

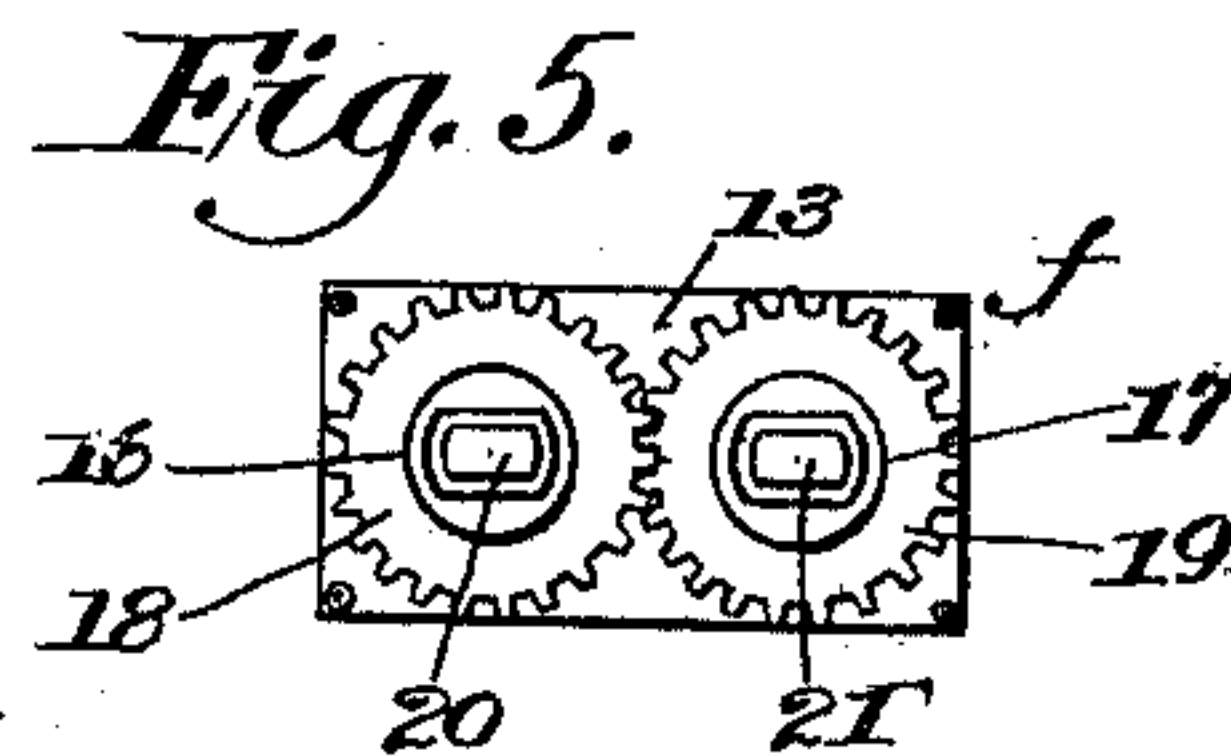
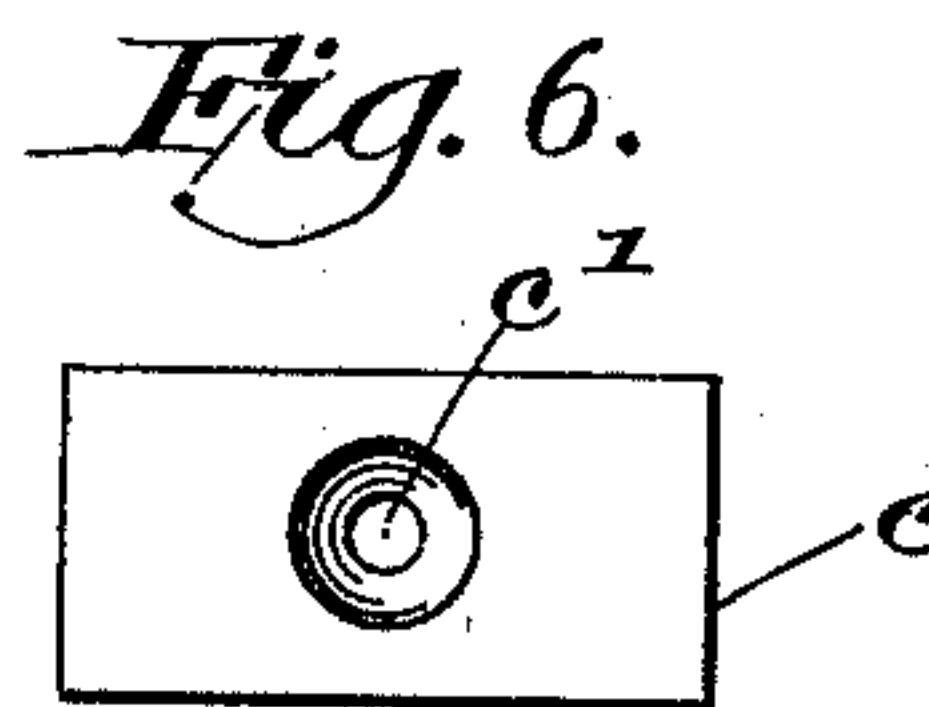
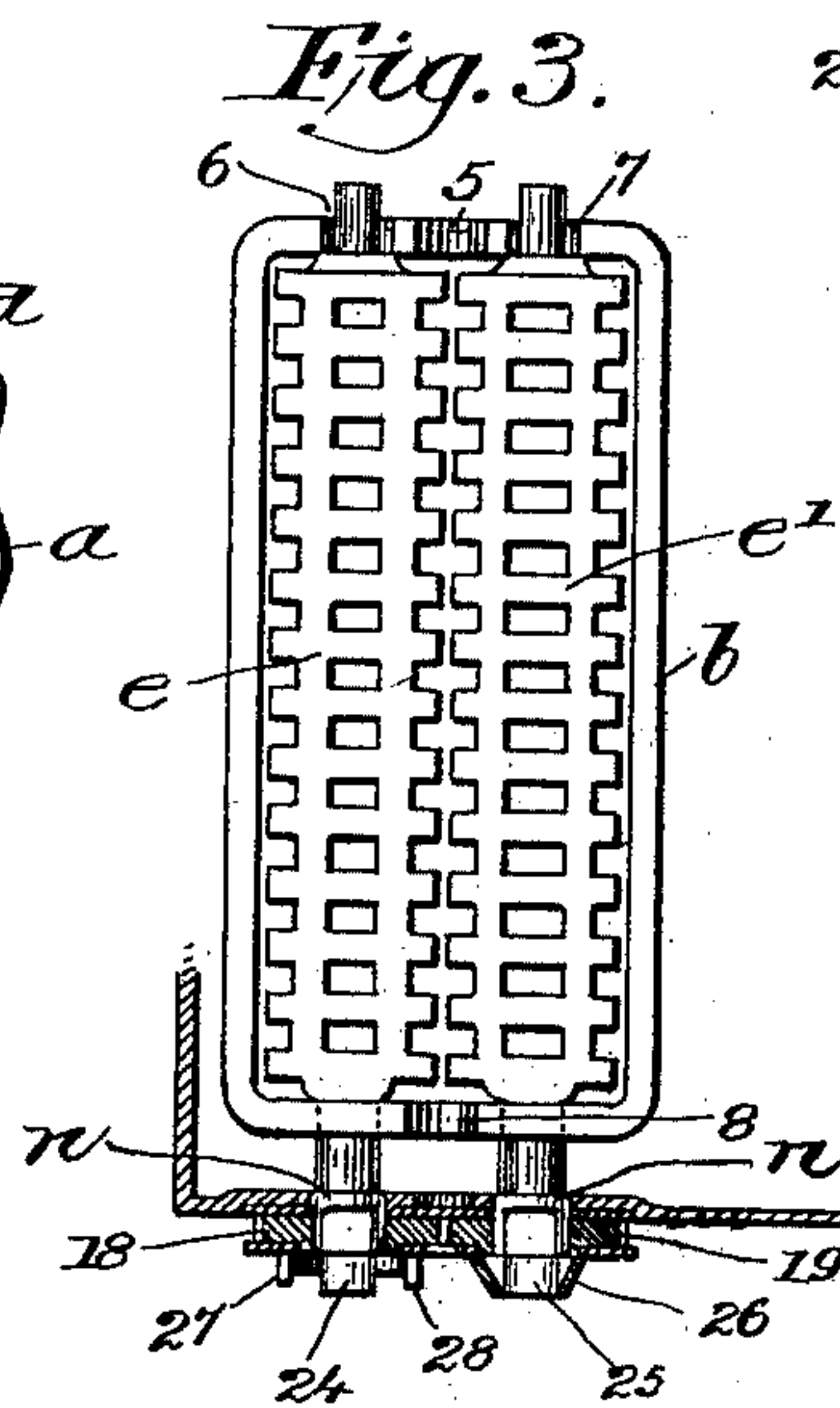
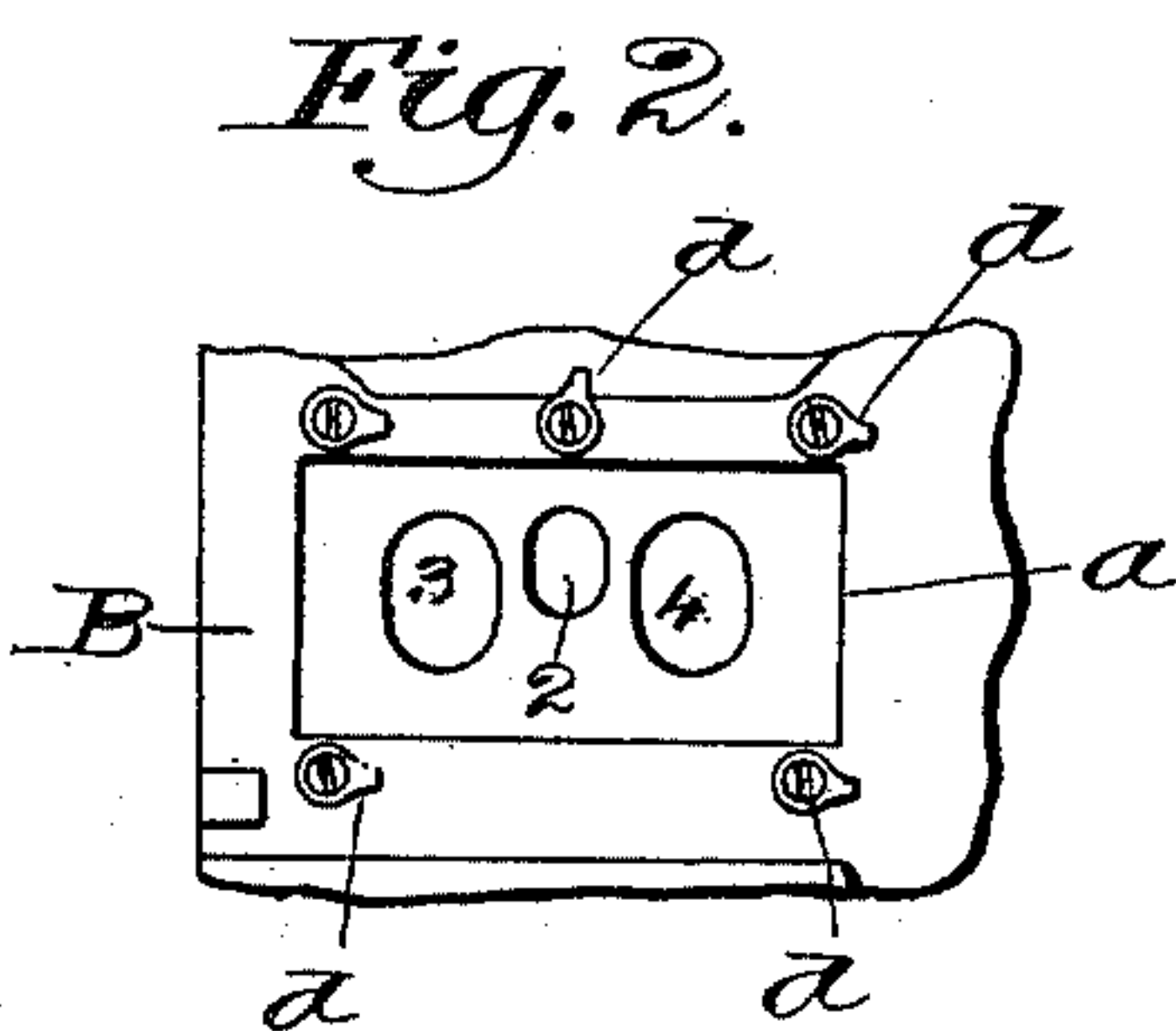
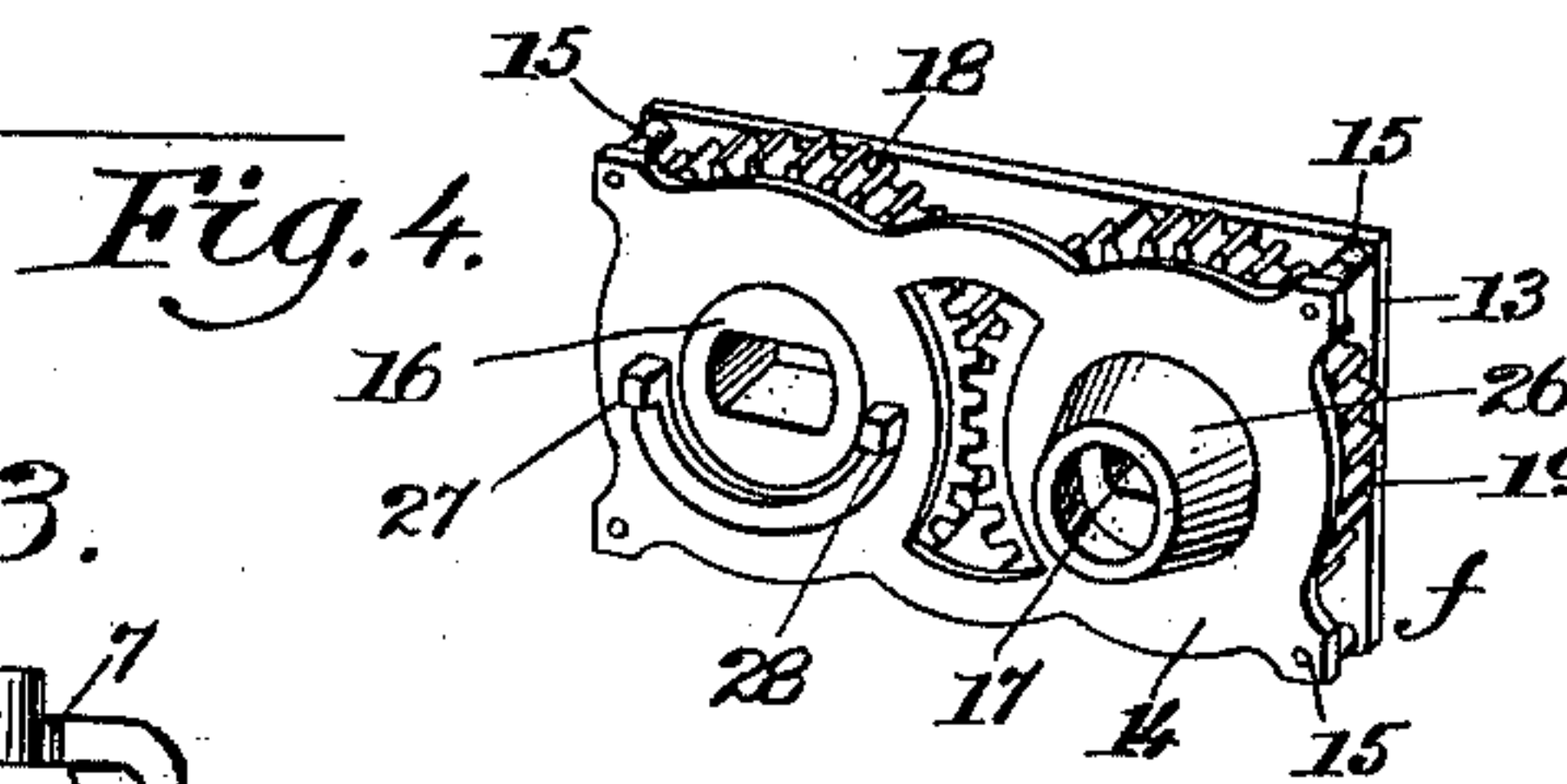
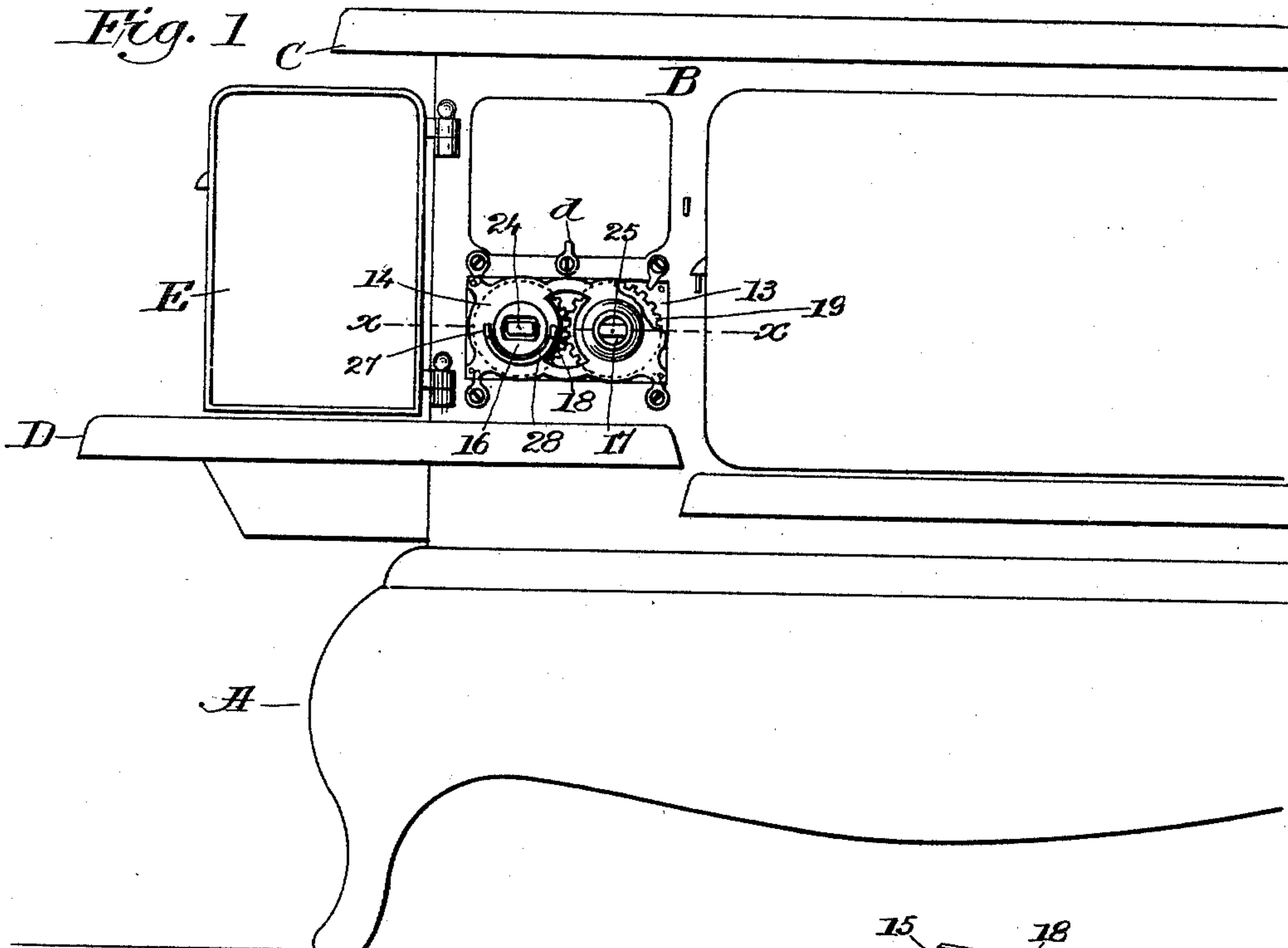
No. 619,104.

Patented Feb. 7, 1899.

A. W. WALKER.
GRATE FOR STOVES, FURNACES, &c.

(Application filed Jan. 7, 1898.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

ARTHUR W. WALKER, OF MALDEN, MASSACHUSETTS.

GRATE FOR STOVES, FURNACES, &c.

SPECIFICATION forming part of Letters Patent No. 619,104, dated February 7, 1899.

Application filed January 7, 1898. Serial No. 665,935. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. WALKER, of Malden, county of Middlesex, State of Massachusetts, have invented an Improvement in
5 Grates for Stoves, Furnaces, &c., of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 Purchasers of cooking-stoves frequently demand that the stove shall have a particular form of grate, there being a variety of grates in the market, some of them being in one piece, while in others the grate is composed of a plu-
15 rality of bars, and in case the stove which the merchant desires to sell has not the preferred grate a sale is lost. Owing to this diversity of grates it becomes a matter of very considerable importance to provide a stove in which a
20 single or double bar grate may be substituted at will without at all disturbing or removing the stove-lining or water-front, and hence this invention now to be described.

I have provided the grate-support, located
25 at the bottom of the fire-box, with a series of notches for the reception of the journals of a single or of a two bar grate, and I have provided the stove-casting, as herein shown, the end plate at its outer side, with two journal
30 plates or boxes, either of which may be readily applied and held in position, according to whether a single or double grate is desired. For instance, that one of these detachable journal-plates to be used with the single grate-
35 bar has a central opening for that journal of the grate which is to be engaged by the shaking-handle, while the journal-plate to receive the journals of the two-bar grate carries two pinions which when in position will embrace
40 a squared or slabbed part of the said journals, the journals of said grate-bars being extended wholly through the central opening of the said two pinions, so that by applying to the jour-
45 nal of the grate outside of the pinion a shaking-handle the grate may be turned, and the pinion upon it engaging the pinion on the other grate will cause the two grates to be carried back and forth in unison to properly ac-
tuate the grate-bars and shake the fire.

50 Figure 1, in side elevation, represents a sufficient portion of a cooking-stove with my invention added to enable my improvement to

be understood, the side door being open. Fig. 2 shows part of the side plate of the stove with the journal plate or box removed. Fig. 55 3 is a sectional detail in the line *x*, Fig. 1. Fig. 4 is an enlarged perspective view of the journal plate or box and its pinions detached from the stove; Fig. 5, a view of the journal plate or box shown in Fig. 1 removed, with 60 the outer of the two walls removed. Fig. 6 shows the journal-plate for the one-bar grate, and Fig. 7 shows one end of the grate-bar support.

The stove has a base A, side plates B, top 65 C, hearth D, and door E, all of any usual or suitable shape or character.

The side plate of the stove herein to be described at the part adapted to be covered by the said top E is provided with plate-holding 70 devices shown as buttons *d* and with a recess *a*, (see Fig. 2,) having a suitable large or three small holes 2 3 4, and the grate-support *b*, located at the bottom of the usual fire-box, is provided at each end with three holes 5 6 7, 75 while at its opposite end the said support has a top notch 8 and two under notches 10 12. (See Fig. 7.)

To adapt this stove for use with a single grate-bar, the journal plate or box *c* will be 80 put in the recess *a* and held in place by the folding devices or buttons *d*, which will be turned into position to overlap the plate, and the short journal of the grate will be put in the notch 5 and the shaking-journal in the 85 notch 8 and extended through the opening *c'* of the plate *c*.

If a customer demands a grate presenting two revoluble bars, as *e e'*, I have provided for use a journal plate or box *f*, composed of 90 two thin plates 13 14, separated by posts 15, each plate 13 and 14 having two holes, the holes in the two plates being in line with each other, and said holes when the plate is in position are in line with the holes 3 and 4 in 95 the side plate, the plate 14 being made large enough to receive in them the hubs 16 17 of the two pinions 18 19, the holding of the hubs of the two pinions in place between said plates insuring the correct meshing of the teeth of 100 said pinions, and when the plate *f* is in the recess *a* the holes 20 and 21 in the pinions come in line with the openings 3 and 4.

To put the two grate-bars *e e'* into the stove,

the shaking ends of the journals of the two revoluble grate-bars will be put through the openings 3 and 4, and then the short journals at the opposite ends of said bars are made to enter the supports which are to sustain them, after which the person applying said grates will put in operative position at the stove side the journal plate or box *f*, and in putting it into this position the holes in the pinions 18 and 19 in the said box will be put over the shaking ends of the journals and will contact with shoulders or flanges *n* of said ends, and acting thereon will push the said short journals firmly into the bearings made to sustain them into a position from which they cannot escape, and then the said plate *f* will be locked or secured in such position, causing the said short journals to be confined and held securely in working position. The shaking-journals are thus left exposed at the face of the plate 14.

The shaking-journals are slabbed, squared, or have given to them other irregular shape in cross-section to enter correspondingly-shaped holes in the pinions, the shaker used being applied to the said ends.

In the drawings the shaking-journal 24 is left accessible to the usual shaker, and the journal 25 is protected within a hood 26.

In this my invention both grate-bars *e* and *e'* and their journals are alike in shape, so that the grate-bars may be used interchangeably at the right or at the left hand side of the center of the grate.

In order that the fire may be kept and controlled in the best manner and the coal be more effectively kept clear of ashes and clinkers, the grate-bars when operated should be moved in such direction when started to be operated as to lift their edges lying next the side walls of the fire-box, for by lifting the coal highest at the outer longer edge of the fire-box the liability of the grates being clogged by the coal to prevent the grates being returned to their proper level is greatly lessened. To insure this, the shaker should be put on the shaking end piece or journal 24 next the hearth of the stove, and according to direction the shaker must be turned to the right. To insure the carrying out of this rule for operating the grates, the shaking end 25 of the grate *e'* is so located in a collar or hood 26 that the shaker cannot be applied, and so the user of the stove has no alternative and is obliged to turn the grate in the proper direction for the best operation thereof. Should, however, the end 25 be left exposed, then to operate the grate-bars in the best and approved manner the user of the stove would have to turn the grate-bars to the left rather than to the right, and such freedom of movement would result in operating the grates at times in the wrong manner, so the covering of the shaking end 25 becomes a matter of importance.

The employment of the collar or hood makes it possible to keep the shaking ends of both

grates of equal length, whereas if the collar were omitted the shaking ends of the two grates used would have to be made so short to prevent its use that it would not be exposed for the application of the shaking-handle.

The plate 14 has two stops 27 28, against which the shaker used may strike and insure that the grates will be left in proper horizontal position, and in practice the grates will be rotated a half-rotation at each operation, the shaker being removed after each operation.

I have not shown the shaker or bar, as it may be of any usual shape or character.

Prior to this invention grate-bars have had pinions fixed on them, and when such a grate-bar was put into the stove it could not be readily changed; but in this my invention by supporting the pinions in a separate journal plate or box adapted to be readily attached to or removed from the stove-plate the double grate may be used when desired, and, further, the end journals of the grate-bars may be sustained in any usual or well-known manner, as the particular plan of supporting them in the bottom of the fire-box is not of the gist of this invention.

My invention is applicable to grates for use in furnaces and heaters.

Instead of the three holes 2 3 4 one large hole might be used with the same result.

I am aware that a stove has been provided wholly inside its sides with plates to receive socketed toothed portions, in which may be inserted the opposite ends of a pair of grate-bars, said grates being shaken by applying a shaker to a journal extended from one of said socketed portions; but in such stove the supports for the grate could not be removed, except after removing the fire-box lining and the water-front, whereas in this my application the journal plate or box herein shown and claimed may be readily applied to or removed from the outside of the stove-plate without at all disturbing in any way the lining or the water-front, and the pinions carried by the said journal plate or box may be slipped loosely over the projecting ends or journals of the grate, leaving one end of said journals readily accessible for the application thereto of the usual shaker.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A stove having a closed fire-box, one end thereof being closed by means of a side plate formed as a permanent, fixed part of the frame or casting of the stove, said side plate being perforated so as to be capable of accommodating either the journal-bearing of a single grate-bar, or the journals of a plurality of grate-bars as desired, in combination with an independent journal plate or box for attachment outside of said plate, said journal-plate being perforated in alinement with the said perforated side plate to provide bearings, and means for locking said journal-

plate in fixed position against the outside of said side plate, substantially as described.

2. A stove having a closed fire-box, a grate-support located at the bottom of said fire-box, and provided at its opposite ends with central notches adapted to receive the journals of a single grate, and at each side of said central notches with other notches properly located to receive the journals of a double grate, one end of said fire-box being closed by means of a side plate formed as a permanent, or fixed part of the frame or casting of the stove, said side plate being perforated so as to be capable of accommodating either the journal of said single or double grate as may be desired, a separate journal plate or box perforated to aline with said perforated side plate to constitute a journal-bearing for the stove-grate, said journal-plate being removably secured against the outside face of said side plate, it being provided and arranged so that the stove may be provided with a single grate or double grate as required, without disturbing the fire-box, substantially as described.

3. In a stove, a side plate having a through-and-through opening and a recess at the outer side surrounding said opening, combined with a journal plate or box having a plurality of openings and provided with a plurality of pinions having their teeth in mesh, and means to hold said journal plate or box in place in said recess, substantially as described.

4. A stove having a closed fire-box, one end thereof being closed by means of a side plate formed as a permanent, fixed part of the frame or casting of the stove, said side plate being perforated to receive loosely the journals of a plurality of grate-bars, in combination with a journal plate or box removably fastened against the outer face of said side plate, said journal-plate being composed of two thin plates held apart in substantially parallel planes, and having oppositely-alined holes also in alinement with said perforated side plate, gears permanently mounted in said journal plate or box between its said thin plates, said gears being journaled in said alined holes and having central holes in which the grate-bar journals are mounted beyond said side-plate, substantially as described.

5. A stove having a closed fire-box, one end thereof being closed by means of a side plate formed as a permanent, fixed part of the frame or casting of the stove, said side plate being perforated to receive loosely the journals of a plurality of like grate-bars, in combination with a journal plate or box removably fastened against the outer face of said side plate, said journal-plate being composed of two thin plates held apart in substantially parallel planes, and having oppositely-alined holes

also in alinement with said perforated side plate, gears permanently mounted in said journal plate or box between its said thin plates, said gears being journaled in said alined holes and having central holes in which the like grate-bar journals are mounted beyond said side plate, the outer one of said thin plates being flat at one side and substantially flush with the journal to project therebeyond for receiving a shaker, and the said outer thin plate at its other side being provided with a housing inclosing the grate-bar journal at that side and preventing the possibility of its receiving a shaker, substantially as described.

6. A stove having a closed fire-box, a grate-support located at the bottom of said fire-box, and provided at one end with three notches or bearings adapted to receive the journal of a single grate or the journals of a double grate as desired, and at its other end provided with a central notch in its upper side in alinement with the middle of said three notches, and at either side of said central notch provided with two notches on its under side, the end of said fire-box adjacent the top and under notches being closed by means of a side plate formed as a permanent, or fixed part of the frame or casting of the stove, said side plate being perforated so as to be capable of accommodating either the journal of said single or double grate as may be desired, a separate journal plate or box perforated to aline with said perforated plate to constitute a journal-bearing for the stove-grate, said journal-plate being removably secured against the outside face of said side plate, all being provided and arranged so that the stove may be provided with a single grate or double grate as required without disturbing the fire-box, substantially as described.

7. A stove-plate having a suitable opening for the passage therethrough of the shaking ends or journals of a plurality of grate-bars, means to sustain said grate-bars at the bottom of the fire-box of said stove, and a journal plate or box having two pinions with their teeth in mesh and permanently located in said plate or box and having central holes to fit the said shaking ends, the said journal plate or box being applied to the outside of the stove-plate, the pinions being slipped loosely over the projecting ends or journals, and means to confine said plate or box in place on the stove-plate, substantially as described.

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

ARTHUR W. WALKER.

Witnesses:

GEO. W. GREGORY,
MARGARET A. DUNN.