

J. W. PIPER.
VERTICALLY ADJUSTABLE GRATE.
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899,677.

Patented Sept. 29, 1908.

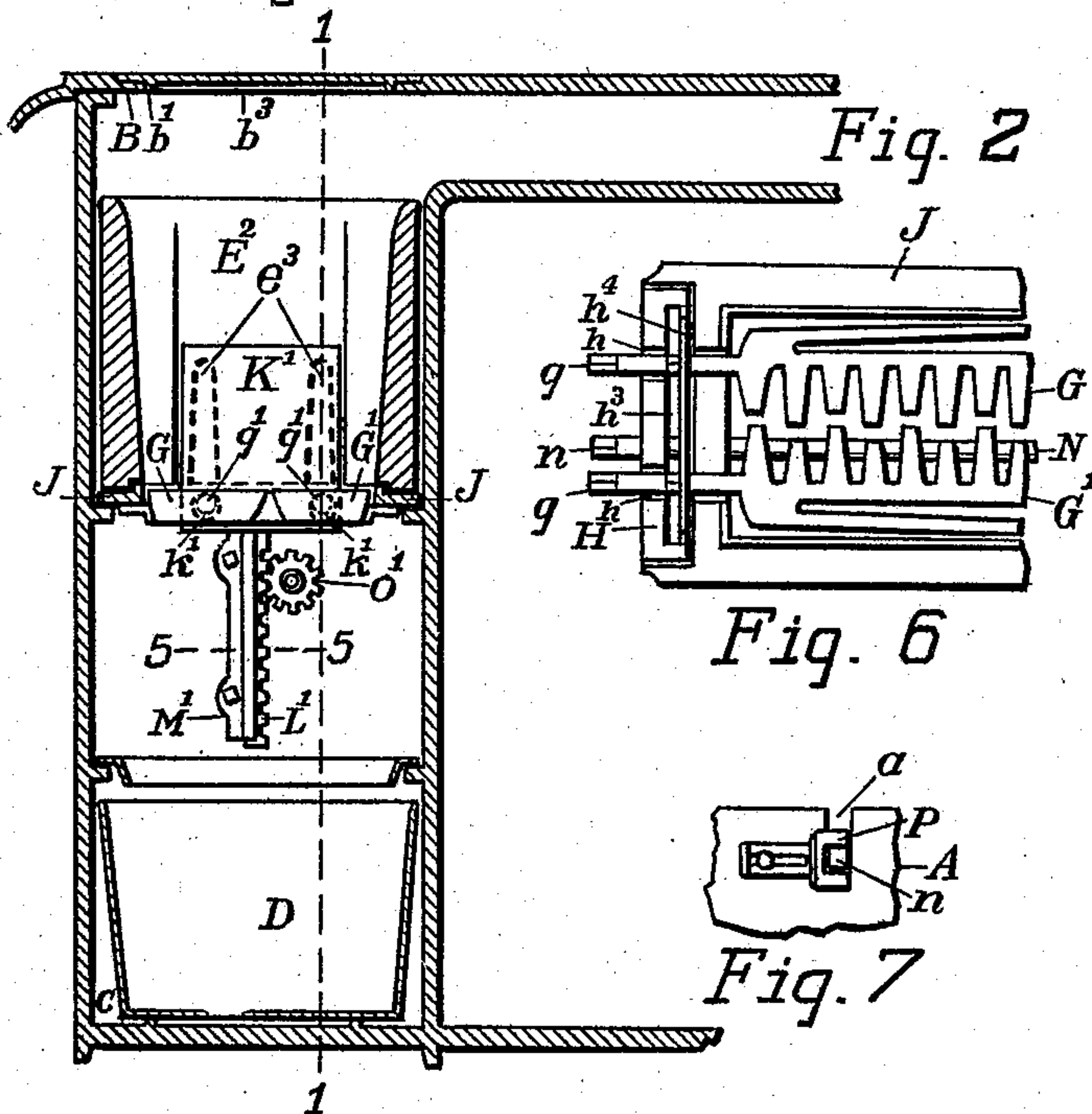
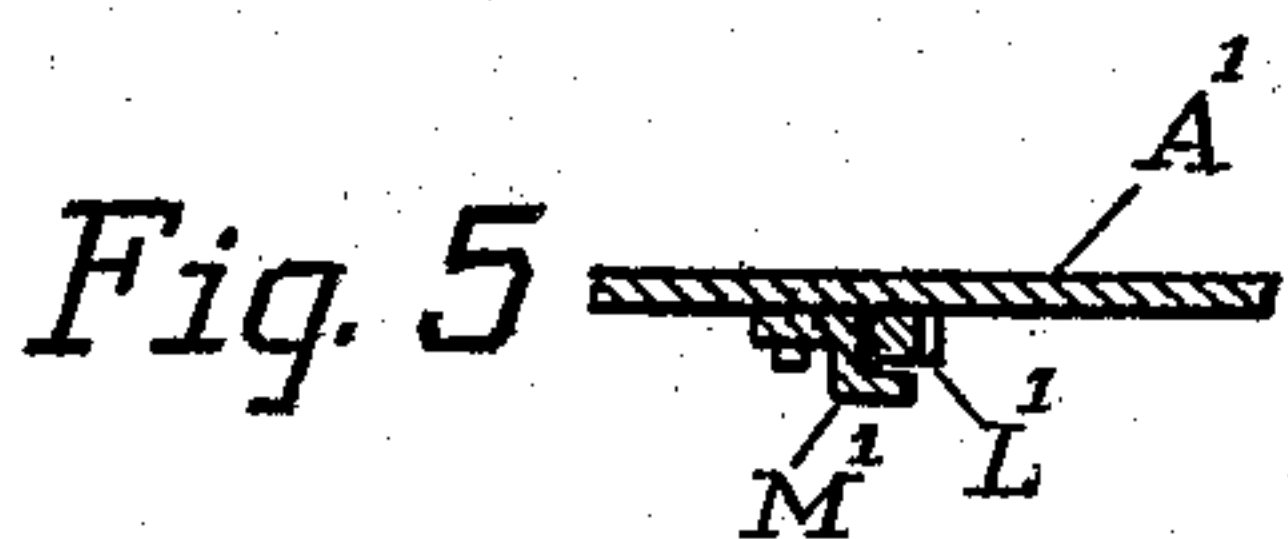
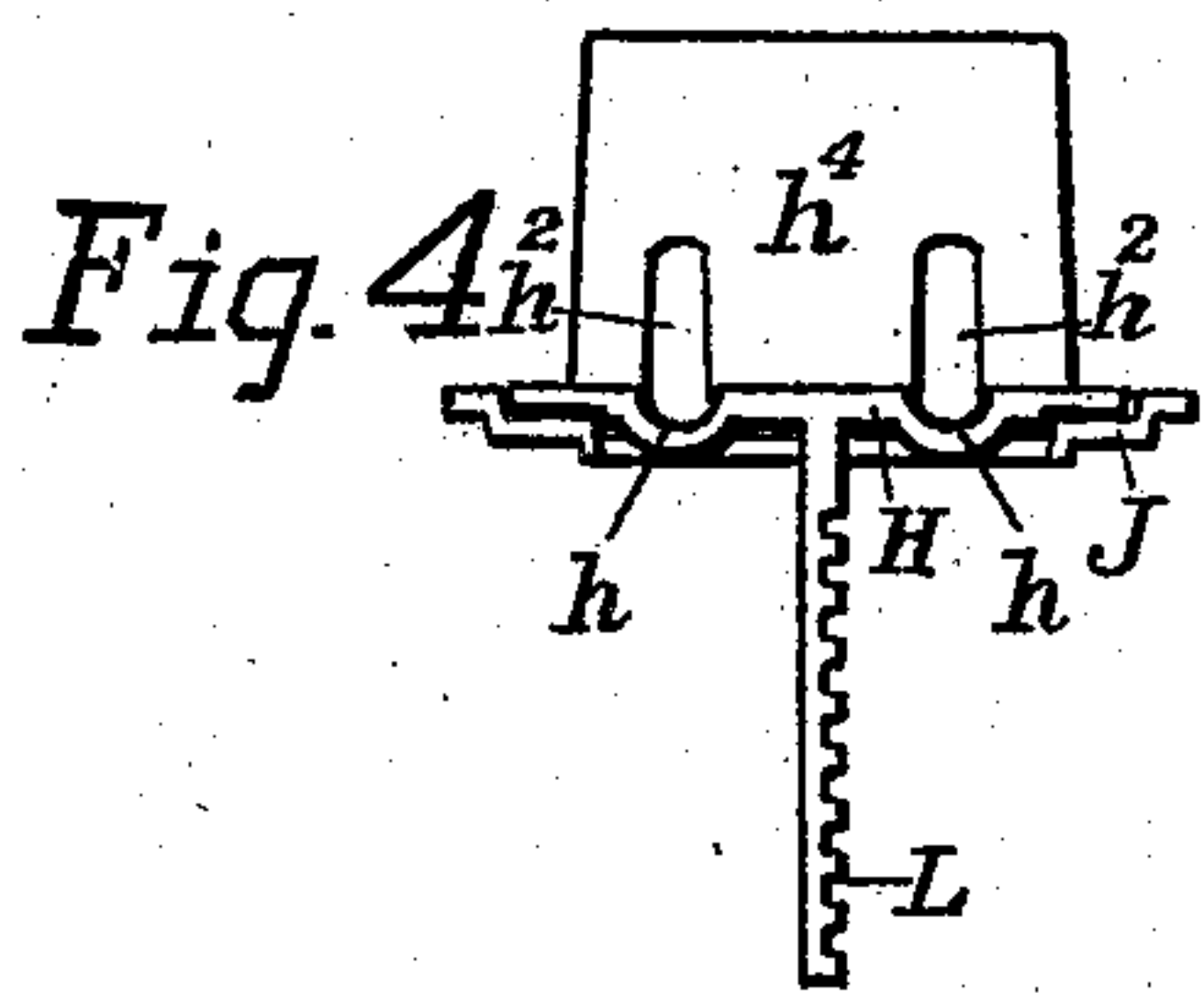
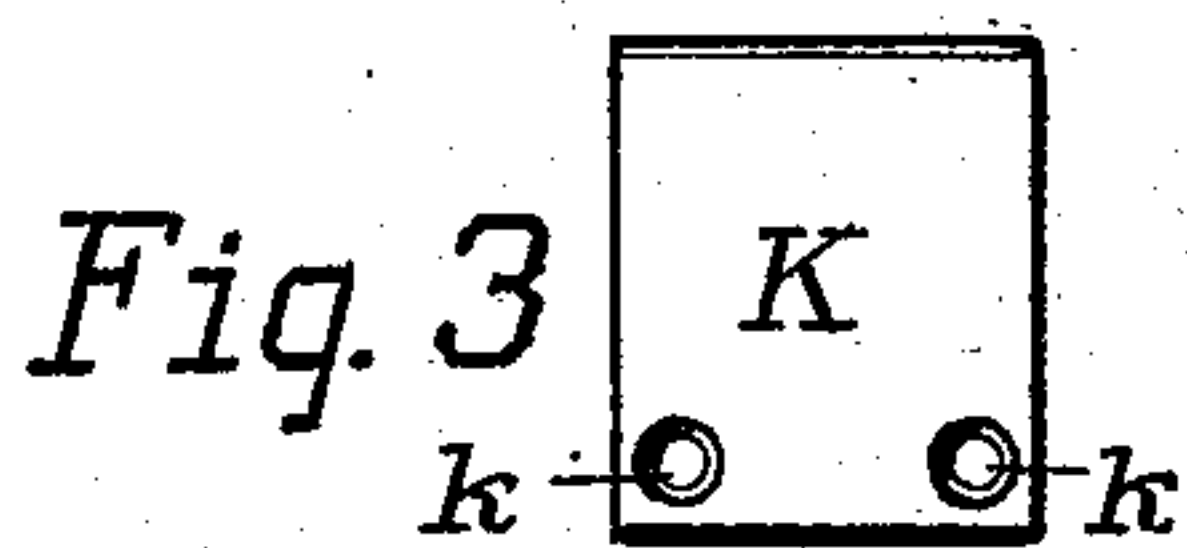
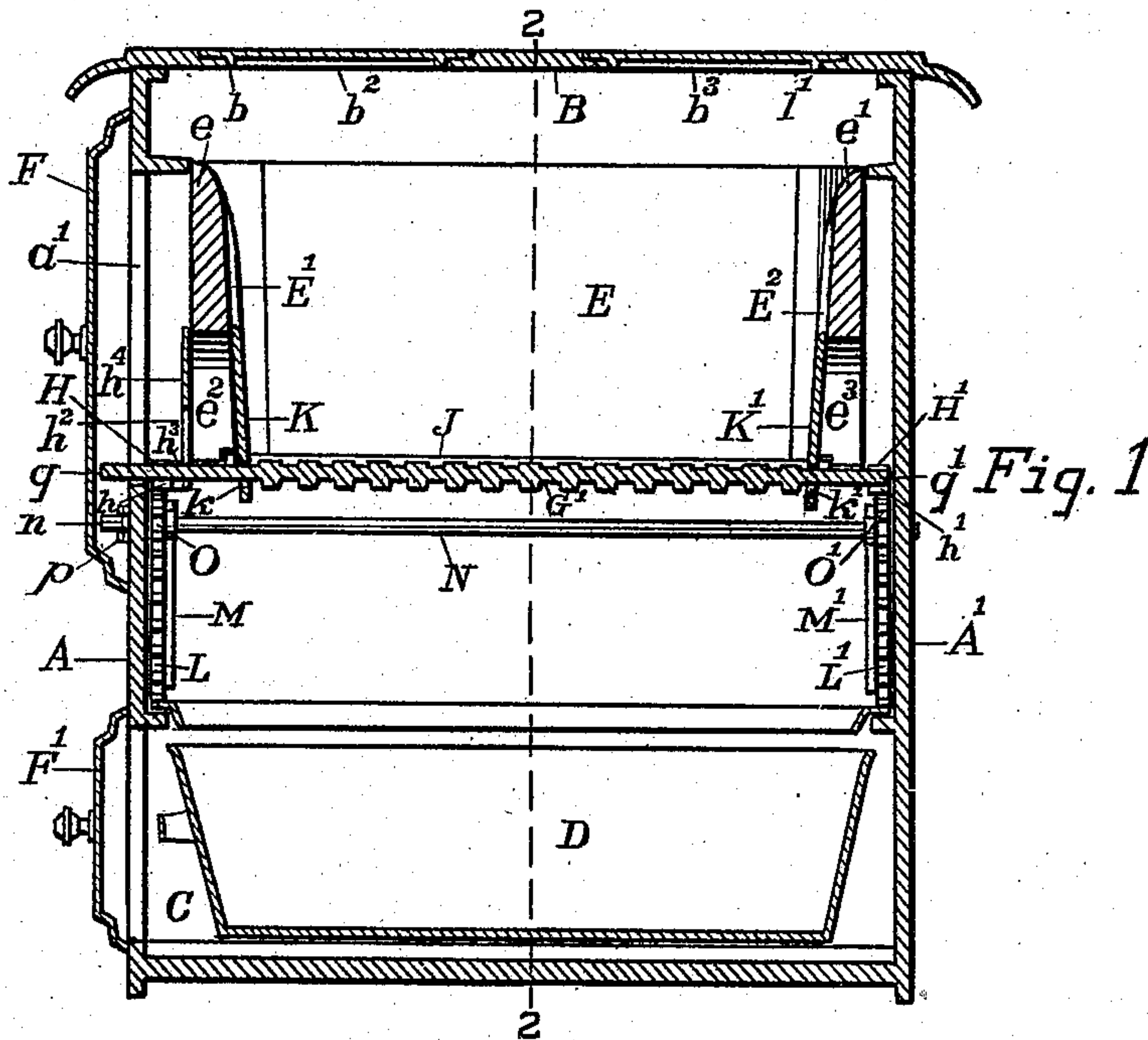
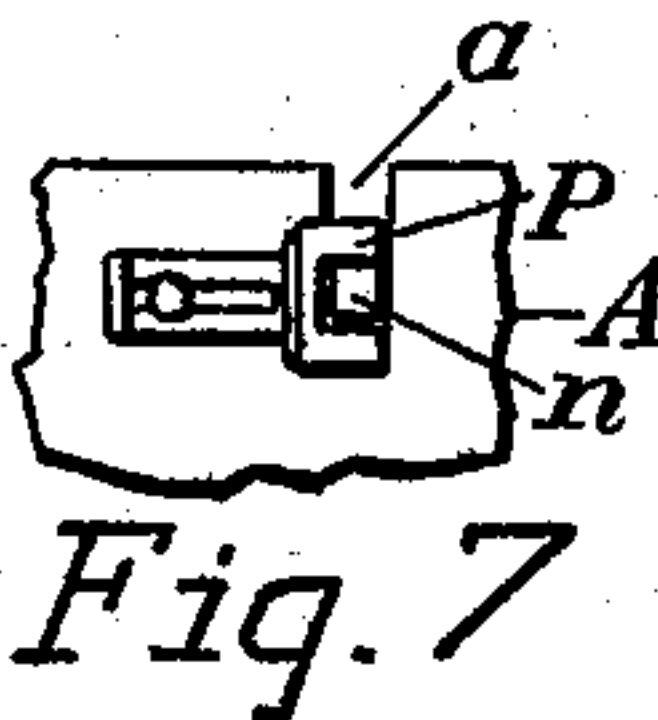


Fig. 6



WITNESSES

Grace Browley
Stewart Shaw

INVENTOR

Joseph W. Piper,
By Albert M. Moore
His Attorney.

UNITED STATES PATENT OFFICE.

JOSEPH W. PIPER, OF LOWELL, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO JAMES PIPER, OF BROOKLYN, NEW YORK.

VERTICALLY-ADJUSTABLE GRATE.

No. 899,677.

Specification of Letters Patent.

Patented Sept. 29, 1908.

Application filed October 12, 1907. Serial No. 397,056.

To all whom it may concern:

Be it known that I, JOSEPH W. PIPER, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Vertically-Adjustable Grates, of which the following is a specification.

This invention relates to vertically adjustable grates for supporting the bed of fuel at a greater or less distance from the top plate of a cooking stove or range.

The grate-bars herein described are so constructed and supported that they may be turned by a wrench or handle applied outside of the stove or range to the pivots of the grate-bars, so that the raising and lowering of said grate-bars require the ends of the fire-box and the fire-box linings, if such are used, to be slotted vertically.

The object of this invention is to prevent the ingress of air through the slots in the ends of the fire-box and to prevent fuel and ashes from filling said slots and thus preventing the operation of the adjusting means.

In the accompanying drawing, Figure 1 is a vertical transverse section of a cooking-stove provided with my invention through the combustion-chamber on the line 1 1 in Fig. 2; Fig. 2, a vertical longitudinal section on the line 2 2 in Fig. 1; Fig. 3, an elevation of the outer side of one of the cover plates, showing beveled holes; Fig. 4, an elevation of the outer side of a grate-bar lifter and rack and an end view of the grate-frame; Fig. 5, a horizontal section on the line 5 5 in Fig. 2 of a part of a side plate of a stove and of the lifter rack and of the way in which said rack travels; Fig. 6, a partial plan of the grate including the frame and bars and one of the lifters; Fig. 7, a side elevation of locking means for the lifter shaft.

The side plates A A¹; the top-plate B provided with holes b b¹; covers b² b³; the ash-chamber C; ash-pan D; combustion-chamber E with lining e e¹; the doors F F¹; the duplex grate G G¹; the grate frame J; these parts are all of the ordinary construction and operation except as hereinafter described.

It will be understood that the grate-frame is stationary and is usually provided at each end with U-shaped journal boxes or grooves, in which turn the pivots or arbors g g¹ of the one or more grate-bars which support the fuel.

The pivot g, at one end of each grate-bar is longer than the pivot g¹ at the other end of said grate-bar and projects through the side-plate A to be engaged by a suitable wrench.

The fire-brick or other lining e e¹ rests on the grate-frame and as usually constructed, would prevent the grate-bar pivots from being lifted.

I form in the lining, vertical slots e² e³ at each end of the fire-box or combustion-chamber of a sufficient vertical length to permit the grate to be raised to the desired height.

I arrange at each end of the fire-box outside of the same a lifter H H¹ to which is secured a rack L L¹, as by casting said rack in one piece with said lifter or otherwise in any convenient manner, which rack depends vertically from said lifter and is guided in a suitable way M M¹ (Figs. 1, 2 and 5).

A horizontal shaft N is journaled in the side-plates A A¹ below the grate-frame J and has rigidly secured thereto two equal pinions O O¹ which engage the racks L L¹ respectively, so that by turning said shaft N, said lifters H H¹ will be raised equally. One end n of the shaft N projects through the side-plate A and is many-sided or otherwise adapted to be engaged by a wrench, preferably the same wrench as is used to tip the grate-bars.

In this invention the pivots g—g¹ of the grate-bars are journaled in grooves h—h¹ in the lifters H—H¹. One of said lifters H, the one at the end of the fire-box, at which the shaft N and the grate-bars G G¹ are operated, is provided with an upwardly-extending plate h⁴ which serves to some extent to prevent the escape of dust when the door F is open and the grate-bars are being turned. The plate is provided with two slots h² h² which allow the adjacent ends or pivots of the grate-bars to be lifted by hand sufficiently to place thereon the usual gears.

When the grates are raised they may be prevented from descending by a notched catch P (Fig. 7) which slides longitudinally on the side-plate A and fits the projecting flat-sided end portion n of the shaft N.

The slot or groove a in the side-plate A opens at the top into the usual opening or door-space a¹ (Fig. 1) to permit the introduction and removal of the shaft N.

With the invention above described, the grate-frame need serve no other purpose than to support the fire-brick or lining, because

the catch by preventing the shaft N from rotation will hold the grate in its lowest or any other position.

To prevent air from entering the fire-box through the slots e^2 e^3 and interfering with the draft and to prevent ashes and fuel from filling said slots and hindering the lifting of the grate-bars, I use two cover-plates K K^1 , each provided with two outwardly flaring round holes k k^1 , through which the pivots g g^1 are passed and I form in the inner faces of the end linings of the fire-box two recesses E^1 E^2 , in which these cover-plates are guided as the grate-bars are raised and lowered. The outward flare of the holes k k^1 allow the cover-plates K K^1 to incline outwardly against the linings of the fire-box and prevent fuel from getting outside of said cover-plate.

It will be seen that this invention enables the grate to be raised while burning fuel is in the combustion-chamber, so that it is not necessary to empty the combustion-chamber before adjusting the height of the grate.

I claim as my invention:—

1. The combination in a stove, of a fire-box having vertical slots, grate-bars having pivots which extend through said slots, lifters, for raising and lowering said grate-bars and cover-plates arranged in said fire-

box and extending over said slots and movable with said bars, to prevent material from entering said slots from said fire-box.

2. The combination in a stove, of a fire-box having vertical slots, and having guide recesses, grate-bars having pivots which extend through said slots, lifters, for raising and lowering said grate-bars, and cover-plates arranged in said fire-box and extending over said slots and movable with said bars, in said recesses, to prevent material from entering said slots from said fire-box.

3. The combination in a stove, of a fire-box having vertical slots, and having guide recesses, grate-bars having pivots which extend through said slots, lifters, for raising and lowering said grate-bars, and cover-plates arranged in said fire-box over said slots and having outwardly flaring holes, through which said pivots extend to allow said plates to incline outwardly against said fire-box, to prevent material from entering said slots from said fire-box.

In witness whereof, I have affixed my signature in presence of two witnesses.

JOSEPH W. PIPER.

Witnesses:

ALBERT M. MOORE,
LUDGER A. NICOL.