June 23, 1936. W. H. BERRISFORD 2,045,065

SHAKER CONVEYER AND THE LIKE

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Fig. 1.

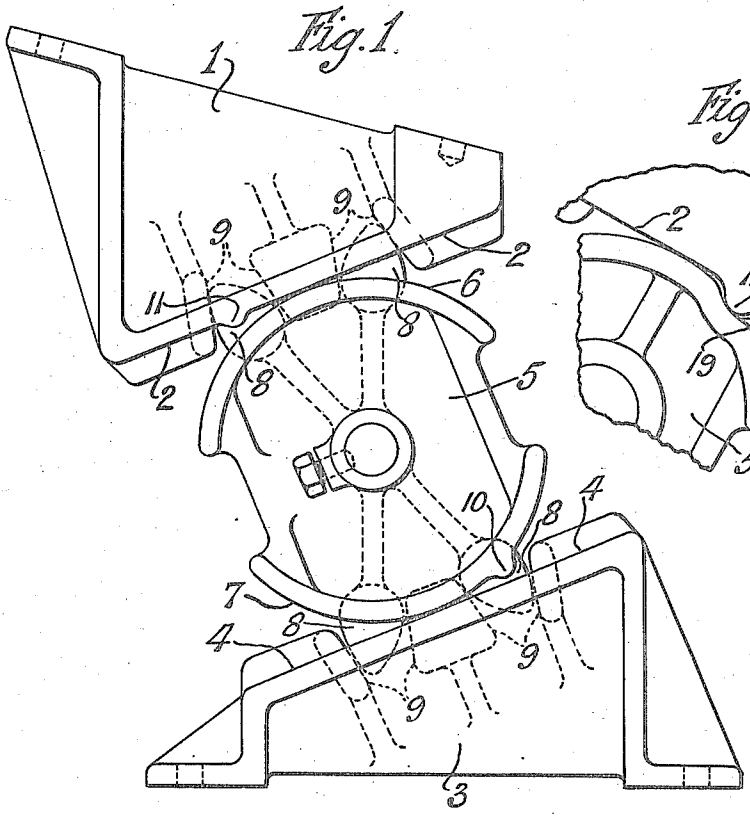
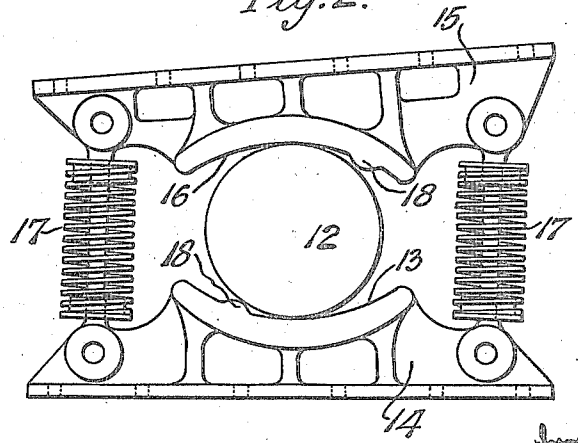


Fig. 3.

Fig. 2.



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SHAKER CONVEYER AND THE LIKE

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3 Claims. (Cl. 198—220)

The invention relates to conveyers and like apparatus in which the travelling movement is imparted to the material by reciprocation of the tray or table carrying it. It is applicable not only to apparatus having the sole function of conveying material from one place to another but also to such apparatus as jigging screens and vibrating separators in which a conveying movement of the material is combined with some form of grading, sizing or cleaning, for example in the treatment of coal and other minerals.

According to the invention a conveyer tray, screen or the like which is reciprocated while supported by a rolling contact is subjected a little short of the upper limit of its course to an abrupt departure from the path determined by the rolling contact by means of a projection or step on one or more of the rolling contact surfaces, the projection or step lying above the general level thereof and being located to contact with the companion surface.

The accompanying drawing serves to show embodiments of the invention and illustrate supports for shaking screens or conveyers. Figure 1 shows one form of support and Figure 2 another, both being in elevation, and Figure 3 shows a modification of a part of Figure 1.

Referring to Figure 1, a casting 1 is adapted for fitting to the structure to be supported and is provided with a flat oblique rolling surface 2. A corresponding casting 3 is provided for fitting to a fixed bedplate or frame and has a flat surface 4 parallel to the surface 2. A roller 5 is located between the surfaces 2 and 4 having cylindrical surfaces 6 and 7 which cooperate respectively with the flat surfaces 2 and 4. Alongside the cylindrical surfaces 6 and 7 the roller 5 has teeth 8, 8 which are guided by notches 9, 9 to locate the member 5. The support just described is duplicated and there may be four or more of them to support the screen or conveyer.

According to the invention the roller 5 has a projection 10 on one part of its periphery so that a little short of the highest position of the reciprocating movement the normal smooth motion is interrupted and the conveyer or other supported structure is jerked away from the path determined by the cylindrical surfaces 6 and 7 cooperating with the flat surfaces 2 and 4.

The same figure serves to show an alternative construction and in this a projection 11 is provided on the flat surface 2 so that the casting 1 rides up on the roller 5 a little short of the upper end of its reciprocating movement above the normal level determined by the co-operating flat and cylindrical surfaces.

In the arrangement of Figure 2 a roller 12 corresponds with the roller 5 of Figure 1 but is not provided with locating teeth. The roller 12 rests on a concave bearing surface 13 of the casting 14 which is intended to be attached to the bedplate or other supporting structure. The screen or other structure to be supported will be attached to a casting 15 having a concave surface 16 bearing on the roller 12. Springs 17, 17 urge the concave surfaces 13 and 16 towards each other and provide all the locating effect which is necessary. Here again the required number of supports as described will be fitted.

According to the invention one or both of the concave surfaces 13, 16 is or are provided with a projection 18 contacting with the roller 12 when the supported structure is a little short of the upper limit of its movement. Accordingly the screen or the like, which normally travels in a smoothly curved path, leaves this path a little short of the upper end of its travel to make a sudden jerk upwards.

The projection may also take the form of the edge of a raised part or a step, and whether it is of this form or of the form shown in the drawing it may be provided in conjunction with any kind of rolling contact, that is while one surface must necessarily be convex, the other may be concave or flat as shown in the figures or convex. Moreover, it is immaterial which member is provided with a particular shape of contact.

The two rolling contacts at one point of support may be alike or may be of different kinds, or one may be replaced by a pivot. Further the contact points or the contact point and pivot may be skewed, or the contact surfaces may be plane and not quite parallel. Also the radius of curvature of any one or more of the surfaces may vary along its periphery. All of these forms of rolling contact have already been proposed for supporting conveyers or the like, and to all of them the present invention can be applied with advantage just as described for the case of a roller between plane or concave surfaces.

It will be noted that in the known forms of support the tray or the like executes a movement in a straight or more or less uniformly curved path.

In some cases the projection on one surface cooperates with a depression on the companion surface, but the depression must of course be smaller than the projection so that the tray or

screen is suddenly lifted when the projection contacts with the depression. This arrangement is shown in Figure 3 which represents a part of Figure 1 with this modification. The upper flat surface 2 has a projection 11 as before, but this projection enters the depression 19 in the cylindrical surface 6, but the depression 19 is not deep enough to allow the projection 11 to enter it completely.

The invention can of course be combined with other arrangements for obtaining particular kinds of movement, such for example as drag-link gear.

It has been found with a coal conveyer having a smooth surface and adapted for conveying only without screening or grading, that with the best form of support hitherto known the maximum slope up which the load would move satisfactorily was 8°, whereas with the use of the new invention the coal would move under otherwise similar conditions up a slope of 10°.

A further advantage of the invention is of particular interest in coal conveyers, but is also valuable in some other applications. That is that the conveying movement is effected with reduced sliding friction and consequently less attrition of the material.

What I claim is:—

1. A support for a reciprocating conveyer tray or screen comprising a member for attachment to the tray or screen and having a rolling surface set at an appreciable angle thereto, a member for attachment to a fixed support and having a rolling surface approximately parallel to that of the first member, and a rolling member interposed between the said two members, the rolling surfaces of all the three members being smooth over the greater part with a projection on at least one of them lying over the general surface level and located where contact is made with the companion surface a little short of the upper limit of movement of the tray or screen.

2. A support for a reciprocating conveyer tray or screen comprising a member for attachment to the tray or screen and having a rolling surface set at an appreciable angle thereto, a member for attachment to a fixed support and having a rolling surface approximately parallel to that of the first member, and a rolling member interposed between the said two members, the rolling surfaces of all the three members being smooth over the greater part and the one of each pair of companion rolling surfaces being each provided with a projection lying above the general surface level and located where contact is made with the rolling member a little short of the upper limit of movement of the tray or screen.

3. A support for a reciprocating conveyer tray or screen comprising a member for attachment to the tray or screen and having a rolling surface set at an appreciable angle thereto, a member for attachment to a fixed support and having a rolling surface approximately parallel to that of the first member, and a rolling member interposed between the said two members, the rolling surfaces of all the three members being smooth over the greater part with a projection on at least one of them lying over the general surface level and a depression in the companion surface of less depth than the height of the projection, both depression and projection being located where contact is made between the surfaces in question near the upper limit of movement of the tray or screen.

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