

No. 626,079.

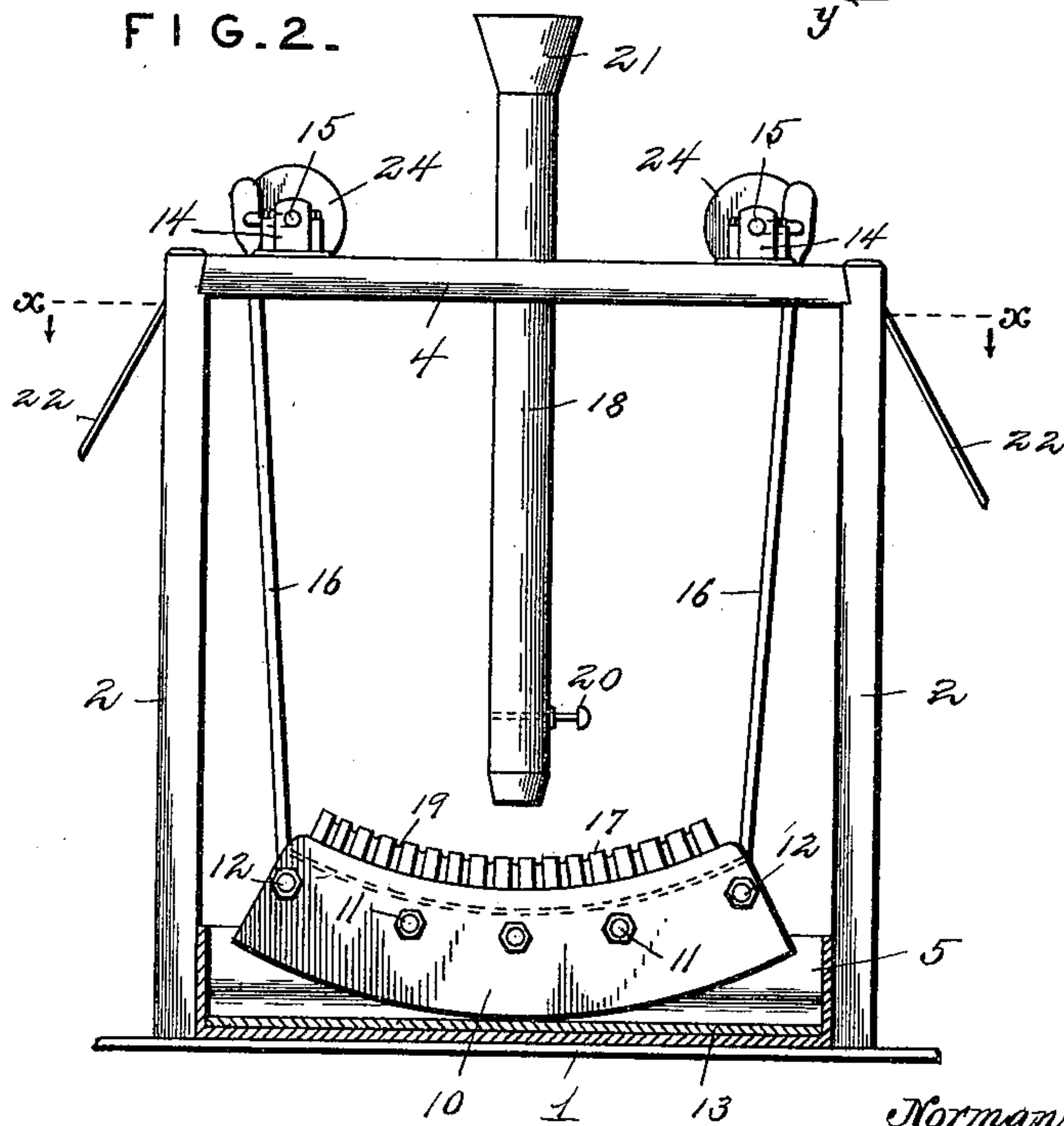
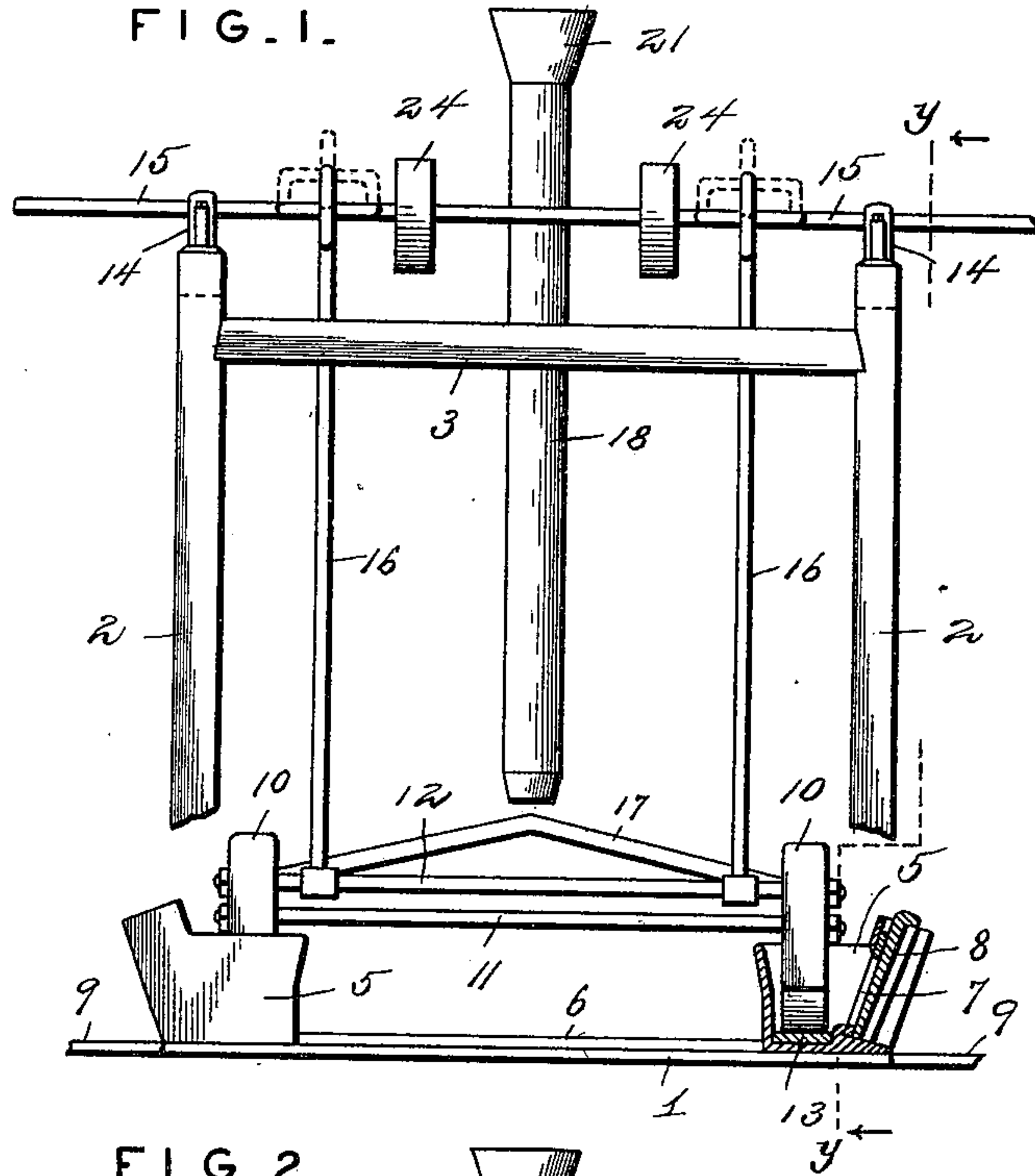
Patented May 30, 1899.

N. McAULAY.  
QUARTZ MILL.

(Application filed June 6, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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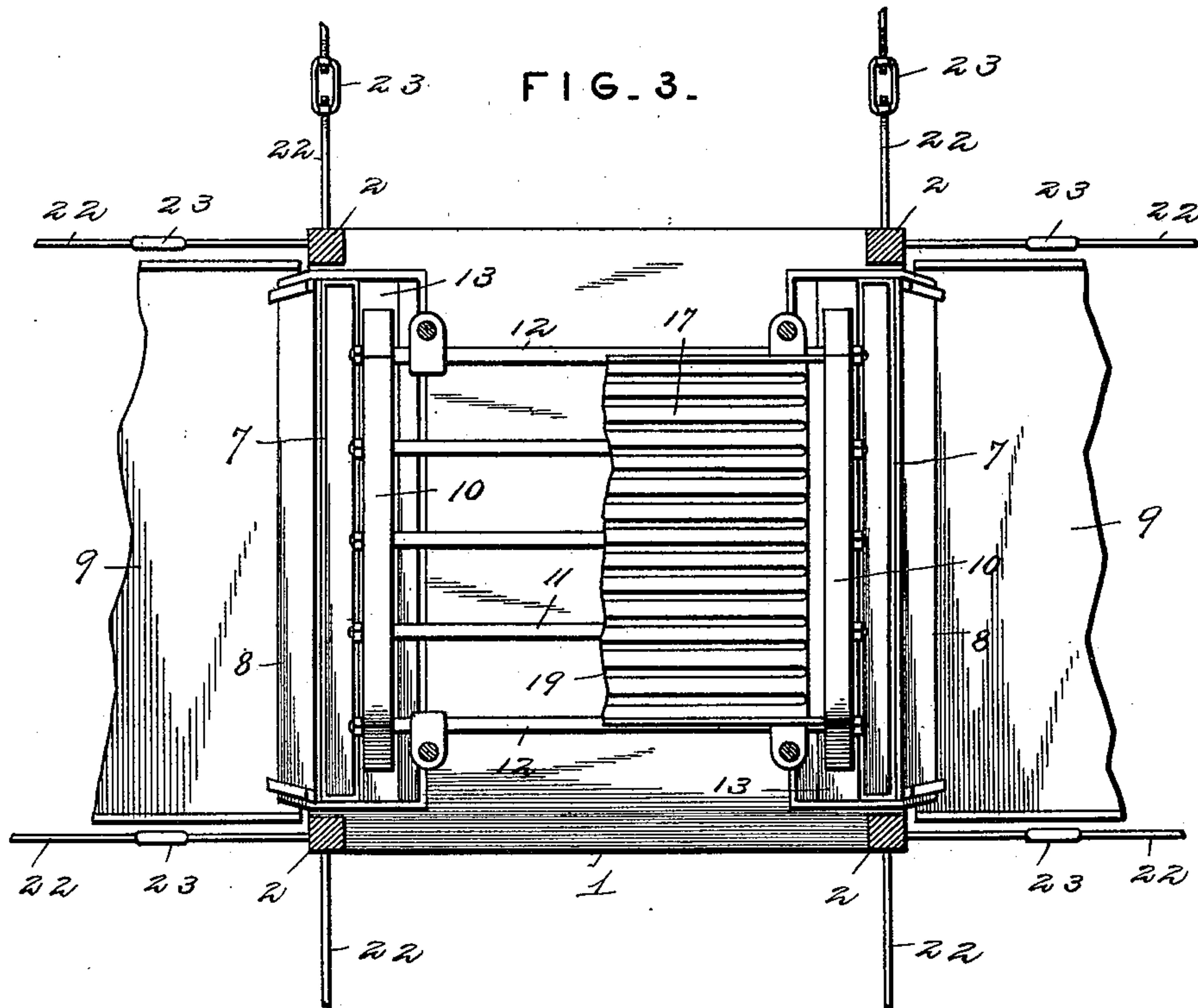


FIG. 4.

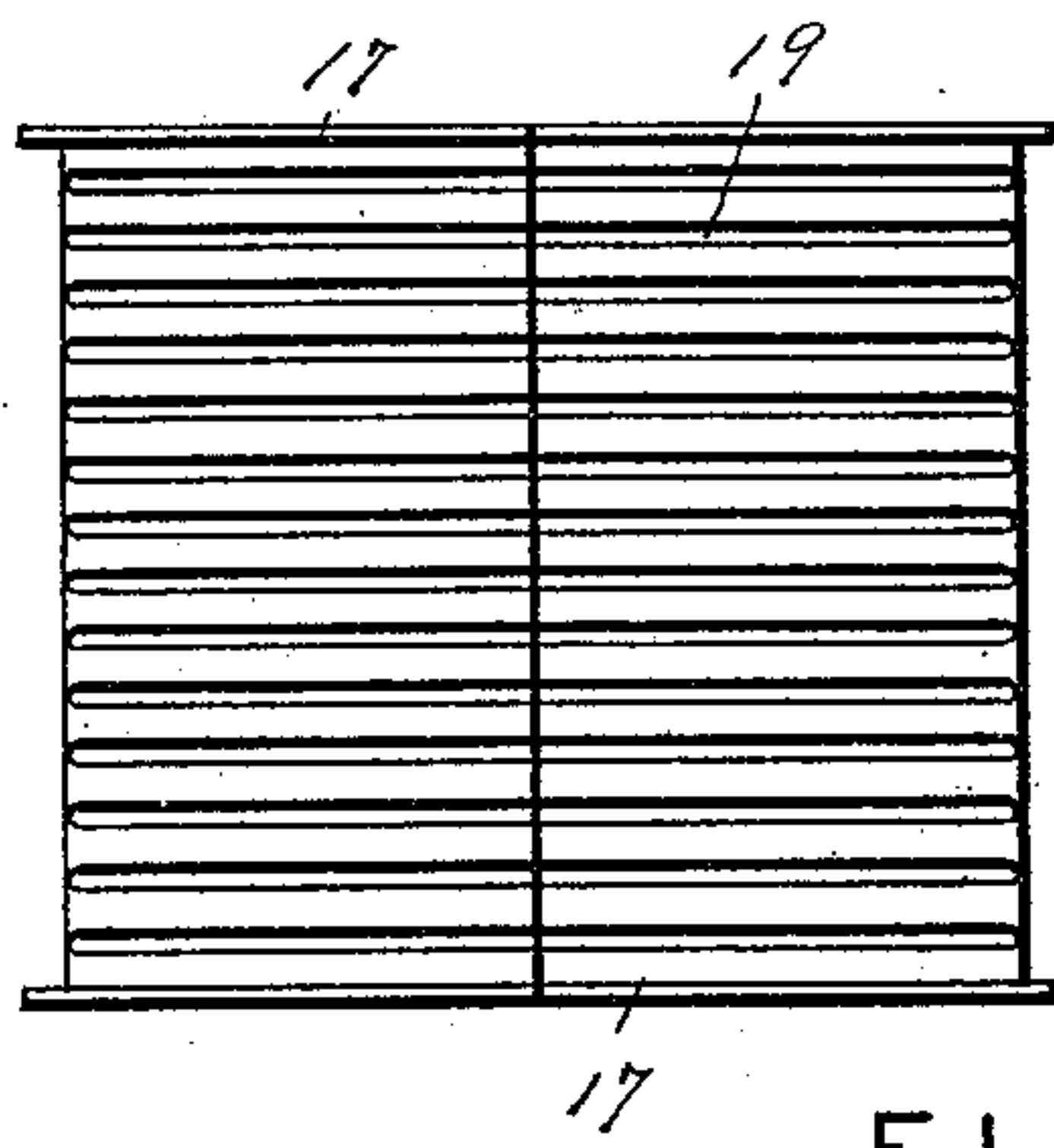


FIG. 5.



FIG. 6.

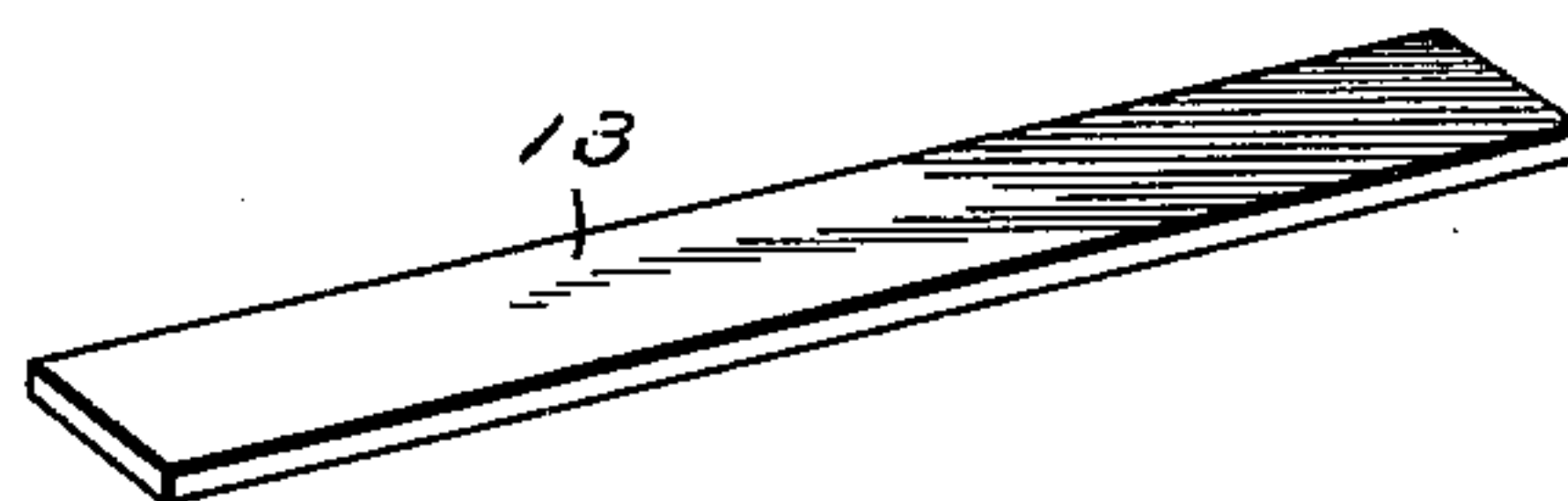
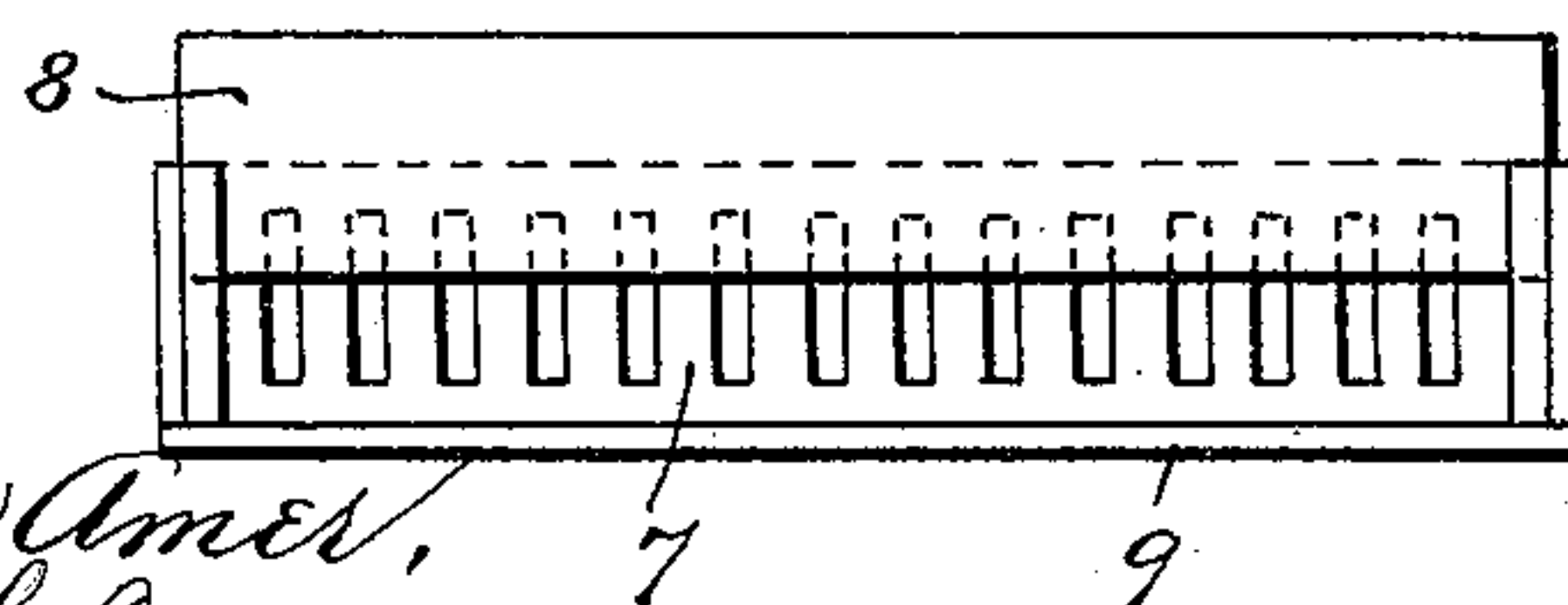


FIG. 7.



Witnesses

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# UNITED STATES PATENT OFFICE.

NORMAN MCAULAY, OF HILL CITY, SOUTH DAKOTA, ASSIGNOR OF ONE-HALF TO CAMILLO VON WOEHRMANN, OF SAME PLACE.

## QUARTZ-MILL.

SPECIFICATION forming part of Letters Patent No. 626,079, dated May 30, 1899.

Application filed June 6, 1898. Serial No. 682,753. (No model.)

*To all whom it may concern:*

Be it known that I, NORMAN MCAULAY, a citizen of the United States, residing at Hill City, in the county of Pennington and State of South Dakota, have invented certain new and useful Improvements in Quartz-Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to an improvement in quartz-mills for pulverizing the quartz after it has been passed through the ordinary crusher in which it has been broken and partially pulverized and from which it is fed to the mill.

The object of the invention is to provide pulverizing-rockers as a substitute for the stamp-mills ordinarily employed for pulverizing the quartz after it has been passed through the crusher.

The nature of the improvements will be understood from the following description and claims, reference being had to the accompanying drawings, in which—

Figure 1 represents the improved mill in end elevation, with one of the pulverizer-pans in section to show the arrangement of the parts operating in connection therewith. Fig. 2 is a side elevation of the mill, showing the adjacent pan in section on the line *y y*, Fig. 1. Fig. 3 represents a horizontal section taken on the line *x x*, Fig. 2, and showing the distributor-apron in plan view partly broken away to show the brace or tie rods connecting the rockers. Fig. 4 is a plan view of the apron which distributes the material to the mills arranged on opposite sides thereof. Fig. 5 is a side elevation of the apron. Fig. 6 is a perspective view of one of the wear-plates used in the bottom underneath the rocker. Fig. 7 is a side elevation of one of the pans, with the gate partly raised to show the slotted or perforated outer side wall.

1 indicates a base-plate of any suitable material.

2 2 indicate corner posts or uprights secured at their lower ends to the base-plate 1 and connected at their upper ends by horizontal bars 3 and 4, which, in connection with

the uprights and base-plate, form the framework of the mill.

5 5 indicate the pans of the mill, of which two are shown and which receive the material to be pulverized. These pans are spaced by means of an intermediate plate 6 and may be otherwise rigidly secured to the base-plate 1 in any suitable manner. These pans are made slightly flaring in cross-section, as indicated in Fig. 1, to adapt them to receive the material to be operated upon, and the outer wall of each (indicated at 7) is slotted or perforated, said wall being preferably made in the form of a slide and made removable, if desired, for giving access to the pan for cleansing or other purposes.

8 indicates a slide or gate applied to the outer face for closing the opening or openings in the wall 7 and insuring the retention of the material in the pan until such time as it is desired to discharge the same upon the amalgam plates, (indicated at 9.)

10 indicates the rockers or rocker-plates, one of which is located in each pan, said rocker-plates being connected by tie rods or braces 11 and 12, the latter being at the ends of the rockers, and to each the actuating connecting-rods are connected for operating the rockers, as will be explained.

13 13 indicate wear-plates resting on the bottom of the pan to receive the action of the rockers and adapted to be readily removed for renewal, cleansing the pans, or for other purposes.

On the upper longitudinal bars 4 of the frame are mounted upright brackets 14, in which are journaled crank-shafts 15, from the cranks on which connecting-rods 16 extend downwardly and are connected at their lower ends with the end tie-bars 12, connecting the rockers for imparting the rocking motion. The cranks upon the opposite parallel crank-shafts are set opposite each other, so that when one end of the rocker-plate is raised the other end thereof will be depressed. The rocker-plates 10 are segmental or concavo-convex in form, the convex lower face resting upon the wear-plates 13, the upper face of the rocker being made concave from end to end, as shown. The tie-bars connecting the rocker-plates in pairs are given a con-



cave arrangement on their upper sides corresponding to that on the upper face of the rocker-plates, and upon these tie-bars is placed the apron 17, concave on its upper  
 5 face from end to end and convex, angular, or of an inverted-V shape on said face from side to side, as indicated in Fig. 1, whereby the material received from the chute 18 is deflected to opposite sides of the apron and by  
 10 the rocking movement thereof in connection with the rocker-plates is also distributed endwise upon the apron. The apron is corrugated or provided with a series of spaced grooves 19 on its upper face, said grooves  
 15 extending transversely and from the central ridge to the sides of the apron, as indicated, for receiving and carrying the material to be operated upon to the sides of said apron. These grooves or corrugations serve to prevent the material deposited upon the apron  
 20 from spreading too rapidly toward and escaping over the ends of the rocking apron, and being inclined toward the sides from the central longitudinal ridge cause such material to be discharged laterally at the sides of  
 25 the apron. The edges of the apron overhang the flaring inner wall of the pan in such manner as to provide for the discharge of the material into the said pans upon opposite sides.  
 30 The chute 18 is provided with a damper at 20, having a suitable handle by means of which it can be turned for controlling or regulating the supply of material to the apron 17. The chute is provided at its upper end with a  
 35 funnel-shaped mouth 21, designed to project through the flooring above the mill or in close proximity with an opening in said flooring for receiving the material to be operated upon from the quartz-crushers located in the room  
 40 above the mill.

22 22 indicate stay-rods by means of which the framework of the mill is connected with the adjacent walls of the building for firmly supporting the same, and 23 indicates turn-  
 45 buckles applied to said rods for giving the desired tension or adjustment thereto.

24 24 indicate band-pulleys applied to the shaft 15 for imparting motion thereto, the power for actuating said shafts being received  
 50 from any suitable motor, either from the room above containing the quartz-crusher or in any other convenient location. In practice one band wheel or pulley 24 upon one shaft will be connected with the corresponding band wheel  
 55 or pulley upon the opposite shaft in such manner that they will be made to rotate in unison, so that when the cranks upon one shaft are up the others will be down, and vice versa, for properly actuating the rocker-  
 60 plates. The rocker-plates are made substantially solid below the tie-plates 11 and 12, very heavy, and of any suitable metal, so that in their rocking movements they are made to thoroughly pulverize the material.

65 In practice the pans 5 are provided each with a suitable quantity of water, in which the material is pulverized and which serves

to carry off the material when the gates 8 are raised, allowing the material to flow out and spread over the amalgam plates 9. 70

By reference to Fig. 1 it will be seen that the shaft 15 may be extended to any desired length and that rocker-plates may be connected in pairs therewith, so that any desired  
 75 number of mills may be operated from the same shaft.

The mill constructed as described is very simple and is not liable to get out of order and forms, as compared with the ordinary stamp-mills, a noiseless mill and one which is  
 80 very effective and durable.

Having described the invention, what is claimed as new, and sought to be secured by Letters Patent, is—

1. In a quartz-mill, rocker-plates connected  
 85 in pairs, in combination with the interposed ridged or corrugated apron connected to and rocking with said plates for distributing the material, and the pans in which said rocker-plates operate, said pans underlying the discharge  
 90 sides of the apron, substantially as described.

2. In a quartz-mill, the combination with the pans in which the material operated upon is pulverized, said pans being made flaring  
 95 for the reception of the material, of the rocker-plates operating therein and connected in pairs, and the longitudinally-ridged and transversely-corrugated apron interposed between and rocking with said plates for feeding the  
 100 material on opposite sides to said pans, substantially as described.

3. In a quartz-mill, the combination with the rocker-plates arranged in pairs and the pans in which said rocker-plates operate, said  
 105 rocker-plates being connected by tie-rods, of the longitudinally-ridged and transversely-corrugated apron overlying said rods and connected with said rocker-plates, to rock with them, substantially as described. 110

4. The combination in a quartz-mill, of the rocker-plates connected in pairs, the flaring-mouthed pans in which said rocker-plates operate, the longitudinally-ridged and transversely-corrugated apron intermediate and  
 115 rocking with said plates, the outer flaring walls of said pans being provided with openings, and gates for closing said openings, substantially as and for the purpose described.

5. The combination in a quartz-crusher, of  
 120 the rocker-plates connected in pairs, the flaring-mouthed pans in which said rocker-plates operate, the interposed corrugated and ridged apron for conveying the material to be operated upon laterally to said pans, and the feed-  
 125 chute arranged immediately above the ridge of said apron for supplying the material to be operated upon thereto, substantially as described.

6. The combination in a quartz-mill, of the  
 130 rocker-plates connected in pairs, the pans in which said plates operate provided with removable wear-plates and side openings with gates through which the contents of the



pan may be discharged, oppositely-disposed  
cranks connected with the opposite ends  
of said rocker-plates for actuating them, the  
ridged and corrugated apron intermediate  
5 said rocker-plates, discharging laterally and  
upon opposite sides into said pans, the feed-  
chute for supplying the material thereto pro-  
vided with means for controlling the feed,  
and means for imparting a rotary motion to

the crank-shafts actuating said rocker-plates, is  
all substantially as described.

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

NORMAN MCAULAY.

Witnesses:

JOHN J. McLAURIN,  
R. W. JENKINS.