Oct. 18, 1932. D. A. WEBER 1,883,186

APPARATUS FOR SCREENING MATERIALS

Filed Oct. 20, 1928

Fig. 1.

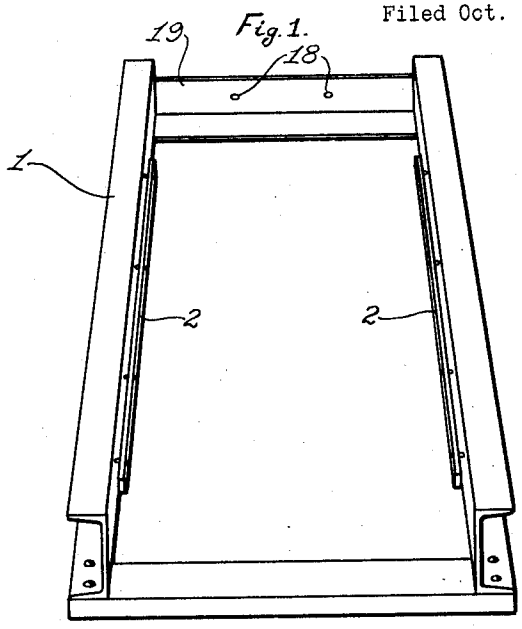


Fig. 2.

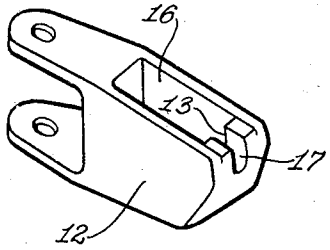


Fig. 3.

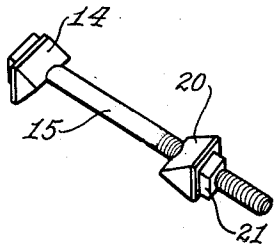


Fig. 4.

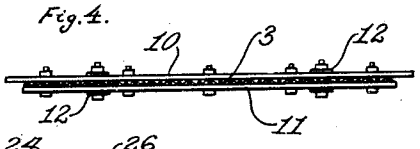


Fig. 5.

Fig. 6.

INVENTOR

BY

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UNITED STATES PATENT OFFICE

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APPARATUS FOR SCREENING MATERIALS

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This invention pertains to screening apparatus such as is used for screening granular materials in grading the same to various sizes and the like.

In that type of screening apparatus in which a screen cloth is stretched on a frame and vibrated while the material operated upon is passed over the vibrating screen, it is usually a rather difficult matter to renew the screen cloth when worn. This is due to the fact that the cloth is usually stretched on a frame in such a manner that the entire frame must be removed in order to remove the cloth. As the driving mechanism which vibrates the screen cloth is usually mounted on a bridge spanning the frame, the same must be removed endwise and a considerable amount of floor space must be left free in order to allow for such removal.

One of the objects of this invention, therefore, is to provide a construction which will permit the removal of a worn screen cloth in a simple manner and in a short time.

Another object is to provide improved means for supporting and tensioning the screen cloth.

Another object is to provide means for temporarily supporting the screen cloth when the latter has been disconnected from the frame and to guide the same during its removal so as to prevent its sagging and becoming snagged on other parts of the apparatus.

Further objects will appear from the following description taken in connection with the accompanying drawing, in which

Fig. 1 is a perspective view of the frame of a screening apparatus embodying this invention;

Fig. 2 is a perspective detail of the suspension bracket;

Fig. 3 is a perspective view of the tensioning link or bolt;

Fig. 4 is a section on line 4—4, Fig. 5;

Fig. 5 is a perspective view of a screen cloth assembly constructed in accordance with this invention; and

Fig. 6 is a section on line 6—6, Fig. 5.

Referring to the drawing 1 designates the frame of a screening apparatus which may be of any suitable construction. Mounted on each side of the frame 1 on the inside thereof is a rail 2. The rail 2 may be constructed of a strip of bar iron or other suitable material secured to the side member of the frame 1 and suitably spaced therefrom, to allow passing of undersize material and prevent the building up and clogging of undersize material between these rails and the screen jacket.

The screening cloth 3 is secured at its lower end between a pair of clamping plates 4 and 5. Mounted at each end of the plate 5 is a block 6 provided at its upper end with a knife edge 7.

The upper end of the screening cloth 3 is clamped between a pair of clamping plates 10 and 11. Pivoted at intervals to the plates 10 and 11 are brackets 12, each of which is provided with a bearing socket 13. The socket 13 has the form of a notch adapted to receive a sharp edged bearing member 14 mounted on a bolt 15. The member 14 is engaged with the socket 13 by simply hooking the same into said socket, the block 14 being passed into the side entrance opening 16 in the bracket 12 and the bolt 15 entering the slot 17 in said bracket.

In mounting the screening cloth in the frame 1 the bolts 15 are first passed through openings 18 in the upper cross member of the frame 1. A second sharp edged bearing block 20 is then slipped into each bolt on the outside of the member 19 and secured to an adjusting nut 21. The screening cloth is then placed in the frame with the blocks 6 engaging the end of the side members of the frame 1 and the bearing members 14 are then hooked into the brackets 12, after which the nuts 21 may be tightened up to provide the desired tension on the screening cloth. When so mounted the screening cloth is stretched between knife edges. Sharp edged bearings are provided at the blocks 6 and also at the blocks 14 and 20. The bolts 15 are thus arranged to provide loose links having sharp edged bearing members at both ends thereof. These links may, therefore, hinge freely with the vibration of the cloth 3.

The plate 10 is made slightly longer than

the width of the screening cloth 3 so that its ends 22 will project beyond the edges thereof in a position to engage and rest upon the rails 2. These ends thus provide supporting clips adapted to slide on said rails. In order to vibrate the screening cloth 3, the same is ordinarily equipped with a cross bar 23 near its middle point having the bracket 24 adapted for connection to the vibrating mechanism. The bar 23 may be equipped with a reinforcing metal strip 25. In accordance with the present invention, the strip 25 may have its ends 26 extended beyond the edges of the screening cloth to provide clips in the manner described for the ends 22 adapted to slide on the rails 2.

It will be seen that this construction provides for removing the screening cloth in a simple and convenient manner. When the tension is relieved by backing off the nuts 21, the cloth will not sag but will simply be let down until the clips 22 and 26 rest upon the rails 2. During normal suspension these clips are clear of the rails even during vibration. When the tension has been completely relieved the blocks 14 may be unhooked from the brackets 12. The screening cloth may now be slid downwardly along the rails 2 in order to remove the same. During this operation the cloth may be curled upwardly at its lower end so as to avoid interference with exterior objects close to the lower end of the frame. The cloth may in fact be removed by thus rolling it up within the dimensions of the frame itself except perhaps in the case of extremely heavy cloth.

It will be seen, therefore, that by this construction a worn screen cloth may be removed by a few simple operations, so that little time or effort is required therefor, and on account of the fact that it is supported after the tension is relieved the cloth may be removed without danger of snagging and without requiring a great deal of room at the lower end of the frame. Accordingly the time during which the screening apparatus is out of service for the purpose of renewing the screening cloth is reduced to a minimum.

It will be understood, of course, that certain features of the invention may be used without reference to other features thereof, and that the use of such sub-combinations is contemplated by this invention. It is, furthermore, obvious that various changes may be made in the details of construction and operation within the scope of the appended claims without departing from the spirit of this invention. It is, therefore, to be understood that this invention is not to be limited to the specific details and operations described.

Having thus described the invention, what is claimed is:

1. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, means for suspending said cloth on said frame including a bracket having a bearing socket provided with a side entrance way, and a tension element having a sharp edged bearing member formed to hook into said socket.

2. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, means for suspending said cloth on said frame including a bracket having a bearing socket, and a link having a sharp edged bearing member at each end thereof, one of said members being formed to hook into said socket.

3. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, means for suspending said cloth on said frame including a bracket having a bearing socket, a link having a sharp edged bearing member at each end thereof, one of said members being formed to hook into said socket, and means for adjusting the length of said link in order to adjust the tension of said cloth.

4. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, means for suspending said cloth on said frame adapted for dismounting by unhooking the same, rails on said frame, and a strip secured to said cloth transversely thereof and extending beyond the edges thereof so as to engage said rails when said cloth is unhooked in order to support said cloth.

5. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, means for suspending said cloth on said frame adapted for dismounting by unhooking the same, rails on said frame, and a plurality of strips spaced along and secured to said cloth transversely thereof extending beyond the edges thereof so as to engage said rails when said cloth is unhooked in order to support said cloth at a plurality of points therealong.

6. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, means for suspending said cloth on said frame including a pair of mutually engageable and disengageable suspension elements having a sharp edged bearing with one another, said elements having mutually interlocking forms adapted for engagement by hooking action, and means for supporting said cloth on said frame when disengaged so as to be movable endwise of the frame for removing said cloth.

7. In a screening apparatus of the character described, a supporting frame, a screen

cloth adapted for suspension on said frame, means for suspending said cloth on said frame, including a bracket on said screen cloth having a bearing socket, a tension element having a sharp edged bearing member formed to hook into said socket, a rail on said frame, and a clip on the edge of said cloth arranged to be slidably supported on said rail when said cloth is unhooked.

8. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, means for suspending said cloth on said frame, including a bracket on said screen cloth having a bearing socket, a link having a sharp edged bearing member at each end thereof, one of said members being formed to hook into said socket, a rail on said frame, and a clip on the edge of said cloth arranged to be slidably supported on said rail when said cloth is unhooked.

9. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, means for suspending said cloth on said frame, including a pair of mutually engageable and disengageable suspension elements having a sharp edged bearing with one another, the engagement of such elements being effected by hooking action, a rail on said frame, and a strip secured to said cloth transversely thereof and extending beyond the edges thereof so as to engage said rail when said cloth is unhooked in order to support said cloth.

10. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, means for suspending said cloth on said frame including a bracket having a bearing socket, a link having a sharp edged bearing member at each end thereof, one of said members being formed to hook into said socket, means for adjusting the length of said link in order to adjust the tension of said cloth, a rail on said frame, and a plurality of strips spaced along and secured to said cloth transversely thereof and extending beyond the edges thereof so as to engage said rail when said cloth is unhooked in order to support said cloth.

11. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, and means for suspending said cloth on said frame including a bracket on said screen cloth having a bearing socket, and a tension element having an elongated sharp-edged bearing directed along said cloth, said socket and tension members having mutually interlocking forms adapted for hooking engagement and disengagement with one another.

12. In a screening apparatus of the character described, a supporting frame, a screen cloth adapted for suspension on said frame, and means for suspending said cloth on said frame including a bracket on said screen cloth having a bearing socket, and a tension element having a sharp-edged bearing at each end thereof, one of which bearings is adapted to engage said socket and the other said frame.

In testimony whereof I affix my signature this 10th day of September 1928.

DON A. WEBER.