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DISK ROLLER CLASSIFYING GRATE FOR COAL

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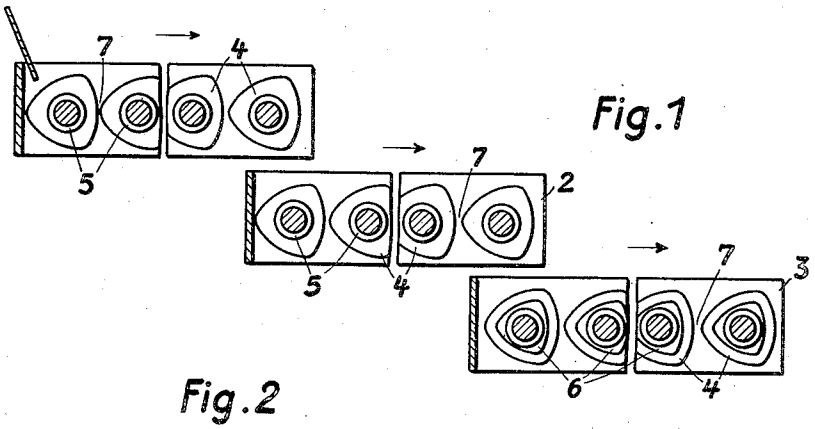
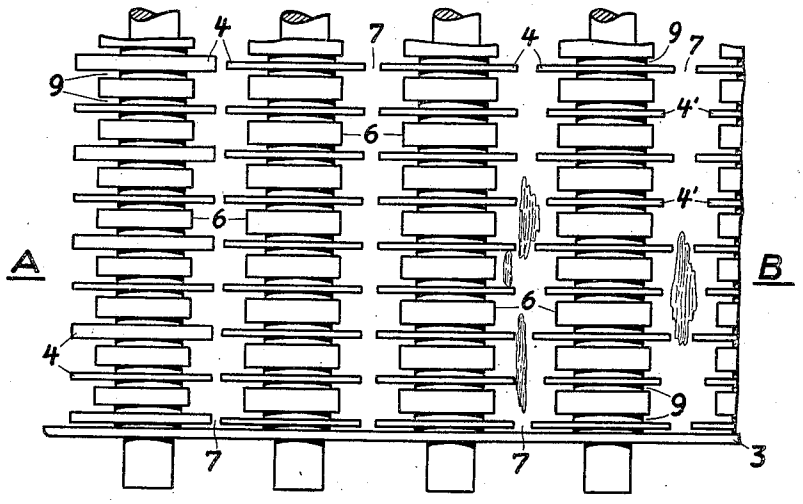


Fig. 1

Fig. 2



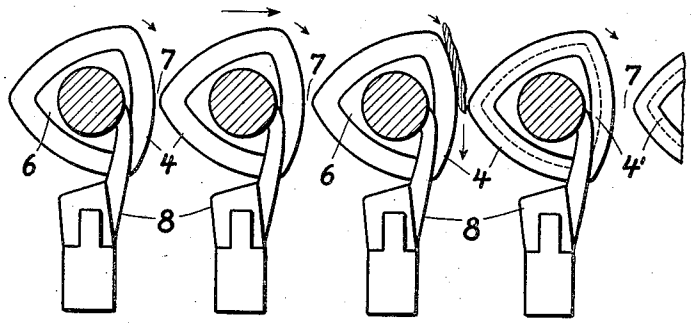


Fig. 3

INVENTOR

Heinrich Köhler

by Knight Bros

HIS ATTORNEYS

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DISK ROLLER CLASSIFYING GRATE FOR COAL

Heinrich Köhler, Gr. Ottersleben-Georgshohe, Germany, assignor to the firm Fried. Krupp Grusonwerk Aktiengesellschaft, Magdeburg-Buckau, Germany

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2 Claims. (Cl. 209—104)

The subject of this invention is a disk roller classifying grate for coal, which is particularly suited for the simultaneous sifting off of shale in the form of flat lumps. In the disk roller classifying grates used heretofore, a sifting off of the shale in the form of flat lumps did not take place, so that the pieces of shale travelled over the grate and passed into the overflow together with the coarse coal, from which they had to be removed subsequently by sorting. In the case of the improved grate a falling through of the shale, corresponding to the grain size of the coal in each case, takes place at the same time as the classification of the coal according to its grain size. The pieces of shale are then separated off in the subsequent screening of the individual sorts of coal.

The grate according to the invention is subdivided into a plurality of grate parts arranged in the form of steps with respect to one another, the object of this being to render it possible to vary the speed the disk rollers and consequently the conveying speed of the grate surface at the individual parts of the grate. The disk rollers are intended to rotate at a speed decreasing from one part of the grate to the next in the conveying direction.

The longitudinal and transverse gaps widen in the conveying direction, while the disks of the disk rollers are constructed in the manner known per se as three-arc disks. This form of the disks is particularly favourable for the sifting off of flat pieces, because in this way the pieces are brought into the upright position, which alone enables them to fall through the gaps in the grate. The bringing of the flat pieces into the upright position and their falling through (the largest pieces falling through on the last part of the grate) is, moreover, assisted by the reduction of the speed of rotation in the conveying direction, that is, by driving the disks in the last part of the grate at a slower speed than those in the first part of the grate. The larger pieces are more slowly brought into the upright position without being thrown off by the disks, and thus have sufficient time to slip through the transverse gaps.

In order to achieve a perfect conveyance of the material on the last part of the grate, which acts as a coarse grate, between each pair of three-arc disks an intermediate member is mounted on the disk shaft, this intermediate member also having a three-arc cross-section, while its circumference extends parallel to the circumference of the grate disks.

The jamming of material between the disks is prevented by scraping-off devices, which are supported with their upper ends generally against round intermediate rings which determine the distance from disk to disk of the same disk roller. In the coarse grate, the upper ends of the scraping-off devices engage in circular grooves of the three-arc intermediate members.

In order that the said invention may be clearly understood and readily carried into effect, the same will now be more fully described with reference to the accompanying drawing, wherein:—

Figure 1 represents in vertical longitudinal section the supply and discharge ends of the individual grate parts of a three-stage disk roller classifying grate,

Figure 2 is a plan of the last part of the grate forming the coarse grate, on a larger scale, and

Figure 3 represents a section on the line A—B in Figure 2.

The parts **1**, **2**, and **3** of the disk roller grate are arranged in the form of steps relatively to one another. All the disk rollers consist of three-arc disks **4**, the distance apart of which is determined by intermediate members. The intermediate members **5** of the grate parts **1** and **2** are made annular, while the intermediate members **6** of the grate part **3** have a three-arc cross-section. The angular position of the intermediate members **6** corresponds to the position of the disks **4**, the intermediate members for forming the longitudinal gaps merely being smaller than the said disks. Preferably, the intermediate members **5** of the grade parts **1** and **2** also have a three-arc cross-section. The disk rollers are driven at a speed of rotation which decreases from one part of the grate to the next.

The distances between the consecutive disk rollers, that is, the gaps **7** lying transversely with respect to the conveying direction, are increased in the conveying direction to permit pieces of shale of continuously increasing size to fall through these transverse gaps. The longitudinal gaps lying in the conveying direction may also become larger in this direction with the transverse gaps, so that, according to the size of the pieces of shale falling through, a sorting of the coal according to the grain size also takes place. The longitudinal gaps are, in the constructional example, increased in size by reduction of the width of the disks **4**, as illustrated, for example, on the left in Figure 2 in the case of two consecutive disk rollers. In the conveying direction, the centre planes of the disks of the same part

of the grate moving one behind the other lie in a common vertical plane. In this way the maintenance of uniform transverse gaps over the entire width of the grate is rendered possible. The size of the disks **4** may also decrease in the conveying direction for the purpose of increasing the size of the transverse gaps. In the grate part **3**, each second disk **4'** of the last rollers is made smaller, whereby the gap for the passage of coal and shale is increased.

The scraping-off devices **8** are made as narrow as possible in all rollers, in order that the intermediate members **5** and **6** assisting the conveyance of the material may be made as wide as possible. In the narrower longitudinal gaps, it will only be possible to arrange one scraping-off device between each two adjacent disks. In the parts of the grate whose longitudinal gap widths permit of it, two scraping-off devices are provided between each two adjacent disks **4** or **4'**, which preferably lie immediately next to the disks and at the points at which the non-circular intermediate members **6** are provided with annular grooves **9**.

What I claim is:

1. In a disk roller classifying grate, a plurality of rollers transverse to the conveying direction of the grate, each comprising a row of spaced three-arc disks, the distances between the peripheries of the disks of adjacent rollers and the distances between the disks on the same roller both increasing in the conveying direction of the grate.

2. In a disk roller classifying grate, a plurality of rollers transverse to the conveying direction of the grate, said rollers being arranged in stepped groups, each roller comprising a row of spaced three-arc disks, the distances between the peripheries of the disks of adjacent rollers and the distances between the disks on the same roller both increasing in the conveying direction of the grate, and means for driving the respective groups of rollers at progressively slower speeds in the conveying direction of the grate.

HEINRICH KÖHLER.