R. W. DULL.

SCREENING APPARATUS.

APPLICATION FILED JUNE 19, 1912.

1,082,855. Patented Dec. 30, 1913.

Fig. 1.

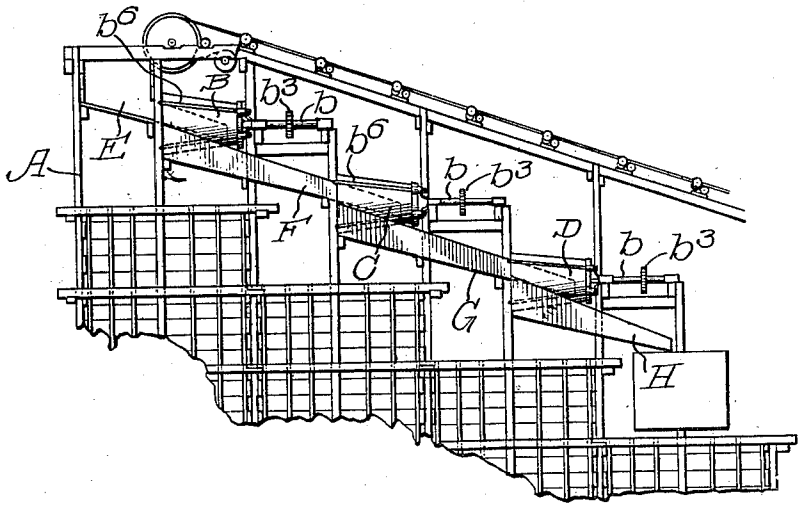


Fig. 2.

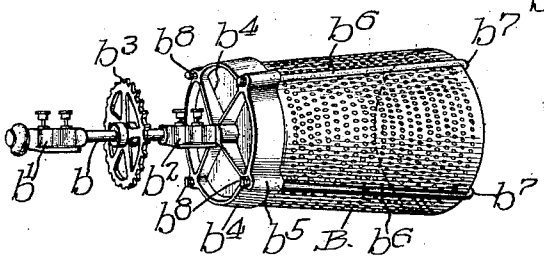
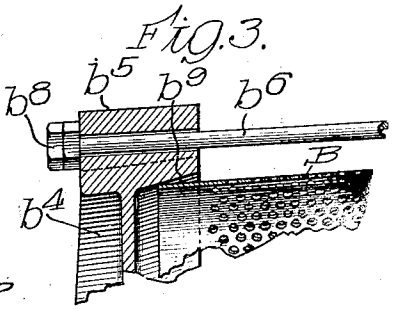


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

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SCREENING APPARATUS.

1,082,855. Specification of Letters Patent. Patented Dec. 30, 1913.

Application filed June 19, 1912. Serial No. 704,603.

To all whom it may concern:

Be it known that I, RAYMOND W. DULL, a citizen of the United States of America, and resident of Aurora, Kane county, Illinois, have invented a certain new and useful Improvement in Screening Apparatus, of which the following is a specification.

My invention relates to screening apparatus of that character in which frusto-conical screens have their truncated ends secured to the ends of shafts which are disposed in position to rotate about horizontally disposed axes which are non-coincident, and in which the fine materials are spouted from one screen to the other, while the coarser materials are discharged from the open mouth of each screen.

The object of my invention is to provide means, in a screening apparatus of this particular class, for removably securing the screen on the shaft thereof, by providing a head secured to the end of the shaft and having means for drawing the screen endwise against the face of the said head, in the direction of the horizontally disposed axis thereof, whereby the screen may be easily and conveniently removed from the supporting structure of the apparatus, for the purpose of repair or substitution, and whereby the removal of the screen and the adjustment of the same or a new one in place may be accomplished without difficulty and by unskilled labor.

To these and other useful ends my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings: Figure 1 is a side elevation, in conventional outline, of a screening apparatus embodying the principles of my invention. Fig. 2 is a perspective of one of the rotary frusto-conical screens shown in Fig. 1. Fig. 3 is an enlarged detail sectional view of a portion of the screen shown in Fig. 2.

As thus illustrated, my invention comprises a framework A upon which the screens B, C and D, are suitably mounted to rotate about horizontal axes. As the said screens are all alike, a description of one will be sufficient.

Referring to Fig. 2, it will be seen that the screen B is of a frusto-conical shape, and that its sides are perforated to screen the materials delivered to the interior thereof. The shaft b is horizontally disposed and supported in suitable bearings b^1 and b^2, a driving sprocket b^3 being applied to said shaft at a point between said bearings. The head b^4 is secured on the end of said shaft and provided with ears or lugs b^5 disposed at regular intervals around the circumference thereof. These lugs or ears b^5 are provided with openings for the longitudinallly disposed rods b^6 that have hooks b^7 at their outer ends for removably engaging the outer edge or perimeter of the screen. The rear ends of the said rods are provided with nuts b^8 that bear against the back of the said head to pull the screen up tight against the face of the head. These fastening devices operate, therefore, in opposition to gravity—that is to say, they are opposed by the weight of the screen, but not directly, as the pull of the rods b^6, and the endwise adjustment of the screen against the head. are in a direction at right angles to the direction of gravity. As stated, though, the weight of the unsupported outer end of the screen is exerted in opposition to the adjusting means by which the screen is drawn endwise against the head. During the rotation of the screen, the bolts or rods b^6 are successively relieved of the strain, as when any particular bolt is directly below the axis of rotation, it does not sustain the downward pull exerted by gravity on the outer end of the screen. Also, and as a matter of further and special improvement, it will be seen that the face of the head has a seat with a bevel b^9 extending around the edge thereof, and that the edge of the screen impinges against the said bevel. In this way the different rods b^6 can be tightened to different degrees to square the screen on the head, it being understood that the small end of the screen will rock around in the said beveled seat to an extent sufficient to bring the true axis of the screen into line with the shaft.

The spouts E, F, G and H receive the fine materials that fall through the perforations in the sides of the screen, it being understood that the screens have perforations of different sizes, whereby the materials, such as sand or gravel, are properly graded. The said spouts, especially the spouts F, G and H, are mounted and arranged for endwise displacement on the frame A, to withdraw them from the screens. Then by a slight adjust-

ment of the rods b^6 the screens can be withdrawn laterally from the frame A, thus facilitating the work of repairing the screens and substituting new ones when necessary.

What I claim as my invention is:—

1. A screening apparatus comprising a horizontally disposed shaft, a head secured on the end of said shaft, a frusto-conical rotary screen disposed with its truncated end at the face of said head, means for supporting and removably connecting the said screen with the head, operative for drawing the screen endwise against the face of the head, in the direction of the horizontally disposed axis thereof, the rotary screen being removably supported by said head, and a spout extending through the outer open end of the screen to deliver the materials at said head, displaceable therefrom to permit lateral removal of the screen from said apparatus.

2. A screening apparatus comprising a horizontally disposed shaft, a head secured on the end of said shaft, a frusto-conical rotary screen disposed with its truncated end at the face of said head, means for supporting and removably connecting the said screen with the head, operative for drawing the screen endwise against the face of the head, in the direction of the horizontally disposed axis thereof, the screen being removably maintained in position to discharge from its larger end, said means including longitudinally disposed threaded members extending through the head and provided at their ends with nuts bearing against the back of said head to pull the screen against the face thereof, and means for feeding the materials to said screen, displaceable therefrom to permit lateral removal of the screen from said apparatus.

3. A screening apparatus comprising a horizontally disposed shaft, a head secured on the end of said shaft, a frusto-conical rotary screen disposed with its truncated end at the face of said head, means for supporting and removably connecting the said screen with the head, operative for drawing the screen endwise against the face of the head, in the direction of the horizontally disposed axis thereof, said means including rods with hooks at one end for removably engaging the outer edge of said screen, and having their other ends threaded and provided with nuts which bear against the back of said head to pull the screen endwise against the face thereof, said hooks holding the rods against rotation.

4. A screening apparatus comprising a horizontally disposed shaft, a head secured on the end of said shaft, a frusto-conical rotary screen disposed with its truncated end at the face of said head, means for supporting and removably connecting the said screen with the head, operative for drawing the screen endwise against the face of the head, in the direction of the horizontally disposed axis thereof, the screen being removably maintained in position to discharge from its larger end, a supporting structure for said apparatus, and a device for feeding the materials to said screen, permitting lateral removal of the screen from said structure by slight adjustment of said means.

5. A screening apparatus comprising a horizontally disposed shaft, a head secured on the end of said shaft, a frusto-conical rotary screen disposed with its truncated end at the face of said head, means for removably connecting the said screen with the head, operative in opposition to gravity for drawing the screen endwise against the face of the head, in the direction of the horizontally disposed axis thereof, a spout extending through the outer open end of the screen to deliver the materials at said head, and a supporting structure upon which said spout is displaceable endwise from the screen to permit lateral removal of the latter from the said structure.

6. A screening apparatus comprising a horizontally disposed shaft, a head secured on the end of said shaft, a frusto-conical rotary screen disposed with its truncated end at the face of said head, in the direction of the horizontally disposed axis thereof, and a spout extending through the outer open end of the screen to deliver the materials at said head, said head having a seat in which the small end of the screen may be rocked by adjustment of said means to center the screen relative to the axis of said shaft.

7. A rotary screening apparatus comprising a rotary truncated screen, a horizontally disposed shaft, a member fixed on said shaft, devices for supporting the screen, adapted for drawing the screen endwise against the said member, with the smaller end of the screen exerting an endwise thrust upon said member, in the direction of the axis of rotation thereof, means for feeding the materials to the screen in such a manner that the portions which do not pass through the sides of the screen escape from one end thereof, permitting lateral removal of the screen, and means for rotating said shaft, which devices permit ready detachment of said screen and lateral removal thereof from said apparatus.

8. A screening apparatus comprising a shaft mounted to rotate about a horizontally disposed axis, a head on said shaft, a frusto-conical screen rotating about said axis, and means for supporting the screen in position, rotating therewith, serving to draw the screen endwise against the said head.

9. A screening apparatus comprising a shaft mounted to rotate about a horizontally disposed axis, a head on said shaft, a frusto-conical screen rotating about said axis, and

means for supporting the screen in position, rotating therewith, serving to draw the screen endwise against the said head, together with a supporting frame work, and means reaching into the screen to deliver the materials thereto, supported on the frame work, displaceable thereon in the direction of the shaft to permit lateral removal of the screen therefrom.

10. A screening apparatus comprising a shaft mounted to rotate about a horizontally disposed axis, a head on said shaft, a frusto-conical screen rotating about said axis, and means for supporting the screen in position, rotating therewith, serving to draw the screen endwise against the said head, together with a supporting frame work, and a trough extending into said screen to deliver the materials thereto, supported on the frame work, displaceable endwise thereon to permit lateral removal of the screen therefrom.

11. A screening apparatus comprising a shaft mounted to rotate about a horizontally disposed axis, a head on said shaft, a frusto-conical screen rotating about said axis, and means for supporting the screen in position, rotating therewith, serving to draw the screen endwise against the said head, said means including bolts which are successively relieved of the strain by the rotation of the screen.

Signed by me at Chicago Illinois this 5th day of June, 1912.

RAYMOND W. DULL.

Witnesses:

E. H. CLEGG,

GEO. F. SCHMIDT.