No. 746,104. PATENTED DEC. 8, 1903.

J. Q. A. KING.

ASSAYER'S PULVERIZING APPARATUS.

APPLICATION FILED MAR. 11, 1903.

NO MODEL.

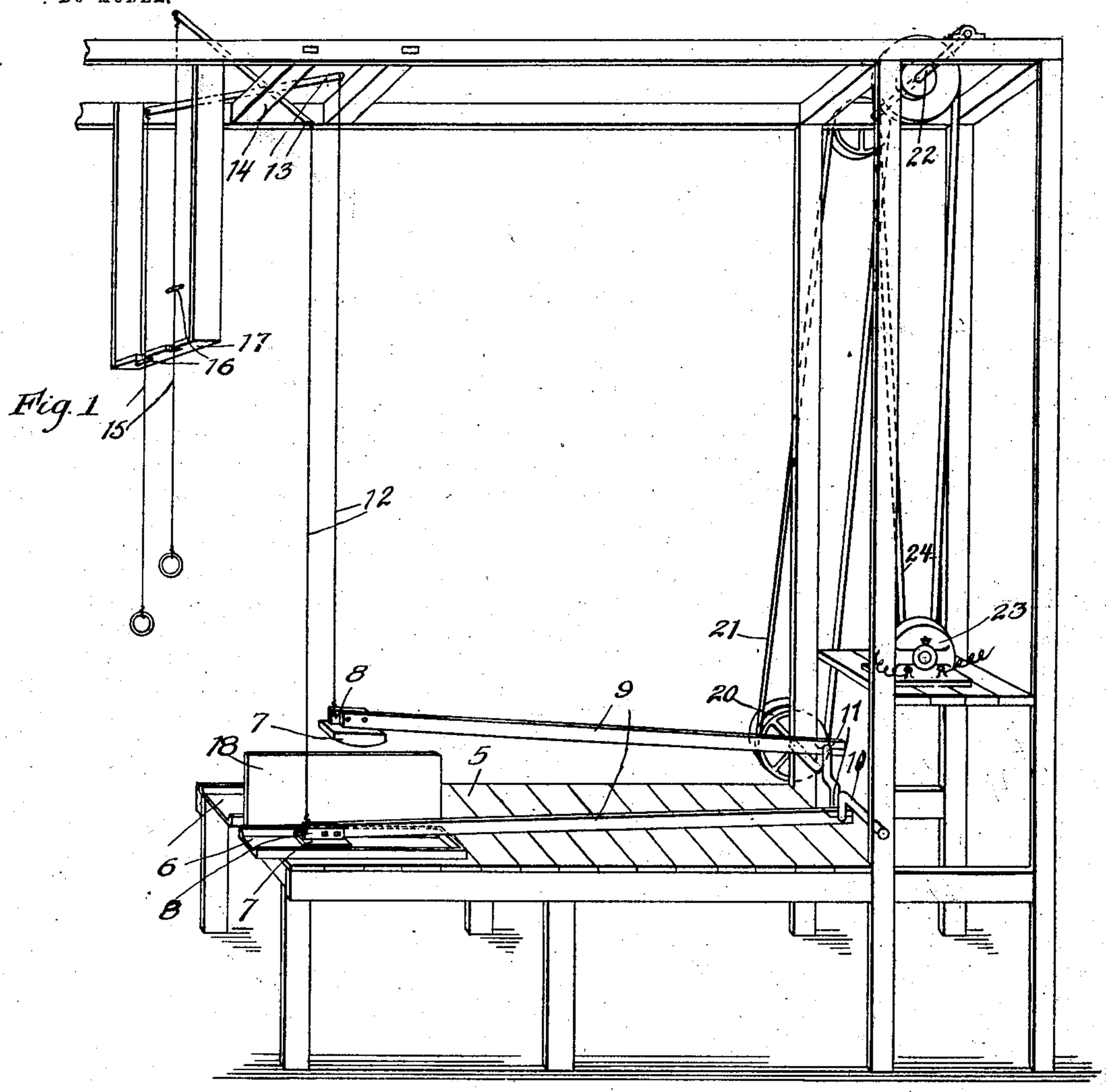

Fig. 1

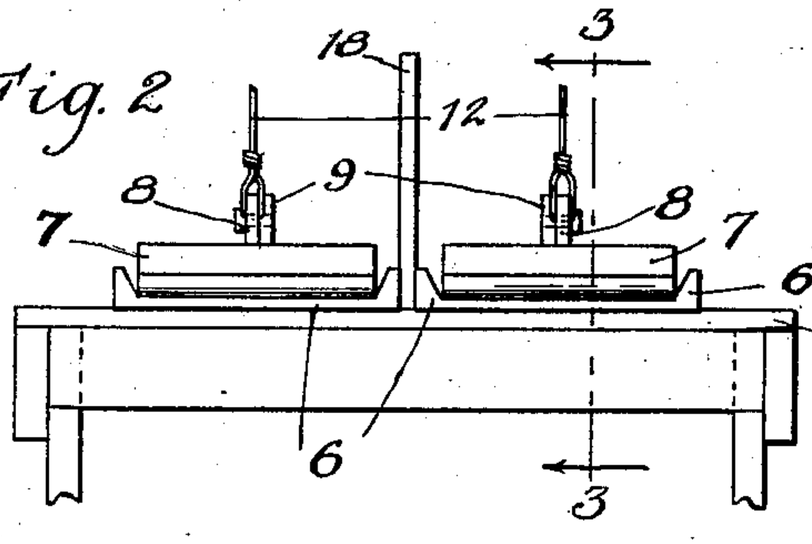

Fig. 2

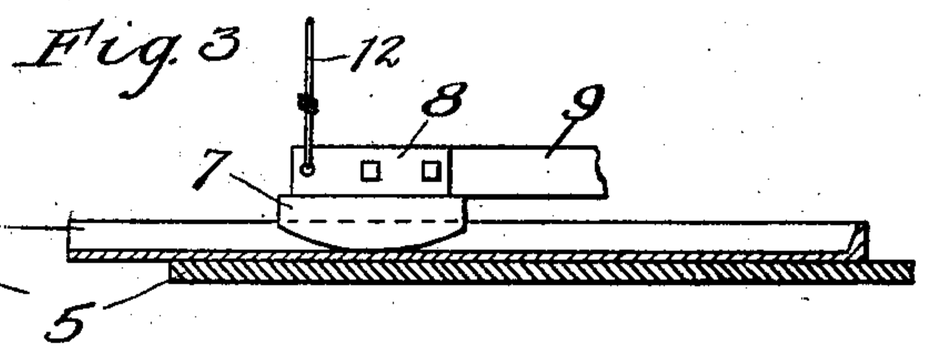

Fig. 3

Witnesses:
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No. 746,104. Patented December 8, 1903.

UNITED STATES PATENT OFFICE.

JOHN Q. A. KING, OF PHŒNIX, ARIZONA TERRITORY, ASSIGNOR OF ONE-HALF TO FRANK H. STANWOOD, OF LOWELL, MASSACHUSETTS.

ASSAYER'S PULVERIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 746,104, dated December 8, 1903.

Application filed March 11, 1903. Serial No. 147,296. (No model.)

To all whom it may concern:

Be it known that I, JOHN Q. A. KING, a citizen of the United States, residing in Phœnix, in the county of Maricopa and Territory of Arizona, have invented a new and useful Improvement in Assayers' Pulverizing Apparatus, of which the following is a specification.

This invention relates to an improved construction of bucking-board and muller for pulverizing ore. As heretofore used the muller has always been operated by hand, the operator pressing it down on the material as he works the muller back and forth over the bucking-board with a rocking motion. The operation is slow and arduous and requires the attendant's entire time. My endeavor in the present invention has been to devise means for operating the muller by power, so that it shall have both the reciprocating and rocking motion of the hand-muller and also exert the necessary pressure on the ore being pulverized, and I accomplish this end by the means hereinafter set forth.

In the accompanying drawings, forming a part of this specification, Figure 1 is a perspective of my invention. Fig. 2 is a partial front elevation, and Fig. 3 is a partial vertical section on the line 3 3 of Fig. 2.

In said drawings, 5 represents a table, on which two flat-surfaced bucking-boards 6 6 of the ordinary construction are mounted. A separate rubber or muller 7 is provided for operating on each board, the same being preferably of a width corresponding substantially to that of the boards, so that they may operate on all the ore without receiving any sidewise motion and having a rounded under surface. The mullers have centrally-located upwardly-projecting ribs 8, with transverse openings through them, whereby the mullers may be attached to pitmen 9 9 and whereby they may be actuated by power from a shaft 10, having formed in it a separate crank 11 for each pitman. The shaft is located only a short distance above the plane of the table, so that the thrust and pulls imparted to the pitmen by the cranks will cause the mullers to move in a horizontal direction and to rock as they move.

In order that the mullers may press downward upon the ore with the necessary pressure to secure proper action, I make them quite heavy as compared with the hand-muller. Their gravity added to that of the pitmen will be sufficient for this purpose.

The mullers and bucking-boards require to be cleaned after pulverizing each sample lot of ore, and to enable this to be done readily I attach each muller by means of a flexible connection 12 to one end of the lever 13, pivoted between its ends to a bar 14, located over the apparatus. From the other end of the lever a depending cord or wire 15 depends, and in this cord or wire a button or stop 16 is secured, such button or stop being adapted to engage the notched board or plate 17, suspended rigidly from the ceiling or framework above the apparatus. By means of these devices either or both of the mullers may be raised from their acting positions at will and retained in the raised positions as long as desired by catching the buttons under the plate 17, and one muller is shown thus raised in Fig. 1. The flexible connections 12 permit the mullers while raised to move freely with the cranks, so that it is unnecessary to disconnect them from the cranks at such times. They may be disconnected, however, if preferred.

I have shown in the drawings a double machine, and in such places prefer to place between the bucking-boards a division-plate or partition 18, whereby any particles of ore which may fly in that direction may be prevented from entering the other bucking-board. This plate is, of course, not present in machines embodying only a single bucking-board, and although the double form of machine is a desirable construction it will be understood that I do not wish to be limited thereto in my claims.

The shaft is operated in any suitable way. I have shown it as carrying a pulley 20, receiving power by belt 21 from a pulley on shaft 22, driven from the electric motor 23 by the belt 24; but any other motor may be used, and the connections between the motor and shaft may also be greatly varied from those shown.

While the mullers are in operation they are entirely independent of the suspending

devices, so that their entire gravity is exerted on the material. It will also be noted that their attachment to the pitman is a rigid one, so that they cannot tip to either side. This is important, because if the material is larger upon one side of the board than upon the other the muller cannot tip to accommodate itself to the material, but is compelled to first reduce the larger material to the size of the smaller before the latter are operated upon, so that all parts of the material are treated evenly and reduced to the same extent.

I claim—

1. The ore-pulverizing apparatus consisting of a flat-surfaced bucking-board, a muller resting by gravity upon the board, a motor, a crank-shaft driven by the motor and located in the same or nearly the same horizontal plane with the board, and a pitman freely joined to the crank and rigid with the muller, and serving to impart both a reciprocating and a rocking motion to the muller.

2. The ore-pulverizing apparatus consisting of a bucking-board, a muller resting by gravity upon the board, a motor, a crank-shaft driven by the motor and located in the same or nearly the same horizontal plane with the board, and a pitman freely joined to the crank and rigid with the muller, and serving to impart both a reciprocating and a rocking motion to the muller.

3. The apparatus for pulverizing ore embracing a bucking-board on which the ore is placed, a muller constantly resting by gravity upon the board, a motor, a crank-shaft driven by the motor and located substantially in the same horizontal plane with the board, and a pitman freely joined to the crank and rigidly joined to the muller.

4. The combination in ore-pulverizing apparatus, of a bucking-board, a power-driven gravity-muller mounted on the end of a horizontal pitman, and means for raising the muller from its acting position at will.

5. The ore-pulverizing apparatus, comprising a bucking-board, a power-driven gravity-muller, a horizontal pitman to which the muller is secured, a crank-shaft for driving said pitman, and means for raising and supporting the muller above its acting position, said supporting means being adapted to permit the muller to continue in motion after being raised.

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Witnesses:

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