

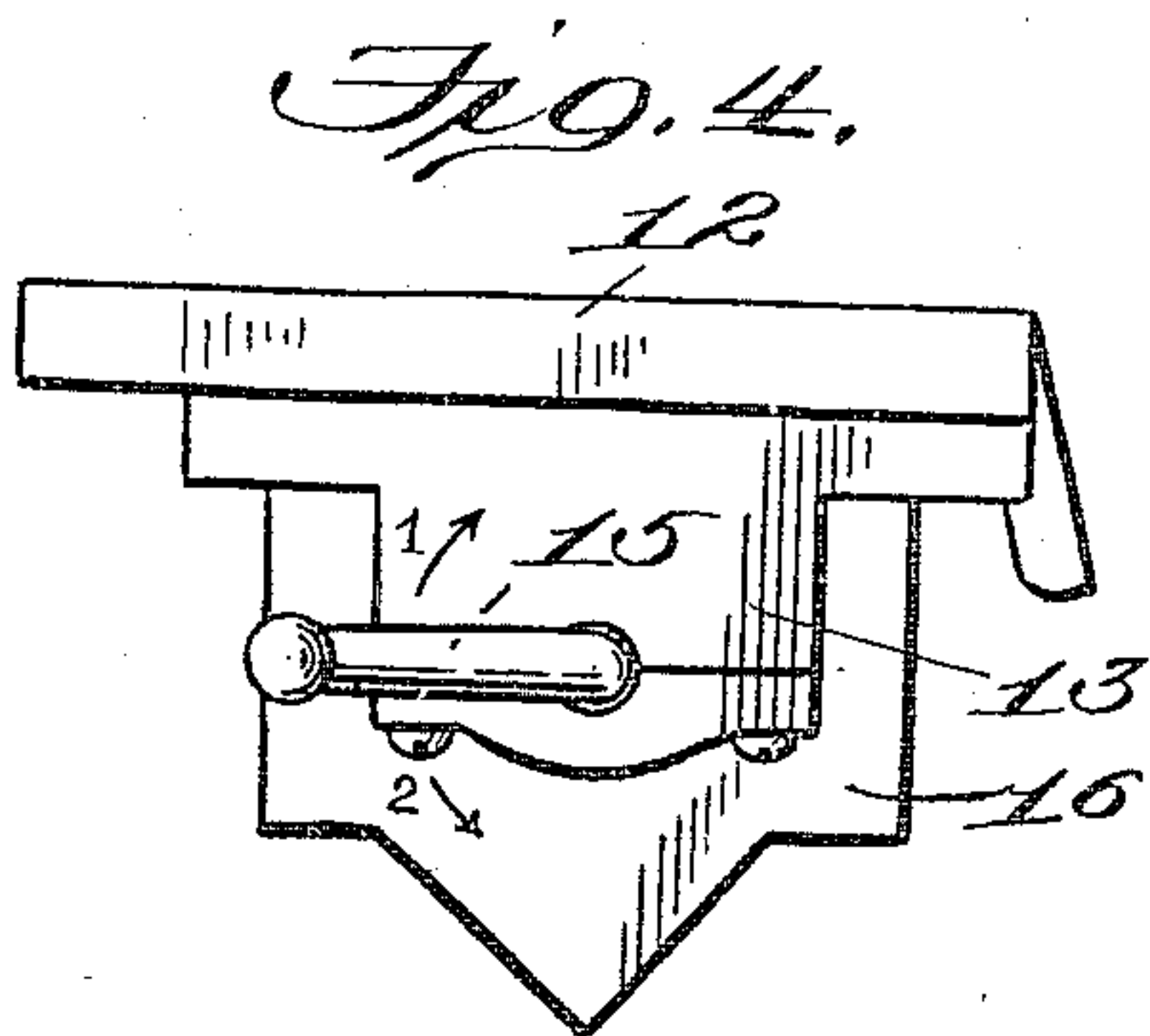
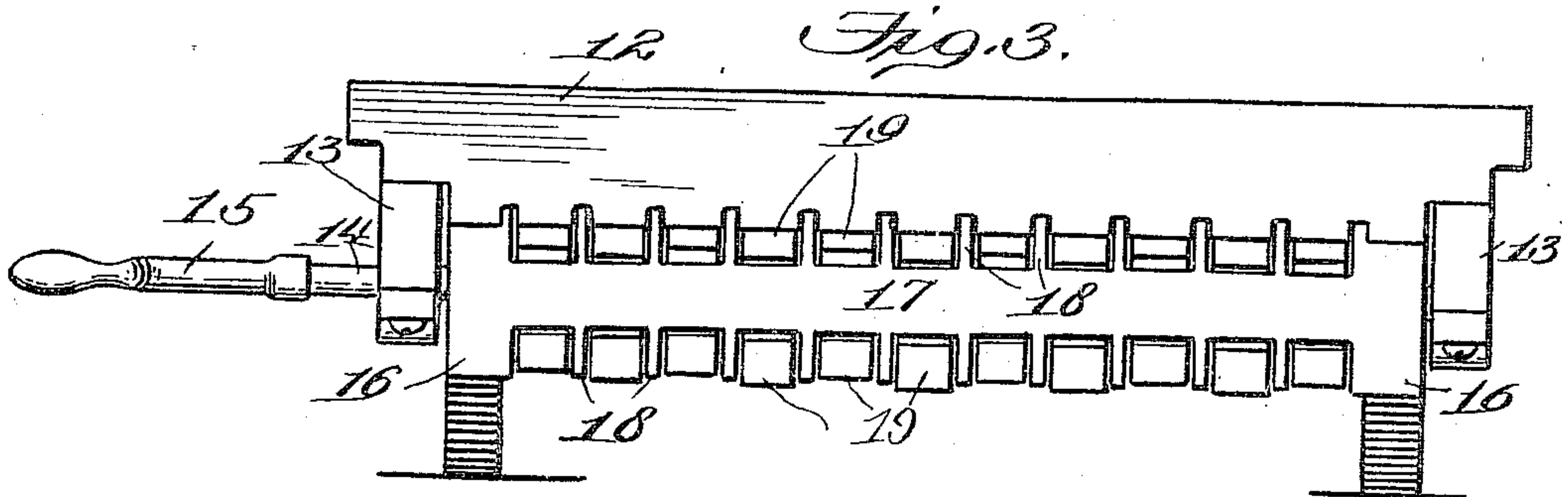
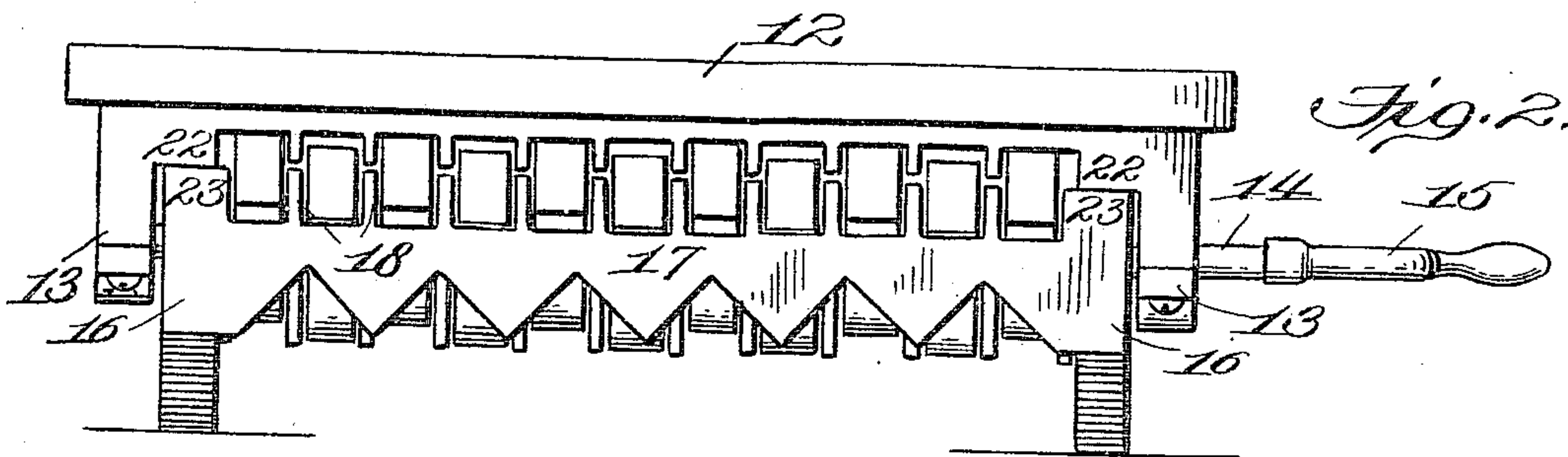
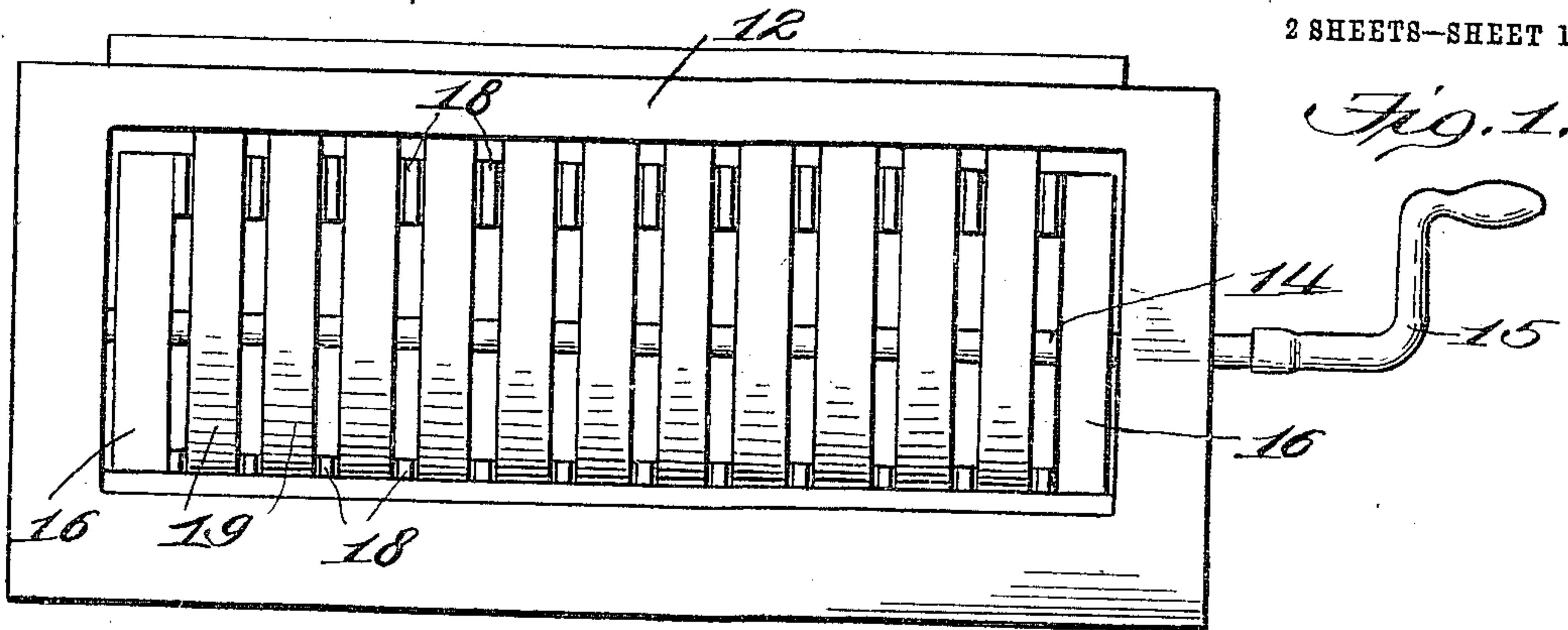
W. E. MARENGO.
GRATE.

APPLICATION FILED APR. 21, 1909.

959,568.

Patented May 31, 1910.

2 SHEETS—SHEET 1.



Witnesses:
C. M. Sweeney
J. D. Kling

Inventor:
William E. Marengo
Calvin Kalin
Attys.

W. E. MARENGO.

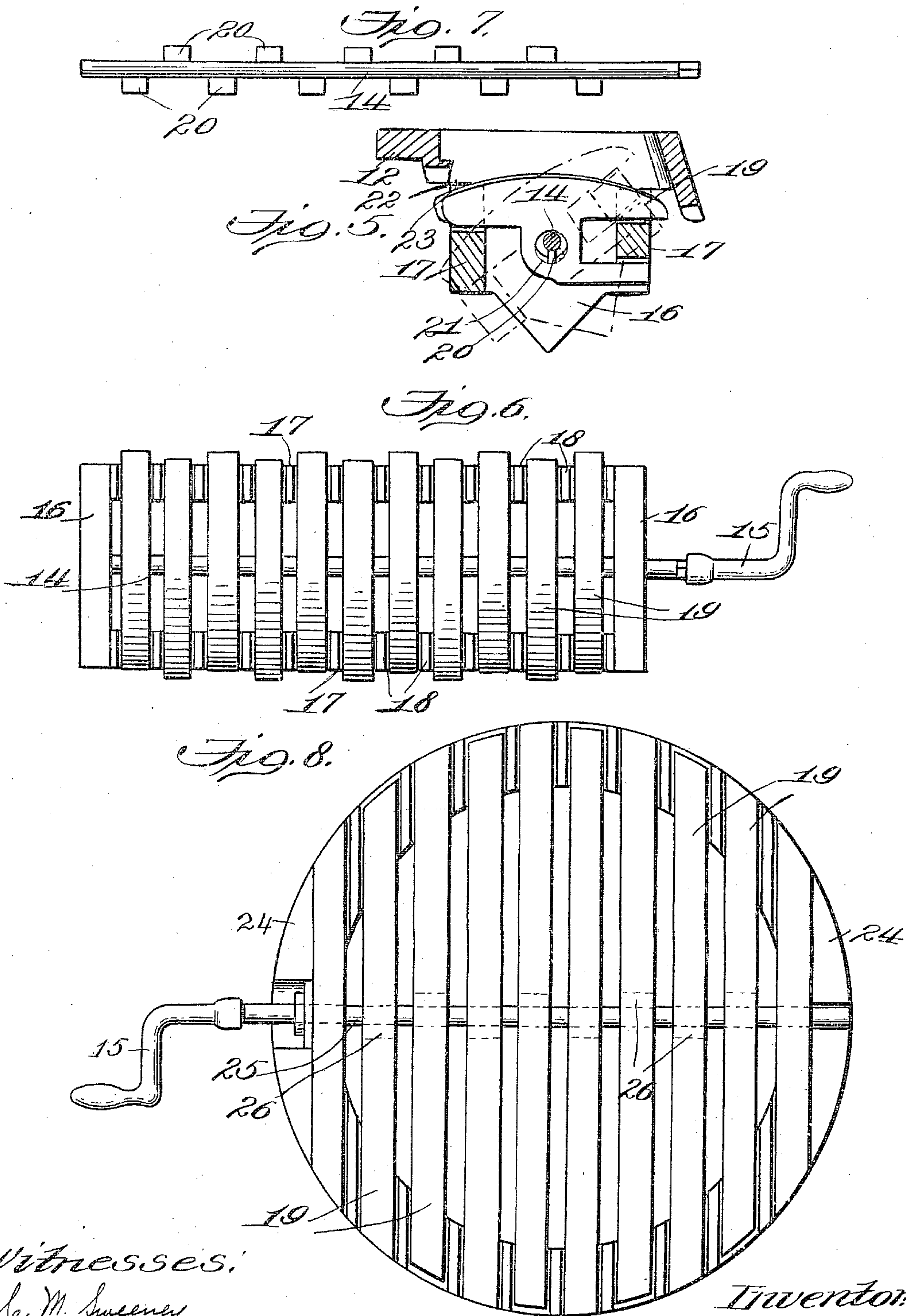
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Inventor:

William E. Marengo,

By

Calvin Calvin
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM E. MARENGO, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO JOHN B. PROULX, OF SOUTHBRIDGE, MASSACHUSETTS.

GRATE.

959,568.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed April 21, 1909. Serial No. 491,305.

To all whom it may concern:

Be it known that I, WILLIAM E. MARENGO, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented or discovered certain new and useful Improvements in Grates, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improved grate suitable for use with stoves, ranges or furnaces; and has for its object to provide a grate with a series of independent grate bars which may be agitated or shaken in the frame of the grate, in such a manner as to shake out the ashes and cinders, by means of a rotating shaft provided with eccentric projections preferably so arranged as to impart opposite movements to the alternating grate-bars, and thereby secure an efficient agitation without requiring extended movements thereof.

In the accompanying drawings, Figure 1 is a plan view showing one form of the improved grate hung in a suitable frame; Figs. 2 and 3 are opposite side views and Fig. 4 is an end view of the same. Fig. 5 is a section on line 5—5, Fig. 1. Fig. 6 is a plan view of the grate detached from its frame. Fig. 7 is a detail view of the agitating shaft, and Fig. 8 is a plan view, similar to Fig. 6, showing the invention as applied to a round form of grate.

Referring to the drawings, 12 denotes a suitable frame which may be considered to represent the base of the fire chamber of a stove or furnace, and which is provided with end bearing portions 13 in which is journaled a suitable shaft 14 provided with a crank 15 by which it may be turned. Supported by the shaft 14 is a grate frame comprising end portions 16 and side-bars 17, said side-bars being provided with a series of teeth or projections 18 between which are recesses of suitable size to receive loosely the end portions of the grate bars 19. The shaft 14 is provided with a series of eccentrics or projections 20 which are received in central openings 21 in the grate bars 19, the said eccentrics or projections extending alternately outward from the said shaft so as to impart alternating movements to the adjacent grate bars. The openings 21 are of such size relative to the shaft 14 and the projections or eccentrics 20 that the

walls of said openings will closely inclose said shaft and projections or eccentrics, as shown in Fig. 5, thereby providing a construction which will cause the grate bars to rise and fall and to be reciprocated back and forth when said shaft is rotated. The grate bars 19 rest at their opposite ends on the side bars 17 of the grate frame, each of said grate bars being forked at one end to embrace loosely one of said side pieces, so that, in coöperation with the shaft 14 which passes through said grate bars, they will be connected positively with the grate frame but in such a manner that they will be free to be moved up and down and also back and forth longitudinally, so as to thoroughly agitate the partly consumed material in the combustion chamber, and thus shake out the ashes and cinders.

The grate frame, comprising the end pieces 16 and the attached or integral side bars 17, is pivotally hung in the frame 12 by the shaft 14 in such a manner that the said grate frame may be tilted for the purpose of dumping the grate, when desired. By turning the crank 15 in the direction denoted by the arrow 1 in Fig. 4 the grate bars may be shaken or agitated; and by turning the said crank in the direction indicated by the arrow 2 in Fig. 4 the grate frame may be tilted, as denoted in dotted lines in Fig. 5, for the purpose of dumping. To permit of this dumping operation the lower arms of the forked ends of the grate bars 19 are made somewhat shorter than the upper arms of said forked ends, so as not to interfere with the grate frame. When however, the crank 15 is turned in the direction denoted by the arrow 1 in Fig. 4 the power or force applied to the shaft 14, and which might have a tendency to tilt the grate in the direction of movement of the shaft, will be resisted by stop-ports 22 on the frame 12 which may be engaged by the upper corners 23 of the end pieces 16 of the grate frame; or any other suitable stopping construction, to prevent the grate frame from being tilted when the shaft is turned in the direction denoted by the arrow 2, may be adopted.

Instead of making the grate in the general rectangular form represented more clearly in Fig. 6 the invention may be applied to a round form of grate such as is represented in Fig. 8 in which the grate bars 19, each forked at one end, are mounted in the frame

24 in the same manner in which they are mounted in the rectangular form of frame, and are agitated or shaken in the same manner by means of the shaft 25 provided with 5 eccentrics or projections 26 similar to the eccentrics or projections 20 with which the shaft 14 is provided.

From the foregoing it will be understood that by turning the crank of the agitating 10 or shaking shaft the grate bars of the improved grate will be moved up and down and back and forth, the alternate bars moving in opposite directions so that a thorough agitation results from comparatively short move- 15 ments of said bars, in that one bar moves up when the adjoining bar moves down, and one bar moves to the right when the adjoining bar moves to the left.

Having thus described my invention I 20 claim and desire to secure by Letters Patent:

1. In a grate, the combination with a suitable grate frame, of a series of independent grate bars loosely supported at their ends on the side bars of said frame and provided 25 with central openings, and a shaft passing through said openings, and having a series of alternating cams or projections engaging said bars at said openings, the latter being of such size, relative to said shaft and pro- 30 jections that the walls of said openings will closely inclose said shaft and projections, so that by turning said shaft the said grate bars may be moved up and down and back and forth, the movements of the alternate 35 bars being in opposite directions.

2. In a grate, the combination with a suitable grate frame, of a series of independent grate bars loosely supported at their ends on the side bars of said frame and provided 40 with central openings, and a shaft passing through said openings and having a series of alternating cams or projections engaging said bars at said openings and the walls of which openings closely embrace said shaft 45 and cams or projections, so that by turning said shaft the said grate bars may be moved up and down and back and forth, the movements of the alternate bars being in opposite directions, each of said grate bars hav- 50 ing a forked end loosely embracing one of said side bars.

3. In a grate, the combination with a suitable grate frame, of a series of independent grate bars loosely supported at their ends 55 on the side bars of said frame and provided with central openings, and the walls of which openings closely inclose said shaft and cams or projections, a shaft passing through said openings and having a series

of alternating cams or projections engaging 60 said bars at said openings, so that by turning said shaft the said grate bars may be moved up and down and back and forth, the move- ments of the alternate bars being in opposite directions, and a suitable stationary frame 65 or support in which said grate frame is pivotally mounted by said shaft, so that said grate frame may be tilted for dumping.

4. In a grate, the combination with a suit- 70 able grate frame, of a series of independent grate bars loosely supported at their ends on the side bars of said frame and provided with central openings, a shaft passing through said openings and having a series of alternating cams or projections engaging 75 said bars at said openings, and the walls of which openings closely embrace said shaft and cams or projections so that by turning said shaft the said grate bars may be moved up and down and back and forth, the move- 80 ments of the alternate bars being in opposite directions, each of said grate bars having a forked end loosely embracing one of said bars, and a suitable stationary frame or sup- 85 port in which said side grate frame is pivotally mounted by said shaft, so that said grate frame may be tilted for dumping.

5. In a grate, the combination with a suit- 90 able grate frame, of a series of independent grate bars loosely supported at their ends on the side bars of said frame and provided with central openings, a shaft passing through said openings and having a series of alternating cams or projections engaging 95 said bars at said openings, and the walls of which openings closely inclose said shaft and cams or projections, so that by turning said shaft the said grate bars may be moved up and down and back and forth, the move- 100 ments of the alternate bars being in opposite directions, each of said grate bars having a forked end loosely embracing one of said bars, a suitable stationary frame or support in which said grate frame is pivot- 105 ally mounted by said shaft, so that said grate frame may be tilted for dumping when said shaft is turned in one direction, and stops for preventing tilting movement of said grate frame when said shaft is turned in an opposite direction to agitate 110 said grate bars.

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

WILLIAM E. MARENGO.

Witnesses:

CHAS. S. HYER,
ARTHUR W. CALVER.