

A. RICHMOND.  
Grates.

No. 158,741.

Patented Jan. 12, 1875.

Fig. 1.

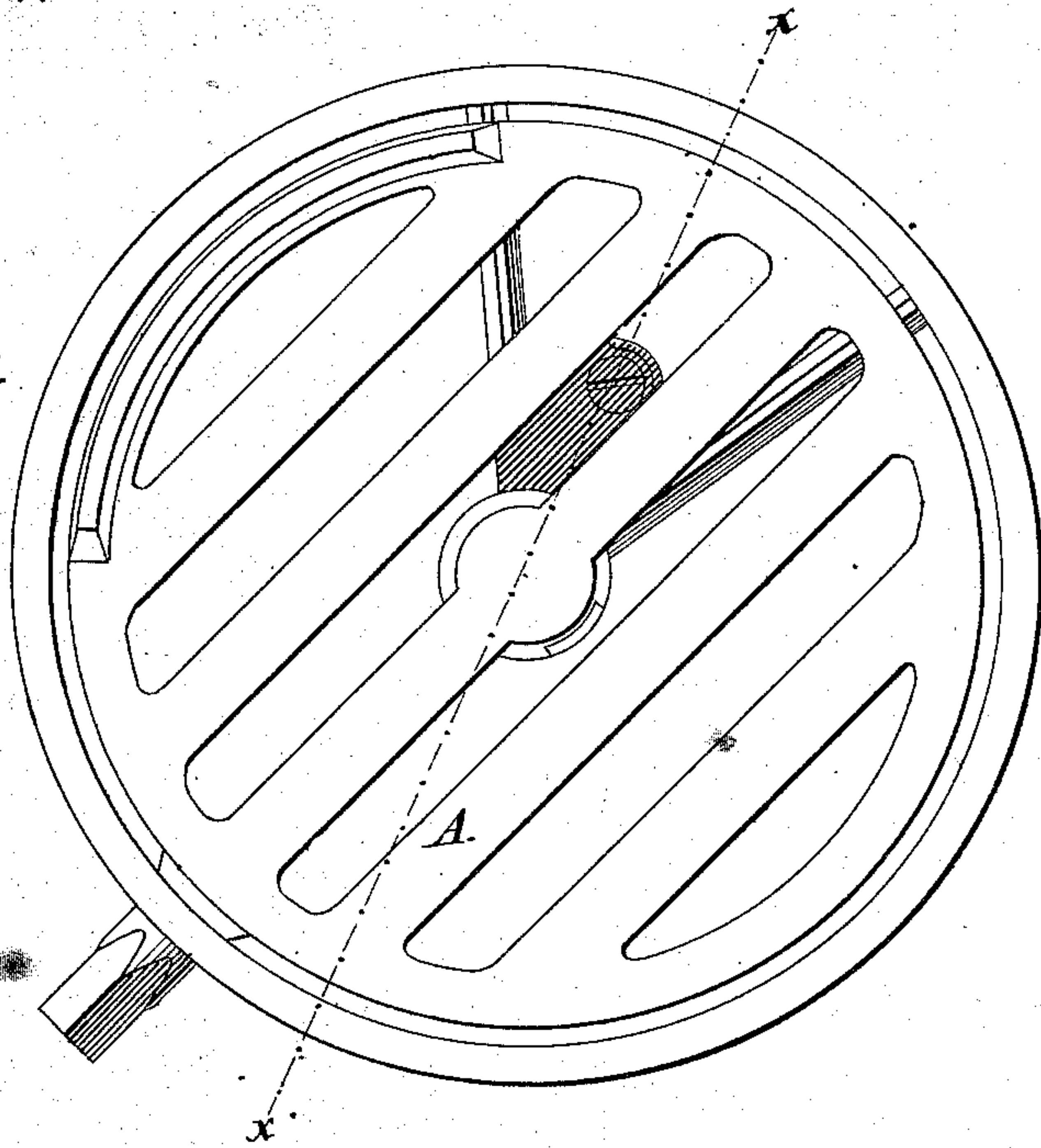


Fig. 2.

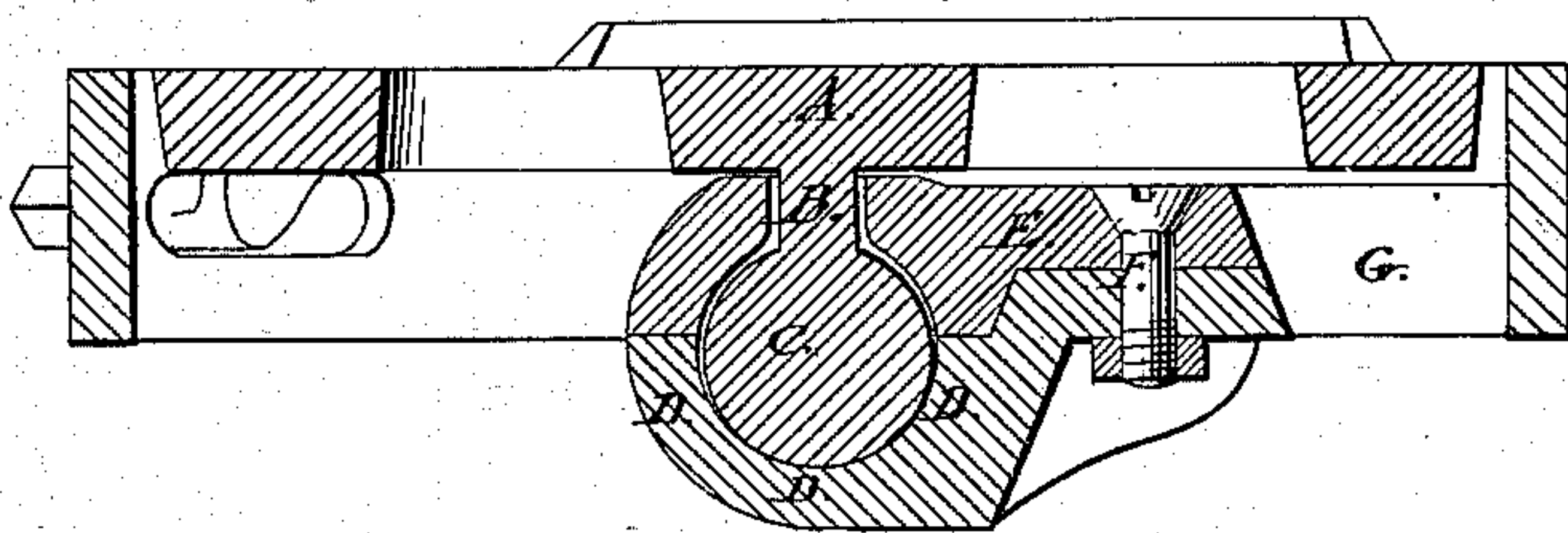
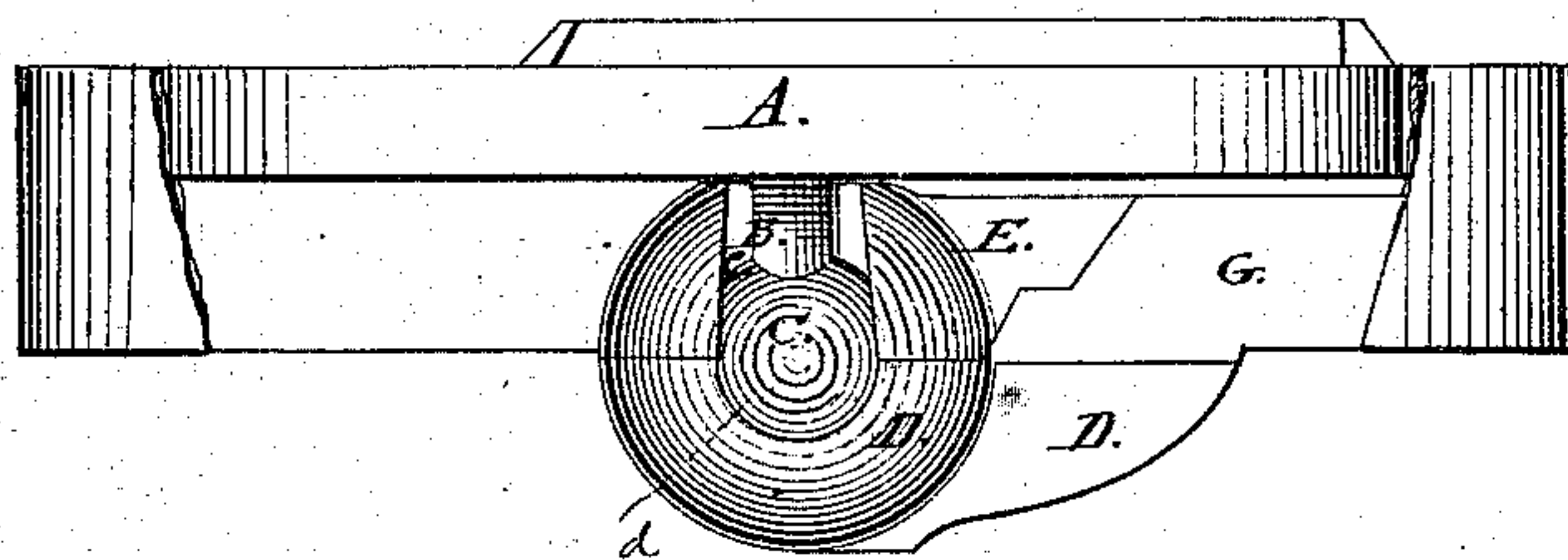


Fig. 3.



WITNESSES

George W. Miller  
Allen Tunny

INVENTOR

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# UNITED STATES PATENT OFFICE.

APOLLOS RICHMOND, OF BROOKLYN, CONNECTICUT.

## IMPROVEMENT IN GRATES.

Specification forming part of Letters Patent No. **158,741**, dated January 12, 1875; application filed December 23, 1874.

*To all whom it may concern:*

Be it known that I, APOLLOS RICHMOND, of the town of Brooklyn, in the county of Windham and State of Connecticut, have invented a new and Improved Socket-and-Ball-Joint Attachment for Grates, &c., for shaking and dumping purposes, of which the following is a specification:

In the drawings, Figure 1 is a plan view; Fig. 2, a cross-section in dotted lines *x x*. Fig. 3 is a side view.

A is the grate; B, stem on grate, which connects grate and ball; C, ball attached to grate, and resting in socket; D, concave socket, in which ball rests; E, convex cap, covering socket and securing ball of grate in socket, with slot in said cap for dumping grate at any point; F, bolt and nut, securing cap to socket; G, arm on which socket is attached; *d c*, openings in socket and cap to permit of dumping the grate.

My improvement relates to the attachment of grates in furnaces, ranges, &c.; and consists in connecting the grate, by a ball-and-socket joint, to an arm or arms secured to an outer ring of metal surrounding the grate.

The ball and stem are formed as a part of the grate, either by casting entire therewith or securing them firmly thereunto. The lower part of the socket is formed in some piece of metal, connecting firmly to some place outside the grate. In the form shown in the drawing the arms are V-shaped and secured to an outer ring.

It will be, of course, evident that, so far as my invention is concerned, it matters not just how the lower socket-piece is secured.

The arms, instead of being V-shaped, may extend over from each opposite side the socket,

and these arms may vary in number. The socket might also be arranged upon standards secured to the bottom of the stove or furnace.

The lower socket-piece is furnished with a slot, as is also the cap-piece, which secures the ball in the socket. These two slots, forming a continuous one, as they register with each other, allow the passage of the stem of the ball, so that the grate may be turned to a vertical position in dumping. The cap-piece prevents the grate from being accidentally upheaved, as is the case in grates as a general thing.

I am aware that in Letters Patent No. 154,348, of E. Smith, a concave bearing has been used for a convex knob under side of grate; but this device does not prevent the upheaval of the grate, while mine does; nor does it permit of turning the grate to a vertical position in dumping, and is not properly a ball and socket.

I claim—

1. A ball-and-socket joint for the grate of any range, furnace, or stove, formed by a ball attachment upon the under side of the grate, and a resting-socket on the arms, permanently attached to the stove in any suitable manner, and a securing cap-piece or cover, all as and for the purposes shown.

2. In a ball-and-socket-joint grate-support, the combination of the socket provided with opening *d*, and the securing-cap provided with corresponding opening *c*, all as and for the purposes set forth.

APOLLOS RICHMOND.

Witnesses:

ALLEN TENNY,  
GEORGE L. SELDEN.