

April 2, 1940.

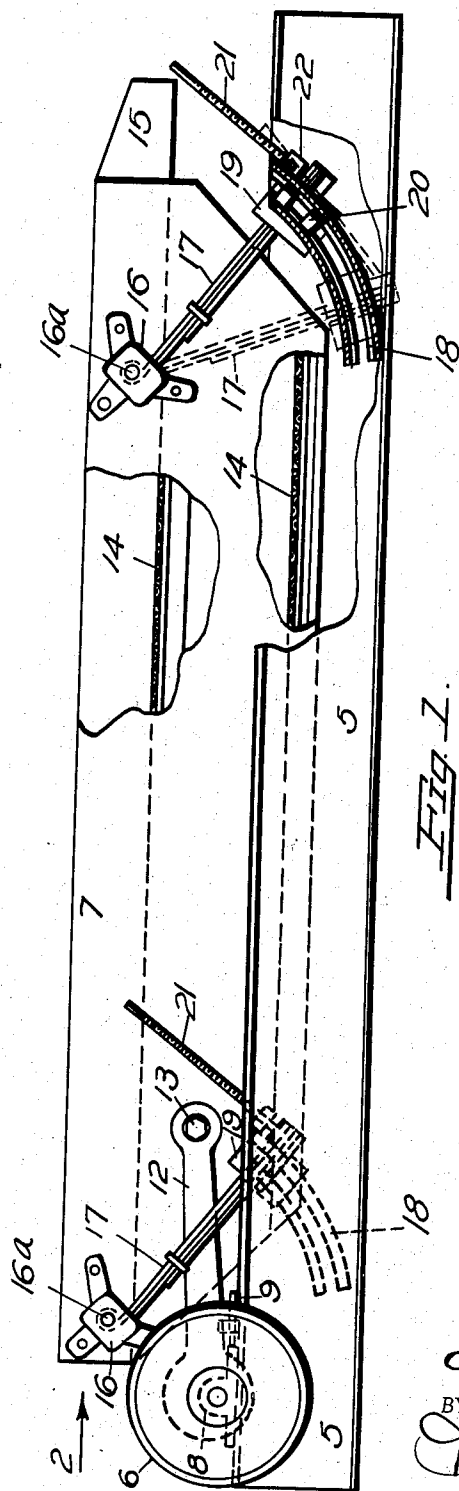
C. V. HALLENBECK

2,195,648

SCREEN

Filed Nov. 30, 1937

2 Sheets-Sheet 1



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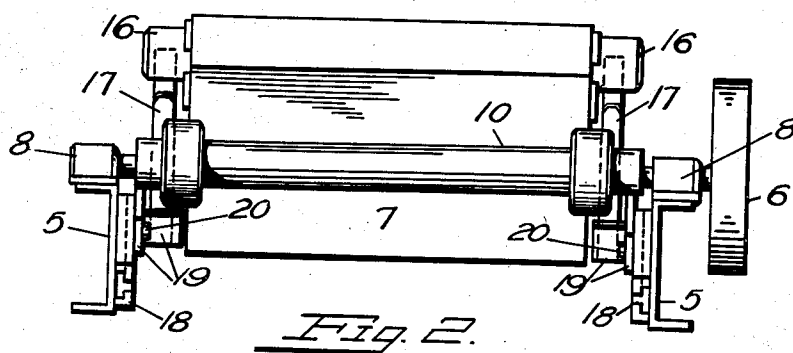
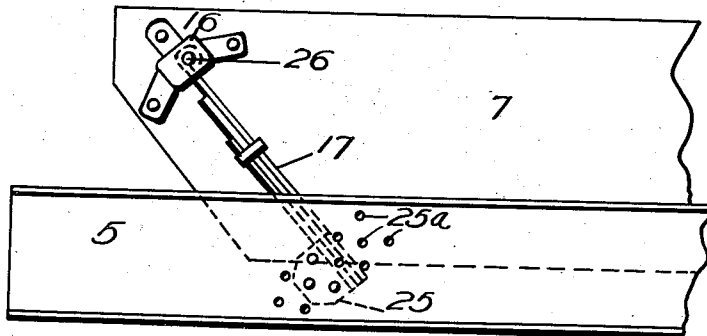
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SCREEN

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,195,648

SCREEN

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Application November 30, 1937, Serial No. 177,245

2 Claims. (Cl. 209-415)

This invention relates to improvements in oscillating sizing screens, particularly of the type disclosed in my Patent No. 1,971,156, issued August 21, 1934.

An object of this invention is to provide a spring-suspended screen element that can be oscillated in variable arcuate paths, the means for varying the paths being novel and highly efficient.

Another object is to provide an inclined oscillatory suspension element for such a screen, that may be rotated about its point of connection with the screen, to selected positions; to vary the angle of inclination of the element while maintaining the screen in its original position.

A further object is the provision of novel means to change the upward component of movement in the arc of oscillation of a sizing screen of this kind.

Other objects and advantages reside in details of design and construction that will be disclosed more fully in the following description and in the drawings wherein like parts are similarly designated and in which:

Figure 1 is a side elevation, partly in section, of a screen assembly built according to this invention;

Figure 2 is an end elevation of the same, looking in the direction of the arrow 2 in Figure 1; and

Figure 3 is a fragmentary elevation of a modified form of the suspension means.

In the drawings, a stationary base element, such as a pair of steel channels, is denoted by reference character 5, upon which is mounted mechanism 6, connected to impart reciprocating movements to a screen element 7.

In the form illustrated, the mechanism 6 includes a pair of pillow blocks 8 that are slidably mounted on the channels 5 and may be slid therealong by abutting set-screws 9. An eccentric shaft 10 is journaled in the bearings 8 and carries a pair of connecting rods 12 that are connected with the screen element 7 at 13.

The screen element 7 comprises a supporting frame and a plurality of screens 14, preferably of different size mesh, so that coarser material can be discharged from a chute 15 while finer material falls to the lower screens, any desired number of which can be provided for as many size-classifications as may be wanted.

The novel features of the present invention reside in the supporting elements, their means for anchorage to the base channels 5, and their means of angular variation.

Brackets 16 are on the screen frame and provide a pivotal attachment at 16a for oscillatory supports such as leaf springs 17 that flexingly support the entire screen element. The lower ends of the springs 17 are fastened to the base channels by means that may be selectively used to vary the angle of the springs, by moving them about their pivotal attaching means on the screen. Thus the stationary position of the screen is not changed by the changing of the angle of the springs since they rotate about their points of attachment to the screen. Therefore the screen element is not moved with reference to its reciprocating mechanism, by the changing of the angle of inclination of springs 17.

In Figures 1 and 2, arcuate undercut channels 18 are illustrated as attached to the inner surfaces of the base channels, to provide anchorage for angle plates 19 that are secured to the springs 17 adjacent their lower ends. Anchor bolts 20, slidably engage in the arcuate undercut channels so that they may be loosened and the angle plates moved to any desired position, whereupon the bolts may be tightened to retain the selected position of the plates and thereby fix the angle of inclination of the springs 17. To facilitate the movement of the angle plates, screws 21 may be provided, that operate through pivotal threaded members or nuts 22, and that engage the lower ends of the movable spring assemblies. The upper ends of the screws may be squared to receive a wrench or handle.

As the screws are turned the springs rotate, as, for instance, one of the spring assemblies illustrated in Figure 1, is shown in dotted lines as it would appear in another position after anchor bolts 20 had been loosened and screw 21 had been advanced to its dotted line position. The bolts serve as the securing means after the screw has been operated to accomplish the movement to the selected position.

Operation

The operation of the improved screen is easily understood. The reciprocating movement of the connecting rods 12 is converted into arcuate oscillatory movement of the screen element by the nature of the spring supports. Preferably the set-screws 9 are used to move the bearings 8 to keep the springs constantly under tension.

The arcuate movement of the screen element contains both a forward and an upward component of motion. The greater the angle of the springs 17 from perpendicular, the more the

upward component will predominate and vice versa.

Thus, the quality and force of the screening action may be selectively varied according to the material being screened and other operating conditions.

The stationary position of the screen is not materially affected by the changing of the angle of the springs, and its connection with the reciprocating mechanism is maintained without readjustment.

Obviously, the reciprocating mechanism could be positioned or connected at either end of the screen element or at any desired intermediate place. If the eccentric shaft is mounted near the center of the screen, a tubular housing may be provided transversely through the screen element, for the shaft, between the screens 14.

In Figure 3, a modified means for selectively changing the position and angle of the springs, is illustrated, wherein a plate 25 supports the spring 17, and is bolted onto the base channel 5. A series of bolt holes, 25a, drilled along arcuate lines, drawn from pivot point 26 as a center, provide selective positions for the anchor bolts and the plate 25.

The means shown and described for varying the position and angle of the supporting springs along an arcuate path, are disclosed as examples of any means for effectively positioning the springs according to this invention. Obviously, other equivalent mechanical arrangements could be used for the purpose without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent is:

1. In gravity screening apparatus inclusive of a screen, means for reciprocating the screen, and a base, the improvement which comprises resilient supports for the screen pivotally attached thereto adjacent opposite ends thereof and extending downwardly therefrom, means on the base below said pivotal attachments and below said reciprocating means, for holding the lower ends of said supports in selected angular positions about their respective pivotal axes as centers and independent of the position of the screen, the supports being positioned to guide said screen in convex arcuate paths of oscillatory reciprocation, and screws mounted in threaded nuts pivotally mounted on said base, for moving the respective supports to selected angular positions.

2. In gravity screening apparatus inclusive of a screen, means for reciprocating the screen, and a base, the improvement which comprises resilient supports for the screen pivotally attached thereto adjacent opposite ends thereof and extending downwardly therefrom, means inclusive of arcuate channels on the base below said pivotal attachments and below said reciprocating means, for holding the lower ends of said supports in selected angular positions about their respective axes as centers and independent of the position of the screen, the supports being positioned to guide said screen in convex arcuate paths of oscillatory reciprocation, and screws mounted in threaded nuts pivotally mounted on said base, for moving the respective supports to selected angular positions.

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