

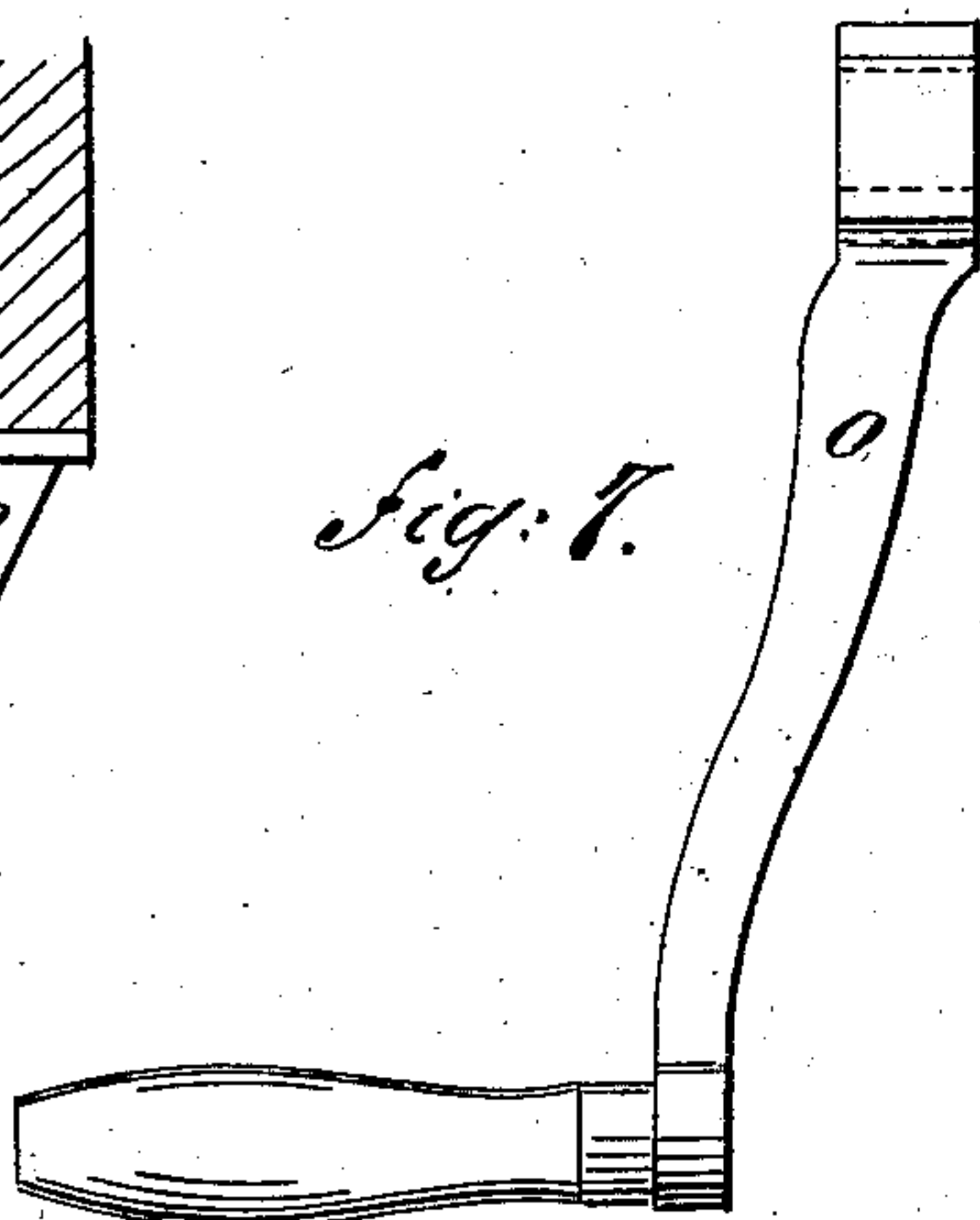
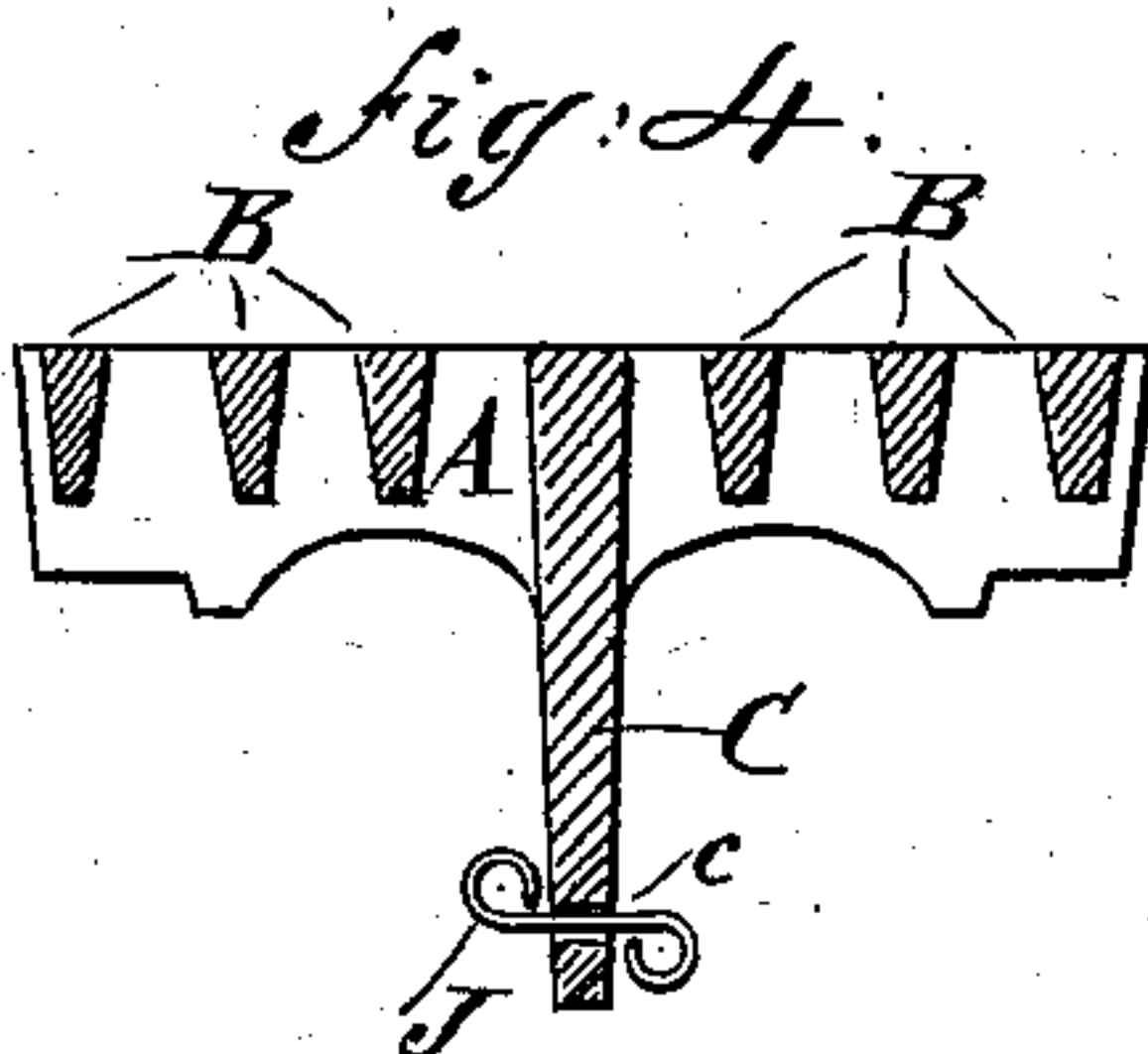
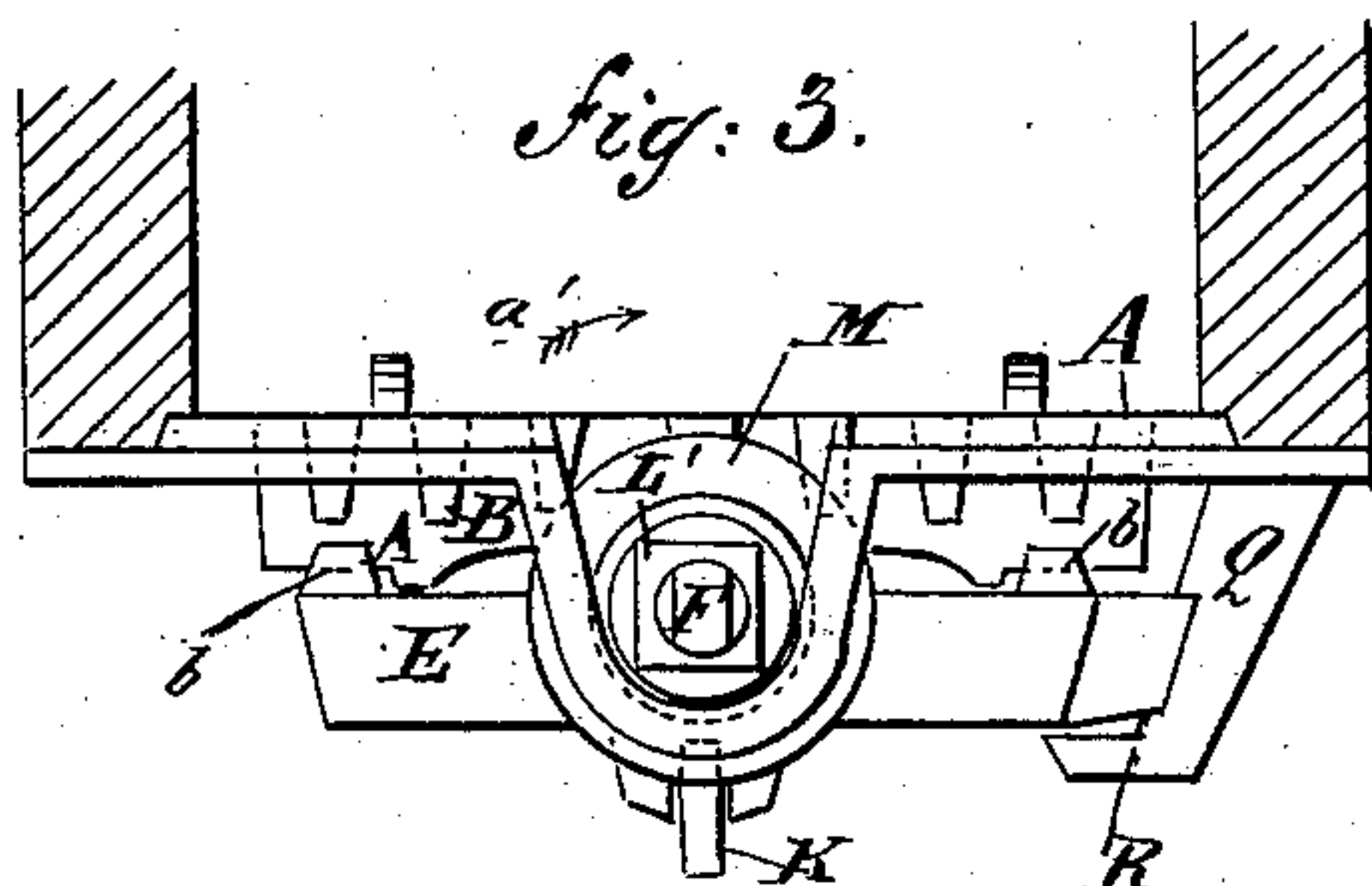
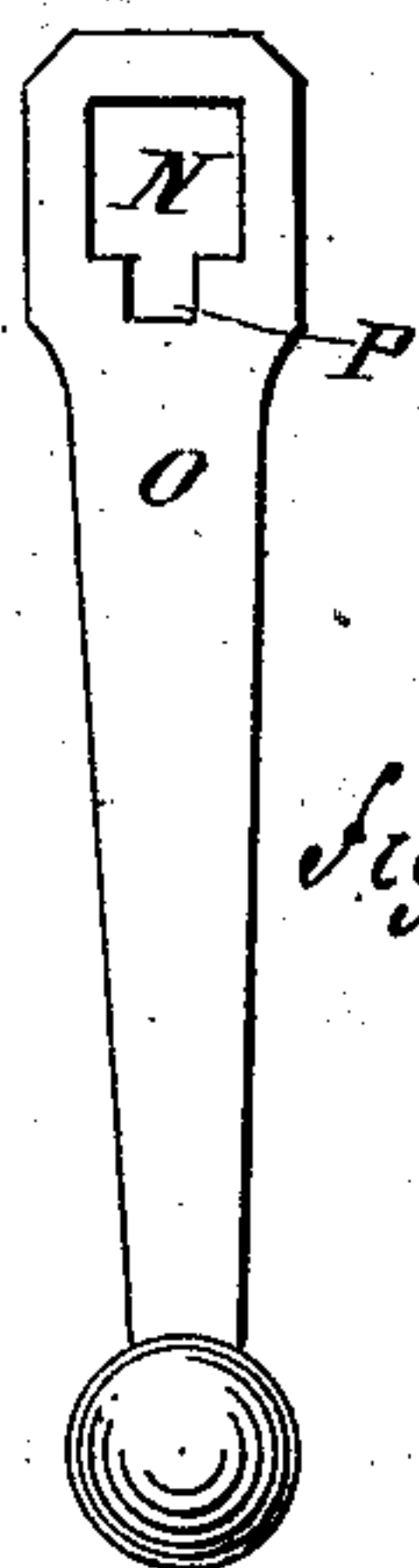
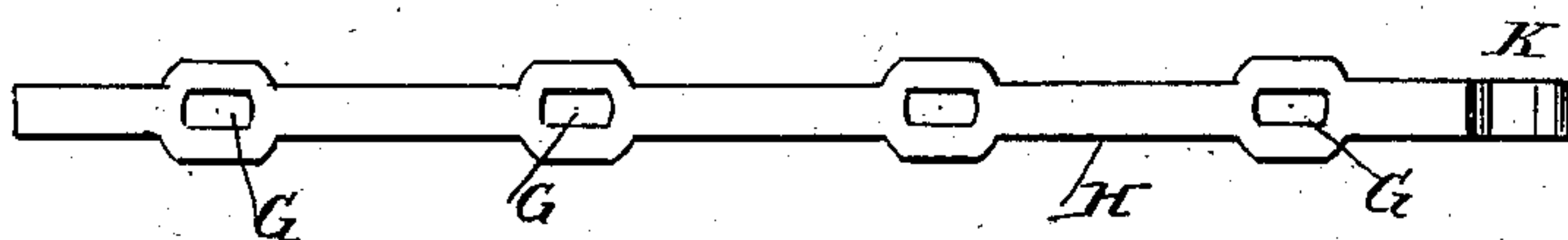
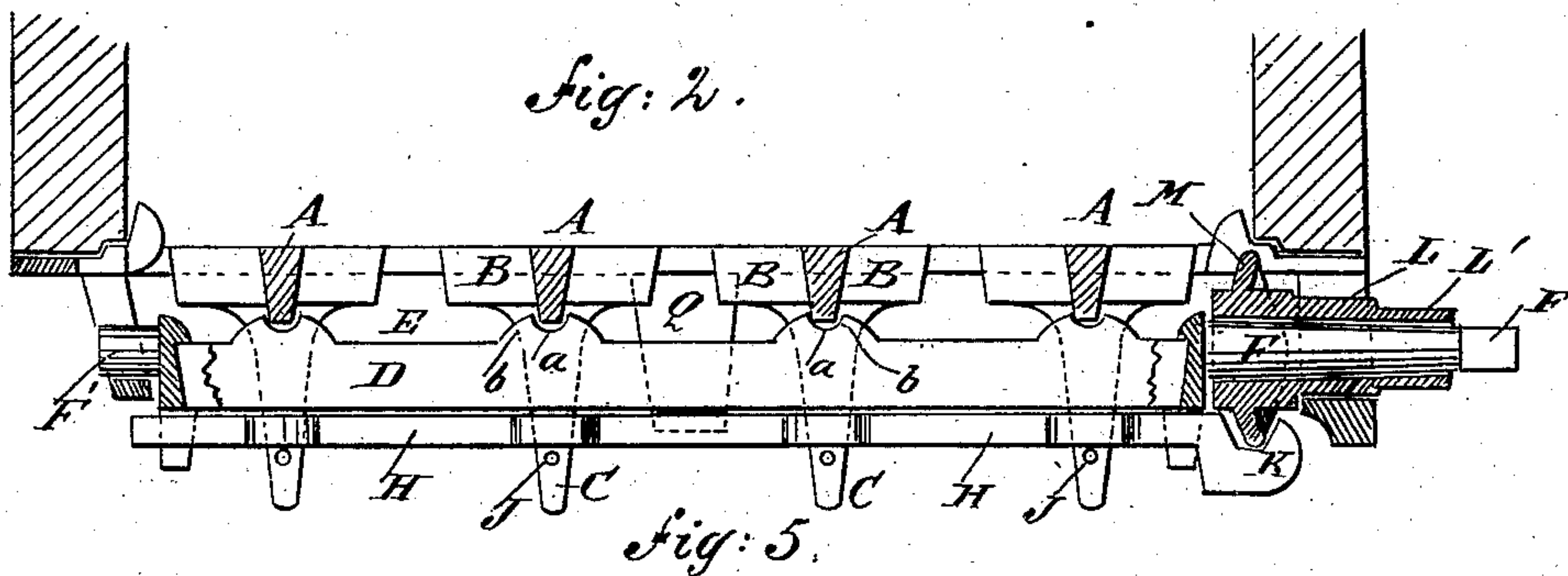
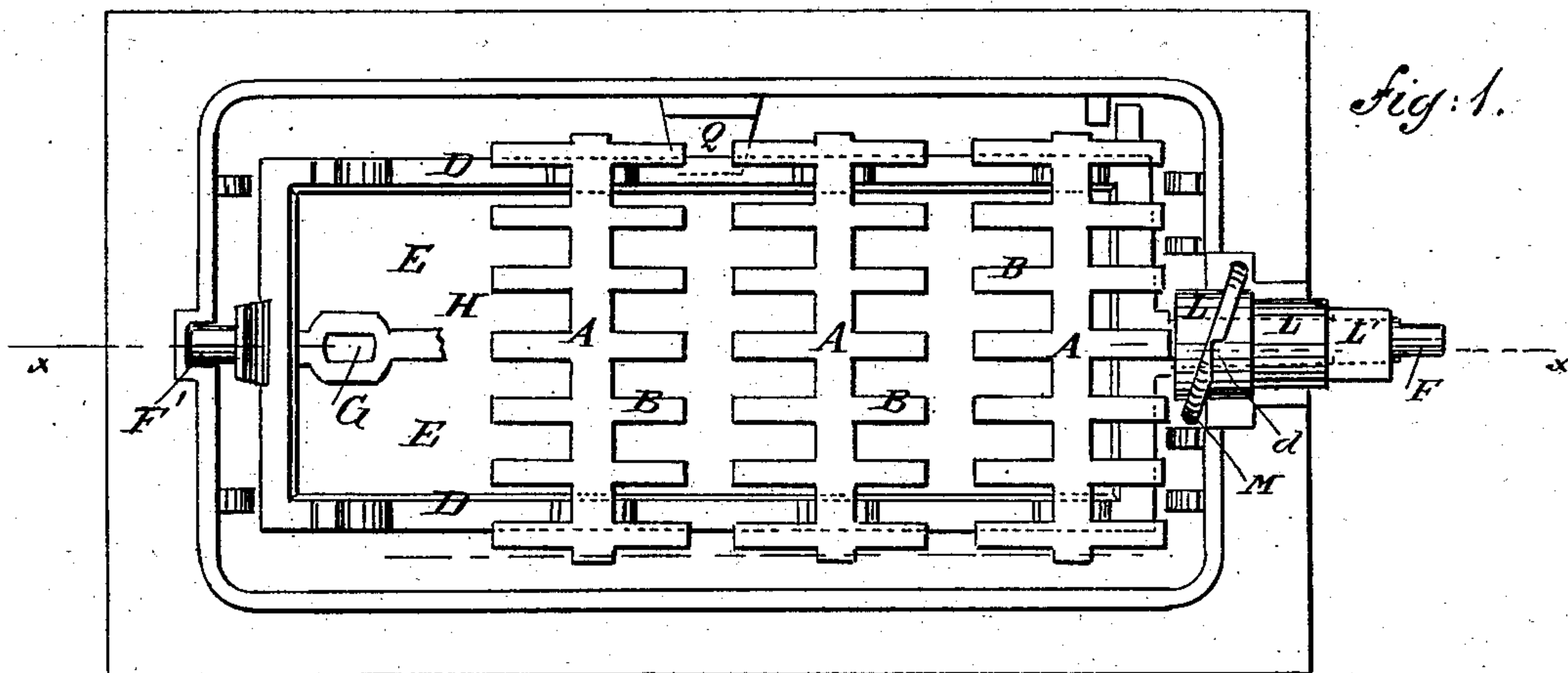
(No Model.)

H. H. JAMES & J. C. DUNBAR.

**SIFTING GRATE.**

**No. 256,696.**

Patented Apr. 18, 1882.



**WITNESSES :**

Chas. Nida.  
C. Sedgwick

**INVENTOR:**

BY *H. H. James*  
*J. C. Dunbar*  
*Munn & Co*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

HENRY H. JAMES AND JOHN C. DUNBAR, OF BANGOR, MAINE.

## SIFTING-GRATE.

SPECIFICATION forming part of Letters Patent No. 256,696, dated April 18, 1882.

Application filed November 5, 1881. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY H. JAMES and JOHN C. DUNBAR, of Bangor, in the county of Penobscot and State of Maine, have invented a new and Improved Sifting-Grate, of which the following is a full, clear, and exact description.

The object of our invention is to provide a new and improved grate which can be shaken or dumped very easily and rapidly.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of our improved grate. Fig. 2 is a longitudinal sectional elevation of the same on the line  $x x$ , Fig. 1. Fig. 3 is a cross-sectional elevation of the same. Fig. 4 is a longitudinal sectional elevation of one of the rocking grate-bars. Fig. 5 is a plan view of the slotted or apertured bar for connecting the downwardly-projecting arms of the rocking grate-bars. Fig. 6 is a front elevation of the grate-operating crank. Fig. 7 is a longitudinal elevation of the same.

The grate-bars A are provided with a series of lateral projecting teeth or prongs, B, on each longitudinal side, all these prongs or teeth being equidistant and of the same length. Each grate-bar is provided with a downwardly-projecting arm, C, arranged in the middle of the bar A and parallel with the transverse prongs or teeth B. The ends of the bars A rest loosely in slight recesses  $a$  in the projections  $b$  on the upper edges of the longitudinal sides D of a frame, E, provided with the front end pivot, F, and a rear end pivot, F', which pivots pass into suitable bearings in the furnace or stove frame, so that the frame E can swing on these pivots. As the ends of the bars A rest loosely on the projections or elevations  $b$ , the bars can be caused to swing, rock, or tilt. The ends of the downwardly-projecting arms C are passed through slots or openings G of a bar, H, passing longitudinally under the center of the frame E, and a spring-wire, J, or equivalent, is passed into each aperture  $c$  in the end of each arm C, for the purpose of holding the bars A, the frame E, and the bar H together, the bar H resting on the springs, wires, or equivalents, J. The bar H is provided at the front end with a

recess in its upper edge, whereby a hook, K, is formed at the end of the bar H. The front end pivot, F, of the frame E is surrounded by a sleeve, L, provided with a cam-flange or ridge, M, arranged diagonally to the longitudinal axis of the sleeve L and passing into the recess of the hook K of the bar H. This cam-flange or ridge M has one or more notches,  $d$ , in its outer edge, for a purpose that will be set forth hereinafter. The outer end, L', of the sleeve L is squared, so as to adapt it to fit in the squared opening N of the crank O. The outer end of the pivot F is flattened or decreased in thickness, so as to fit into a recess or notch, P, in the crank O.

At one side of the stove or frame (in this case on the right side) a downwardly-projecting arm, Q, with a flange or lug, R, at the lower end, is provided, upon which flange one edge of the frame E can rest when this frame is in a horizontal position.

The grate-bars A are so located that the ends of the teeth B of two different bars A will be separated a distance about equal to the distance that the teeth of one and the same bar A are separated.

If a very large grate-surface is desired, several grates of the above-described construction and provided with the above devices for operating them are united or combined.

The operation is as follows: If the grate is to be shaken so that the ashes and cinders will fall down between the bars A and teeth B, the crank O is passed upon the squared end L' of the sleeve L, and is then rotated or turned in the direction of the arrow  $a''$ , Fig. 3. As the cam-flange M passes into the aperture in the hook K the bar H will be reciprocated by the rotary movement of the cam-flange or ridge M. The reciprocating movement of the bar H causes a vibrating movement of the lower ends of the arms C and causes a swinging or rocking movement of the bars A—that is, these bars are placed alternately in a different position and then back again to the original position, &c. The body of the fire is thus loosened and lightened, instead of being shaken together more compactly, as it is by the grates in use heretofore. The cinders, ashes, &c., can easily pass down between the adjoining grate-bars A and their teeth B. If the grate is to be dumped,



the crank O is turned in the inverse direction of the arrow  $a'$ , thereby causing the edge formed by one of the notches  $d$  to catch on the edge of the hook K, against which it presses, thereby tilting or dumping the frame E and the grate-bars resting thereon in the inverse direction of the arrow  $a'$ .

The frame E, the bars A, and the bar H are united, as described, and if the bar H is turned the pivoted frame E must turn with it. It is clear that if the sleeve L is turned and the edge formed by one of its notches  $d$  catches on the hook K the bar H, of which the hook K is a part, will turn with this sleeve L—that is, the grate is tilted or dumped. The grate is replaced into its original position by passing the outer flattened end of the pivot F into the notch or recess P of the crank O, and then turning the crank in the direction of the arrow  $a'$ . The grate may also be dumped by passing the flattened end of the pivot F into the recess P and turning the crank in the inverse direction of the arrow  $a'$ .

If any of the grate-bars are injured by fire or otherwise, they can be removed without disturbing or removing other parts. This grate is to be used in stoves, ranges, furnaces, boiler-furnaces, &c.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent—

1. The combination of the frame E, having longitudinal bars D, with recessed projections  $a b$ , and the end pivots, F F', arranged in bearings of the stove or furnace frame, the bar H, having slots G, and the rocking bars B, having arms C, with spring-wire J, arranged in aperture  $c$ , whereby said frame and bars are held as described.

2. In a grate, the combination, with the frame E, provided with pivots F' F, of the rocking grate-bars A, the arms C, the bar H, the

hook K, the sleeve L, surrounding the pivot F, and the cam-flange M on the sleeve L, substantially as herein shown and described, and for the purpose set forth.

3. In a grate, the combination, with the frame E, provided with pivots F' F, of the rocking grate-bars A, the bar H, the hook K, the sleeve L, the cam-flange M, and the arm Q, substantially as herein shown and described, and for the purpose set forth.

4. In a grate, the combination, with the frame E, provided with pivots F' F, of the swinging grate bars A, the arms C, the rod H, the hook K, sleeve L, and the cam-flange M, provided with one or more notches,  $d$ , substantially as herein shown and described, and for the purpose set forth.

5. The combination, with the bar H, having end hook, K, and the frame E, having the flattened end pivot, F, of the sleeve L, having diagonal cam-flange M and square end L', and the crank O, having the square opening N and notch P, as and for the purpose specified.

6. In a grate, the sleeve L, constructed, as shown and described, with a squared outer end, and provided with a cam-flange, M, diagonal to the longitudinal axis of the sleeve, as set forth.

7. A grate made substantially as shown and described, and consisting of a series of rocking grate-bars resting on a pivoted frame, which has one of its pivots surrounded by a sleeve which is provided with a cam-flange or ridge passing into the opening of a hook at the end of a slotted bar, uniting the downwardly-projecting arms of the rocking grate-bars, all as set forth.

HENRY H. JAMES.  
J. C. DUNBAR.

Witnesses:

JOHN T. BOWEN,  
JEWET N. BOYNTON.