Oct. 28, 1941. K. KROHN 2,260,386

SCREENING APPARATUS

Filed May 20, 1939 2 Sheets-Sheet 1

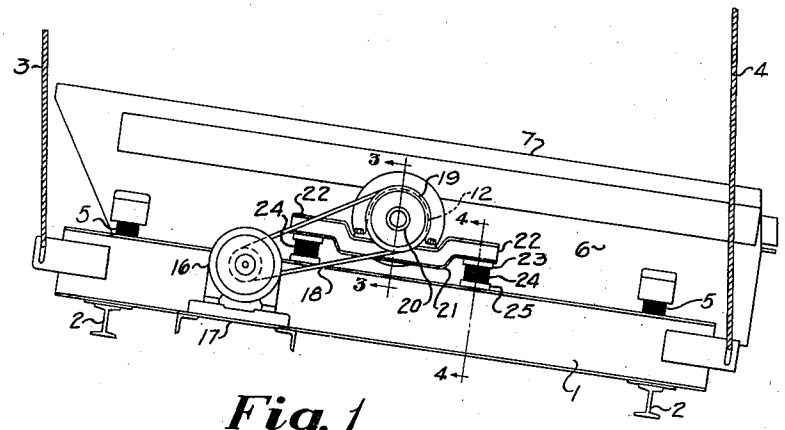


Fig. 1

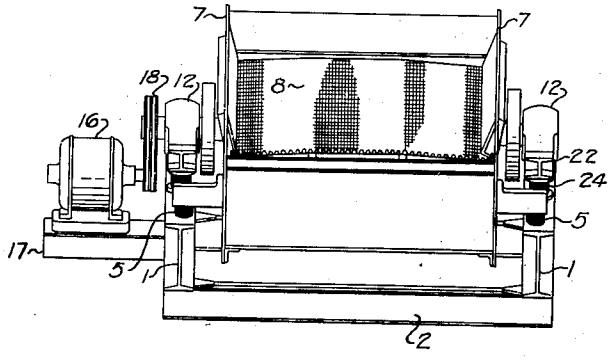


Fig. 2

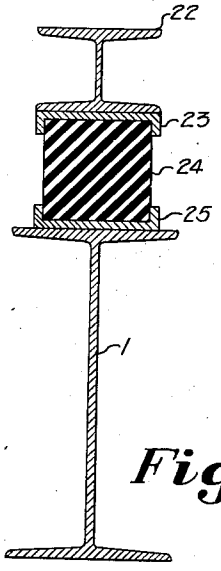


Fig. 4

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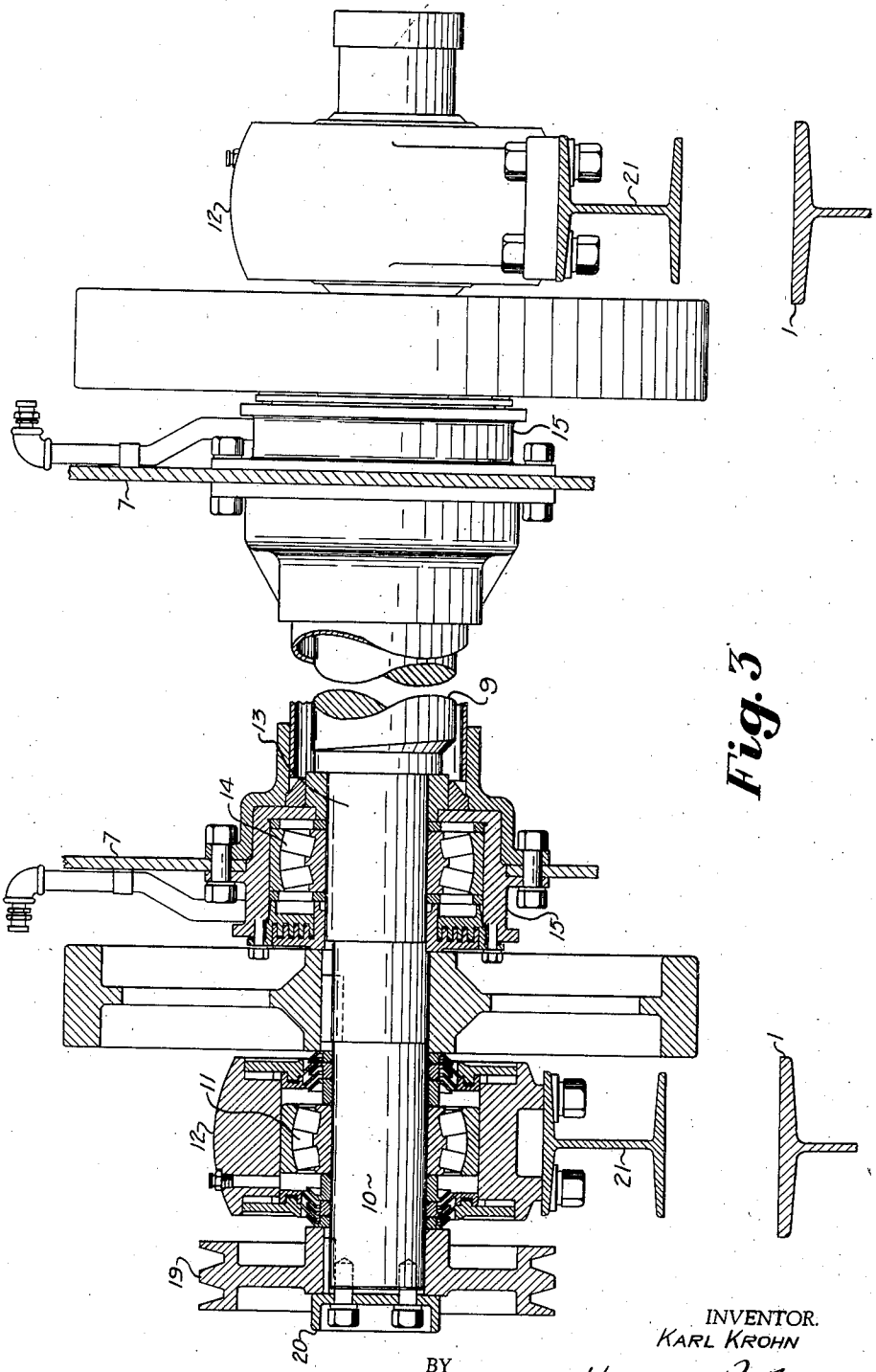


Fig. 3

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UNITED STATES PATENT OFFICE

2,260,386

SCREENING APPARATUS

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Application May 20, 1939, Serial No. 274,759

1 Claim. (Cl. 209—326)

This invention relates, as indicated, to screening apparatus, but has reference more particularly to that type of screening apparatus embodying only a single gyratory body.

The primary object of the invention is to provide apparatus of the character described having an improved screening action and an increased life.

Another object of the invention is to provide apparatus of the character described in which the main or non-gyratory body is virtually freed of all vibrations.

A further object of the invention is to provide apparatus of the character described in which the main bearing housings of the drive shaft are supported in a novel and improved manner.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claim; the annexed drawings and the following description setting forth in detail certain means and one mode of carrying out the invention, such disclosed means and mode illustrating, however, but one of various ways in which the principle of the invention may be used.

In said annexed drawings:

Fig. 1 is a side elevation of a screening apparatus embodying the invention;

Fig. 2 is a front end elevation of the apparatus;

Fig. 3 is a view, partly in section and partly in elevation, taken on the line 3—3 of Fig. 1, and

Fig. 4 is a fragmentary cross-sectional view, taken on the line 4—4 of Fig. 1.

Referring more particularly to the drawings, the apparatus comprises a relatively stationary frame or non-gyratory body consisting of a pair of transversely spaced longitudinally extending I-beams 1 connected adjacent their ends by a pair of transversely extending smaller I-beams 2, the aforesaid body being supported in inclined position, as shown on Fig. 1, as by means of cables 3 and 4, suspended from a suitable support, not shown.

Resiliently supported upon the main frame, as by means of resilient members 5 carried thereby adjacent its ends and resting upon the I-beams 1, is a gyratory screen body 6, consisting of the usual side plates 7, which support the screen 8.

The screen body 6 is adapted to be positively and continuously gyrated by means of a drive shaft 9, the axis of which extends substantially through the center of gravity of the screen body, and the ends 10 of which are journalled in self-aligning sealed roller bearings 11 mounted in bearing housings 12.

The portions 13 of the drive shaft 9 which extend through the side plates 7 of the screen body are eccentric to the ends 10 of the shaft and engage self-aligning sealed roller bearings 14 mounted in housings 15, bolted or otherwise secured to the side plates 7. In this way, when the shaft 9 is driven, a positive gyratory movement is imparted to the screen body in a plane normal to the axis of the drive shaft.

The shaft 9 is driven by means of a motor 16 mounted on a bracket 17 supported by the main frame, the drive being through the intermediary of an endless V-belt 18 and a grooved sheave 19, keyed to one end of the shaft 9, as by means of a clamp-plate 20.

It has been heretofore been common practice in making apparatus of this general type to support the main bearing housings 12 directly on the main frame of the apparatus, usually by bolting such housings directly to the I-beams.

It has been determined, however, that notwithstanding the accuracy of the design of the drive shaft, the counter-balancing of the eccentric portions of the drive shaft and the gyratory screen body, as well as the resilient mounting of the screen body at the ends, that a certain amount of vibration occurs at the points where the bearing housings 12 are mounted on the main frame of the apparatus.

I have discovered that such vibrations can be virtually eliminated, and the general operation of the screening apparatus improved to a considerable extent by resiliently mounting the bearing housings 12 on the main frame of the apparatus. This is preferably accomplished by bolting such housings to short members 21 formed from I-beams, and having offset ends 22, substantially parallel with the I-beams, these ends having permanently secured thereto cup-like members 23, to which are vulcanized circular rubber blocks 24, the lower ends of these blocks being in turn vulcanized to cup-like members 25, permanently secured to the upper flanges of the I-beams. In this way, an extremely effective mounting is provided, which has been found to not only increase the screening efficiency of the apparatus, but to considerably prolong the life of the apparatus as well.

It will be understood that other means of resiliently supporting the main bearing housings of the drive shaft may be used instead of that described, which is intended to be only illustrative of the invention in its broadest aspects.

It will be understood that the sole object of resiliently supporting the main bearing housings

in the manner which has been described is to provide a means for the escape and absorption of vibrations resulting from inaccuracies in the balancing of the screen body, or due to the load of material which is being screened. This is in contradistinction to the teachings of certain prior art patents in which the bearing housings or their supports are resiliently supported on a main frame, but in which a gyratory movement is imparted to such bearing housings or supports to compensate for the weight of the gyratory screen body. In other words, the bearing housings 12, in the present construction, do not have an intentional or predetermined gyratory or other movement imparted thereto.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the means and the steps herein disclosed, provided those stated by the following claim or their equivalent be employed.

I therefore particularly point out and distinctly claim as my invention:

In screening apparatus of the character described, a main frame, a screen body, a shaft having eccentric portions adapted to gyrate said body upon rotation of said shaft, and journal portions, the mass of the screen body being so proportioned that at normal operative speed the axes of the journal portions are coaxial with the axis of revolution of said shaft, and means for resiliently supporting said shaft by its journal portions, said means comprising members having end portions spaced from said frame and resilient means interposed between said end portions and said frame, said resilient means providing a means for the escape and absorption of vibrations resulting from inaccuracies in the balancing of the screen body, or due to the load of material which is being screened.

KARL KROHN.