

(No Model.)

R. BAGALEY & F. M. RITES.

CRANK CASE DOOR.

No. 397,062.

Patented Jan. 29, 1889.

FIG. 1.

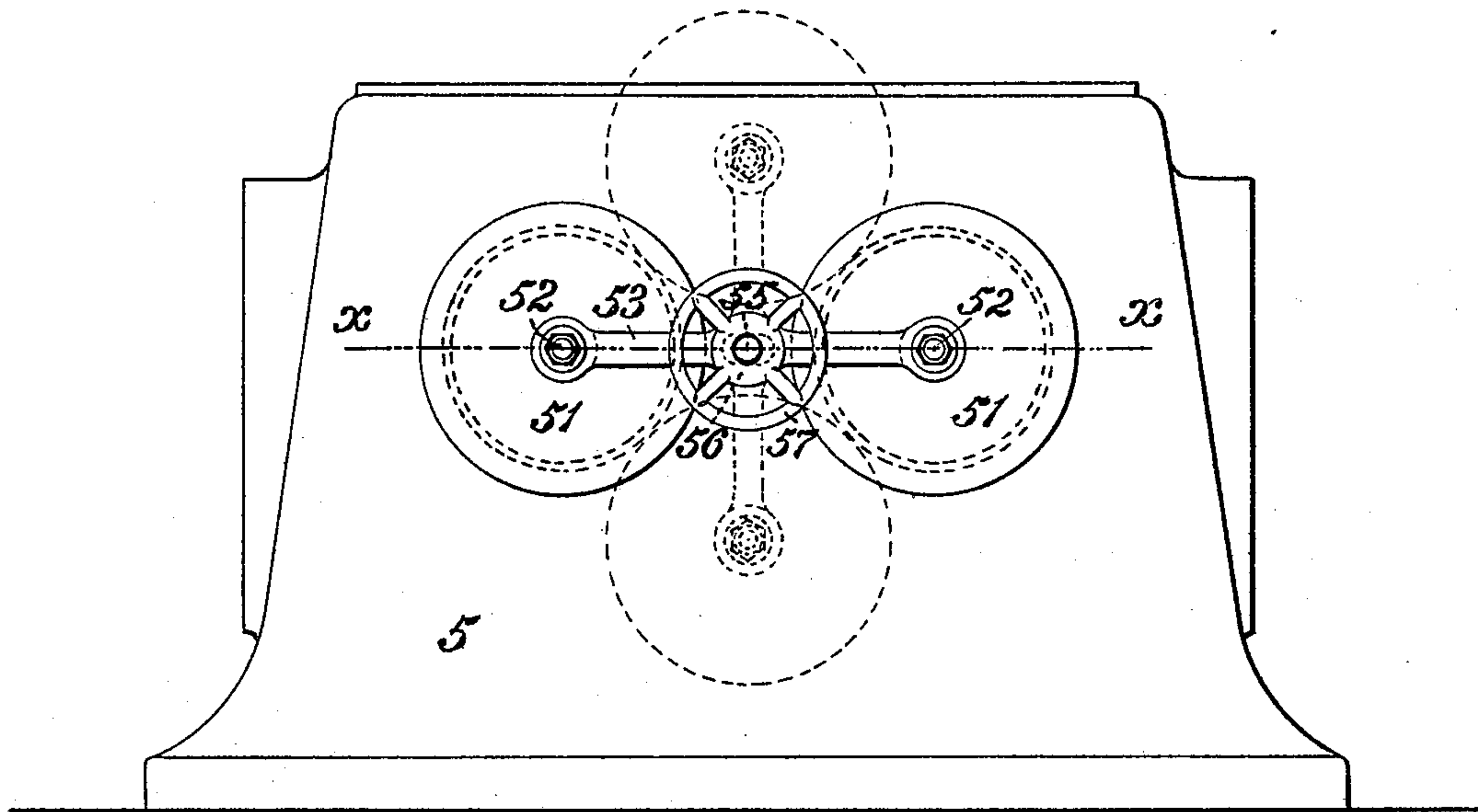
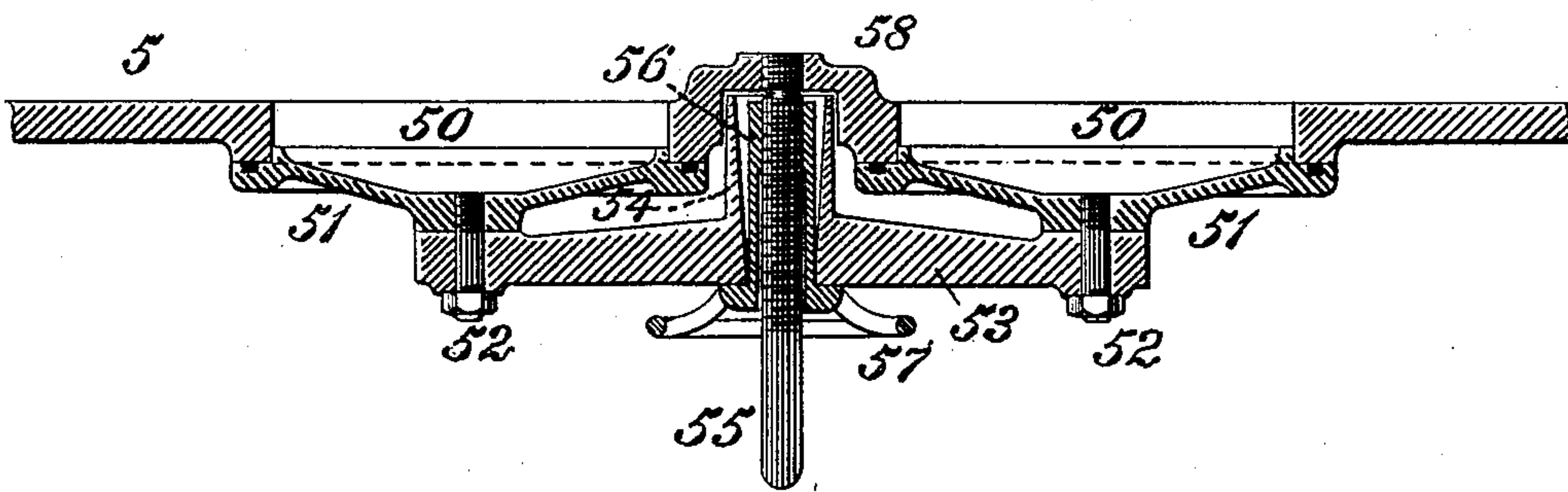


FIG. 2.



WITNESSES:

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RALPH BAGALEY AND FRANCIS M. RITES, OF PITTSBURG, PENNSYLVANIA,
ASSIGNORS TO THE WESTINGHOUSE MACHINE COMPANY, OF SAME PLACE.

CRANK-CASE DOOR.

SPECIFICATION forming part of Letters Patent No. 397,062, dated January 29, 1889.

Application filed October 31, 1888. Serial No. 289,614. (No model.)

To all whom it may concern:

Be it known that we, RALPH BAGALEY and FRANCIS M. RITES, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered a certain new and useful Improvement in Crank-Case Doors, of which improvement the following is a specification.

Our invention particularly relates to steam-engines of the Westinghouse type, in which a crank-shaft and pair of double cranks thereon rotate within a closed crank-case, upon which the cylinders are supported, and which serves as a receptacle for oil and water, which, by the movements of the cranks, is continuously sprayed upon and effects the lubrication of the working-surfaces of the inclosed crank-pins and connecting-rods.

The object of our invention is to enable ready and convenient access to be had to the interior of the crank-case and obviate the labor and loss of time involved in the detachment of a series of nuts and the removal and replacement of a heavy bonnet, which have been heretofore necessary in order to inspect or manipulate the inclosed members.

To this end our invention, generally stated, consists in the combination, with a case or receptacle having two openings, of a threaded stem fixed to the case, a nut engaging the stem, and a supporting-bar fitting freely upon the stem and carrying upon its ends doors or covers adapted to close the openings in the case.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side view, in elevation, of the crank-case of a steam-engine embodying our invention; and Fig. 2, a horizontal section, on an enlarged scale, through one side of the same at the line *x x* of Fig. 1.

In engines of the class in which our invention is specially designed for application, as heretofore constructed, access to the interior of the crank-case was ordinarily had through a longitudinal rectangular opening in one of its sides, which was closed by a corresponding bonnet or cover-plate secured to the crank-case by a series of nuts screwed upon studs, usually eight or ten in number, fixed in the

case. The bonnet was of considerable weight, being about two hundred pounds in engines of the larger sizes, and its removal and replacement was an operation which involved more time and labor than was desirable. Under our present invention the crank-case, which is of the ordinary substantially-rectangular form, is provided on one side with two openings or doorways, 50, which may be either circular, elliptical, or rectangular, as preferred, and in large engines are of sufficient size to serve as man-holes, the vertical center line of each opening being about in line with that of the adjacent crank-pin of the engine. A threaded stem or bolt, 55, is fixed in the case centrally between the openings 50, the case being recessed and an inwardly-projecting hub or boss, 58, formed at the bottom of the recess for the reception of the bolt 55. The thread of said bolt is engaged by a nut, 56, which enters the recess of the case and is provided with a tubular extension, upon the outer end of which is formed or secured a hand-wheel, 57. A supporting-bar, 53, having a long central hub, 54, is fitted freely upon the nut 56, so as to be capable of axial movement thereon when required, and a door or cover, 51, is secured by a bolt, 52, to each end of the bar 53, said doors being of proper form to close the openings 50 when forced against the case around said openings. The doors 51 are preferably provided with flanges or projections on their inner sides, which form shoulders around the openings, and may be faced with suitable packing, so as to form a tight joint with the case.

In operation the supporting-bar 53 and connected doors 51 are moved into the position shown in full lines in Fig. 1, and the nut 56 is screwed up on the stem 55 until the doors are brought to a proper tight bearing against the crank-case around the openings 50, such bearing being equalized and binding prevented by the bar 53 and the inward projection of its hub 54 and the nut 56. When access to the crank-case is desired, it is only necessary to slacken the nut 56 and move the bar 53 slightly outward upon the nut, so that the inner flanges of the doors may be brought outside of the openings, when the bar and doors can be swung into the position shown in dotted lines,

the openings being thereby completely exposed and the doors suspended in readiness for the reclosure of the openings when the examination of or work upon the inclosed parts is completed. The opening of the hub 54 of the supporting-bar may be of flaring or tapering form, as shown in Fig. 2, so as to allow of sufficient movement of the door, which is swung downward to clear the side of the case when the latter is outwardly and downwardly inclined, as in many instances it is.

It will be seen that not only is the time required for detaching and screwing up a series of nuts and fitting a bonnet over a series of studs economized, but also that the removal of the doors is rendered unnecessary, and the operator is relieved from the labor of handling a heavy piece of metal in lowering it from and replacing it in normal position. Our improvement is further applicable, without any essential modification of structure, to tanks, vats, or other receptacles which are ordinarily closed and to the interior of which access is from time to time desired.

We claim as our invention and desire to secure by Letters Patent—

1. The combination of a case or receptacle having two openings in one of its walls, a threaded stem fixed to the case between said openings, a nut engaging said stem, a supporting-bar journaled upon the nut, and doors

fixed to said bar and adapted to close the opening in the case, substantially as set forth.

2. The combination of a case or receptacle having two openings in one of its walls, a threaded stem fixed to a boss projecting inwardly from a recess in the case between said openings, a nut engaging said stem and provided with a tubular extension, a supporting-bar having a central hub inclosing the tubular extension of the nut and projecting into the recess of the case, and doors fixed to the supporting-bar and adapted to close the openings in the case, substantially as set forth.

3. The combination of a case or receptacle having two openings in one of its walls, a threaded stem fixed to the case between said openings, a nut engaging said stem and provided with a tubular extension, a supporting-bar having a central hub bored out in flaring or tapering form and inclosing the tubular extension of the nut, and doors fixed to the supporting-bar and adapted to close the openings in the case, substantially as set forth.

In testimony whereof we have hereunto set our hands.

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Witnesses:

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