

W. H. RUSSELL.
GRATE.

Patented May 19, 1891.

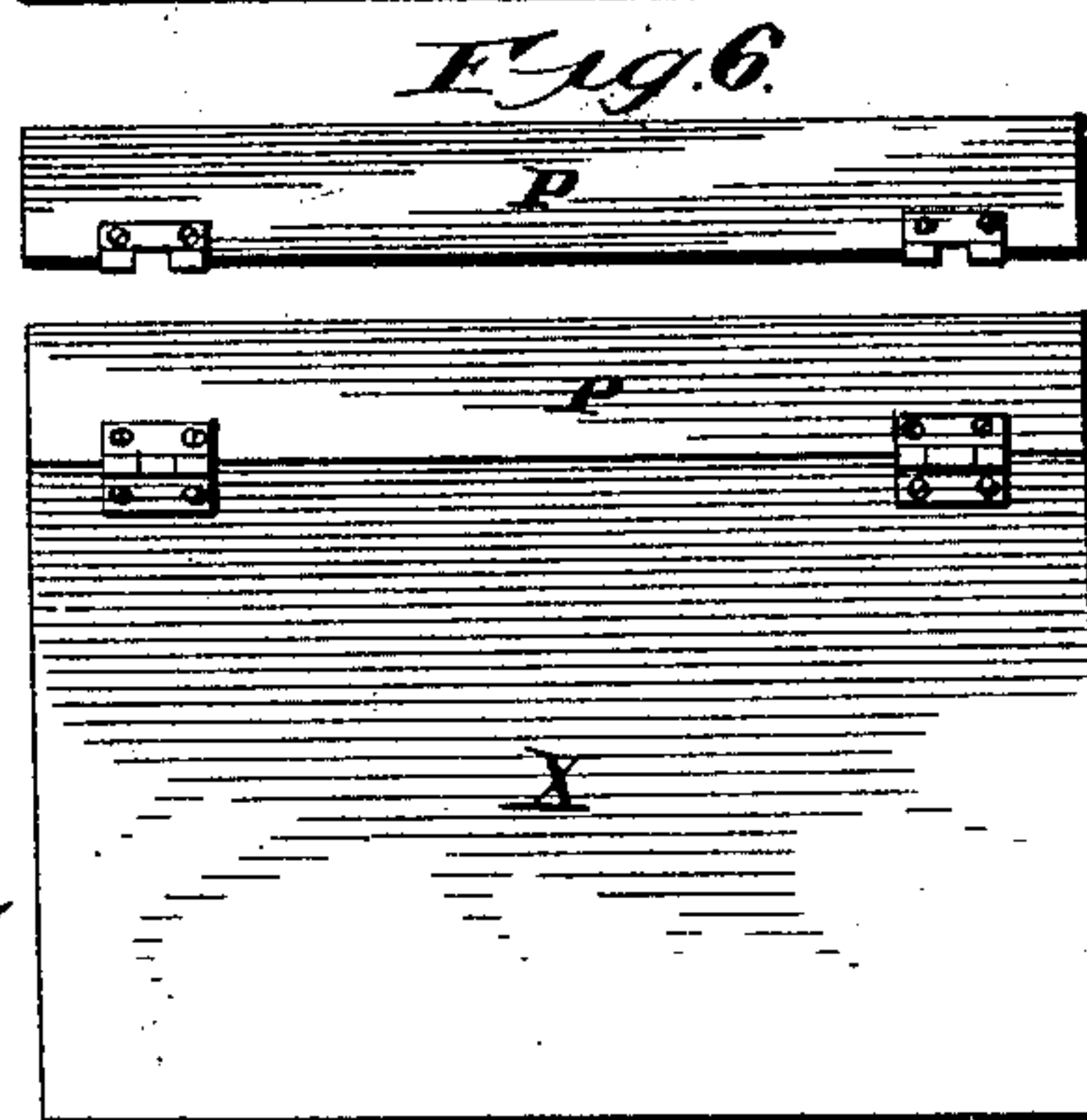
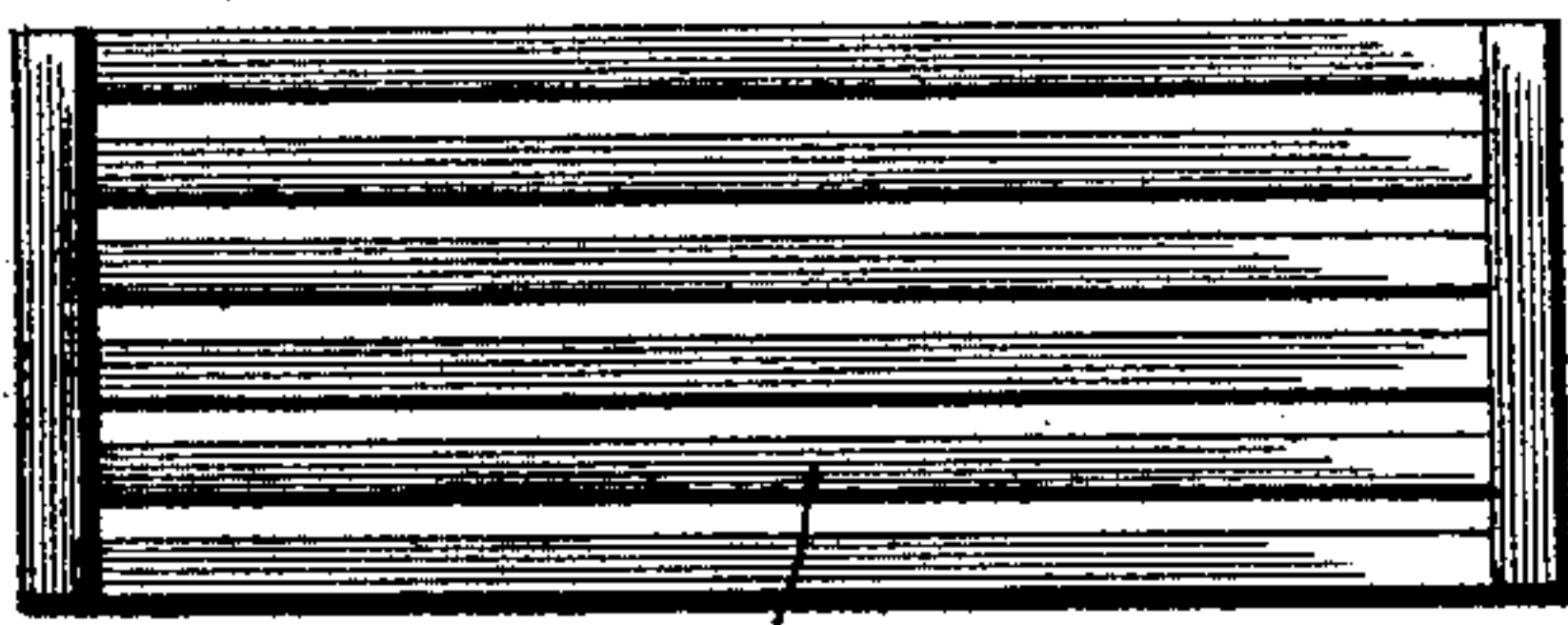
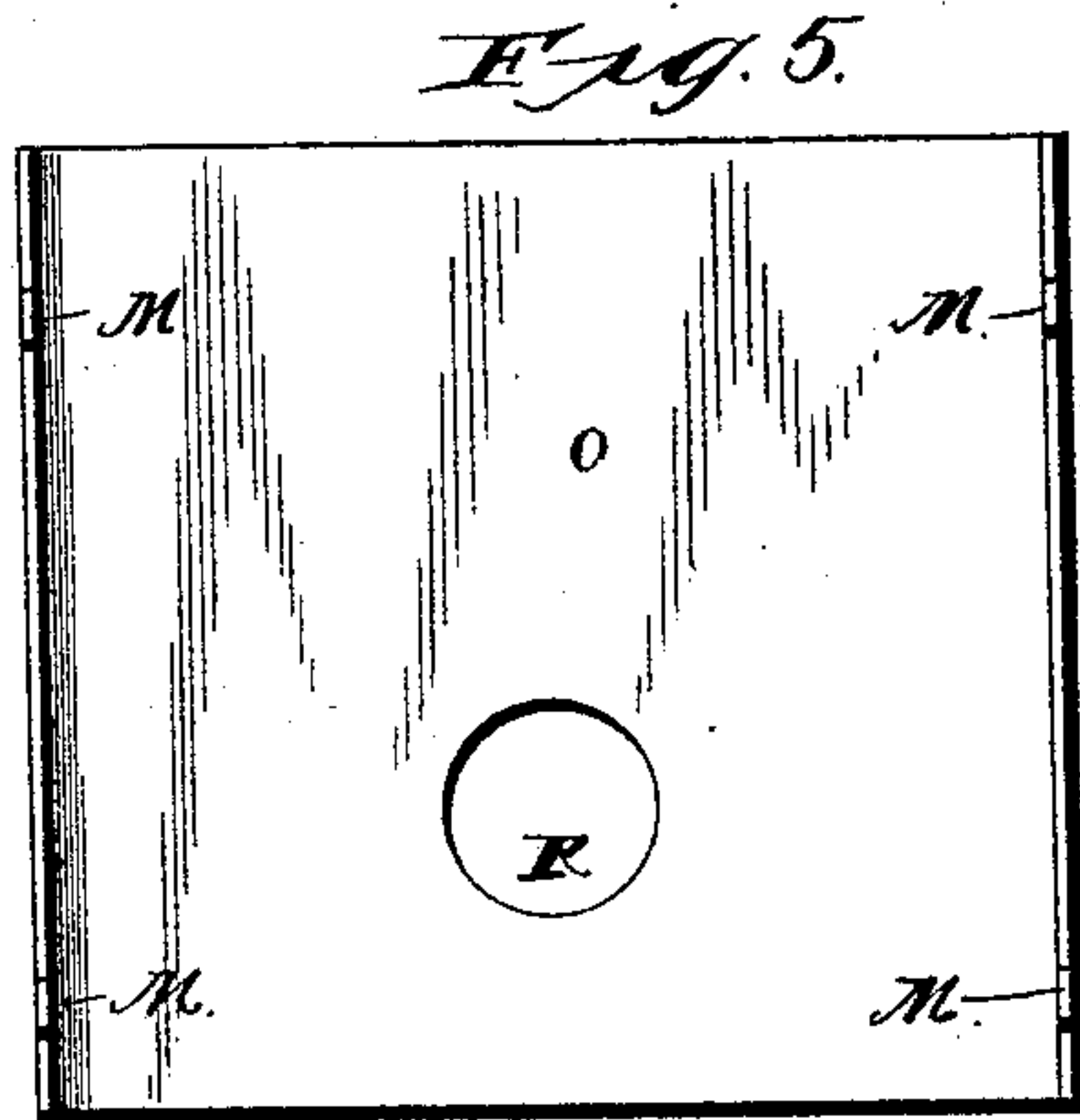
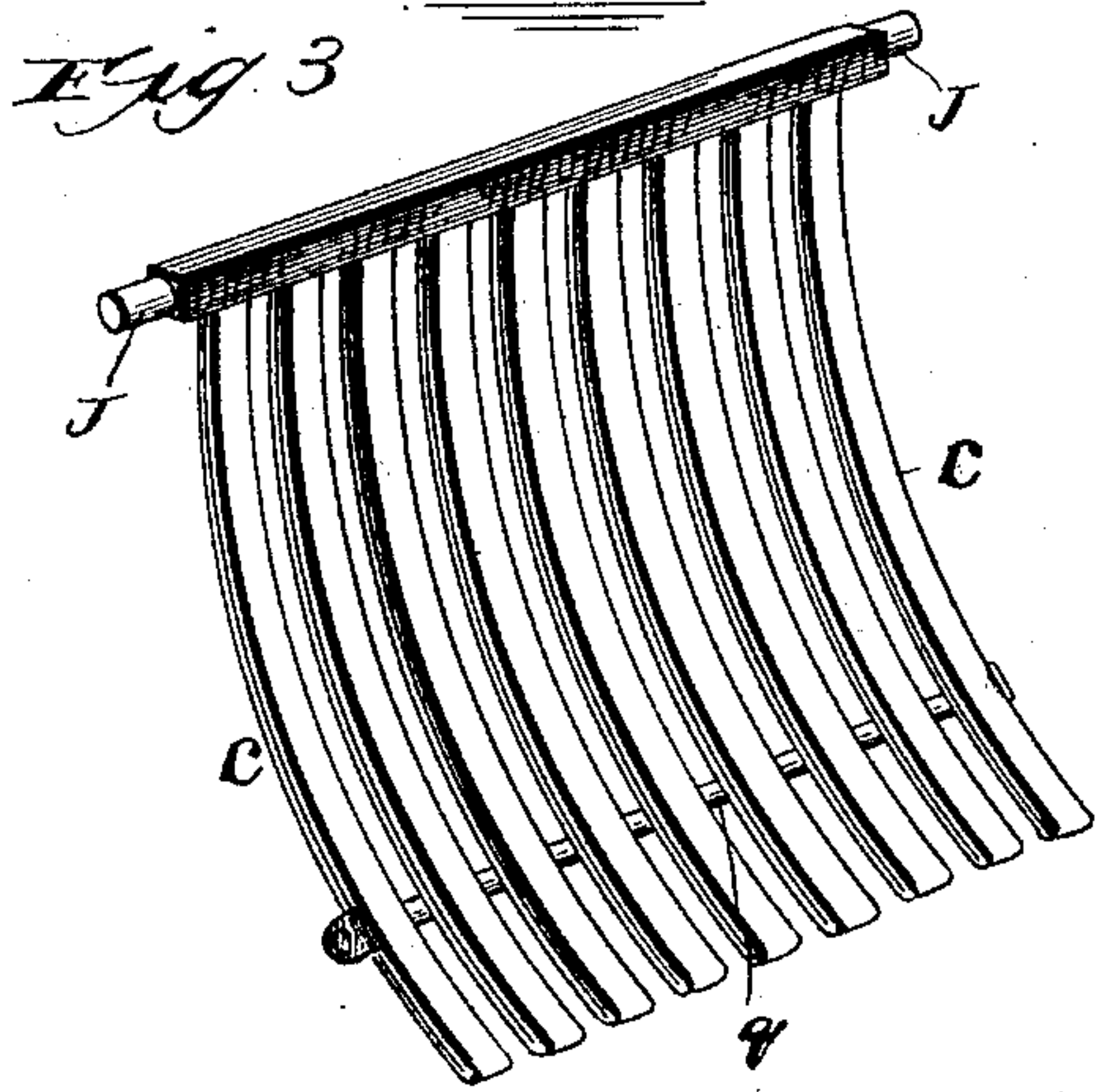
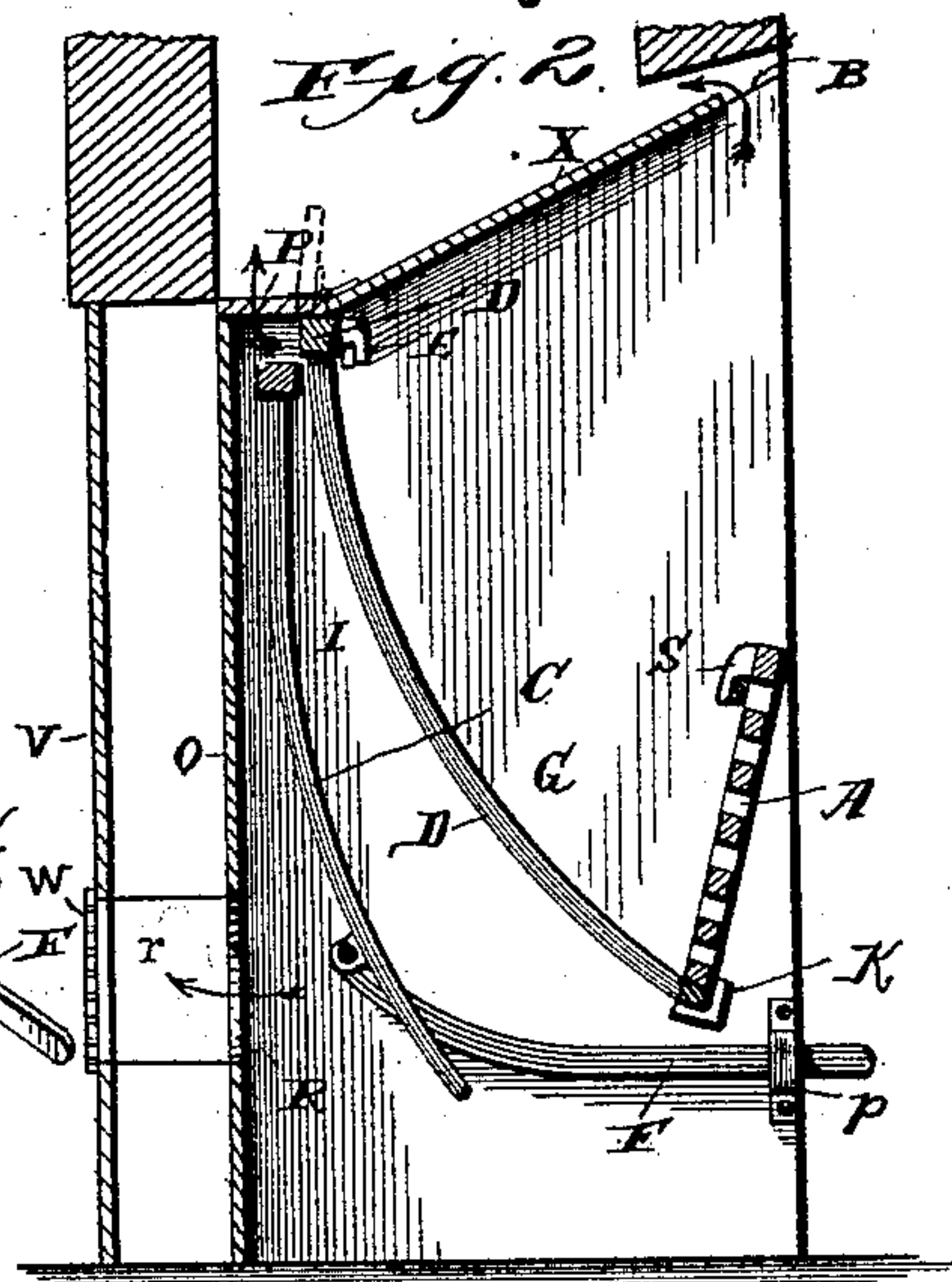
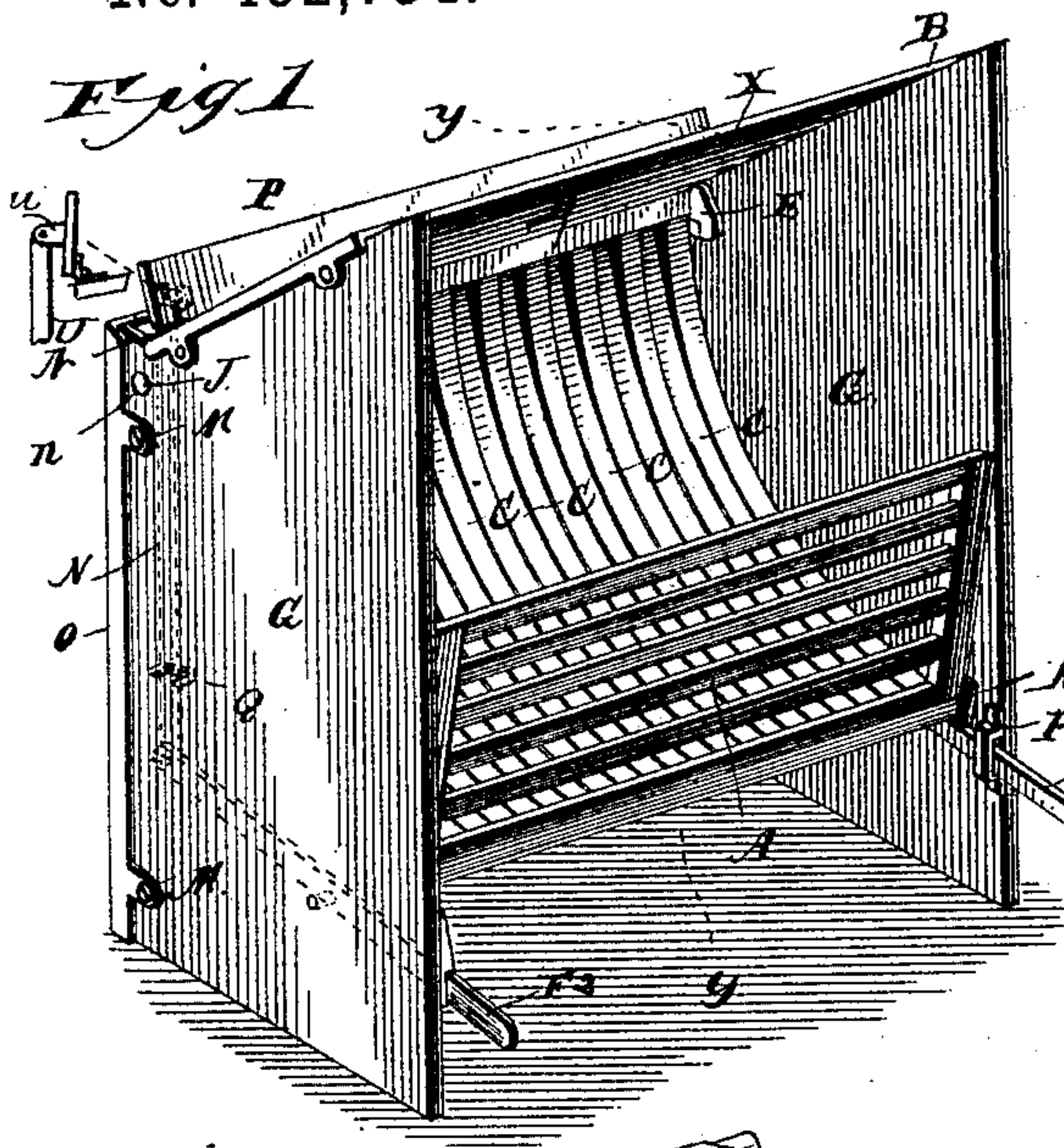


Fig. 4

Fig. 7.

WITNESSES
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UNITED STATES PATENT OFFICE.

WILLIAM HAZE RUSSELL, OF STEUBENVILLE, OHIO.

GRATE.

SPECIFICATION forming part of Letters Patent No. 452,734, dated May 19, 1891.

Application filed March 9, 1889. Serial No. 302,736. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HAZE RUSSELL, a citizen of the United States, residing at Steubenville, in the county of Jefferson and State of Ohio, have invented certain new and useful Improvements in Grates; and I do declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to fire-place heaters or grates wherein coal or any other substance is used.

The object of the invention is to simplify and cheapen the construction of this class of heaters and provide means for regulating the draft, and which will at the same time afford ready escape for the ashes and clinkers.

The improvement consists of the novel features which will be hereinafter more fully described and claimed, and which are shown in the annexed drawings, in which—

Figure 1 is a perspective view of a fire-place embodying my invention, showing the connection between the upper draft-regulating damper and its operating-rod more clearly in a detached view. Fig. 2 is a vertical section on the line Y Y of Fig. 1, showing the application of the invention. Fig. 3 is a perspective view of the bottom or slat damper detached. Fig. 4 is a front view of the front grate. Fig. 5 is a front view of the fire-place back. Fig. 6 is a plan view of the upper damper, which is placed in the rear of the grate. Fig. 7 is a plan view of the top or reflector of the fire-place, showing the damper attached.

The fire-place consists of two sides G G; a deflector or sloping top X; two dampers, an upper and lower one, the upper one being indicated by the letter P, the lower one being indicated by the letters C C; two levers F F², one at the right, the other at the left, and a back O. The two sides G G and the reflector or sloping top X can be made of metal, fire-clay, or brick.

B is smoke-escape or draft-opening.

E is the hook by which the upper ends of

the back part of the grate D are attached to the sides. A and D are the front and back grates, respectively.

S S are hooks at the top of the front grate, fastening it to the sides G G.

K K are two rests or stops, one on each side supporting the lower ends of the grates.

U represents place of attachment of upper damper P to rod N, the damper having lug *u*, to which the rod N is pivotally connected.

M M are points where back is fastened to sides, flanges being turned on the back with holes in them for bolting to sides. The lower damper C is journaled at its ends J J in openings *n* in the sides G. The opening R in back O is where the heat passes through to the opposite room.

The fire-board for the room opposite the one in which the grate is placed is represented by letter V, and is provided with register W to permit the escape of the heat which is concentrated in the space at rear of grate and conducted through pipe *r* into the opposite room.

The damper P is hinged to the rear edge of reflector or top X, and is operated by lever F² and the rod N, which is secured by pivot to the lug *u*, which projects from the rear end of the damper a short distance from its hinge-connection with the said top X and which passes loosely through a keeper Q on the side G, about midway between the top and bottom edges of said side G. The damper P closes or opens the upper end of the space I, which is formed in the rear of the back grate D between said grate and the back of the fire-place.

The damper C is composed of a number of bars, which correspond in size and number to the spaces between the bars which compose the grate D, so that when said damper is drawn forward the bars comprising the same will enter the spaces between the bars of grate D and shut off the draft, the damper being operated by lever F, which is fastened to the lower end of the damper and extends forward, being supported at its outer end by the loop *p*. The cross-bar *q*, which is placed at the lower end of damper C, unites and strengthens the bars which comprise said damper, and also forms means for the attachment of the lever F, which is fastened to the end of the said

bar. The bars D and the damper C are concaved to the front, the right-hand lever F regulating damper C and the left-hand lever F² regulating damper P.

5 The front and back grates are preferably cast together, thereby avoiding loose joints and extra means for securing them together, or back and front cast separate.

In starting a fire, damper P is closed and
10 damper C opened, thereby obtaining the best possible draft. The register W is closed to prevent a counter-current carrying smoke and gases into the adjoining room. When stirring the fire to remove the ashes and clinkers,
15 the damper P is opened to permit an escape of the dust up the chimney or flue. The register W is also closed to prevent dust passing through the same into the next room. After the fire is started the temperature can be controlled by operating dampers P and C in the
20 following manner: On opening damper P the draft is divided and goes through opening B and through damper P, and on closing damper C all or nearly all the heat goes up through
25 damper P, in that the edge of the reflector or top X at B stands in a direct line with the bottom of front bars of grate-front A. The top damper P is generally closed when a good fire is required and the lower damper C is
30 open. The dampers are reversed at night to cut the draft off at B.

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

1. In a fire-place heater, the combination, 35 with the fire-grate D, concaved to the front, of the damper C, correspondingly concaved and pivotally supported at its upper end, and composed of a series of bars which correspond in size and number to the spaces between the
40 grate-bars, and means for swinging the damper on its pivotal supports to project the bars thereof in the spaces between the grate-bars, substantially as described.

2. A fire-place heater having inclosing sides, 45 back, and top, and having a smoke-escape at the front and at the rear edge of the top, respectively, the combination of the concaved grate D, arranged to form a hot-air space between it and the back of the fire-place, the
50 damper correspondingly concaved and composed of a series of bars corresponding in size and number to the spaces between the grate-bars D and pivoted at its upper end, the lever F for operating the damper to project the
55 bars thereof in the spaces between the grate-bars D, the damper P for closing the upper end of the hot-air space, the lever for operating the damper P, and means for conveying the hot air from the said hot-air space to an
60 adjoining compartment or room, substantially as described.

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

WILLIAM HAZE RUSSELL.

Witnesses:

A. S. BUCKINGHAM,
GEORGE SWORDS.