

June 24, 1941.

R. BARLOW

2,247,271

SCREEN AND MEANS FOR PREVENTING BLINDING THEREOF

Filed Jan. 6, 1940

2 Sheets-Sheet 1

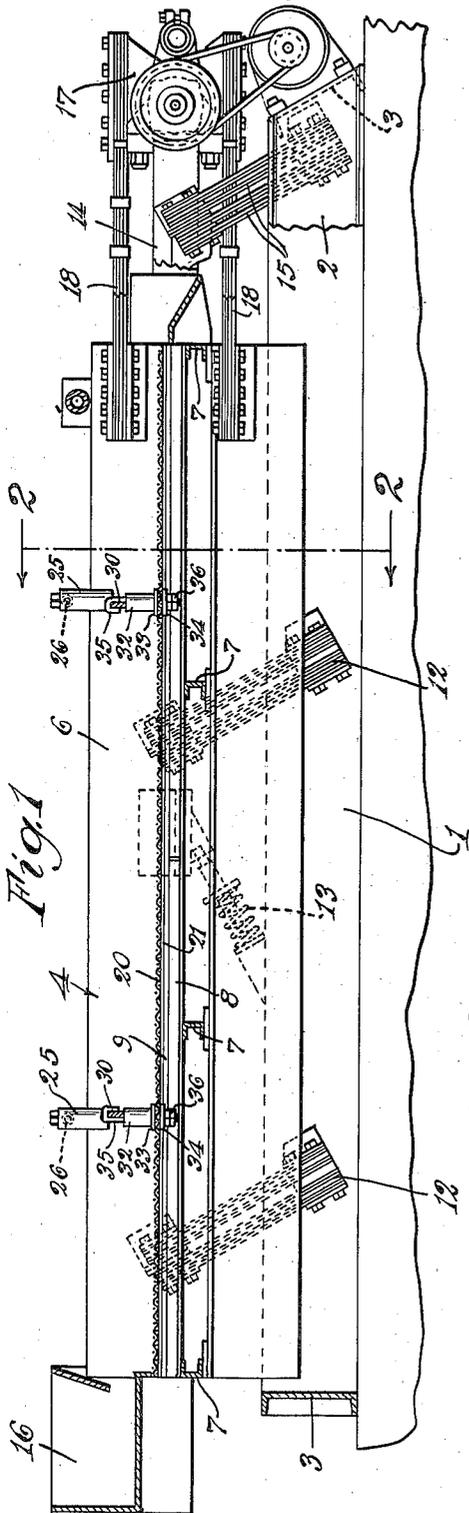


Fig. 1

Fig. 4

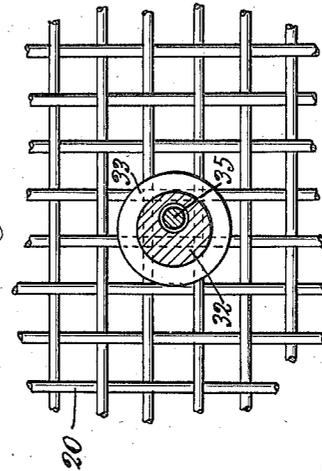


Fig. 3

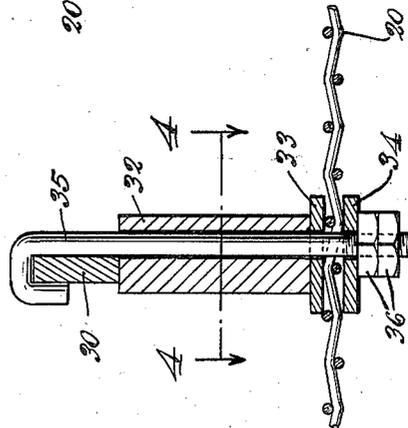
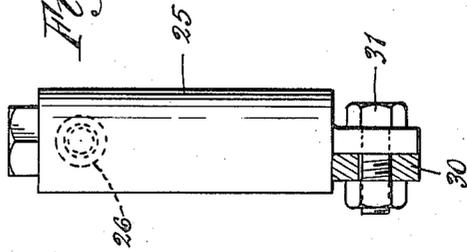


Fig. 5



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2 Sheets-Sheet 2

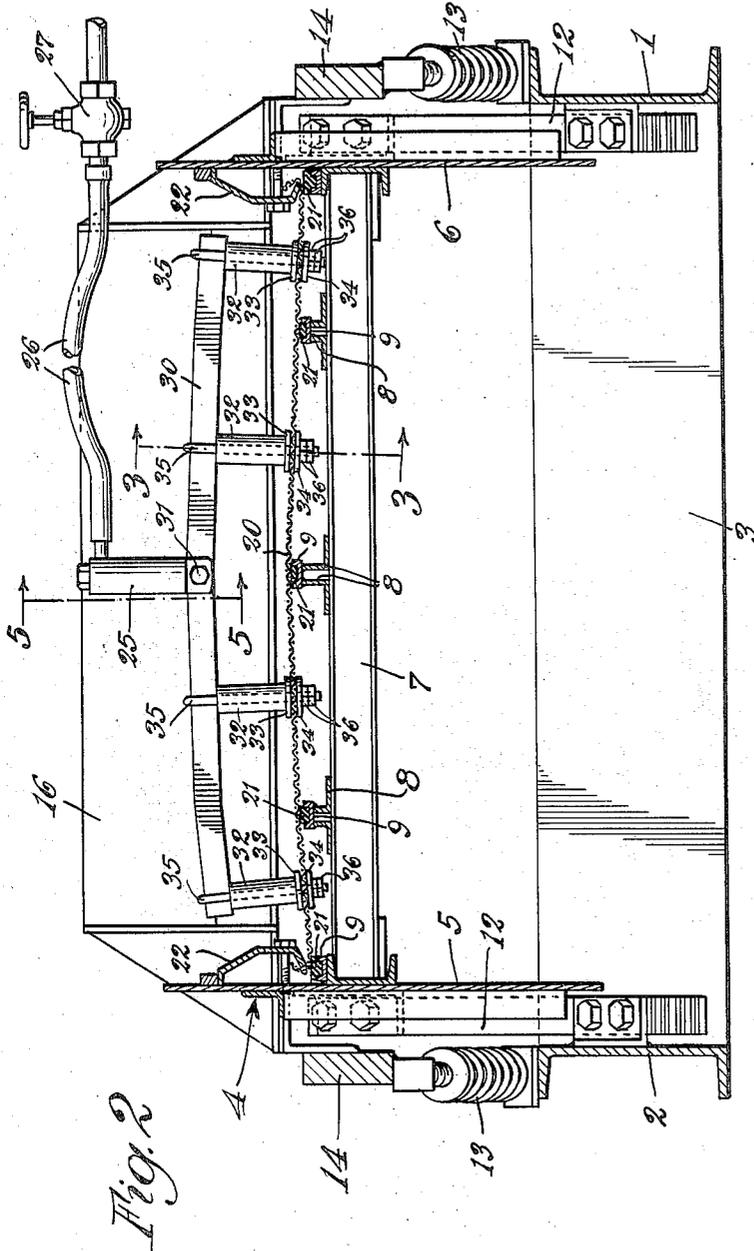


Fig. 2

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UNITED STATES PATENT OFFICE

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SCREEN AND MEANS FOR PREVENTING BLINDING THEREOF

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Application January 6, 1940, Serial No. 312,669

3 Claims. (Cl. 209—310)

My invention relates to an improvement in screens and has for one purpose the provision of means for preventing the blinding of screen mesh.

Another purpose is the provision of means for independently vibrating the mesh of a vibrated screen, whereby, in addition to the normal conveying and separating vibration of the screen, an additional cleansing or anti-blinding vibration may be imparted to the mesh.

Other purposes will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings wherein:

Fig. 1 is a longitudinal section;

Fig. 2 is a section on an enlarged scale on the line 2—2 of Fig. 1;

Fig. 3 is a section on an enlarged scale on the line 3—3 of Fig. 2;

Fig. 4 is a section on an enlarged scale on the line 4—4 of Fig. 3; and

Fig. 5 is a section on an enlarged scale on the line 5—5 of Fig. 2.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring to the drawings, 1, 2 indicate longitudinally extending, generally parallel base frame members, which may be connected by one or more transverse connecting members 3. 4 generally indicates a screen deck, the details of which do not of themselves form part of the present invention. The deck, however, may include side plates 5, 6, transversely extending supports 7, longitudinally extending frame members 8, and upwardly open channels 9 extending longitudinally along the deck.

The deck as a whole may be mounted on the base by any suitable flexible leaf spring structures 12, the details of which do not form part of the present invention. Spring means 13 may be employed tending to hold the deck structure at a predetermined neutral position, with the springs 12 unflexed. Side weight bars 14 are illustrated as mounted on similarly inclined leaf springs 15. It will be understood that the bars 14 extend from end to end of the base and that any suitable feed member 16 may be mounted upon the bars.

Also mounted upon the ends of the bars at the right end, when the parts are in the position of Fig. 1, is any suitable vibrating element, the details of which do not form part of the present invention, but which is indicated diagrammatically as at 17. The vibrating element may be connected to the deck as by horizontally extending leaf springs 18.

The description of the particular screen shown will be understood as merely illustrative, since the present invention may be applied to any one of a number of screens and is not dependent upon the details of the particular screen employed or on the means employed for vibrating the screen or screen deck. It will be understood, however, that some suitable mesh or screen cloth 20 is properly stretched upon a screen deck and is herein shown as resting upon the tops of rubber strips or members 21 mounted in the channels 9. Any suitable clamping means 22 may be employed for transversely tensioning the mesh 20, and similarly, any suitable end tensioning means not herein shown may be employed.

Secured to or mounted upon the mesh itself is an additional vibrating structure. I illustrate diagrammatically for example any suitable pneumatic vibrator, the details of which are not illustrated but which is shown at 25. It may be connected as by any suitable flexible conduit 26, with a supply of fluctuating pneumatic pressure. Any suitable valve 27 may be employed between the source of pressure and the vibrator 25. It will be understood that, in response to the supply of pressure, the vibrator 25 is caused to vibrate, and with it to vibrate any parts attached thereto.

It will be understood that, whereas I have illustrated two of said vibrators, as in Fig. 1, a larger or a smaller number may be employed, depending upon the length or area of the screen and the service for which the screen is employed.

In order to transmit the vibration of the vibrator 25 to the screen mesh I illustrate a transversely extending member 30, secured to each said vibrator, as at 31. It may be secured to the mesh itself by the intermediary of spacing sleeves 32 and washers 33, 34, engaging the upper and lower faces of the screen mesh 20. Any suitable securing means, such as the hook bolt 35, with its nuts 36, may be employed to hold the member 30 against the upper ends of the sleeves 32, and also to lock the lower ends of the sleeves 32 to the mesh. Thus when a vibrator 25 is vibrated, the vibration is transmitted to the mesh 20 itself. This vibration has no conveying effect on the material going over the screen and is in addition to the normal vibration of the screen which is obtained by rotation of the vibrating member 17 above alluded to. Since the conduits or pipes 26 are flexible, the normal screening vibration of the screen is not interfered with by the connections between the source of pneumatic pressure and the vibrators 25.

It will be realized that whereas I have de-

scribed and illustrated a practical and operative device, nevertheless many changes may be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting me to my precise showing.

The use and operation of my invention are as follows:

In screening, and particularly wet screening, the screen mesh not infrequently tends to blind. This blinding may result from the application of sticky material to the screen, or it may result from the shapes of the particles. A frequent cause of blinding is the passage of wedge-shaped or cone-shaped particles or slivers across the screen. A particle which is long and narrow, and which may have for example a sharp point, may become wedged in an aperture in the mesh and stay there.

The conveying vibration, it will be understood, is at a substantial angle from the vertical and may, in fact, be almost or entirely horizontal in some types of screens at some part of the screen surface.

The pneumatic vibrator above described may be employed to impart to the mesh itself, in addition to the screening vibration, a generally vertical vibration, which causes the particles to dance on the screen mesh and which in practice proves highly effective in preventing the mesh from blinding, or in freeing blinded mesh from blinding particles. This additional vibration may be constantly applied, or it may be intermittently applied when conditions call for it.

It will be understood also that a pneumatic or supplemental vibrator may be employed to subject the mesh to vibration at a substantial angle to the vibration imparted to the deck by the

main deck vibrating means, and also at a different frequency. Preferably the vibrations are of higher frequency. The additional vibrator may be employed intermittently to clear the screen, or, if desired, it may be employed continuously or substantially continuously in order to increase the screening capacity of the screen.

I claim:

1. In a screen structure, a screen deck and means for imparting a screening vibration thereto, screen mesh on said deck, and additional means for imparting an additional vibration to said mesh, said additional means including a pneumatic vibrator and means for actuating it, said pneumatic vibrator being supported upon the screen mesh.

2. In a screen structure, a screen deck and means for imparting a screening vibration thereto, screen mesh on said deck, said screen including mesh supporting members extending beneath said mesh, and additional means for imparting an additional vibration to the mesh, including a pneumatic vibrator supported on and connected to the mesh itself in an unsupported mesh area, a source of pneumatic pressure, and a flexible actuating connection between said source and said vibrator.

3. In a screen structure, a screen deck and means for imparting a screening vibration thereto, screen mesh on said deck, said screen including mesh supporting members extending beneath said mesh, and additional means for imparting an additional vibration to the mesh, including a frame secured directly to unsupported portions of the mesh at a plurality of points, a pneumatic vibrator mounted on said frame, a source of pneumatic pressure, and a flexible actuating connection between said source and said vibrator.

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