(No Model.)

J. J. CAIN.

MACHINE FOR REFACING SURFACES OF HAND HOLES.

No. 549,764. Patented Nov. 12, 1895.

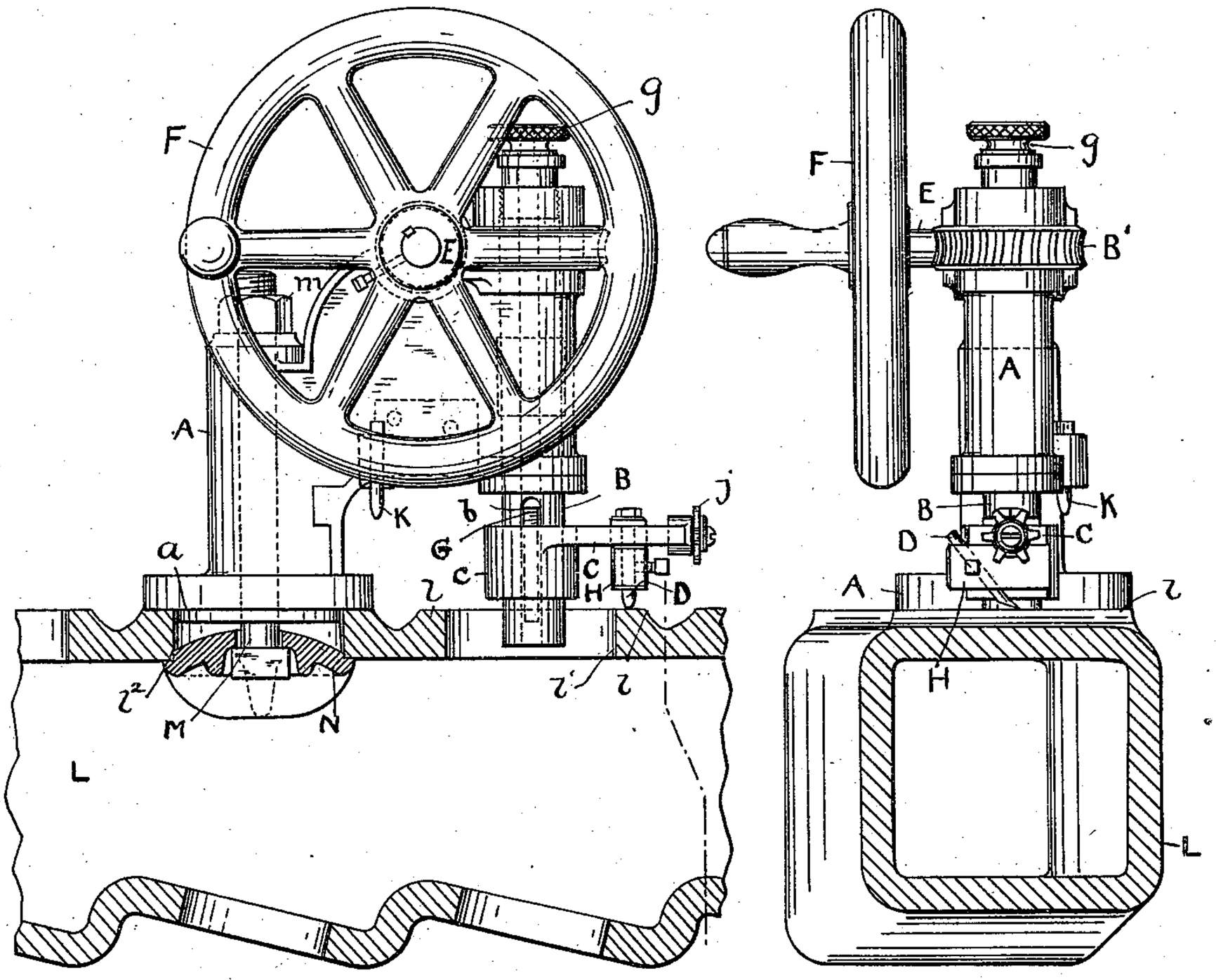

Fig. 1.

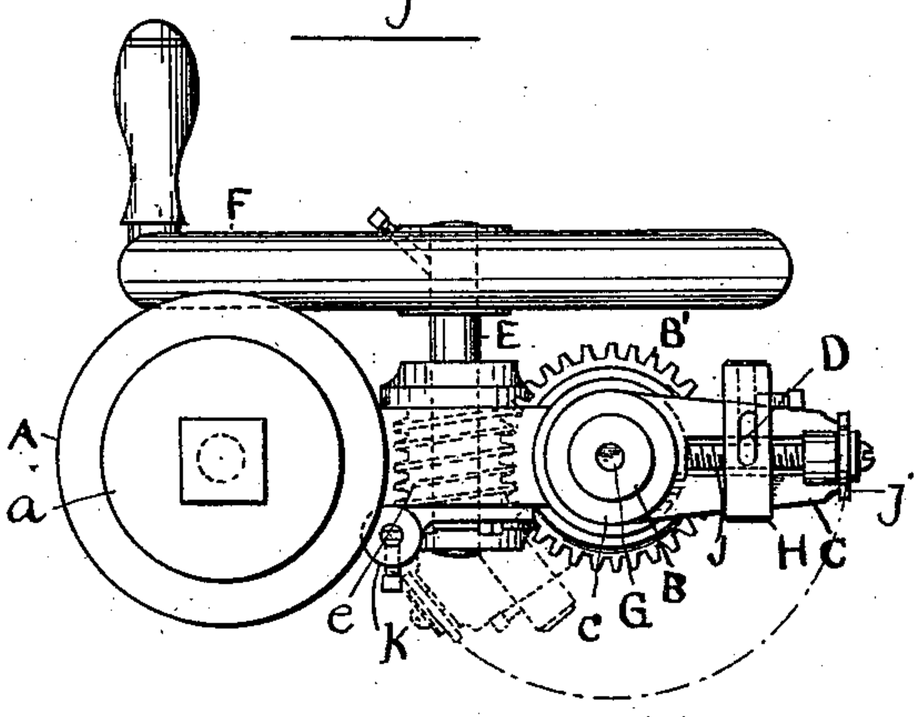

Fig. 3.

Fig. 2.

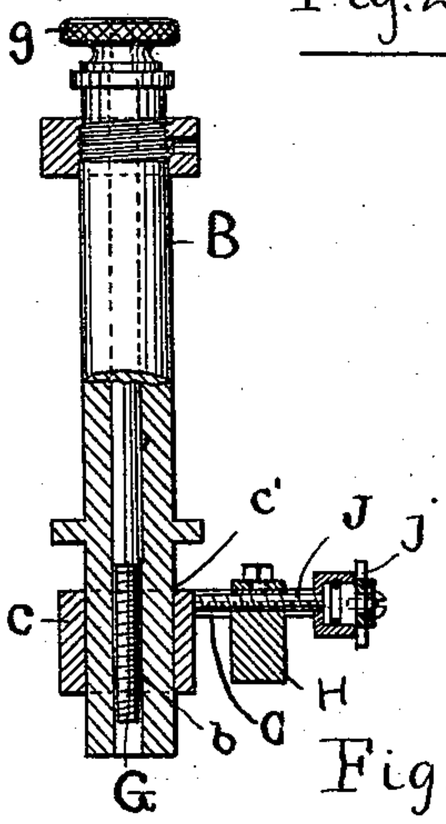

Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN J. CAIN, OF BAYONNE, NEW JERSEY.

MACHINE FOR REFACING SURFACES OF HAND-HOLES.

SPECIFICATION forming part of Letters Patent No. 549,764, dated November 12, 1895.

Application filed February 11, 1895. Serial No. 538,023. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. CAIN, a citizen of the United States, residing at Bayonne, in the county of Hudson and State of New Jersey, have invented a new and useful Machine for Refacing the Surfaces of Hand-Holes, &c., of which the following is a specification.

This invention consists in a new and useful machine or device for refacing or dressing the surfaces that surround the hand-holes in the headers and other parts of steam-boilers, to which surfaces covers are clamped to close said openings.

After a steam-boiler has been in use for some time the surfaces surrounding the hand-holes, upon which covers are clamped, become more or less corroded, and when the covers are removed to give access to the interior of the boiler parts and said covers are replaced it is found that, owing to such corrosion, they cannot always be clamped in position so as to secure a steam-tight fit unless the surfaces surrounding the hand-holes are refaced or dressed off.

The object of the invention is to produce a device with which this refacing or dressing can be conveniently, speedily, and successfully accomplished upon the parts while they remain in normal position.

The machine as shown in the drawings is particularly constructed and arranged for refacing the surfaces surrounding the hand-holes on steam-boiler headers.

In the accompanying drawings, Figure 1 represents a side view of the device in position for performing its office upon the face or surface surrounding a hand-hole on a steam-boiler header, a portion of the header being shown in longitudinal section. Fig. 2 represents an end view of the same. Fig. 3 shows a bottom view of the device. Fig. 4 represents the tool-carrying shaft detached and in partial longitudinal section.

A denotes the body of the machine, which is provided with suitable means, hereinafter described, whereby it may be secured in place while the operation of refacing is being performed. In this body a shaft B is mounted to rotate, the said shaft being supplied with an arm C, in which the refacing-tool D is secured. The shaft B is provided with a worm-gear B', which meshes with a worm *e* upon a transverse shaft E, to the outer end of which a hand-wheel F is secured. By revolving this hand-wheel the tool-shaft B will be rotated and the tool D will be caused to revolve around the axis of said shaft, thereby dressing off the surface to be operated upon.

Preferably the arm C is mounted upon the shaft B, so as to be longitudinally adjustable thereon, in order conveniently to bring the tool to its work, and this may be accomplished in any suitable manner. In the construction shown in Figs. 1 and 4 the hub *c* of the arm is bored to fit the exterior of the shaft B. The shaft is furnished with a slot *b*, through which passes a bridge *c'* on the hub, and a screw G passes through the shaft (which is made tubular) and is threaded into said bridge, a head *g* being secured to the screw, by which the latter can be turned.

The means or tool D by which the dressing is performed is secured to a block H, which is arranged to be adjusted longitudinally of the arm C. This adjustment is shown as being effected by a screw J, which passes through the block and has a star or other wheel *j* on its outer end. By turning the wheel *j* the tool D is brought into proper radial relation, in the first instance, to the surface to be refaced, and as the arm revolves the successive engagements of said wheel with a fixed pin K, located in the path of revolution of the wheel, gradually move the tool step by step radially on said surface until the whole of said surface has been operated upon.

In Figs. 1 and 2 the machine is shown as attached to a steam-boiler header L in position to dress the surface *l*, which surrounds the hand-hole *l'*; and the machine is so arranged that it can be secured to the header at the hand-hole l^2, adjacent to the hand-hole *l*. The means shown for securing the machine in place consists of a bolt M, having a nut *m*, which bolt passes through the body of the device and through a bridge-plate N, located upon the interior of the header at the hole l^2, the foot of the body preferably having a circular boss *a*, which substantially fits the hole, to center the device.

When it is desired to reface a hand-hole,

the bridge-plate N is placed upon the next hole, and the bolt M is passed through it and the body of the machine, and the latter is clamped securely in place by the nut *m*. By means of the wheel *j* the tool D is brought into proper radial relation to the surface to be dressed, (as at the periphery thereof,) and by the screw G it is brought into proper contact therewith. By turning the hand-wheel F the tool will be revolved about the axis of the shaft B, and the successive engagements of the wheel *j* with the pin K will cause the tool to move step by step toward said axis, and thereby effect a refacing of the whole surface to be operated upon.

To reface the surfaces surrounding the remaining holes, the position of the machine is suitably changed and it is reclamped in proper place.

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

1. A re-facing machine consisting of a body adapted to be secured in a fixed position, and having a shaft mounted to rotate therein which is provided with a tool-carrying arm; means for rotating said shaft; means for adjusting said arm longitudinally on said shaft; a tool-block mounted to slide on said arm to and from the shaft, and means for moving the tool-block step by step across the work at each revolution of the shaft, substantially as and for the purposes specified.

2. In a re-facing machine, the combination of a body adapted to be secured in a fixed position and having a tool-shaft mounted to rotate therein; means for rotating said shaft; a tool-carrying arm longitudinally adjustable on the shaft; a tool-block longitudinally adjustable on said arm; means for moving said block along the arm; and a pin located in the path of revolution of the arm for sliding said block step-by-step over the work as the block revolves around the shaft, substantially as set forth.

3. The combination with the machine-body of a tool-shaft furnished with a gear; a worm for turning said gear, and means for rotating said worm; a tool-arm mounted to slide on said shaft; a screw for adjusting the position of the arm on the shaft; a tool-block mounted to slide on said arm; a screw provided with a wheel for adjusting the tool-block on the arm; and a pin located in the path of revolution of said wheel for engaging the same, substantially as and for the purposes specified.

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