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COAL DUST SCREENING DEVICE

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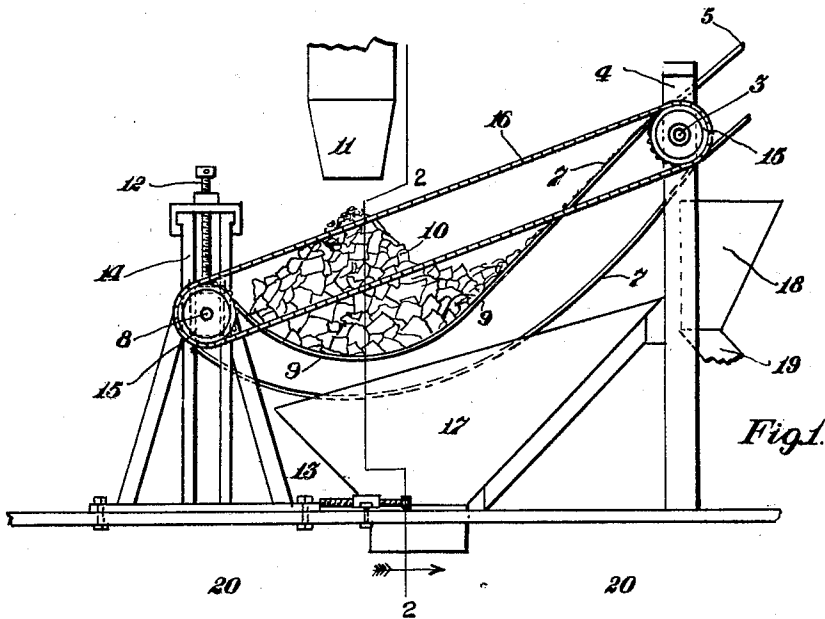


Fig. 1.

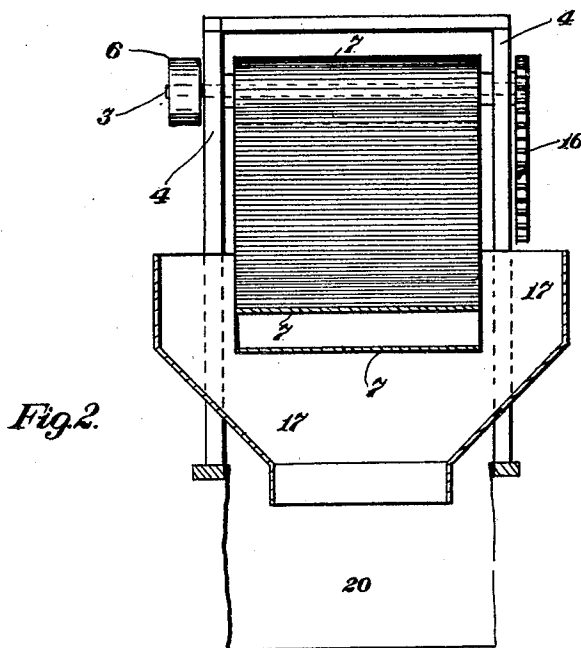


Fig. 2.

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COAL DUST SCREENING DEVICE

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This invention relates to an improved device for screening coal and particularly coal dust from larger particles and pieces, its object is the provision of an equipment of this character which is actually continuous in operation because of its inherent freedom from liability to stoppage and delay for the purpose of removing the clogging material from the meshwork of the screens which are now commonly used for this operation.

With coal screening devices as used hitherto it is a well recognized fact that the use of wire mesh screens as almost universally adopted for this work is attended with great inefficiency, largely on account of the inevitable liability of coal dust to adhere to the mesh fabric of the screens by reason of its peculiar qualities—largely hygroscopic—when pulverized to an impalpable powder, a condition which tends to set up a cumulative massing effect.

This process is so rapid under certain favouring conditions that it interposes a serious limitation on the output of ordinary equipment for this particular screening operation.

My invention by the adoption of an entirely new and different type of screening element, completely eliminates this defect and delay.

Instead of utilizing a wire mesh fabric for the screen I adopt a wide endless belt of yieldable or resilient character of fabric, such as rubber, canvas, or other like composite material. The outer surface of the belt has by preference fine corrugations positioned transversely of its direction of traverse to which the coal dust readily adheres but from which the larger particles roll back by gravitational effect. Other surface textures for the belt are also quite efficient. The belt is loosely supported from revolvable pulleys so as to provide a sag which forms a receptacle for the unscreened coal which is continuously deposited upon it from an overhead chute.

One of the supporting pulleys may be elevated as compared with the other as indicated in Fig. 1, but if a suitable inclination is given to the leading portion of the belt this difference of elevation is not vital to the efficiency of the device the disposition of the

parts of which may be determined by local considerations.

A positive drive is preferably given to both the pulleys in such a direction that the unscreened coal tends to traverse the inclined belt, this process causes the larger pieces of coal to fall off the belt sidewise, the smaller pieces being carried somewhat further by the traverse of the belt while the coal dust is caught in the fine corrugations of the belt surface and carried forward over the belt pulley to be deposited in any suitably placed receptacle for automatic or other delivery as required. With this arrangement it is obvious that the fine coal dust cannot encircle the fabric of the screen as is the case when wire mesh is used, and therefore the tendency for the dust to become locked on the screen is eliminated.

The device is more clearly described by the aid of the drawings accompanying and forming a part of this application and in which

Fig. 1 is a side elevation which indicates one method of carrying out my invention.

Fig. 2 is a sectional plan, taken on line 2—2 of Fig. 1.

In these drawings the numeral 3 indicates a shaft supported in bearings carried by the column 4, the shaft is driven in any convenient manner by a belt or chain 5 through the pulley 6 or an equivalent sprocket wheel. A wide belt member 7 provided with fine corrugations transversely positioned on its outer surface depends angularly from and is supported by a suitable wide belt pulley secured to the shaft 3. The belt member 7 which is endless is loosely looped over a second corresponding pulley secured to the shaft 8, and thus forms a loop or sag 9 which acts as a receptacle for the unscreened coal 10, the latter being continuously delivered from an overhead hopper or chute 11.

The belt 7 is preferably of yieldable or resilient material such as rubber fabric or the like, and its tension or level may conveniently be adjusted vertically by the screw 12 or horizontally at 13 by the setting up device for the column 14. By these the inclination and sag of the belt member 7 may be adjusted to meet any imposed conditions

whether of material or humidity. Sprocket wheels 15 afford a positive drive to both shafts 3 and 8 by the chain 16.

The larger material is caught by the hopper 17 below and on each side of the belt, and there is a continual changing of position in the components of the coal 10 as the latter traverses the inclined belt whereby gravitational action entirely separates the larger from the finer portions the actual coal dust clinging to the fine corrugations of the belt until after passing over the top or final pulley as the case may be it falls from the belt and is received by the hopper 18 and delivered to the chute 19. The plant may be conveniently arranged with a driveway below as indicated at 20 and of course depending upon local circumstances.

What I claim and desire to secure by Letters Patent, is:

In a coal dust screening device the combination comprising, two revolvable shafts parallel to each other and in spaced apart relation, means for driving said shafts at the same speed of revolution, a belt pulley secured to each said shaft, an endless belt of resilient fabric loosely encircling the two said pulleys whereby the sag between the said two pulleys is adapted to form a receptacle for the reception of the unscreened coal deposited upon its outer and upper surface and whereby an inclination of the said belt in the direction of its traverse is provided, a chute positioned above said belt and adapted to deliver unscreened coal upon said belt at the foot of said inclination, the outer surface of the said belt being provided with fine corrugations adapted to cause coal dust to adhere thereto, said corrugations of the belt being right-angularly positioned in respect to its direction of traverse, a receptacle below said belt and on each side thereof adapted to receive the lumps of coal gravitating from said belt when traversed, and a receptacle adjacent the top end of said inclination and adapted to receive the coal dust adhering to said corrugations and carried by said belt when traversed.

In testimony whereof I have hereunto affixed my signature.

VIVIAN ST. LAURENCE SYMONDS.

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