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HORIZONTAL VIBRATING SCREEN

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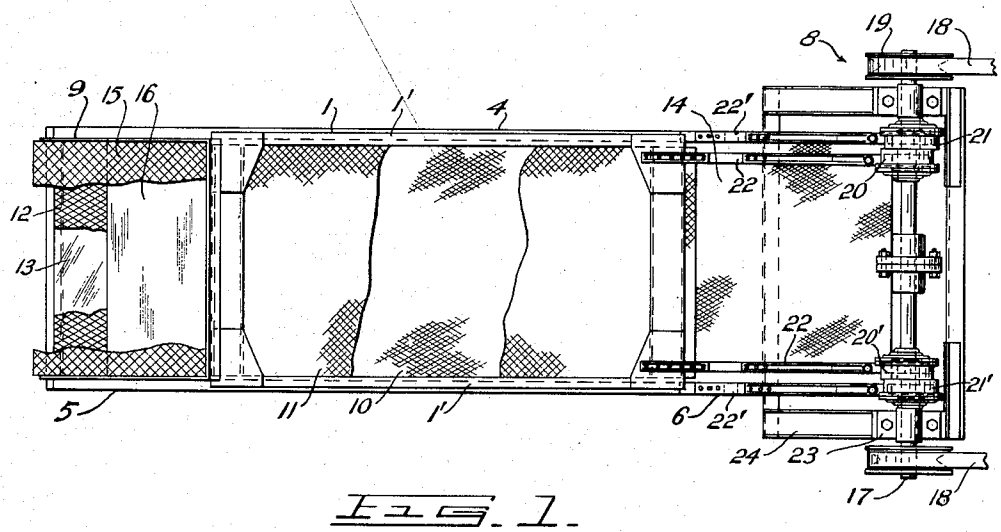


FIG. 1.

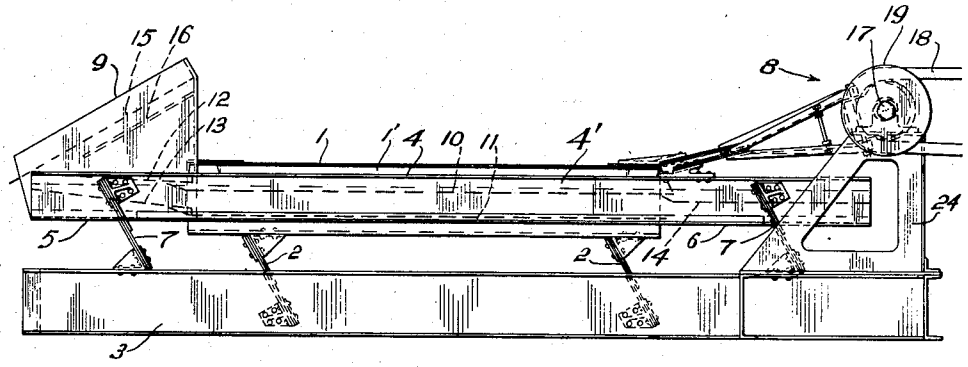


FIG. 2.

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HORIZONTAL VIBRATING SCREEN

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6 Claims. (Cl. 209—314)

This invention relates to horizontal vibrating screens and more particularly to a compound screen of this type.

In the usual construction of horizontal screens, difficulty has been experienced in maintaining a proper counterbalancing of the screen during its vibratory movement. Various means for mounting such screens in order to satisfactorily take care of the reciprocal movement thereof have been suggested but these have been for the most part complicated and expensive.

It is thus an object of the invention to provide a simply mounted screen having a plurality of sections with means for imparting reciprocal movement to such sections whereby they are always in counterbalancing relation with respect to each other. Another object is to provide a screen possessing a versatile combination of screening functions.

The invention will be described with reference to the accompanying drawing, in which,

Figure 1 is a plan view and

Figure 2 is a side elevation.

In the drawing 1 is a main screening section mounted in supporting bars 1' carried by flat leaf springs 2 mounted on a frame member 3 and 4 is an outerscreening section of substantially the same weight as section 1 formed in two parts, 5 and 6, adjacent either end of the main section 1 and mounted in supporting bars 4', extending along either side of the main section 1 but independently thereof, carried by flat leaf springs 7 also mounted on the frame member 3. 8 indicates a means for imparting the necessary vibratory movement to the screen and 9 is a preliminary scalping and washing section which may be provided at the receiving end of the screen.

The main section 1 is provided with a top deck screen 10 and a lower deck screen 11. Outer section 5 has a slightly inclined top deck screen 12 leading onto top deck screen 10 of section 1 and an inclined screen pan 13 below screen 12 leading onto lower deck screen 11. Outer section 6 has a single screen 14 adapted to receive the tailings from top deck screen 10. The scalping section 9 has an inclined screen 15 and a screen pan 16 discharging onto top deck screen 12 of outer section 5.

The means 8 for imparting reciprocal movement to the screen comprises a shaft 17 mounted in bearings 23 supported on frame members 24, and driven from any suitable source by means of belt drives 18 to flywheels 19 mounted on the shaft, and two pairs of double eccentrics 20, 21 and 20', 21', carried by the shaft, the corresponding eccentrics 20 and 20' being connected to the main section 1 by means of connecting rods 22 and the corresponding eccentrics 21 and 21' being connected to the outer section 4 by means of connecting rods 22'. The connecting rods 22 and 22' may be adjustable as to length.

In operation, crushed rock, ore or other material to be treated is fed onto the inclined scalping screen 15, the scalpings being discharged over the end as indicated and the remainder, which passes through the screen onto pan 16, is fed onto the forward end of top deck screen 12 of section 5. The screened material drops onto lower deck screen 13 and the coarser material is discharged onto top deck screen 10 of section 1. Sand waste passes through lower deck screen 13 and the screened material discharges onto lower deck 11 of section 1. The fines are deposited by lower deck screen 11 and the first intermediate sizes are discharged at the end thereof. Top deck screen 10 discharges onto screen 14 of section 6, which screen deposits the second intermediate sizes and discharges the oversizes.

It will be noted that the leaf springs 2 and 7 are mounted at an angle of approximately 60° with respect to the frame and thus, when the screens are in motion, they move in the arc of a circle whose radius is the length of the leaf springs and whose direction is at right angles thereto, thus propelling the material forward over the screen surfaces.

By reason of the opposed eccentrics, the screening sections 1 and 4 always move in opposite directions and, since these sections are of the same weight, a true counterbalancing arrangement is obtained.

Moreover, the separation of the screens in each horizontal plane into a series of screening sections makes possible a very versatile screening arrangement as will appear from the foregoing description. Obviously, various means for assembling the different required screening sections may be readily provided to meet various requirements.

I claim:

1. In a horizontal vibrating screen having a supporting frame, a screening section resiliently mounted thereon, a second independent screening section having screening members at either end of said first section resiliently mounted thereon independently of said first section, and means carried by said supporting frame for reciprocating each of said sections in opposite directions.

2. In a horizontal vibrating screen, a support,

a frame with screen sections adjacent the ends thereof, a second independent frame carrying a screen section located between said end screen sections and means carried by said support for independently vibrating said frames.

3. In a horizontal vibrating screen, a support, a reciprocating frame, with screen sections adjacent the ends thereof, resiliently mounted on said support, a second independent reciprocating frame, carrying a screen section located between said end screen sections, resiliently mounted on said support and means carried by said support for reciprocating each of said frames simultaneously in opposite directions.

4. In a horizontal vibrating screen, a support, a continuous outer frame, with a screen section adjacent each end thereof, mounted on said support, an inner independent frame, carrying a screen section, located within said outer frame between said end screen sections, means for resiliently and independently mounting said frames on said support and means carried by said support for reciprocating each of said frames simultaneously in opposite directions.

5. In a horizontal vibrating screen, a support, a pair of frame members extending longitudinally of said support and carrying screen sections adjacent the ends thereof, inclined spring members connecting the frame members to the support, a second pair of independent frame members parallel to said first frame members and extending between said screen sections, a screen section carried thereby, inclined spring members connecting the second pair of frame members to the support, and means carried by said support for reciprocating each of said pairs of frame members simultaneously in opposite directions.

6. In a screening device, three screens mounted on a common base in substantially end to end relationship with adjacent ends overlapping, a connecting member constraining the two end screens to move as a unit, and actuating means for said screens constructed and arranged to reciprocate the middle screen and said end screens simultaneously in opposite directions.

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