

(No Model.)

2 Sheets—Sheet 1.

S. J. GAVIN.
FURNACE GRATE.

No. 388,273.

Patented Aug. 21, 1888.

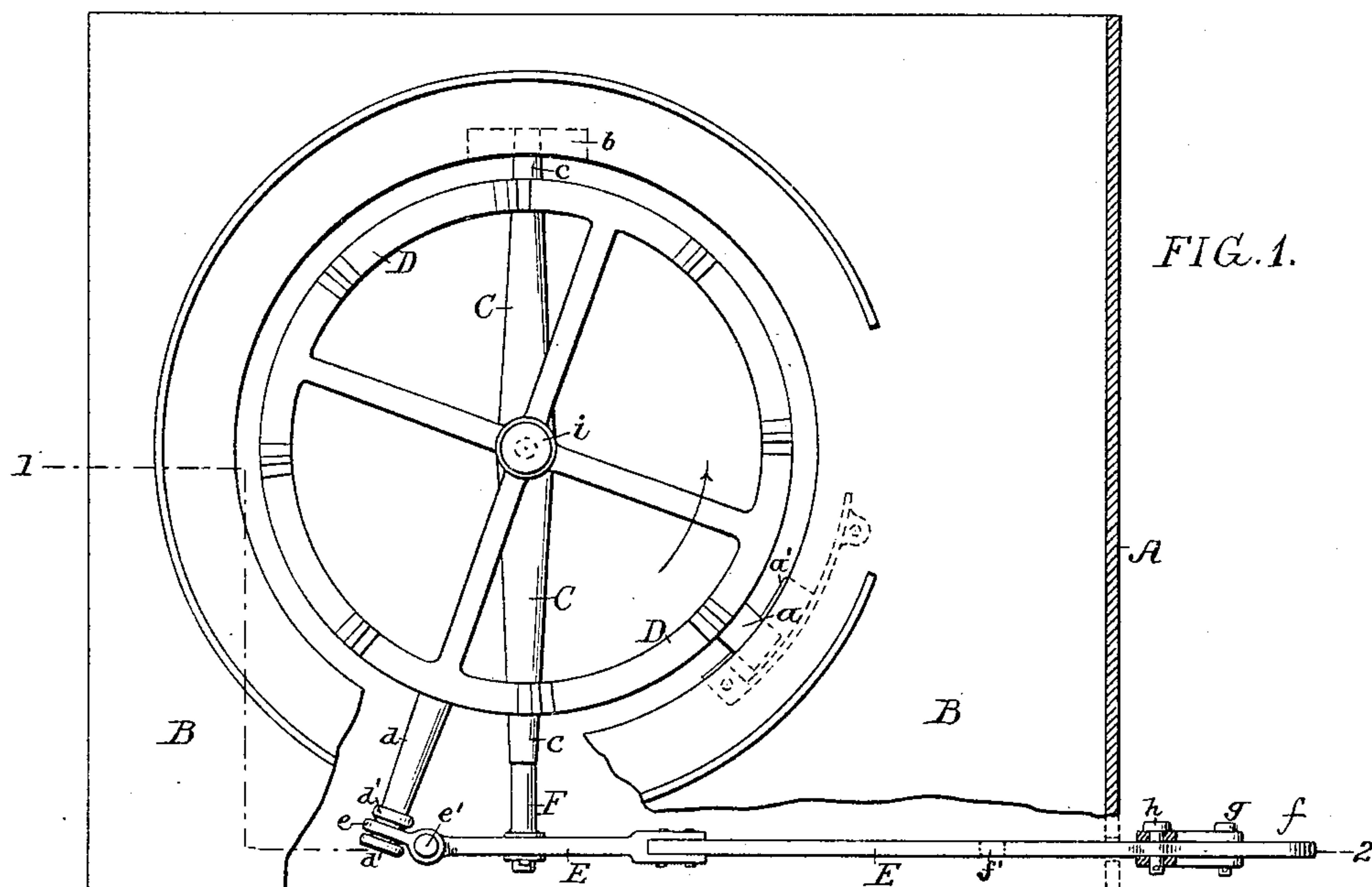


FIG. 1.

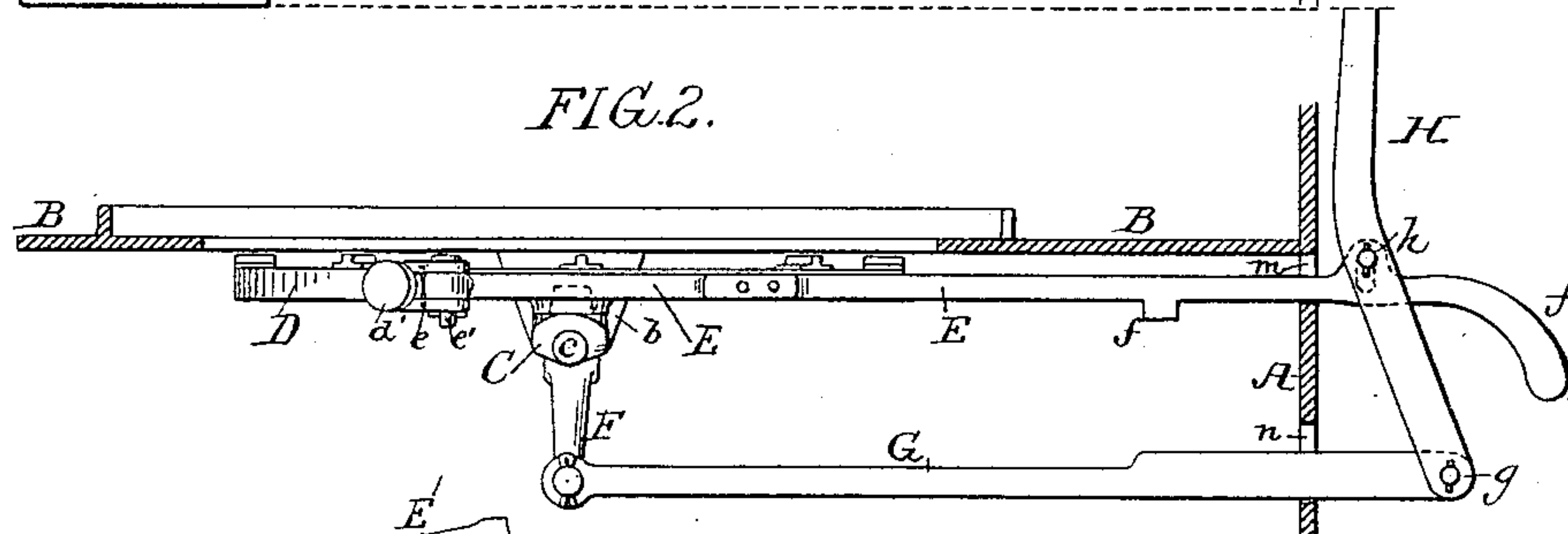


FIG. 2.

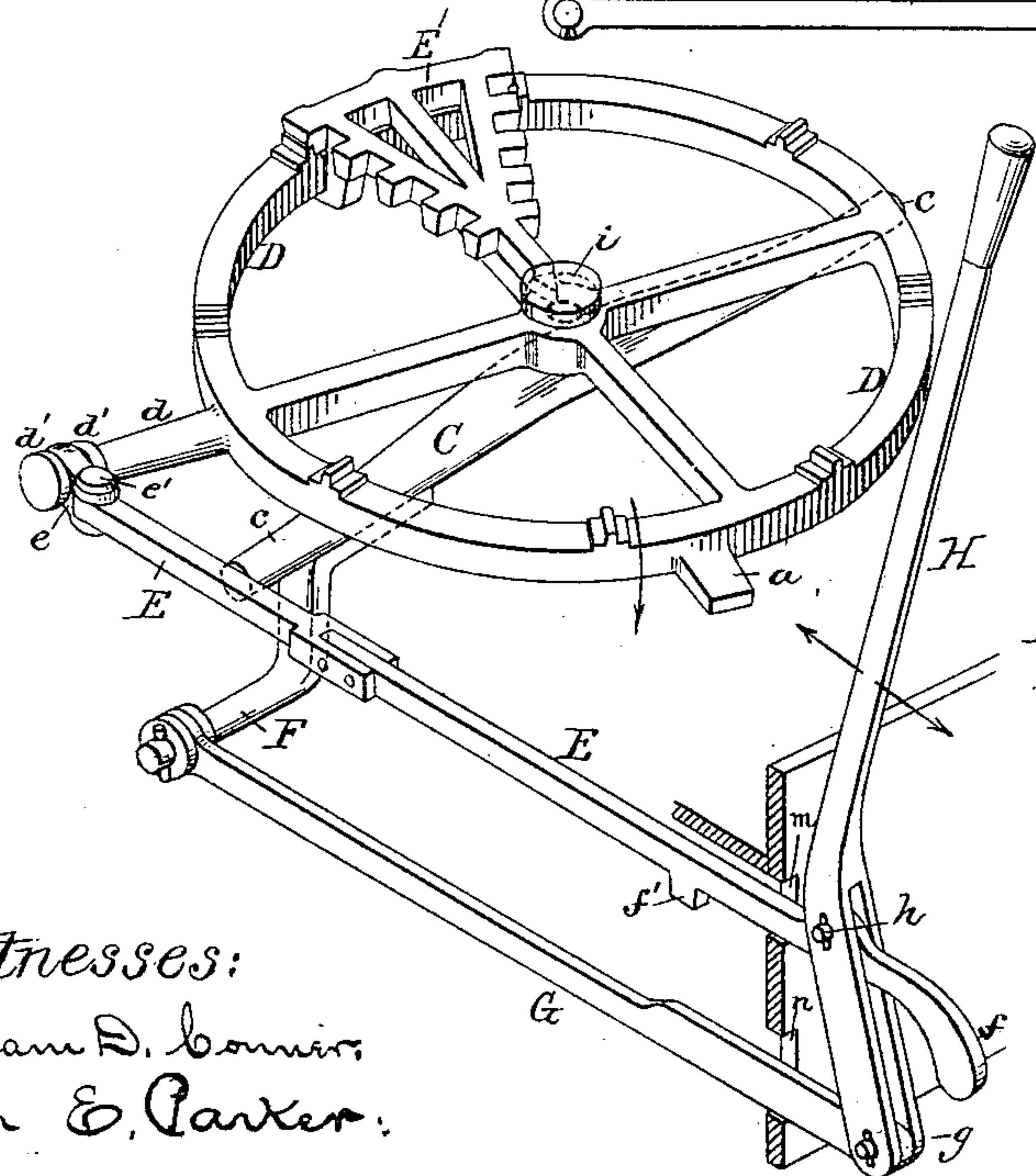


FIG. 3.

Witnesses:
William D. Bowler,
John E. Parker.

Inventor:
Stephen J. Gavin,
by his Attorneys,
Howson & Jones

(No Model.)

2 Sheets—Sheet 2.

S. J. GAVIN.
FURNACE GRATE.

No. 388,273.

Patented Aug. 21, 1888.

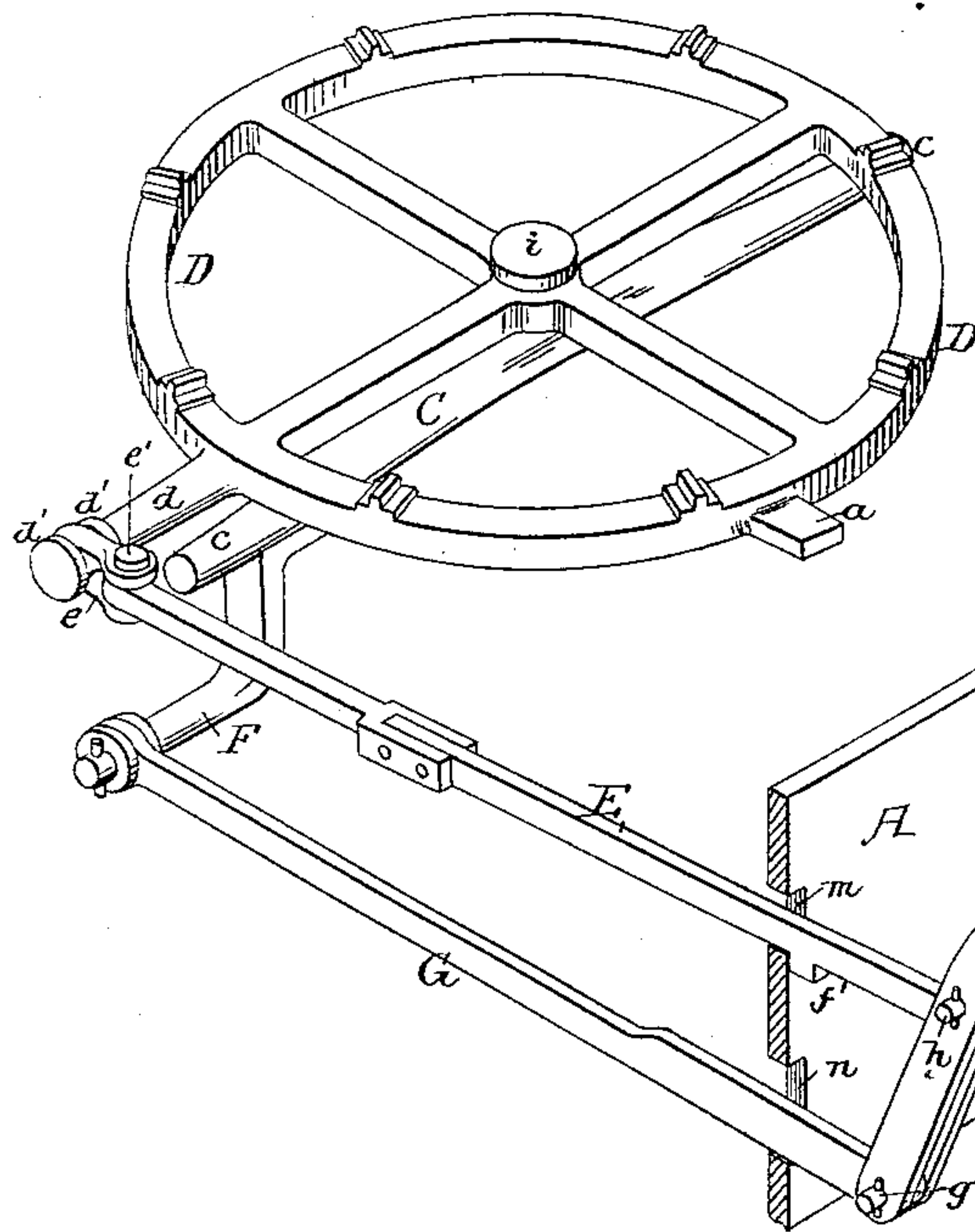


FIG. 4.

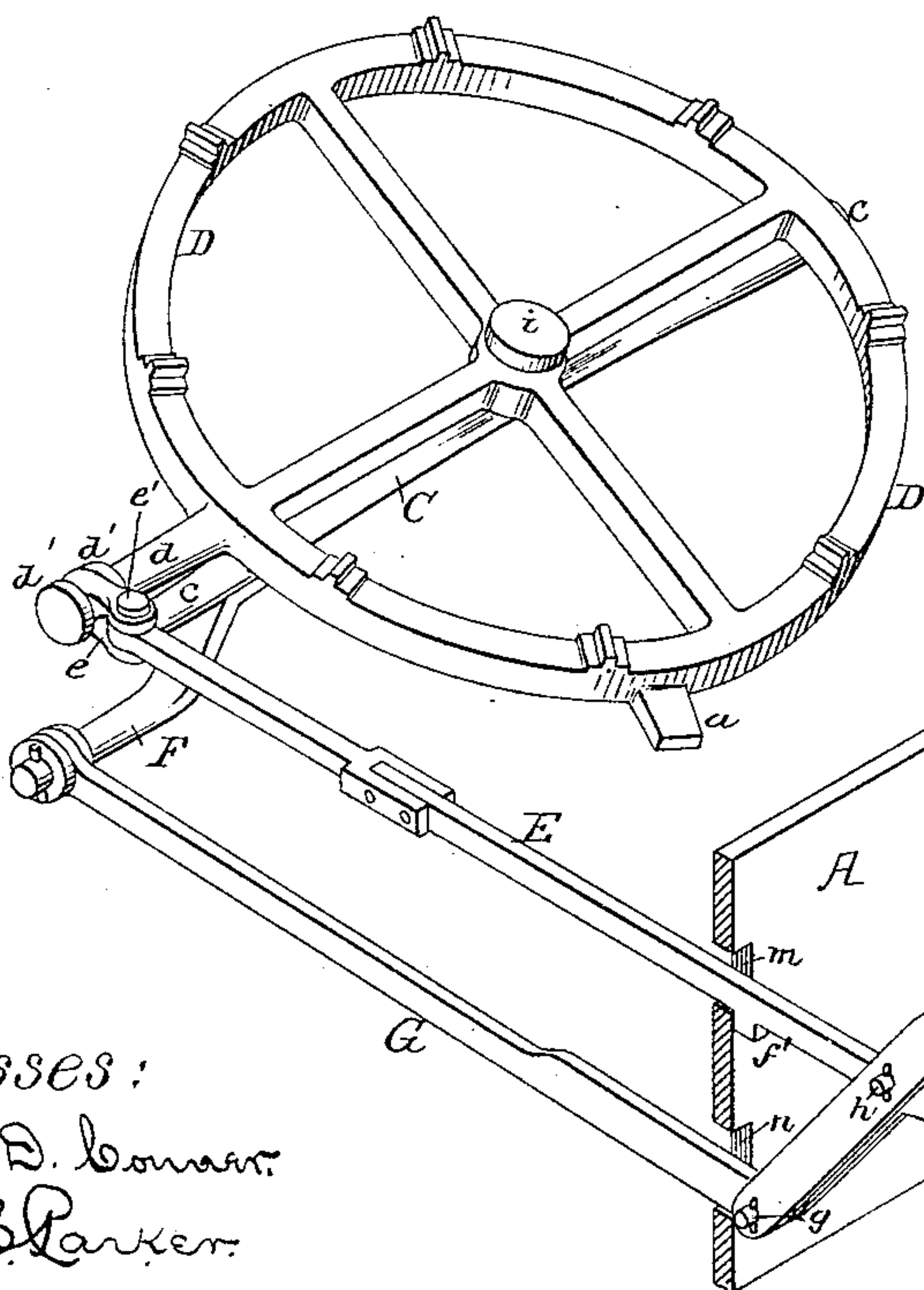


FIG. 5.

Witnesses:
William D. Bonser,
John E. Parker.

Inventor:
Stephen J. Gavin
by his Attorneys,
Howson & Sons

UNITED STATES PATENT OFFICE.

STEPHEN J. GAVIN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
STEPHEN MORRIS AND EDWARD W. MORRIS, BOTH OF SAME PLACE.

FURNACE-GRATE.

SPECIFICATION forming part of Letters Patent No. 388,273, dated August 21, 1888.

Application filed September 25, 1886. Serial No. 214,530. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN J. GAVIN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Furnace-Grates, of which the following is a specification.

My invention consists of certain improvements in the shaking and dumping grate shown in the patent of L. Passmore, No. 309,979, dated
10 December 30, 1884, the object of my invention being to provide such a grate with simple mechanism whereby the grate may be readily vibrated without danger of accidental dumping, the parts being so constructed, however, that by
15 simple manipulation the dumping of the grate will be permitted, one lever serving to effect both the vibrating and dumping operations.

In the accompanying drawings, Figure 1 is a plan view, partly in section, of a portion of
20 the base-plate of a furnace with a grate-frame mounted thereon, and vibrating and dumping devices in accordance with my invention, part of the base-plate being broken away in order to show these devices. Fig. 2 is a view, partly
25 in elevation and partly in section, on the line 1 2, Fig. 1; Fig. 3, a perspective view of the grate-frame and the shaking and dumping devices therefor, part of the fixed frame of the furnace being also shown; Fig. 4, a view similar to
30 Fig. 3, but showing some of the parts in a different position; and Fig. 5 a view showing the parts in still another position.

A represents part of the front plate, and B the base-plate, of a stove or furnace, D being
35 the grate-frame, which is pivoted by means of a central pin, *i*, to a transverse hanger-bar, C, having at its opposite ends trunnions *c*, adapted to bearings in lugs *b* on the under side of the base-plate B.

Projecting from the grate-frame is a bar, *d*,
40 between collars *d'*, at the outer end of which is confined a link, *e*, eyes on which receive a vertical pin, *e'*, which passes through an opening at the inner end of a rod, E, the outer
45 portion of which projects through a slot, *m*, in the front plate, A, the outer end of the rod being shaped so as to form a handle, *f*.

To the under side of the hanger-bar C is secured a bent arm, F, which projects beyond
50 the trunnion of said bar, and is connected to the inner end of a rod, G, the outer end of

which projects through a slot, *n*, in the front plate, A, and is connected by a pin, *g*, to the forked lower end of a lever, H. A pin, *h*, passes through openings in the forked portion
55 of this lever H, and through a slot in the rod E, so that said rod is connected to the lever, but can have a certain amount of vertical movement independent thereof.

A lug, *a*, projects from the grate-frame D,
60 and has a bearing upon a segmental plate, *a'*, secured to the under side of the base-plate B of the furnace, this lug and plate serving, under ordinary circumstances, to prevent any
65 tilting movement of the grate.

The shaking or vibrating movement of the grate is imparted thereto from the lever H through the medium of the connecting-rod E; but the latter has a lug, *f'*, which, by contact with the front plate of the furnace, prevents
70 the grate from being turned so far in the direction of the arrow, Fig. 1, as to free the lug from the retaining-plate *a'*; but by lifting the outer end of the rod E to an extent permitted by the slot in the same the lug *f'* will pass
75 through the slot *m* in the front plate, A, so as to permit such a movement of the grate on its pivot as will free the lug *a* from the control of the plate *a'* and permit the grate to be dumped, the lug *f'* bearing against the outer face of the
80 plate *a* and preventing any inward movement of the rod E, (see Fig. 4,) so that the pin *h* serves as a fulcrum, the movement of the lower arm of the lever being transmitted to the crank-
85 bar F of the grate through the medium of the connecting-rod G. (See Fig. 5.) After the grate has been dumped and restored to its horizontal position, the rod E is again lifted and the lug *f'* passed to the inside of the plate A,
90 so as to again bring the lug *a* of the grate-frame under the influence of the retaining-plate *a'*.

Instead of slotting the rod E the lever H may be lifted bodily, so as to raise the outer ends of both connecting-rods to an extent suffi-
95 cient to permit the lug *f'* to pass through the slot *m* of the front plate, the slotting of the rod E being preferred, however, as a more convenient method of effecting this result. A link, *e*, having a pivot-pin, *e'*, at right angles to the
100 arm *d*, provides a universal-joint connection between said arm and the inner end of the rod

E, so as to permit either the shaking or the dumping of the grate without straining said rod.

The grate-frame D is provided with detach-
5 able grate-bar sections E', one of which is shown in Fig. 3, although my invention is not limited to this construction, as any desired form of grate may be used.

In the grate shown in the Passmore patent,
10 before alluded to, the shaker-rod was jointed about midway of its length in order to permit the grate to tilt, and it was necessary to detach the outer end of the rod from the lever in order to tilt the grate, so that the lever could
15 not be used as a means of effecting the tilting. These objections are effectually overcome by my invention.

I claim as my invention—

- 20 1. The combination of the pivoted hanger-bar, the grate-frame pivoted thereto, and a retainer to prevent the dumping of the grate, with a shaker-rod connected to said grate-frame and projecting through an opening in the front plate or casing of the furnace, said rod hav-
25 ing a stop-lug whereby movement of the rod is arrested before the grate has been vibrated to such an extent as to free it from the control of the retainer which prevents the dumping of the grate, all substantially as specified.
- 30 2. The combination of the pivoted hanger-bar and its crank, a grate pivoted to said bar, a retainer for preventing the dumping of the

grate, a shaker-rod connected to the grate-frame and having a stop-lug to restrict its movement, a dumping-lever, and a rod con-
35 necting said lever to the crank of the hanger-bar, all substantially as specified.

3. The combination of the pivoted hanger-bar and its crank, a grate pivoted to said bar, a retainer to prevent the dumping of the grate,
40 a shaker-rod, E, connected to said grate and serving as a means of vibrating the same, a stop to limit the movement of said rod, a rod, G, connected to the crank of the hanger-bar, and a lever connected to both of said rods E
45 and G, all substantially as specified.

4. The combination of the pivoted hanger-bar and its crank, a grate hung to said bar, a retainer for preventing the dumping of the grate, a dumping-lever and rod, the rod E,
50 connected to the grate-frame and having a stop-lug, and a slot-and-pin connection between said rod E and the dumping-lever, whereby the stop-lug of the rod may be freed and further movement of said rod permitted, all sub-
55 stantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

STEPHEN J. GAVIN.

Witnesses:

WM. K. SHRYOCK,
W. E. HOFFMAN.