(No Model.)

F. W. COLLINS.

STOVE GRATE.

No. 475,298. Patented May 24, 1892.

Fig 1

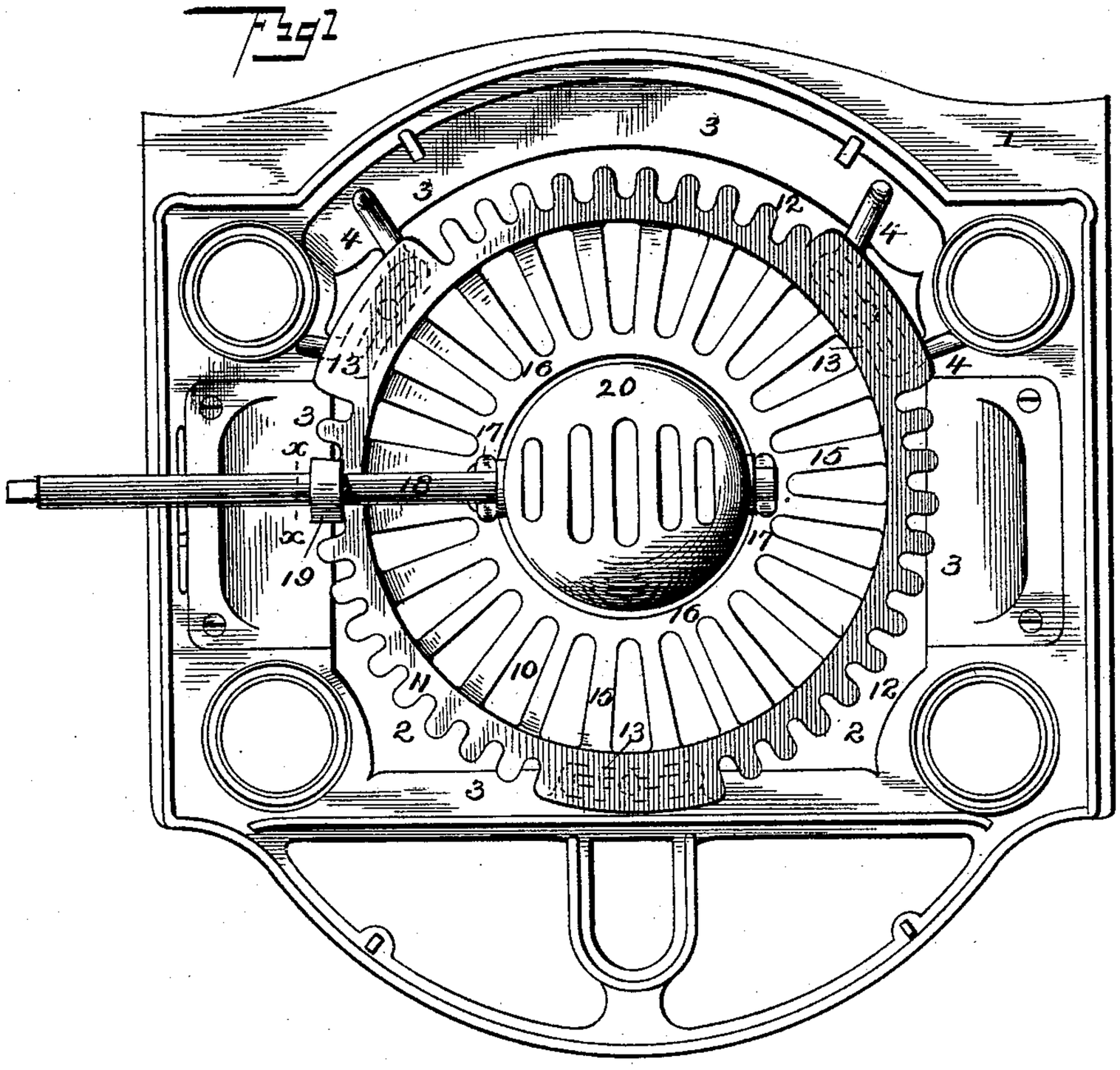


Fig 2

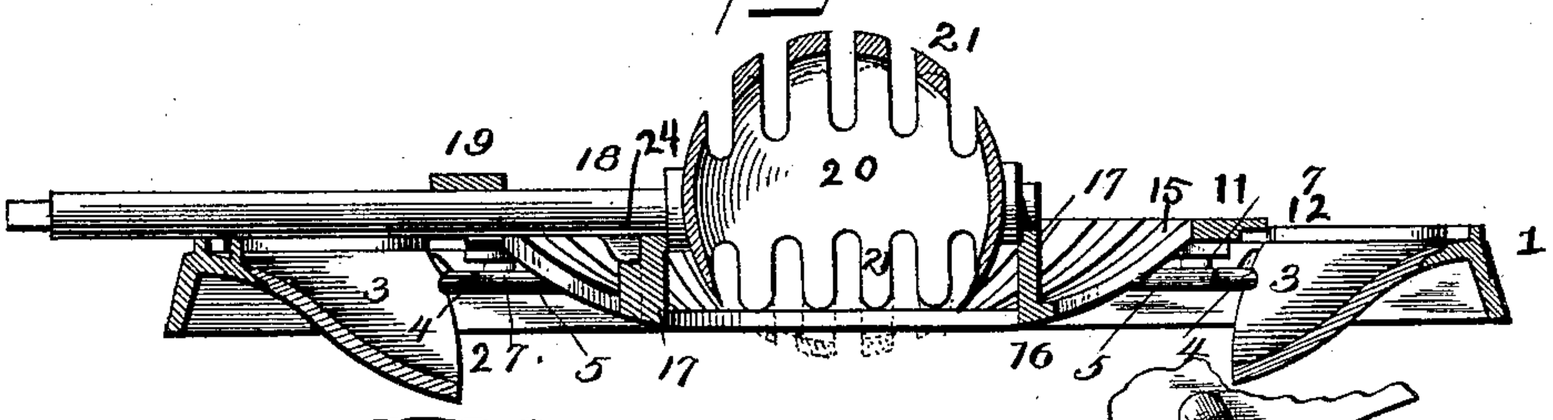


Fig 3

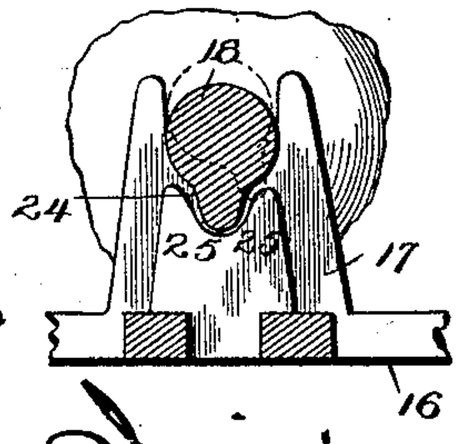
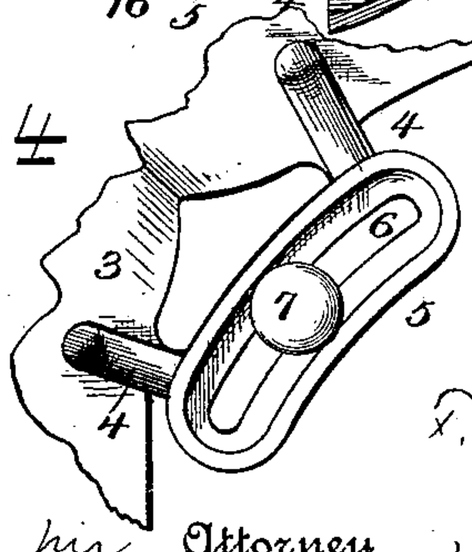


Fig 4



Witnesses

John Dominie

E. C. Wells

Inventor

F. W. Collins

By his Attorney

W. A. Bartlett

UNITED STATES PATENT OFFICE.

FRANK W. COLLINS, OF CORTLAND, NEW YORK.

STOVE-GRATE.

SPECIFICATION forming part of Letters Patent No. 475,298, dated May 24, 1892.

Application filed November 9, 1891. Serial No. 411,303. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. COLLINS, residing at Cortland, in the county of Cortland and State of New York, have invented certain new and useful Improvements in Stove-Grates, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to grates for stoves.

The object of the invention is to produce a grate which shall be easy to shake or to dump, to convey the air well up into the center of the body of coal when desirable, and to improve the grate so it will operate readily and not clog with ashes.

Figure 1 is a plan of the grate-support and grate of a stove. Fig. 2 is a cross-section of the same, nearly central, showing parts in elevation. Fig. 3 is an enlarged detail section on line *x x*, Fig. 1. Fig. 4 is an enlarged detail plan of ball-bearing and supporting-bracket.

The numeral 1 indicates the frame or top casting of the stove-base, being the part of the stove which is just above the ash-pan. This particular casting is intended for a ventilating-stove, and such parts only need be described as relate to the grate and support. The inside of the casting 1 has an opening 2, nearly as large as the grate and in this particular stove nearly square, although the form of opening is not material. The rim 3 surrounding this opening slopes downward and inward, so that ashes which may fall on the rim will not rest there, but will slide down into the ash-pan. Lugs or arms 4 4 are cast with the rim and extend toward the central part of the opening, where they support slotted bearing-brackets 5 5. These brackets 5 are arranged at the angles of a triangle and have curved guideways 6, open at the bottom for the reception of balls 7, which support the grate. One of the bearing-brackets or ways may be cast with the rim. The grate 10 has a rim or ring 11, which rests on the balls 7 in their brackets or bearings. The ring 11 preferably has short bars 12 projecting at its periphery, except at the parts 13, which rest on the bearing-balls, where the rim is wider. The rim or ring 11 has radial bars 15 extending inward and downward to the central ring 16, which joins all the grate-bars. The grate is thus made dish-shaped, so that ashes will tend toward the central opening in ring 16. The ring 16 has open bearing-boxes 17 at opposite sides to support the shaft 18 of the grate center. The ring 11 has a closed bearing 19, through which the shaft 18 passes. Shaft 18 supports a shell or segment of a sphere 20, which sphere is slotted or formed into bars 21, all the bars being connected. When the sphere is turned up, as in Figs. 1 and 2, it extends a considerable distance up into the middle of the coal above the main body of the grate, and carries an air-supply well up into the burning coal.

To dump the grate, the shaft 18 may be rotated or rocked in the manner usual to central dumping-grates. The shell 21 when turned over extends but slightly below the bottom of ring 16, so that the grate can be dumped even when an ash-pan below the grate is nearly full of ashes. This is due to the upward extension of the bearings 17 above the depressed ring 16.

The grate can be shaken or turned about its center in a horizontal plane by means of the same shaft 18, which serves to dump the center, as is usual in grates of this class. As the entire weight of the grate rests on the balls 7, this movement is very easy. The shaft 18 has a lug 24 at one side, which lug projects between stops 25. These stops permit a slight rocking of the shaft 18, but prevent such a rocking as would dump the grate except by the application of considerable power to the shaft, so that the grate may not be dumped by accident. By the use of a lever on shaft 18 said shaft can be rotated, the lug 24 riding over stops 25.

I am aware that ball-bearings for stove-grates are not new. Also that dumping-centers of a nearly spherical form are well known in the construction of grates. But a practical test of a great number of grates of my construction have demonstrated that this peculiar construction of rim and bearing is freer from obstruction by ashes than any other grate known to me, and that the central shell, supported on bearings above a depressed ring, permit of the dumping operation with a full ash-pan without obstruction from the ashes in the

pan, which is not true of other somewhat similar grates known to me.

What I claim is—

1. The grate rim or ring having an open center and bars extending inwardly and inclined downwardly toward said central opening, the bearings extending upwardly from said ring, the rock-shaft supported in said bearings and having a segment of a sphere attached thereto and extending upward, (except when in dumped position, when the sphere extends but slightly below the grate-bars,) combined with a suitable support for said grate-rim, all substantially as described.

2. The combination, with the casting having a central opening and downwardly-inclined rim, of ball-bearing brackets open at the bottom and supported on arms projecting from said rim, leaving an open space between the rim and bracket, balls in said bracket, and a grate resting on said balls, substantially as described.

3. The combination, with the outer and inner rings of the grate proper, of the shaft having a close bearing on the outer ring and open bearing above the inner ring, a lug at one side of the shaft, and stops in the line of movement of said lug in rotating, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK W. COLLINS.

Witnesses:

A. C. WALRAD,

A. A. SPRAGUE.