

July 27, 1937.

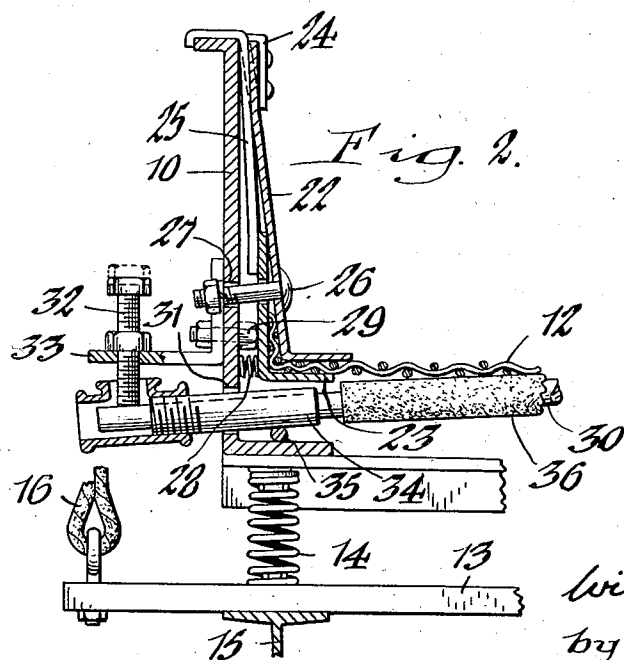
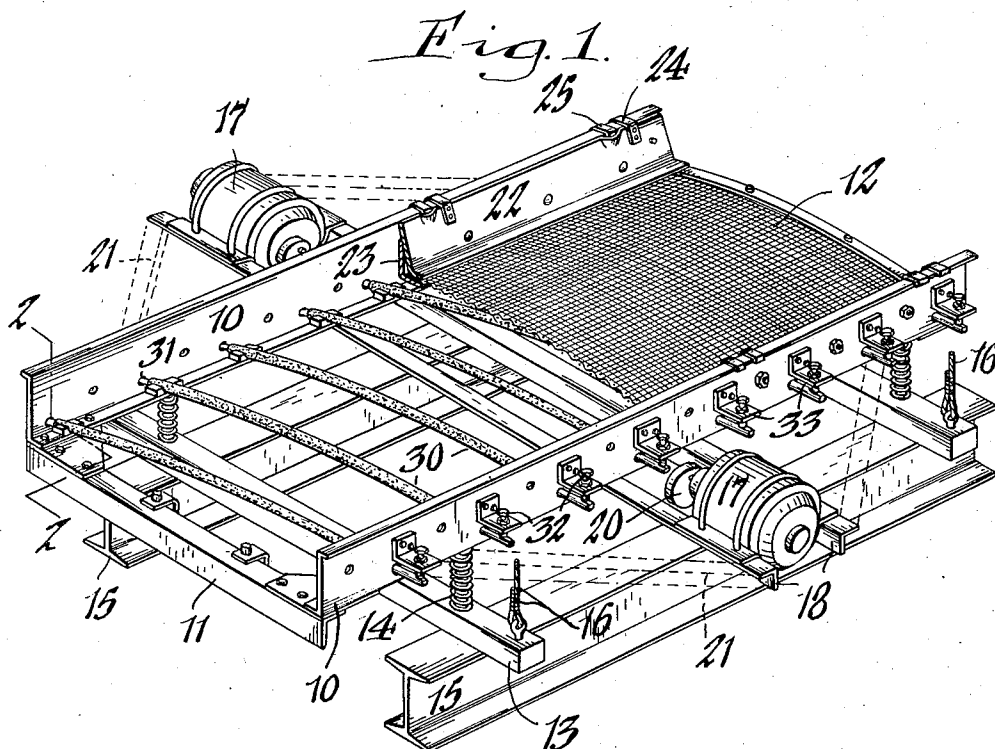
W. L. WETTLAUFER

2,088,313

SCREENING MACHINE

Filed Jan. 26, 1934

3 Sheets-Sheet 1



Inventor,  
William L. Wettlauffer,  
by Walter P. Geier  
Attorney

July 27, 1937.

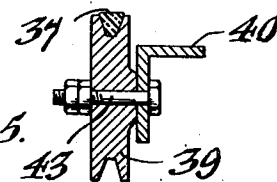
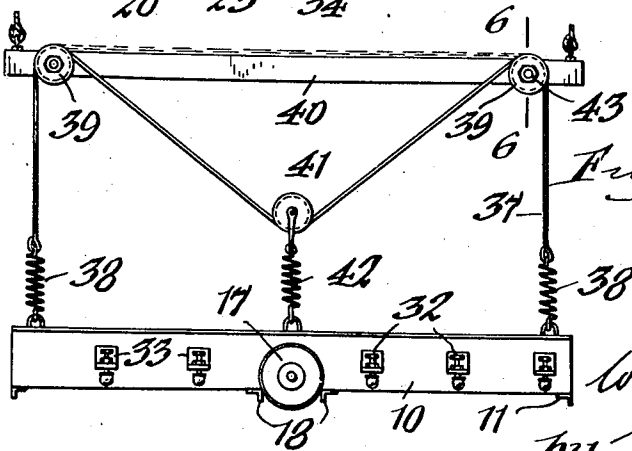
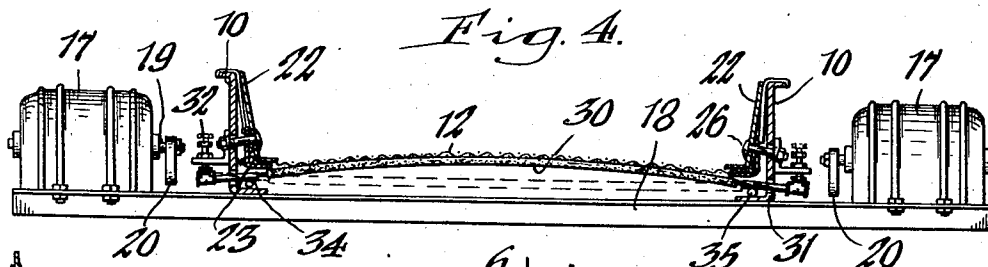
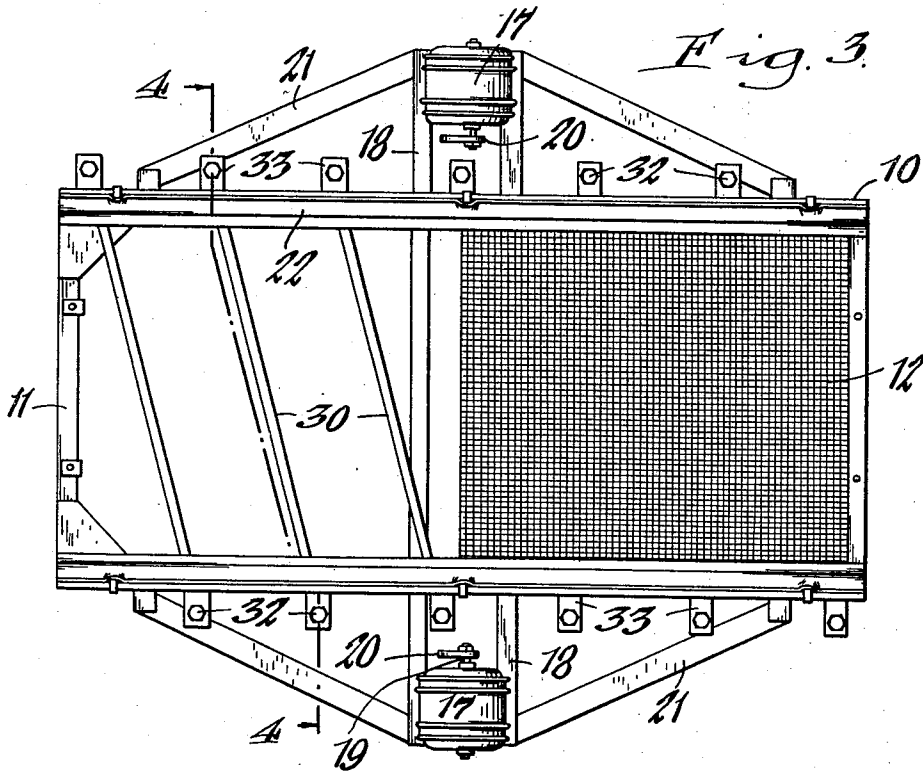
W. L. WETTLAUFER

2,088,313

SCREENING MACHINE

Filed Jan. 26, 1934

3 Sheets-Sheet 2



Inventor,  
William L. Wettlauffer,  
by Walter P. Geyer  
Attorney.

July 27, 1937.

W. L. WETTLAUFER

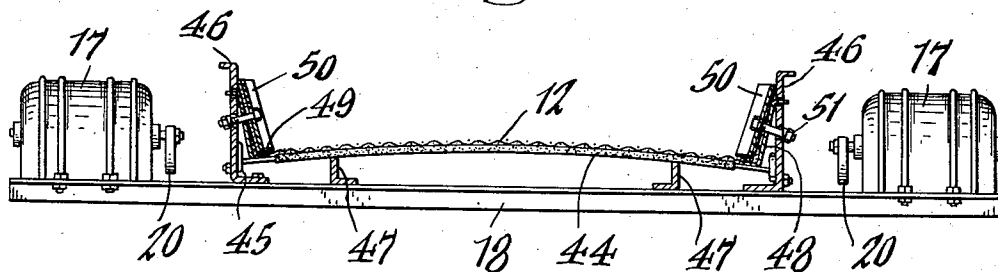
2,088,313

SCREENING MACHINE

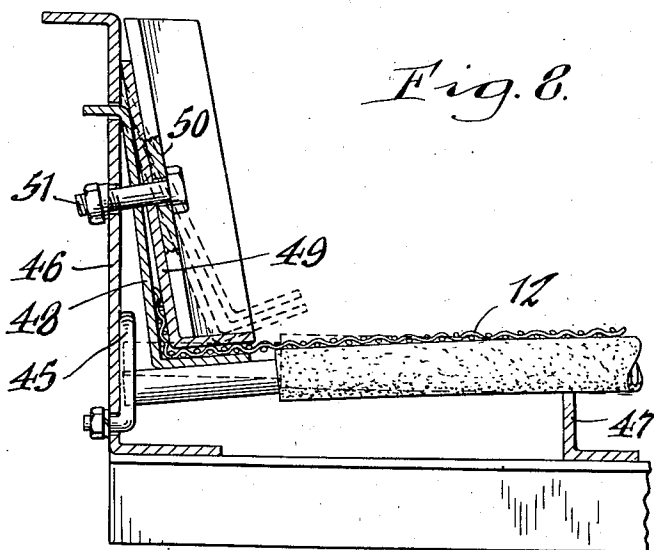
Filed Jan. 26, 1934

3 Sheets-Sheet 3

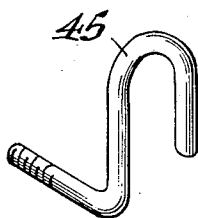
*Fig. 7.*



*Fig. 8.*



*Fig. 9.*



Inventor,  
William L. Wettlauffer,  
by Walter P. Geyer  
Attorney.

## UNITED STATES PATENT OFFICE

2,088,313

## SCREENING MACHINE

William L. Wettlaufer, Buffalo, N. Y., assignor to  
The W. S. Tyler Company, Cleveland, Ohio, a  
corporation of Ohio

Application January 26, 1934, Serial No. 708,451

8 Claims. (Cl. 209—403)

This invention relates to certain new and useful improvements in vibrating apparatus or screening machines.

It has for one of its objects to provide an efficient and inexpensive machine of this character having simple and reliable means for effecting the vibration of the machine at a minimum expenditure of power.

Another object of the invention is to provide a yieldably suspended screening machine having individual vibration-producing units applied to the opposite sides of the screen frame.

A further object of the machine is to provide means for connecting the screen clothing to the machine frame in combination with means for effectually supporting or holding and exerting a tension upon and sustaining the screen cloth in a somewhat cambered firm, taut condition to vibrate in unison with the vibrated screen frame.

A still further object of the invention is the provision of simple and readily adjustable means for permitting any desired angular disposition of the screen frame relative to the horizontal.

Other features of the invention reside in the structure and arrangement of parts hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings:—

Figure 1 is a perspective view of a screening machine embodying my invention. Figure 2 is an enlarged fragmentary cross section taken in the plane of line 2—2, Figure 1. Figure 3 is a top plan view thereof. Figure 4 is a cross section taken on line 4—4, Figure 3. Figure 5 is a side elevation of a suspension means for the machine. Figure 6 is an enlarged cross section taken on line 6—6, Figure 5. Figure 7 is a cross section of the screening machine showing a modification of the means for holding and stretching the screen cloth. Figure 8 is an enlarged fragmentary cross section thereof similar to Figure 2. Figure 9 is a detached perspective view of one of the end-guides for the screen cloth supporting rods.

Similar characters of reference indicate corresponding parts throughout the several views.

Referring now to the drawings, the screening machine comprises a frame suspended in any suitable manner for vibratory movement and consisting of longitudinal side members 10, transverse end members 11, and screen clothing 12 of wire mesh or the like for separating or grading materials. This frame may be yieldingly supported from the floor or from overhead through the medium of cross beams 13 and coil springs

14 or the like interposed between the frame and the cross beams. If a floor mounting is desired, the cross beams 13 may be connected to I-beams 15 or like supports, and if an overhead suspension is desired said cross beams may be suspended from cables 16 or the like.

The screen frame is vibrated by a plurality of individual vibration-producing units supported thereon at opposite sides thereof. Each of these units preferably consists of an electric motor 17 secured to suitable supports 18 projecting laterally from the frame and having fixed to the shaft 19 thereof an eccentrically disposed body or weight 20, the rotating movements of which produce vibrations which are transmitted to the screen frame and its screening surface 12. While two of these vibrating units have been shown in the drawings disposed substantially centrally of the screen frame, it is to be understood that any number may be employed at different points along the frame depending on the size or capacity of the screening machine. In order to effect a uniform distribution of the vibrating impulses over the entire screen deck 12, I provide vibration-transmitting members 21 connecting the motor supports 18 with the frame members 10, 11.

At opposite sides of the screen frame are provided means for detachably securing the screen clothing 12 thereto and for drawing or stretching the same in a taut condition transversely of the frame. In its preferred construction shown in the drawings, these means consist of relatively adjustable clamping members in the form of overlying or interfitted angle-shaped plates 22 and 23 disposed on the opposing inner faces of the frame side members 10 and between the base or jaw portions of which the longitudinal marginal edges of the screen clothing are firmly secured. The inner plate 22 overlies the outer plate 23 and is connected at its upper end to the corresponding side member 10 by straps 24, while its lower end is free for displacement toward and from such side member to draw or release the tension on the screen clothing. The companion outer plate 23 is disposed between the frame side member and the inner plate 22 and is suspended from the former by straps 25 or the like for movement with or relative to the plate 22. Adjustment of the plates toward the side members 10 to stretch the screen clothing is accomplished by any suitable means, that shown in the drawings, by way of example, consisting of bolts 26 passing through openings in said plates and through like openings 27 in the side members 10

of the frame. Coil springs 28 interposed between the latter and the outer plate 23 serve to constantly urge said plate into screen-clamping relation to the companion plate 22. One or more abutments 29 are provided for arresting the outward bodily displacement of the plates to thereby limit the degree of stretching of the screen clothing 12.

Between its marginal edges the screen clothing is supported on rods 30 disposed transversely of the frame 10, 11 and so mounted as to be sprung to a bowed or upwardly arched position against the underside of the clothing to further stretch it and to camber it crosswise of the frame. These rods are preferably disposed in substantially parallel relation diagonally of the frame with one end of each rod being approximately opposite the other end of an adjoining rod in the manner shown in Figure 3, whereby the screen clothing has a practically continuous transverse support from end to end of the frame. At their ends the rods 30 extend through corresponding alining openings 31 located in the side members 10 in a plane below the jaw portions of the screen-attaching plates 22, 23. The means for bowing each of the rods upwardly consist of adjusting bolts 32 mounted on brackets 33 secured to the outer faces of the side members 10 and bearing at their lower ends against the top sides of the extended portions of the rods in the manner shown in Figure 2. Upon screwing the bolts downwardly the rods are bowed upwardly intermediate their ends until the desired camber and tension on the screen clothing has been reached. If desired, the extended portions of the rods 30 may have sleeves 34 thereon which bear inwardly of the side members 10 on bearing members 35 secured to the latter. Furthermore, the screen-engaging portions of the rods may be provided with covers 36 of rubber or like material to thereby provide a cushioned support for the screen clothing.

In Figure 5 I have shown an overhead suspension for the screen frame, wherein the latter is hung at its opposite sides from cables 37 or the like which are connected at their free ends to suspension springs 38 applied to the frame. Intermediate its ends, each cable passes over pulleys 39 mounted on an overhead support 40 and also under a third pulley 41 connected to a suspension spring 42 rising substantially centrally from the screen frame. Either one or both of the pulleys 39 is adjustably fixed to the support 40, whereby the screen frame 10 may be set at any desired inclination. Bolts 43 serve to support and clamp the pulleys 39 against turning after a given adjustment has been made.

In the modified form of the invention shown in Figures 7, 8 and 9, the screen-clothing 12 is rendered taut and cambered by means consisting of supporting rods 44 disposed generally transversely of the screen-frame and held at their ends against displacement lengthwise of the frame by substantially U-shaped clips or guides 45 secured to the inner faces of the side plates 46. Intermediate their ends these rods are supported on one or more longitudinal fulcrum bars 47. Applied to the inner faces of the side plates are screen-gripping, angle plates 48, 49 which are adjustable laterally of the screen-frame to release or stretch the screen clothing. The base flanges of the outer plates 48 are adapted to bear against the top sides of the adjoining ends of the rods 44 to exert a downward pressure thereon and bow the rods in the manner seen in Figures

7 and 8. For this purpose, the plates 48, 49 are suspended from their upper ends on the side plates 46 so as to swing downwardly and outwardly, upright draw bars 50 engaging the inner plates 49 and serving through the medium of adjusting bolts 51 to move said plates bodily outward from the position shown by dotted lines in Figure 8 to that shown by full lines in the same figure to not only stretch the screen cloth and render it taut but at the same time give a camber to it crosswise of the frame.

I claim as my invention:—

1. A shaking screen, comprising a frame, a screening surface thereon, flexible, self-supporting members beneath the screening surface, and means for bowing said members in engagement with said screening surface to stretch and camber the same.

2. A shaking screen, comprising a frame, a screen deck thereon, flexible self-supporting members on said frame beneath the deck, and means engaging said members adjacent the ends thereof for bowing them upwardly against the underside of said deck to camber it.

3. A shaking screen, comprising a frame having openings in its opposite sides, a screen deck thereon, supporting rods on said frame beneath the deck and extending through said frame-openings, and adjustable means mounted on said frame for exerting a pressure on the extended ends of said rods for bowing them upwardly against the underside of said deck to stretch and camber it.

4. A shaking screen, comprising a frame, a screen deck thereon, flexible transverse self-supporting members on said frame beneath said deck and disposed diagonally of said frame to support the deck transversely from end to end thereof, and means for bowing said flexible supporting members upwardly to stretch and camber the screen deck.

5. A shaking screen, comprising a frame including screen clothing, draw plates mounted on opposite sides of said frame and having means thereon for securing the corresponding marginal edges of the screen clothing thereto, means for adjusting said plates to stretch the screen clothing, flexible self-supporting members on said frame beneath said clothing, and means for flexing said members upwardly to further stretch and camber the screen clothing.

6. A shaking screen, comprising a frame including screen clothing, draw plates mounted on opposite sides of said frame and having means thereon for securing the corresponding marginal edges of the screen clothing thereto, means for adjusting said plates to stretch the screen clothing, flexible self-supporting members mounted on said frame beneath said clothing, and adjustable means applied to the frame and engaging opposite ends of said members for exerting a pressure thereon to flex them upwardly against the underside of the screen clothing to further stretch and camber it.

7. A shaking screen, comprising a frame including screen clothing, draw plates mounted on opposite sides of said frame and having means thereon for securing the corresponding marginal edges of the screen clothing thereto, means for adjusting said plates to stretch the screen clothing, said frame having openings in its opposite sides, supporting rods disposed transversely of the frame and extending through said openings, and adjustable means mounted on said frame and engaging the extended ends of said rods for bowing

the rods upwardly against the underside of said clothing to further stretch and camber it.

5 8. A shaking screen, comprising a frame including screen clothing, draw plates mounted for swinging movement on opposite sides of said frame and having means thereon for securing the corresponding marginal edges of the screen clothing thereto, supporting rods disposed transversely of the frame and capable of being bowed up-

wardly against the underside of the screen clothing to camber it, the lower ends of said draw plates being engageable with the top sides of the corresponding ends of said rods, and means for forcing the draw plates in a direction to stretch the screen clothing and camber the supporting rods. 5

WILLIAM L. WETTLAUER.