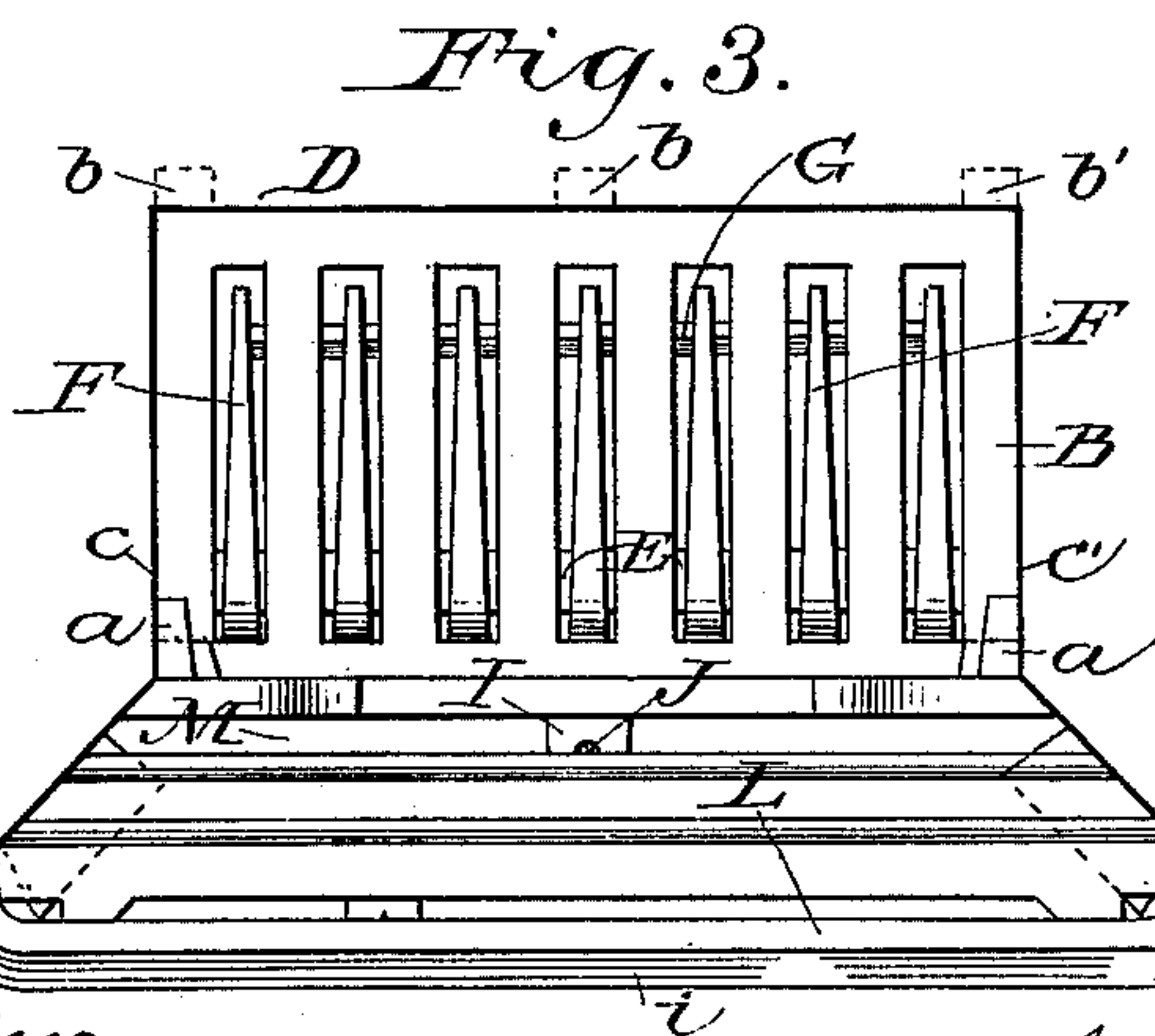
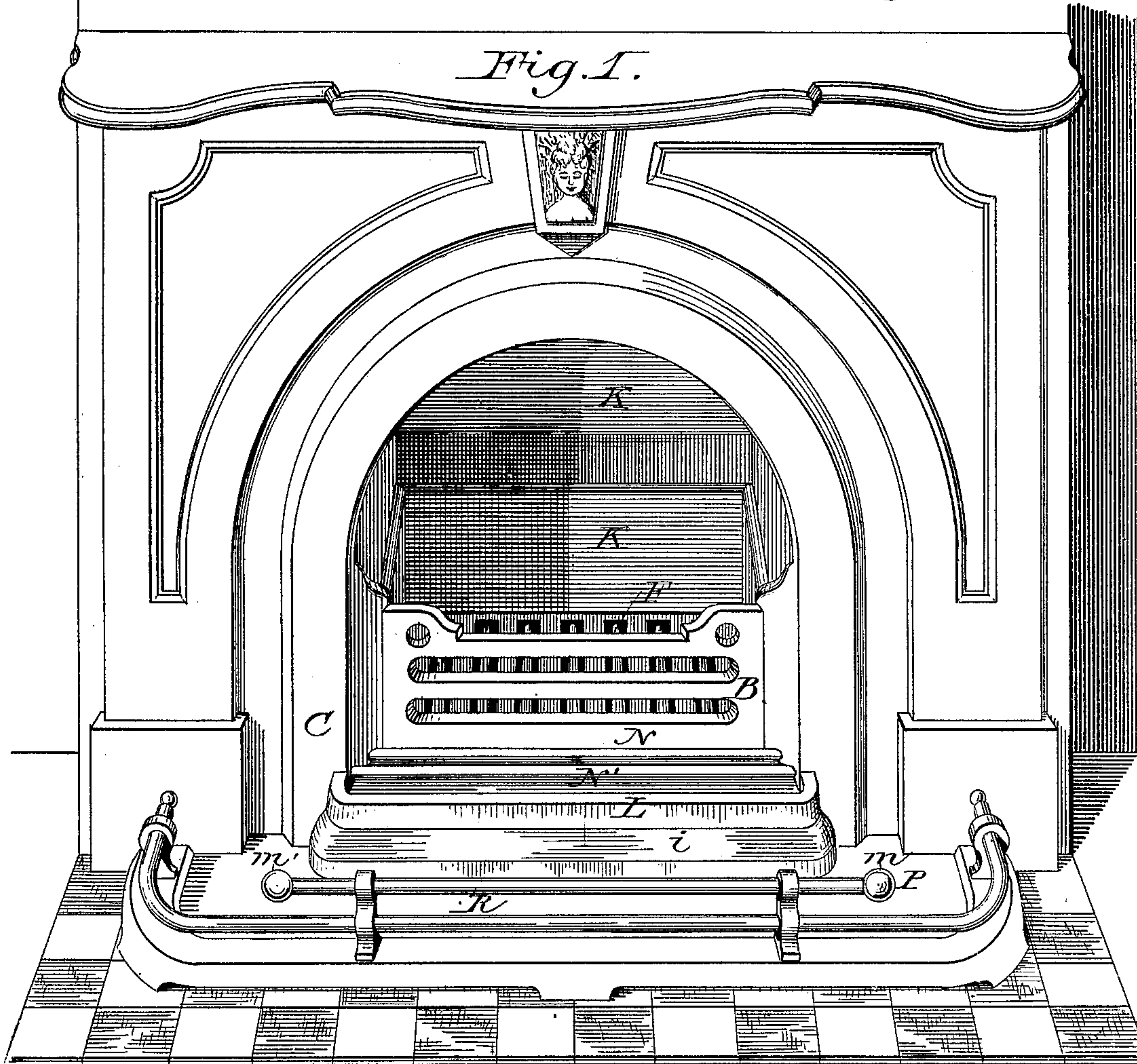


J. B. FARIS.
Grate.

No. 231,296.

Patented Aug. 17, 1880.



Witnesses:

Chas H. Snyder
Samuel M. Greary

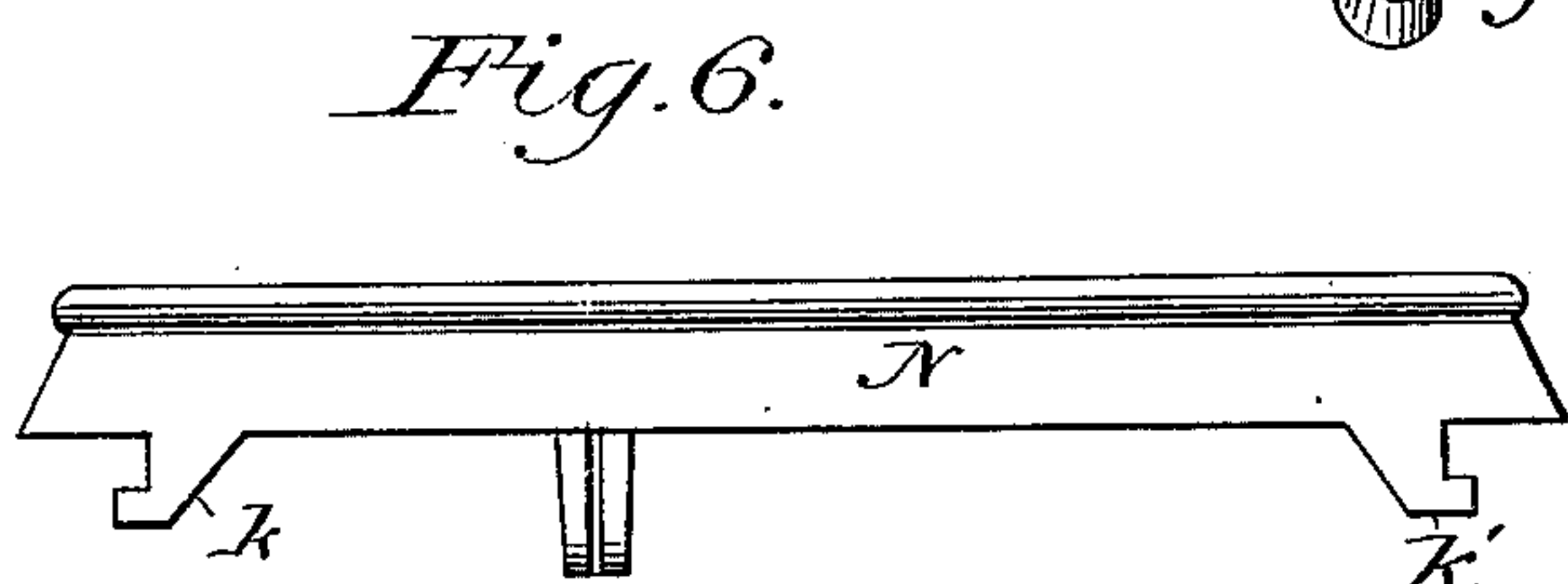
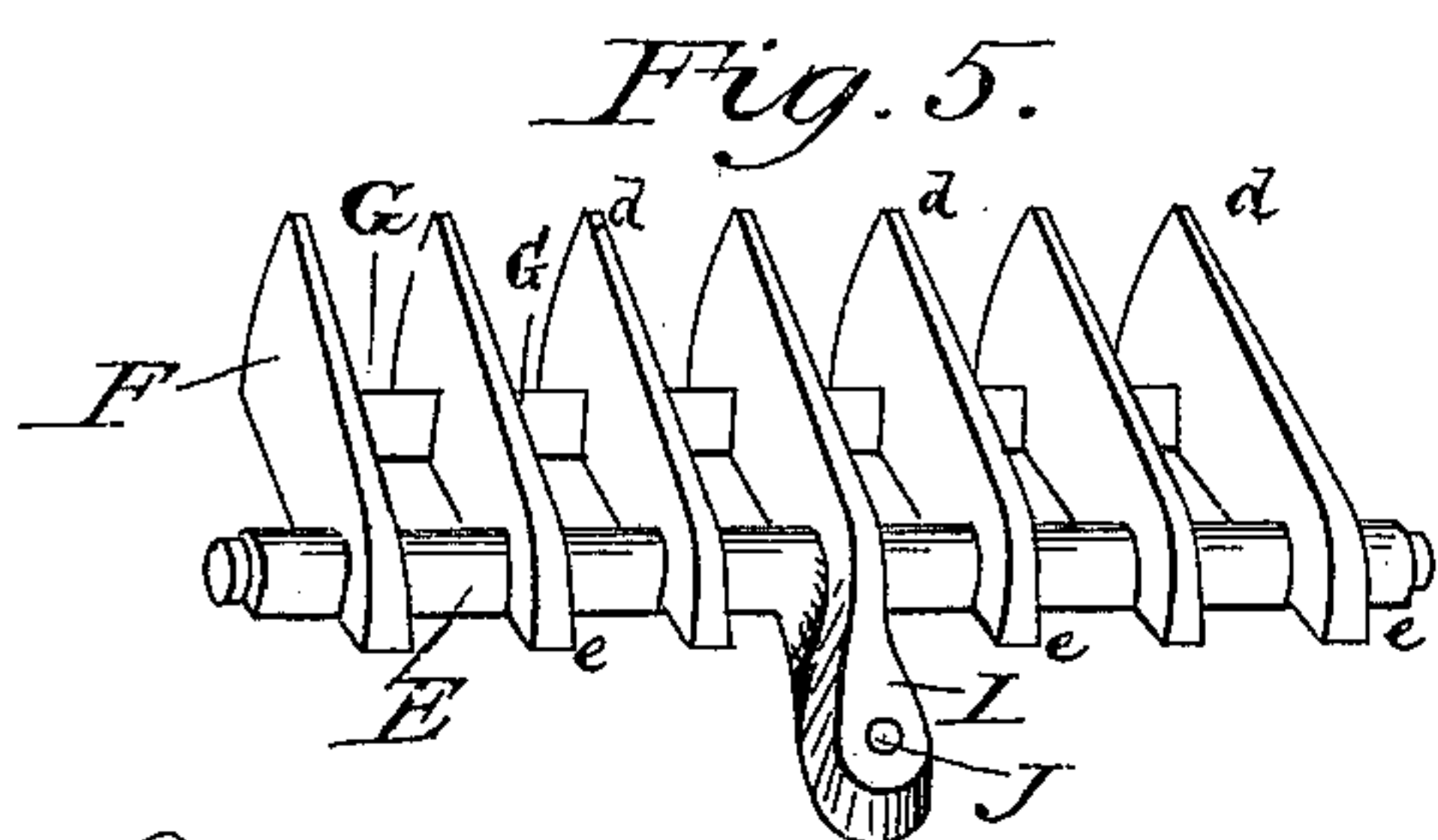
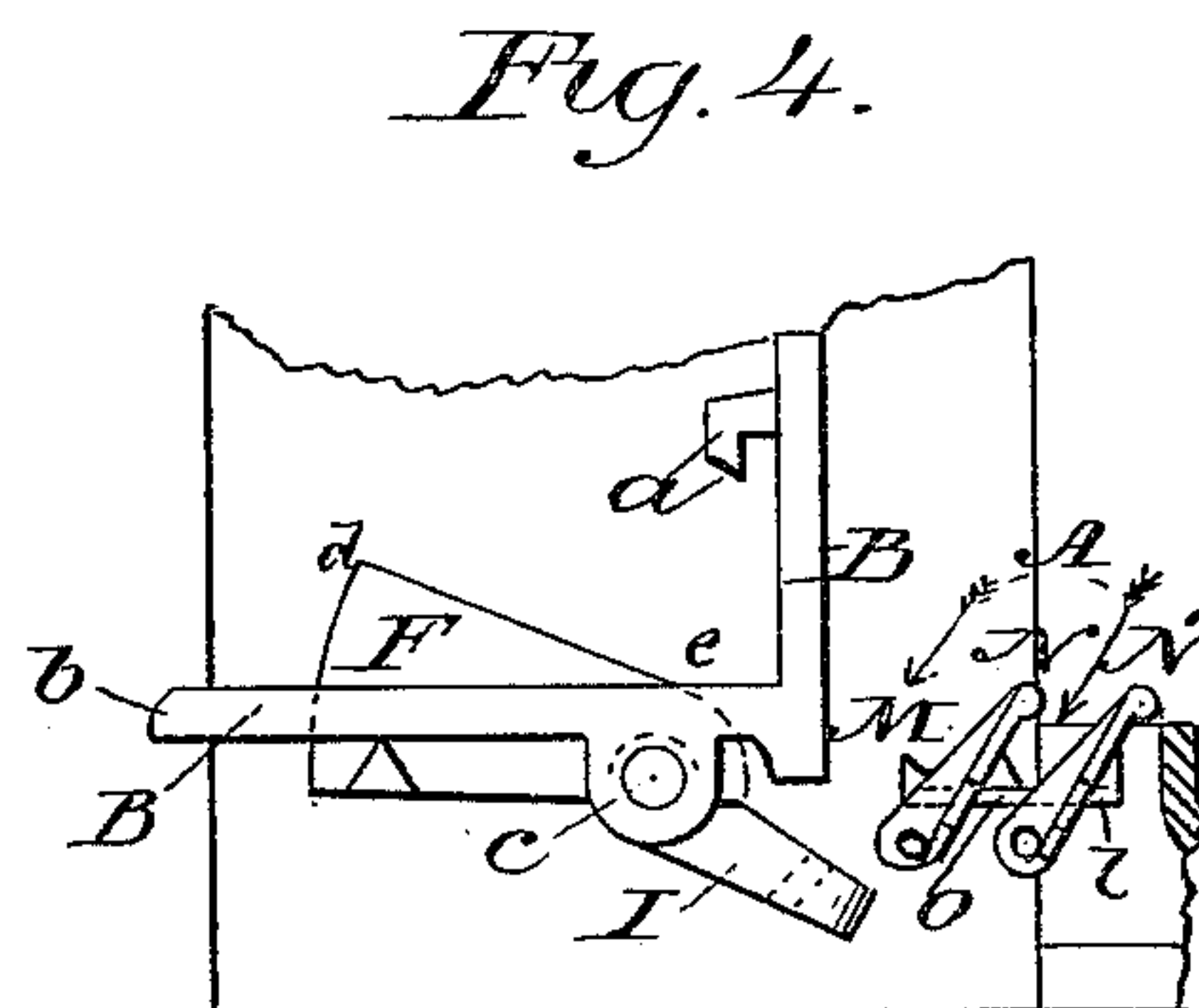
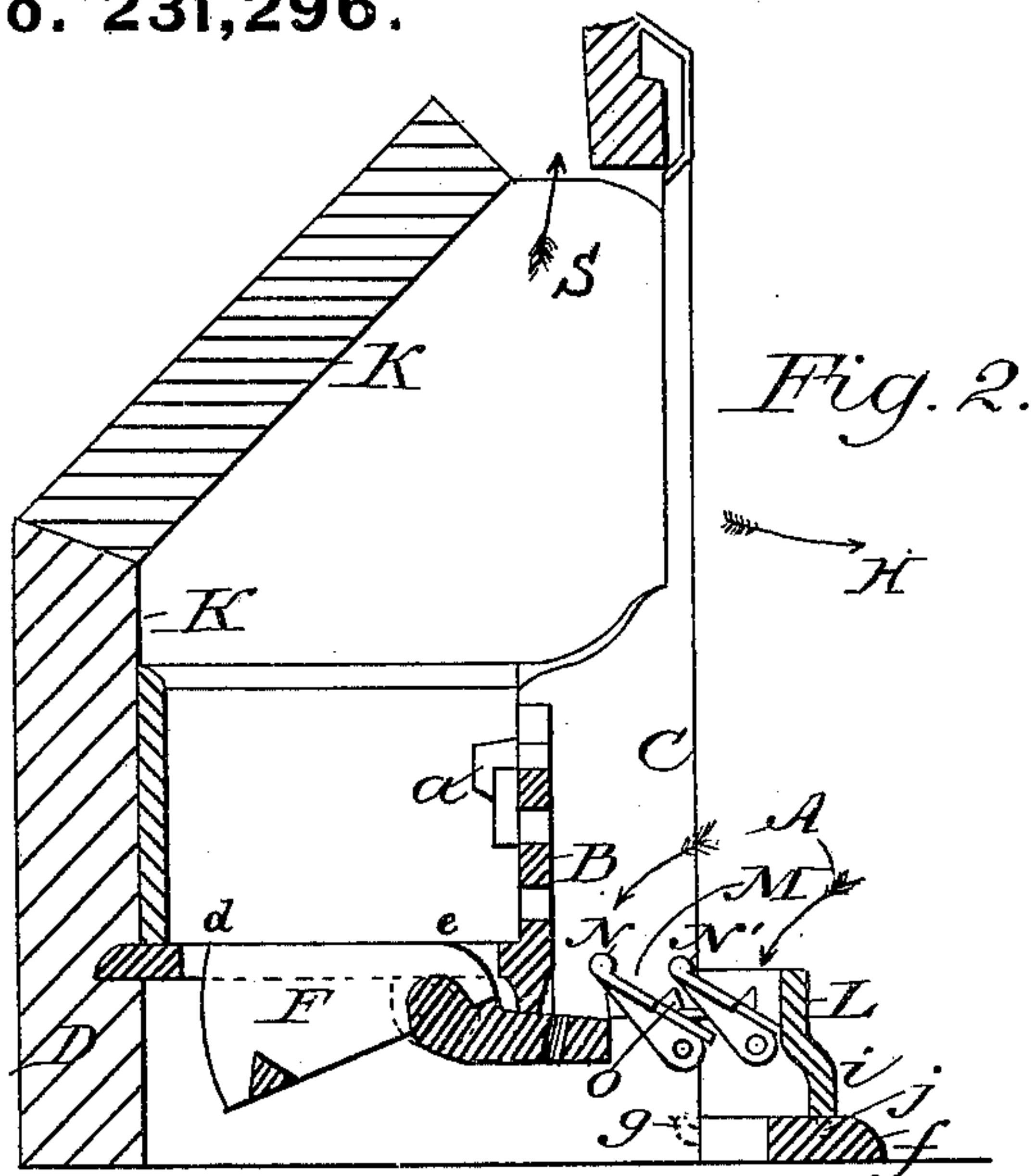
Inventor:

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WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES B. FARIS, OF GLENFIELD, NEAR PITTSBURG, PENNSYLVANIA.

GRATE.

SPECIFICATION forming part of Letters Patent No. 231,296, dated August 17, 1880.

Application filed July 1, 1880. (Model.)

To all whom it may concern:

Be it known that I, JAMES B. FARIS, of Glenfield, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fire-Grates, of which the following is a full, clear, and exact description.

In the annexed drawings, Figure 1 is a perspective view of my invention applied to a fire-arch and in connection with a fender of ordinary construction. Fig. 2 is a vertical section through the center from front to back. Fig. 3 is a plan view of the grate. Fig. 4 is an end elevation of the same. Fig. 5 is a perspective view of the retaining and sifting bars; and Figs. 6 and 7 are detail views, respectively, of one of the blinds and the support or bearer for the same.

The objects of my invention are to retain the burning fuel above the grate until reduced to fine ashes; to easily and effectively sift the whole or a portion of the fine ashes from the fire, thus admitting air and generating a greater or less amount of heat, as required; to maintain a thin bright fire above in front, conceal the ashes and space under the grate from view, and automatically keep the fender and hearth free from ashes and dirt.

The invention consists, essentially, of a series of movable blades of a particular form placed intermediately between the fixed bars of the bottom grate, and also in closing the opening below the grate by a shutter or screen some distance forward of the front grate, and placing one or more inclined blinds between them.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

B represents the grate, the upright part of which may be of any desired form, and is set back so that its front shall be about in line, vertically, with the rear of the mantel, and is suspended by hooks *a* on lugs on the jambs of the arch C. The lugs *b b'*, on rear of bottom grate, rest on the back wall, D, in the usual manner. Near the front edge of the bottom grate, on its inner side, the bearings *c c'* receive the journals of the shaft upon which the

movable retaining and sifting blades are mounted. This device consists of the shaft E, upon which are mounted a number of blades, F, corresponding with the number of fixed bars in the bottom grate, and which, when in repose, are intended to act as auxiliary bars. These blades are intended to be made as thin at the rear end as is consistent with the required strength, gradually increasing in thickness toward the shaft E. This shaft is placed near the front ends of said blades, and at such a distance below their upper edges as will cause them, when in position, to be flush with the upper surface of the fixed bars of the grate.

The ends of the blades are segments of concentric circles, the radius of the greater, *d*, being the distance from the center of the shaft to the rear end of the blade, and the radius of the smaller, *e*, being the distance from the upper edge of one of the blades to the center of the shaft.

At the wide end the blades are connected by the bar G. The short arm I extends forward below the vertical grate, and prevents the rear ends of the blades from descending below the bars, and has a socket, J, to receive the end of the lever or poker by which it is operated.

The walls and crown of the fire-chamber K are of tile, and of the usual form, except that the crown-tile extends somewhat farther forward.

The shutter L is preferably made in two pieces. The lower or base, *f*, rests on the hearth, and is held in place by a hook at each end, *g g'*, which enter holes near the feet of the arch C. The upper portion, *i*, rests on the base *f*, and is held in place by dowel-pins on the under edge, which enter holes *j j* in the base. The object of this shutter is to cut off communication below, and to compel all the air that feeds the fire from below the bottom grate to enter through the space M between the shutter and the front grate. The current of air thus created carries with it to the ash-pit below all the ashes and dust that fall from the front of the grate.

In the space between the shutter and grate (which space should about equal the area of the air-spaces in the bottom grate) the blinds N N' are arranged. The number of these

blinds will depend upon the width of the space M, and they may be of any suitable angle of inclination. These blinds conceal the ashes and space under the grate from view, and also serve to divide the current of air, as it enters the space between the shutter and grate, into thin rapid streams, so as to more effectually carry the ashes and dust along with it. The blinds N N' rest with their lower edges loosely upon the notched plates O, so as to admit of their being tilted forward and backward, and readily removed altogether, whenever desired. These blinds are supported by suitable bearers, O, which may be attached to either the grate or the shutter, or, preferably, to the arch-jamb, and the ends are of such shape as will fit against the jamb when the blind is at the required angle. The hooks k k' on the lower edge of the blinds pass under the flanges l of the bearers O, to prevent the blinds from tilting too far forward.

The devices above described are intended, mainly, to be used in connection with long fenders, with or without a bottom plate, though the usual short fender, of a length about equal to the width of the arch C, may be substituted if desired. In either case, if the bottom plate of the fender is used, the lower part, f, of the shutter may be dispensed with, and its upper part, i, placed directly upon the bottom plate of the fender, care being taken to cut off the air from below.

As the pokers in general use are not long enough for use in this class of grates, I substitute therefor a piece of ordinary bar-iron of suitable size and length, having on one end a knob of a size and shape to correspond with the knob on one end of the fender-rod R. This fender-rod R is hollow, and when not in use the poker is slid inside the rod, out of the way.

The devices operate as follows: Before starting the fire the blinds N N', which are intended to be polished, are tilted forward, as seen in Fig. 4, to keep them clean while making the fire. After the fuel is ignited the blinds are thrown back and the air passes between them, as indicated by the arrows A in Fig. 2. At first, as the air-spaces between the bars of the bottom grate are unobstructed, the fire burns freely, the smoke ascending into the flue, as indicated by the arrow S, while the heat is radiated and reflected into the room, as indicated by the arrows H, the intensity thereof increasing as the fire brightens and the tiles become hot. As the fuel is consumed ashes form, and gradually close the openings in the bottom of the grate, and cause the fire to burn more slowly.

With a view of facilitating radiation and reflection from the flame and the hot tiles of the fire-place, and to prevent dust as much as possible, the upright grate is made low, so that the fire in front is thin, increasing in depth toward the back, and is kept bright by the combined action of the body of fire be-

hind, the radiation and reflection from the tiles, the form of the movable blades, and the deflection of the cold-air current from the front of the grate through the blinds N. After the tiles become hot the fire, if duly supplied with fuel, burns with great regularity and cleanliness and requires but little attention. When it is desired to increase the heat of the fire the poker is withdrawn from the fender-rod, and after breaking the crust upon the top of the fire the blinds N are tilted forward and the poker inserted in the socket J in the arm I. Then, by working the handle of the poker forward and backward, the movable blades F are actuated in such a manner that the blades at the back, where the fire is deepest and where the ashes mainly accumulate, emerge considerably above the level of the fixed bars, the bar G preventing them from rising above a certain height, and lift, shake, and open the fire, so as to effectually sift the fine ashes therefrom, and thus freely admit the air, the motion decreasing gradually toward the thin fire in front, which is little disturbed, and the small amount of ashes there produced is effectually removed by the rotary motion of the circular segments c. The poker is then returned to the fender-rod, the blinds are tilted back, and the grate operates as before.

I do not claim, broadly, the use of movable blades for stirring the fire, as I am aware that sundry devices for this purpose have been used before, particularly that for which Letters Patent were issued to M. D. Wellman November 19, 1867. In that invention the blades are mounted centrally on a shaft and operate so that while the blades on one side of the shaft emerge above the level of the stationary bars those on the opposite side descend below, opening the whole space and permitting much of the fuel to fall through before being burned to fine ashes. Moreover, when applied to open fire-place grates the action of blades so constructed, by disturbing the fire in front equally with the back, has a tendency to throw out much dust, and also dulls the fire by too freely facilitating the admission of cold air to the front of the grate. My invention is intended to obviate these defects.

Neither do I claim, broadly, the use of a shutter or inclined blinds to conceal from view the ashes and space below the grate, as devices for this purpose have been used previously.

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

1. The within-described stirring, sifting, and retaining device, consisting of blades F, shaft E, arm I, and connecting-bar G, the whole being constructed and arranged to operate in combination with a grate, substantially as and for the purposes herein set forth.

2. In combination with grate or basket B, the series of blades F F, shaft E, arm I, having socket J, and the pivoted blinds N N', all

constructed and arranged to operate substantially as and for the purpose set forth.

3. The blinds N N', adapted to operate in the space M, between the basket or grate B and shutter L, substantially as and for the purpose set forth.

4. The combination of blinds N N', grate B, and a series of movable blades or stirrers

adapted, as described, to operate in connection with the latter, substantially as and for the purpose described.

JAMES B. FARIS.

Witnesses:

CHAS. H. SNYDER,
SAMUEL MCCREARY.