C. F. PIERCE & S. C. BYRD.

GRATE CLEANER.

APPLICATION FILED JUNE 12, 1916.

1,217,342.

Patented Feb. 27, 1917.

2 SHEETS—SHEET 1.

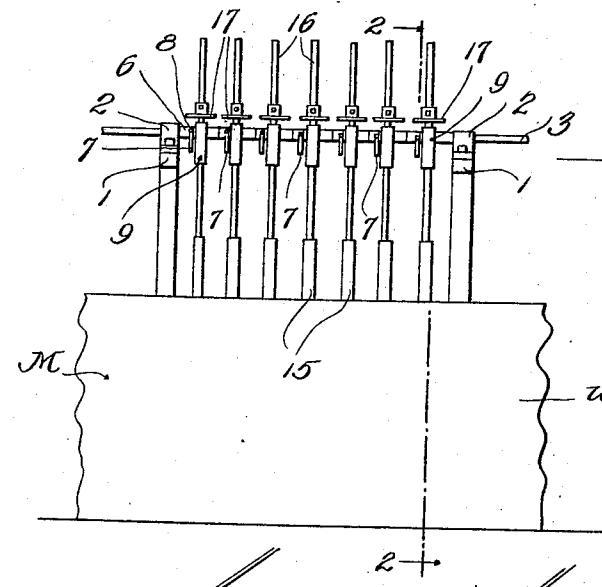
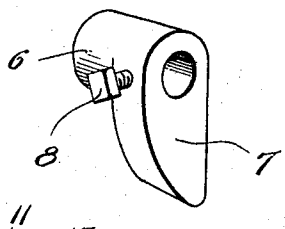


FIG. 1.

FIG. 6.



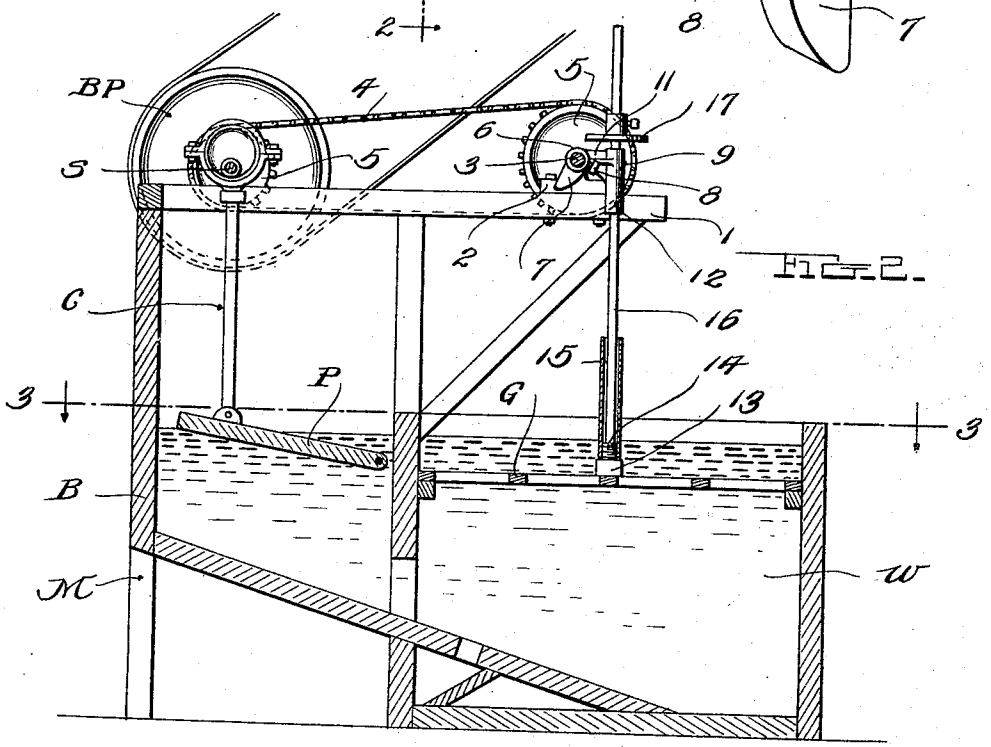


FIG. 2.

Witness

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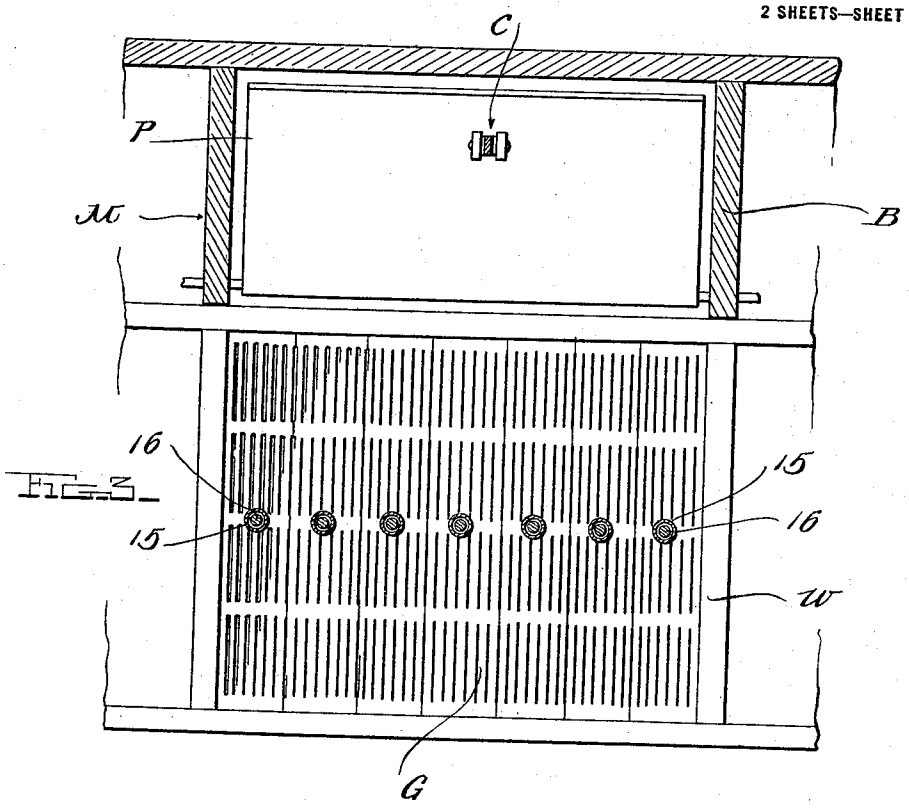


FIG. 3

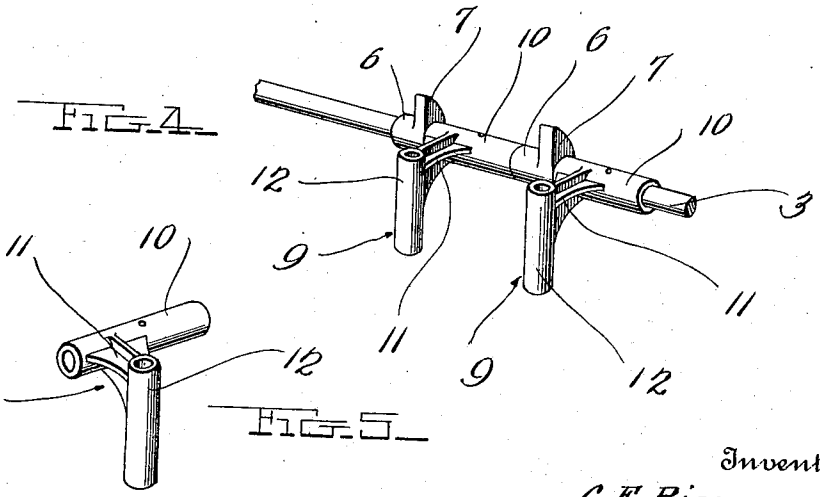


FIG. 4

FIG. 5

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UNITED STATES PATENT OFFICE.

CHARLES F. PIERCE, OF WEBB CITY, AND SAMUEL C. BYRD, OF CARTERVILLE, MISSOURI.

GRATE-CLEANER.

1,217,342. Specification of Letters Patent. Patented Feb. 27, 1917.

Application filed June 12, 1916. Serial No. 103,316.

To all whom it may concern:

Be it known that we, CHARLES F. PIERCE, a citizen of the United States, residing at Webb City, in the county of Jasper and State of Missouri, and SAMUEL C. BYRD, a citizen of the United States, residing at Carterville, in the county of Jasper and State of Missouri, have invented certain new and useful Improvements in Grate-Cleaners, of which the following is a specification.

This invention is an improved mechanism for cleaning the grates of ore handling machines, the object being to provide a mechanism of this class which may be easily and inexpensively manufactured and applied, yet which regardless of these advantages, will be highly efficient and durable.

With the foregoing general object in view, the invention resides in certain novel features of construction and in unique combinations of parts to be hereinafter fully described and claimed, the descriptive matter being supplemented by the accompanying drawings which constitute a part of this application and in which:

Figure 1 is a front elevation of an ore separator showing the application of the improved features of construction;

Fig. 2 is a transverse section taken on the planes indicated by the line 2—2 of Fig. 1;

Fig. 3 is a horizontal sectional view as seen on the plane indicated by the line 3—3 of Fig. 2;

Fig. 4 is a perspective view of a portion of the line shaft and parts mounted thereon;

Fig. 5 is a perspective view of one of the brackets employed for guiding a number of vertically movable rods; and

Fig. 6 is a similar view of one of the tappets employed for raising said rods.

In specifically describing the structure shown in the drawings above briefly discussed, similar characters will be placed on corresponding parts throughout the several views and reference will be herein made to the numerous elements by their respective indices. To this end, M designates an ore separating machine which comprises a water box W, a plunger box B in communication with said water box, a plunger P mounted in the box B, a drive shaft S, connections C between said shaft and plunger for reciprocating the latter, and a grate G in the upper end of the box W. Water will be supplied to and taken from the box W in any preferred manner and the material to be handled will be deposited upon the grate G by any suitable means which constitutes no part of the present invention. It may be explained, however, that reciprocation of the plunger P pulsates the water in the boxes B and W and thus causes currents thereof to alternately pass upwardly and downwardly through the grate G to act upon the ore supported on said grate. The present invention resides in the provision of simply constructed means for vibrating the grate G to prevent accumulation of deposits thereon.

Brackets 1 extend forwardly from the main frame of the machine M to points above the water box W, said brackets having bearings 2 secured thereon. A line shaft 3 is rotatably mounted in the bearings 2 and is driven by means of a chain 4 and sprockets 5 from the shaft S, the latter being rotated by a belt and pulley BP or by any other suitable means.

Secured at spaced intervals on the line shaft 3 are sleeves 6 which are formed as integral parts of tappets 7, said sleeves being held against movement in respect to the shaft by set screws or the like 8. Guide brackets 9 are mounted on the shaft 3 between the sleeves 6, each of said brackets having a horizontal bearing sleeve 10 loosely receiving said shaft, these sleeves having their ends disposed in contact with the ends of the sleeves 6 in order that they may be held against longitudinal shifting. Suitably shaped arms 11 are formed integrally with and extend laterally in the same direction from the sleeves 10, each of said sleeves being provided with one arm and the latter being preferably disposed nearer to one end of said sleeve than to the opposed end thereof. The outer ends of the arms carry vertical guide sleeves 12, the upper ends of these sleeves being formed integrally with said arms.

Each section of the grate G is provided on its upper side with an upstanding cylindrical boss 13 from which a threaded stud 14 rises, said studs being received in the lower ends of vertical guide sleeves 15 which are thus rigidly mounted, these sleeves being disposed in vertical alinement with the guide sleeves 12 above described. Vertical rods 16 are mounted slidably in the guide sleeves 12 and 15, said rods being equipped

with collars or other suitable projections 17 disposed above the brackets 9 in position to be struck by the tappets 7. By this arrangement it will be obvious that as the shaft 3 is rotated, the rods 16 will be raised and then released, with the result that they will descend by gravity and strike the studs 14. This vibrates the grate and will effectively loosen the material thereon and prevent the formation of any deposits.

From the foregoing taken in connection with the accompanying drawings, the construction, manner of operation and advantages of the improvements will be readily understood, but we will explain that although but one unit or cell of the machine M has been shown and described, the novel features may be employed with machines having any number of cells, in which case the shaft 3 will be elongated and will serve to operate a greater number of rods. Furthermore, although we have shown and described a number of specific details of construction for accomplishing probably the best results, numerous changes may be made within the scope of the invention as claimed without sacrificing the main advantages thereof.

We claim:

The combination with the grate of an ore handling machine; of a rotary line shaft extending horizontally above said grate, a plurality of tappets having sleeves secured at spaced intervals on said shaft, guide brackets including bearing sleeves loosely surrounding said shaft and vertical guide sleeves carried by said bearing sleeves, the latter being interposed between the aforesaid tappets and held against longitudinal movement thereby, and rods slidably mounted in said guide sleeves whereby a vibratory movement will be produced when said tappets engage and disengage said rods.

In testimony whereof we affix our signatures in the presence of two witnesses.

CHARLES F. PIERCE.
SAMUEL C. BYRD.

Witnesses:
JOHN F. WINGFIELD,
MATTIE LESLIE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."