Oct. 19, 1943. W. R. GORMAN 2,332,484

DUST HOUSING

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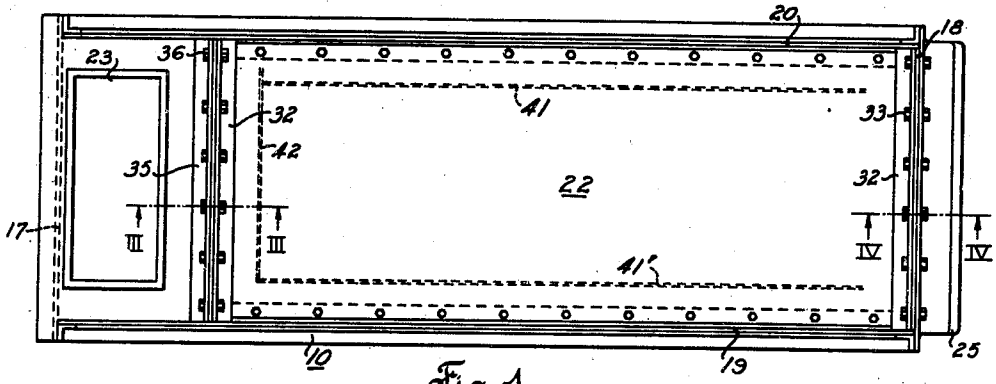


Fig. 1

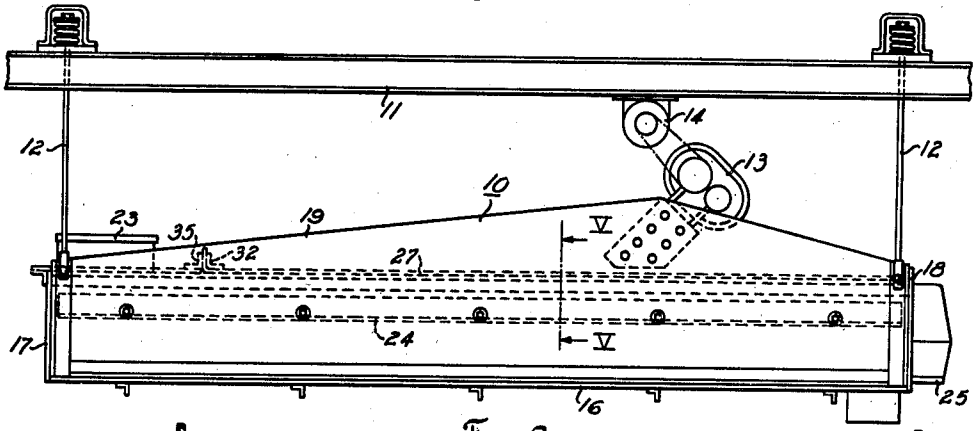


Fig. 2

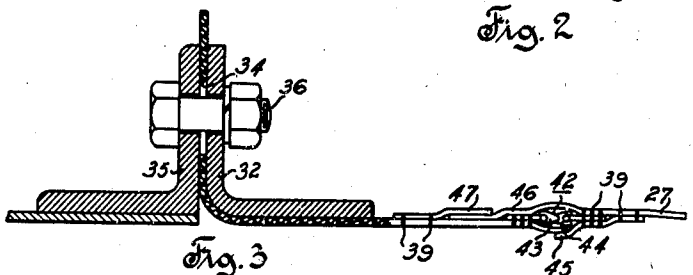


Fig. 3

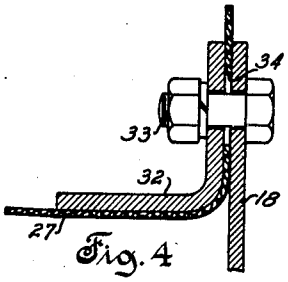


Fig. 4

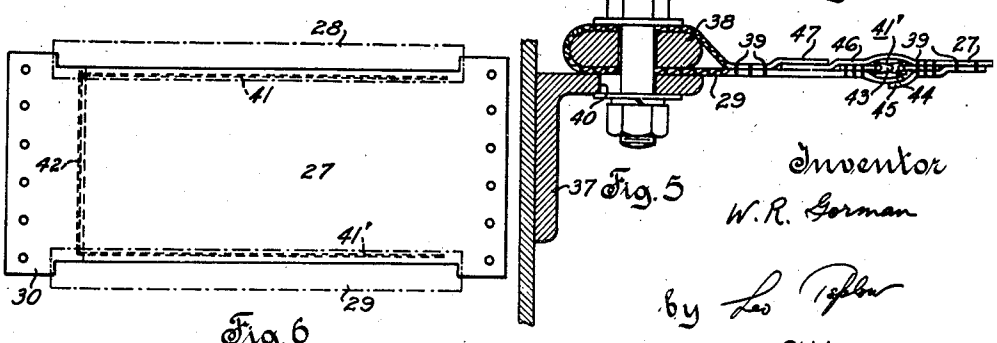


Fig. 6

Fig. 5

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DUST HOUSING

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6 Claims. (Cl. 209—370)

This invention relates to enclosures for vibrating apparatus such as vibrating screens, feeders, conveyors, sifters, etc.

In enclosed vibrating apparatus of this type, the vibrated body carries its housing, which is therefore subjected to rapid, repeated vibrations. In some cases, as in the screening or conveying of coal or ore, the material being treated may be in relatively large lumps, subjecting the vibrated body and housing to substantial abrasion and repeated impacts. It has thefefore been found necessary to make the housing of relatively heavy and durable material such as steel plate, adding appreciably to the weight and cost of the machine. It should be borne in mind that any addition to the weight of the vibrated body may require a larger mechanism to effect suitable vibration thereof, thereby appreciably increasing the cost of the machine. Moreover, such steel plate must be bolted on rigidly in order to keep the housing dust-tight despite the severe vibration to which it is subjected. Such rigid fastening means makes it difficult to open the housing quickly in order to inspect the condition of the screen cloth or conveying surface.

It is an object of this invention to provide a housing which may be easily and quickly opened for inspection and repair but which remains dust-tight during operation.

Another object of this invention is to provide a dust-tight housing which is light and inexpensive.

A more specific object is to provide a dust-tight housing of which at least one wall, preferably the top wall, is made of flexible, pliable or fabric-like material provided with a separable slide fastener.

Other objects of the invention will become apparent from the following description taken in connection with the drawing in which:

Fig. 1 is a plan view of a vibrating screen provided with a housing in accordance with this invention;

Fig. 2 is an elevation view of the screen of Fig. 1;

Figs. 3, 4 and 5 are enlarged cross sectional views taken on the lines III—III and IV—IV of Fig. 1 and V—V of Fig. 2, respectively; and

Fig. 6 is a developed view of the fabric comprising the top wall of the housing.

The invention is shown as being applied to a screen 10 which is supported from beams 11 by means of cables 12. The screen is vibrated by any desired means such as mechanism 13 actuated by a motor 14. The screen 10 is enclosed by bottom plate 16, end plates 17 and 18, side plates 19, 20 and a top covering 22. Material is introduced to the screen through a feed spout 23 and travels from the feed end to the discharge end while being screened on screen cloth 24, leaves the screen by means of a double discharge spout 25.

In accordance with the present invention, the heavy steel plate cover of the prior art is replaced by a relatively light material such as fabric 22. Any desired cloth, or plastic, or other pliable sheet material having the characteristic toughness and yieldability inherent in cloth may be used, transparent or not. This may be made of a good grade of canvas, and may consist of central sheet 27, edge sheets 28 and 29 and end piece 30. The end of central sheet 27 may be fastened to the end wall 18 by being retained by the end wall 18 and a rounded angle bar 32, which is clamped to wall 18 by means of bolts 33. It is noted that the edge portion of sheet 27 is provided with slots 34 which permit longitudinal adjustment of sheet 27 in order to tighten it.

Sheet 30 is similarly fastened to angle bar 35 adjacent the feed end, being clamped between angle bars 32 and 35 by means of bolts 36. Sheet 30 is also provided with slots 34, for purposes of tension adjustment. Edge sheets 28, 29 are attached to side plates 19, 20 in any suitable manner. The particular fastening means illustrated in Fig. 5 comprises a longitudinal angle bar 37 mounted on side plate 19 and having bolted thereto a longitudinal flat bar 38. Edge sheet 29 is passed around flat bar 38 and stitched or riveted as shown at 39. In this way edge sheets 28 and 29 are clamped in dust-tight relation with side plates 19 and 20. Angle bar 37 is provided with slots 40, so that cover 22 may be tightened transversely.

The central canvas member 27 is connected to the side and edge members 28, 29 and 30 by means of separable slide fasteners. As shown in Fig. 1, three separable slide fasteners 41, 41' and 42 are provided, although one or more fasteners may be used as desired. If separable fasteners are used on all four sides, the central panel may be entirely removed. Separable slide fasteners are well known and need not be described in detail. The mode of attachment is illustrated in Fig. 3, wherein slide fastener 42 comprises interengaging sets of separable members 43 and 44 carried by end sheet 30 and central sheet 27, respectively. Sheets 30 and 27 are provided with overlapping members 45 beneath slide fastener 42, which serve to protect the slide fastener

against entry of dirt from within the enclosure. Central sheet 27 is further provided with a wide flap 46 which covers the slide fastener and is retained under a longitudinal flap 47 carried by edge sheet 30. In this manner the slide fastener is protected from above and below and can operate in an extremely dusty atmosphere without clogging. Actual usage under severely dusty conditions has indicated that this protection is sufficient to maintain the slide fastener in operable condition.

As indicated in Fig. 5, the slide fastener is arranged in similar fashion at the sides of the screen cover.

With the construction illustrated, whenever it is desired to inspect the screen, it is only necessary to operate the slide fasteners, which immediately separates the greater part of the central sheet 27 from its bordering edge sheets, making the screen cloth available for inspection and repair from above. After inspection and repair, the central sheet 27 is laid back in place, the slide fasteners closed, and the screen is again enclosed and ready for operation. While the cover 22 is not as rigid as the steel plates of the prior art, it performs the same function in providing a completely dust-tight cover for the housing. Due to its inherent flexibility, the rapid and repeated vibration of the screen body does not affect the canvas cover. The invention provides not only a much lighter and less costly cover, but makes the screen interior easily and quickly accessible for inspection and repair.

While the above description relates to a cover on a vibrating screen housing, it is obvious that the construction of the invention is equally applicable to any wall of the housing of any vibrating apparatus.

While the invention has been illustrated as being applied to a screen, it is obvious that it is equally applicable to feeders, conveyors, sifters and other vibrated bodies. Various modifications apparent to those skilled in the art and coming within the scope of the appended claims are intended to be included within the purview of the invention.

It is claimed and desired to secure by Letters Patent:

1. A vibrating body for treatment of material, a housing for said body vibratable therewith and comprising a cover of flexible material having the characteristic toughness and yieldability of cloth extending over at least a part of said body, said cover comprising a peripheral border portion and a central portion, means for fastening said border portion in dust-tight sealing engagement with said body, and quick-detachable means connecting said central portion of said flexible material to said border portion.

2. A vibrating body for treatment of material, a dust-tight housing for said body supported wholly by said body and vibratable therewith, said housing comprising side walls and a top cover of flexible material having the characteristic lightness, toughness and pliability of cloth, and such strength and quality as to resist abrasion, said top cover extending across a substantial part of said body in such proximity to said body as to be subject to direct impingement by material frequently thrown upwards in the course of said treatment, and quickly detachable means for fastening said flexible material in dust-tight sealing relation to said side walls.

3. A vibrating screen comprising a screen body, means for vibrating said body, a dust-tight housing for said screen body and vibrated therewith comprising rigid side walls and a top wall of flexible material, said top wall comprising central and peripheral portions, said peripheral portion being clamped in dust-tight relation with the upper portions of said side walls, and a separable slide fastener connecting said peripheral and central top wall portions adjacent at least two of said side walls.

4. In a vibrating screen comprising a dust housing surrounding said screen and vibrating therewith, a sheet of flexible material having central and peripheral portions forming a cover for said dust housing, separable slide fastening means connecting said central and peripheral portions, and means for clamping said sheet of flexible material to said casing.

5. In a vibrating screen dust housing as defined in claim 3, said clamping means comprising means for adjustably tightening said sheet of flexible material on said casing.

6. In a vibrating screen housing as defined in claim 3, said clamping means comprising a rigid member fastened to one edge of said flexible material and means for clamping said rigid member in adjustable position on said casing.

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