that may lead to various parts of the plant, and said turn-table is rotatable on its pivot by hand or other power—for example, by crow-bars or other levers used as ordinarily in rotating locomotive-engine turn-  
80 tables. The pivot or center pin may be drilled through the center to give facilities for oiling. The ram is further supported by a cross-head, E, which works against guides F, attached to the inner faces of the converter-standards. By  
85 these means the ram is rendered incapable of any lateral movement caused by the weight being unevenly distributed.

The operation of removing the worn converter is as follows: The bottom section, a, of  
90 the converter being removed, a converter-carriage, G, is run upon the turn-table under the converter, and said turn-table with its superposed carriage is turned horizontally to an angle of forty-five degrees from the line of  
95 rails by means aforesaid. The converter is then turned nose downward, the plumber-block glands are removed, the blast and tipping connections are severed, the converter being thus left free to be lifted out of its bearings. The converter-carriage is then lifted up  
100 by means of the hydraulic ram, and the con-



verter-trunnions are lifted clear of their bearings, and while in this position the table with its superimposed load is turned by means as aforesaid horizontally to an angle of forty-five degrees, and then lowered to the rail-level, the trunnions passing freely between the standards, and the converter is then removed to the repairing shop. A relined converter supported on a carriage with the trunnions at right angles (horizontally) to their position when in their bearings is run under the converter-bearings, and is lifted by means of the hydraulic ram, so that the trunnions are free to revolve above their bearings. The converter is then turned horizontally to an angle of forty-five degrees to the track, and lowered into its bearings, the glands of the plumber-blocks are replaced, and the blast and tipping-gear are connected.

In order to maintain the turn-table in its horizontal plane, it is made to project down over the top of the ram, and carries a series of rollers, H, which not only steady it, but also prevent any undue friction when the table is being rotated. This foregoing arrangement may be very readily applied to existing steel-works, by which means the power of production may be considerably increased.

It is evident that a table or platform might be fixed to the head of the ram and guided at the sides, and have on its face a turn-table of

usual construction; but such an arrangement would have the drawback that slag and dirt would get among the rollers and pivots, and to a certain extent destroy its usefulness, whereas by the before-described arrangement this would be impossible.

Having thus described our invention and shown how the same may be practically employed, what we claim, and desire to secure by Letters Patent, is—

An apparatus for mounting and dismounting Bessemer converters, comprising the combination with the converter-standards and guides thereon, a track between said standards, a trolley constructed to support or hold the converter, a turn-table having a section of said track and adapted to carry the trolley with the converter superposed thereon, and capable while carrying such load of being turned or revolved to a horizontal angle of about forty-five degrees with the line of the track, and means, substantially as described, engaging the guides and turn-table to raise and lower the turn-table with its load, all substantially as and for the purpose set forth.

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Witnesses:

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