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54 **A DEVICE FOR A SORTING SHOVEL.**

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Description

The present invention relates to a separator bucket device comprising a grid for separation of excavated material, especially road material containing gravel, of the kind described in the introduction of claim 1.

Separator buckets of the above-mentioned kind are known (Tojo Maskin, Färila, Sweden) and are usually mounted on wheeled loaders which after cutting of road borders by means of, for example, an excavator take care of the road material cut away in order to return gravel to the road and to remove material unsuitable to be used as road surfacing.

A disadvantage of the known separator buckets is that parts of these have a limited life and must be exchanged rather often, which is time-consuming and uneconomical. This particularly applies to the rubber bushings and the bearings connecting the eccentrics of the drive shaft with the grid portions forming a grid.

It is an object of the present invention to improve the known separator buckets and to eliminate their above-mentioned disadvantages in order to ensure perfect functioning during a long period of time and to facilitate removal and mounting of parts, when worn parts have to be exchanged.

This object is achieved by giving the device according to the invention the features stated in the characterizing portions of the claims.

Figure 1 is a partly cut away perspective view of a separator bucket comprising the device according to the invention,

Figure 2 is a schematic view, seen from the rear, of details of the device according to Figure 1,

Figure 3 is a side view of the details according to Figures 2 and 3, seen from the right, and

Figure 4 is an exploded view of details of the device according to Figures 1-3.

Preferred embodiment

The separator bucket shown in Figure 1 and indicated by 1, comprises a rear part 2, two side walls 3, a cutting plate 4 and a frame 5 extending between the side walls 3. Said parts are welded to each other. The bucket 1 has no real base but is provided with a grid in the form of two grid portions 6 and 7 partly inserted in each other. Each grid portion comprises a number of parallel rods 6a and 7a respectively, one end of each rod being rotatably connected with a shaft mounted between the side walls 3 adjacent to the cutting plate 4. The other end of each rod 6a is connected with a front plate 9, and the other end of each rod 7a is connected with a rear plate 10 which is parallel to the front plate 9 and located partly under the same. The plates 9 and 10 are vertically movable and receive such reciprocal movement in the way described below.

On the frame 5 there are mounted four bearing brackets 11, in which a drive shaft 12 is rotatably mounted. The drive shaft 12 is driven by a hydraulic motor 13 mounted on the frame 5. The drive shaft 12 is provided with four eccentric discs 14 (Figures 3 and 4) surrounded by bearing housings 15 and 16. Through their parts located furthest away from the drive shaft 12, the eccentric discs 14 located in the bearing housings 15 are displaced 180° relative to the corresponding parts of two other eccentric discs located in the bearing housings 16.

The bearing housings 15 are connected with the front plate 9, and the bearing housings 16 are connected with the rear plate 10 in the way described below and shown especially in Figure 4.

The bearing housings 15 and 16 are provided with projections 15a and 16a respectively, each of which has a cone-shaped body 17 mounted thereto. A flexible member in the form of a spring steel member 18 with welded reinforcement plate 23 is provided with a hole 18a. A conical sleeve 19 fits to the body 17 and into the hole 18a. After these details have been mounted, a screw 20 is inserted in the sleeve 19, a washer 21 having previously been inserted between the sleeve and the screw head, and is screwed into the body 17. A screw 22 passed through a hole 18b in the spring steel member 18 is then screwed into the projection 15a, 16a.

By means of the ends facing away from the shaft 12, the arms 18 are connected with the plates 9 and 10 in the same way as the ends of the arms 18 facing towards the shaft 12 are connected with the projections 15a, 16a, as shown in Figure 4 wherefore an explanation will not be required. The details of the lower attachment device shown in Figure 4 are provided with the same reference numbers, though primed, as the corresponding details of the upper attachment device.

By means of the above described attachment devices 17-22 and 17'-22' there is provided a play-free, easily dismountable and mountable as well as reliable connection between the bearing housings 15, 16 and the grid portions 6 and 7 of the grid with the rods 6a and 7a.

Below is a brief description of the mode of operation of the bucket.

After the bucket has received the road material excavated, the motor 13 is started, the plates 9 and 10 being moved vertically towards and from each other because of the two bearing housings 15 acted on by the eccentric discs 14 displacing the associated arms 18 upwardly while the two other bearing housings 16 acted on by the eccentric discs 14 displace the associated arms downwardly, and vice versa. Hereby, the two grid portions will receive contrary rotary movements about the shaft 8 such that large pieces of, for example, soil, will be disintegrated, and gravel and other small particles will enter the spaces

between the rods and fall through these on to the road, whereas large pieces of, for example, turf will stay on the grid. The rotary movements of the rods 6 and 7 are very quick, and since the distance between the rods is greatest at the plates 9 and 10 (around 1-3 cm) most of the road material will fall through the grid near these, especially since the bucket 1 is suitably inclined somewhat to the rear during separation.

The horizontal displacements between the bearing housings 15, 16 and the plates 9, 10 caused by the eccentric action is absorbed by the flexible members 18, which are bent the most at their lower parts over the plates 23'.

Claims

1. A separator bucket device with a grid for separation of excavated material, the grid comprising at least two substantially parallel grid portions (6, 7) inserted in each other, one end of each grid portion being rotatably mounted in the bucket (at 8) and the opposite end of each grid portion being connected, by means of a movement transmission device (15-22), to at least one drive shaft (12) provided with eccentrics (14), such that on rotation of the drive shaft the grid portions will receive a rotary movement towards and from each other about the mounting in the bucket, characterized in that the movement transmission device (15-22) includes elongate, flexible members (18), the ends of which are fixedly connected with the grid portions (6, 7) as well as with parts (15, 16) of the movement transmission device mounted on the eccentrics.
2. A device according to claim 1, characterized in that the flexible members (18) are spring steel members or the like which are flexible in one plane.
3. A device according to claim 1 or 2, characterized in that the fixed connection between one end or the other end of a flexible member (18) and a grid portion (6, 7) or a part (15, 16) of a movement transmission device (15-22) mounted on an eccentric (14) includes cone-shaped connection elements (17, 19).
4. A device according to claim 3, characterized in that a cone-shaped body (17) is connected with the grid portion (6, 7) and/or with the part (15, 16) of the movement transmission device mounted on the eccentric (14), in that a cone-shaped sleeve (19) is applied to said body and is inserted in and fits into a hole (18a, 18a') in the flexible member (18), and in that a screw (20) is passed through the sleeve, is screwed into the body and

exerts a pressure on the sleeve.

5 Patentansprüche

1. Vorrichtung für Sortierschaufel mit einem Gitter zur Sortierung von ausgegrabenem Material, welches Gitter wenigstens zwei im wesentlichen parallele ineinander eingesetzte Gitterabschnitte (6, 7) umfaßt, wobei ein Ende jedes Gitterabschnittes schwenkbar in der Schaufel (bei 8) gelagert und das entgegengesetzte Ende jedes Gitterabschnittes mittels einer Bewegungsübertragungseinrichtung (15-22) mit wenigstens einer Antriebswelle (12) verbunden ist, die mit Exzentern (14) versehen ist, um bei Drehung der Antriebswelle den Gitterabschnitten um die Lagerung in der Schaufel eine Schwenkbewegung gegen- und voneinander zu erteilen, dadurch gekennzeichnet, daß die Bewegungsübertragungseinrichtung (15-22) längliche, flexible Organe (18) umfaßt, deren Enden fix mit den Gitterabschnitten (6, 7) sowie mit auf dem Exzenter montierten Teilen (15, 16) der Bewegungsübertragungseinrichtung verbunden sind.
2. Vorrichtung nach Patentanspruch 1, dadurch gekennzeichnet, daß die flexiblen Organe (18) in einer Ebene flexible Federstahlorgane od.dgl. sind.
3. Vorrichtung nach Patentanspruch 1 oder 2, dadurch gekennzeichnet, daß die fixe Verbindung zwischen einem oder dem anderen Ende des flexiblen Organs (18) und dem Gitterabschnitt (6, 7) oder dem auf einem Exzenter (14) montierten Teil (15, 16) der Bewegungsübertragungsvorrichtung (15-22) konusförmige Verbindungselemente (17, 19) aufweist.
4. Vorrichtung nach Patentanspruch 3, dadurch gekennzeichnet, daß ein konusförmiger Körper (17) mit dem Gitterabschnitt (6, 7) und/oder dem auf dem Exzenter (14) montierten Teil (15, 16) der Bewegungsübertragungsvorrichtung verbunden ist, daß eine konusförmige Hülse (19) auf dem genannten Körper angebracht und in ein passendes Loch (18a, 19a) des flexiblen Organs (18) einsetzbar ist, und daß eine Schraube (20) durch die Hülse hindurchgeführt und am Körper angebracht ist, um einen Druck auf die Hülse auszuüben.

55 Revendications

1. Dispositif de godet séparateur comprenant une grille servant à séparer la matière enlevée, la grille comprenant au moins deux parties de grille (6,

- 7) sensiblement parallèles, imbriquées l'une dans l'autre, une extrémité de chaque partie de grille étant montée rotative dans le godet (en 8) et l'extrémité opposée de chaque partie de grille étant reliée, à l'aide d'un dispositif de transmission de mouvement (15 à 22), à au moins un arbre d'entraînement (12) muni d'excentriques (14), de telle manière que, sous l'effet de la rotation de l'arbre d'entraînement, les parties de la grille reçoivent un mouvement de rotation qui les rapproche et les éloigne l'une de l'autre par rotation autour de leur montage dans le godet, caractérisé en ce que le dispositif de transmission de mouvement (15 à 22) comprend des éléments flexibles allongés (18), dont les extrémités sont reliées rigidement aux parties (6, 7) de la grille, ainsi qu'à des parties (15, 16) du dispositif de transmission du mouvement qui sont montées sur les excentriques.
2. Dispositif selon la revendication 1, caractérisé en ce que les éléments flexibles (18) sont des éléments en acier à ressorts ou analogues qui sont flexibles dans un plan.
3. Dispositif selon la revendication 1 ou 2, caractérisé en ce que la liaison fixe entre une extrémité, ou l'autre extrémité, d'un élément flexible (18) et une partie de grille (6, 7) ou une partie (15, 16) d'un dispositif de transmission de mouvement (15 à 22) montée sur un excentrique (14) comprend des éléments de liaison de forme conique (17, 19).
4. Dispositif selon la revendication 3, caractérisé en ce qu'un corps (17) de forme conique est relié à la partie de grille (6, 7) et/ou à la partie (15, 16) du dispositif de transmission de mouvement montée sur l'excentrique (14), en ce qu'un manchon (19) de forme conique est monté sur ledit corps et est inséré et s'ajuste dans un trou (18a, 18a') de l'élément flexible (18) et en ce qu'une vis (20) est passée à travers le manchon et vissée dans le corps, et exerce une pression sur le manchon.

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