July 2, 1929. F. PARDEE 1,719,305

FEEDER

Filed Jan. 31, 1925 2 Sheets-Sheet 1

Fig. 1.

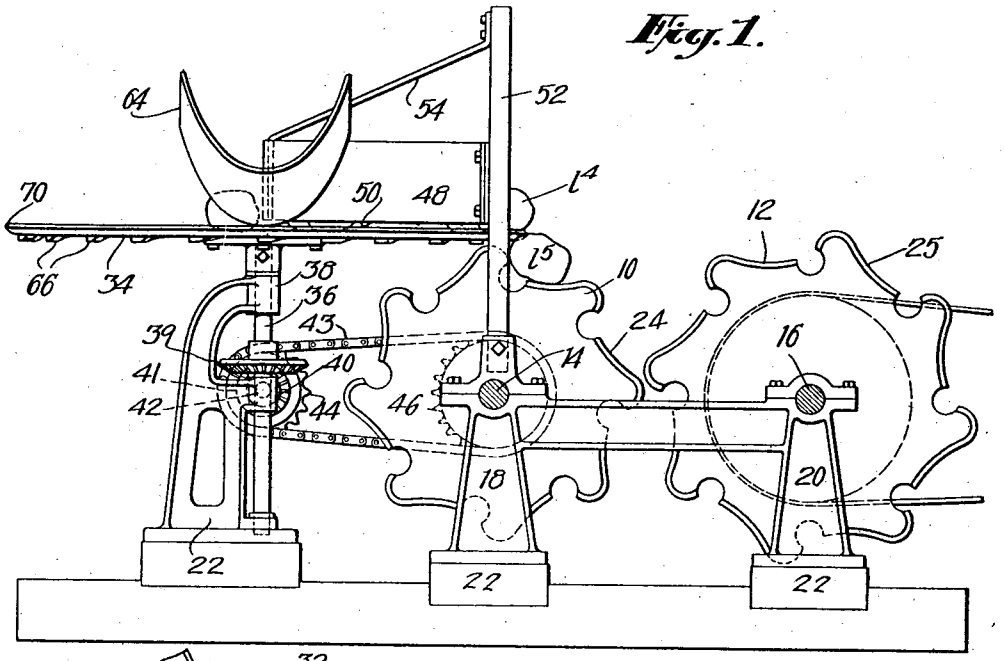
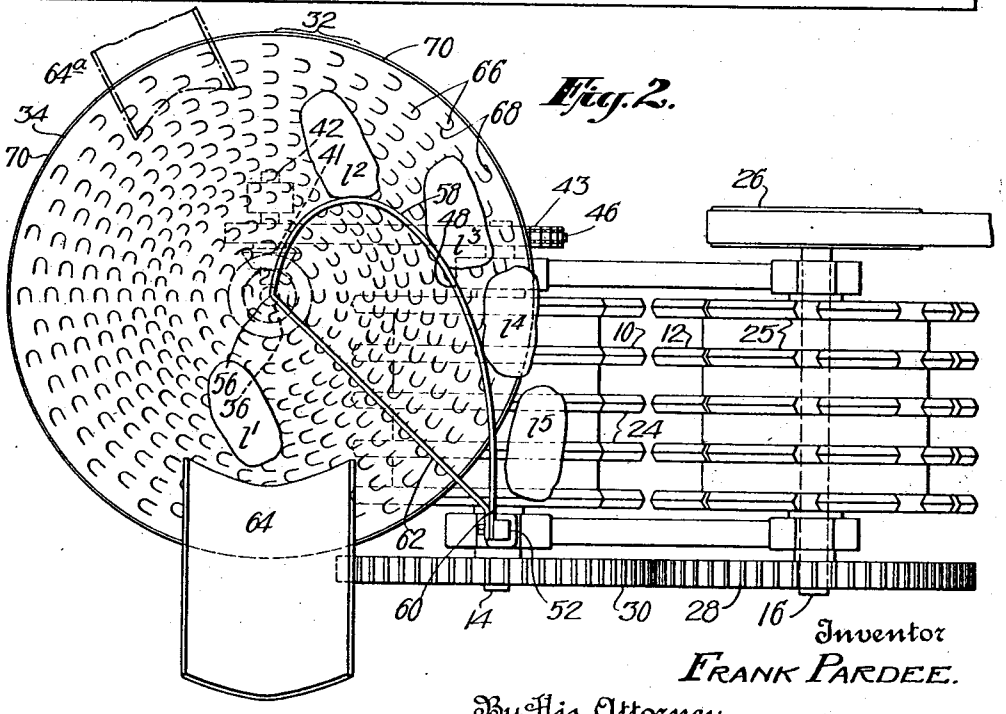


Fig. 2.



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Fig. 3.

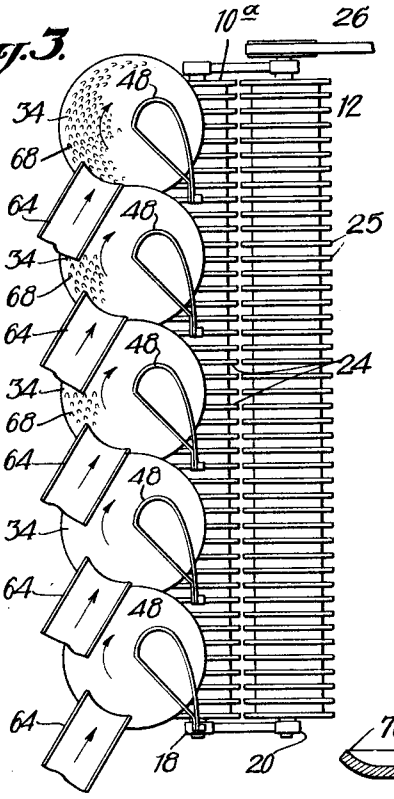


Fig. 4.

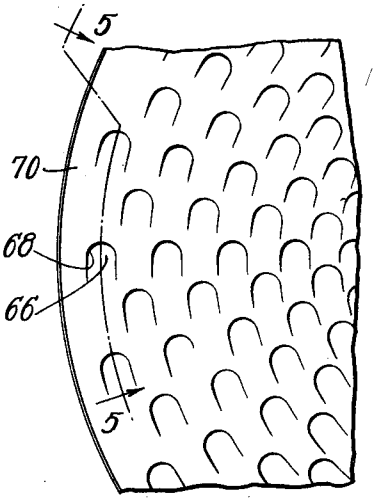


Fig. 5.



Fig. 6.

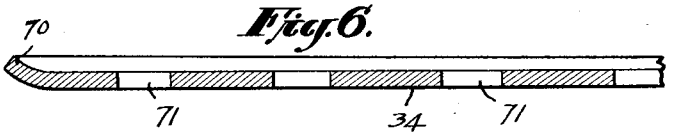


Fig. 7.

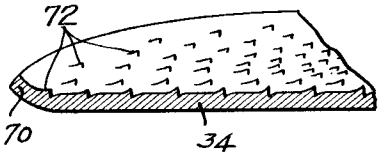
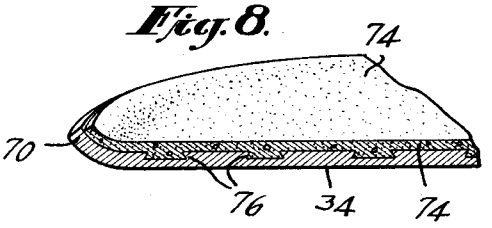


Fig. 8.



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UNITED STATES PATENT OFFICE.

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FEEDER.

Application filed January 31, 1925. Serial No. 5,935.

In a co-pending application No. 700,749 filed March 21, 1924, now Patent 1,577,072, granted March 16, 1926, I have described and claimed broadly a rotary feed device adapted to discharge lumps to a coal breaker or the like with their greatest length extending in such a direction that they will be acted upon in the most effective manner by the breaker.

The present invention is directed particularly to improvements in details of construction of the rotary feeder and aims to provide means for retarding the movement of the lumps fed to the disc.

The rotary feed disc shown in the prior application has a comparatively smooth surface. A disc with such a surface operates quite successfully with certain classes of coal. However, when the coal is wet the surface becomes slippery and the coal which is usually fed from an inclined chute is apt to slide freely over the surface of the disc. The construction herein disclosed overcomes this difficulty by providing a disc having a surface adapted to retard the movement of the lumps thereon, and the disc is also provided with a slightly upturned peripheral edge which tends to prevent the lumps from prematurely falling off.

An embodiment of the invention is illustrated in the accompanying drawings in which

Fig. 1 is an elevation showing my improved feeder operatively associated with a coal breaker;

Fig. 2 is a top plan view;

Fig. 3 is a diagrammatic plan illustrating a plurality of feeders for discharging lumps throughout practically the entire length of one of the breaker rolls;

Fig. 4 is an enlarged plan view of a portion of the feeder disc;

Fig. 5 is a sectional detail thereof on line 5—5 of Fig. 4;

Figs. 6, 7 and 8 are detail sections illustrating modifications.

Referring in detail to the drawings, a pair of breaker rolls 10 and 12 are mounted on shafts 14 and 16 supported in suitable bearings 18 and 20 secured to supporting timbers 22. The breaker rolls illustrated in Figs. 1 to 3 each comprise a series of opposed toothed discs 24 and 25. However, it is to be understood that my improved feeder may be used in connection with various types of breakers. The breaker rolls are driven by a pulley 26 from a suitable source of power, the two rolls being operatively connected by means of gears 28 and 30 shown in plan in Fig. 2.

Mounted in juxtaposition to the breaker is my improved feeder which is indicated as a whole by a numeral 32. This feeder includes a rotary disc 34 secured to a substantially vertical shaft 36 carried in bearings 38 and 40 and adapted to be rotated by any suitable driving mechanism. By way of example, in the drawings I have shown the shaft 36 provided with a bevel gear 39 meshing with a similar gear 41 carried on a shaft 42 which is driven by a chain 43 and sprockets 44 and 46 from the shaft 14 of the breaker roll 10.

Mounted above the disc 34 is a blade 48 whose lower edge 50 clears the top surface of the rotating disc 34. The blade is secured at one end to a suitable upright 52 and the other end is connected to a supporting member 54 which in turn is secured at its upper end to the post 52. The supporting structure for the blade, of course, may be varied, it merely being necessary to provide a structure which will permit the disc to rotate clear of the bottom edge of the blade 48.

As shown in Fig. 2 the blade is curved from the point 56 near the center of the disc 34 and outwardly as at 58 and terminates at 60 at a point beyond the periphery of the feeder disc. Part of the blade between the points 56 and 60 is a substantially straight wall as shown at 62.

The lumps of coal to be acted on by the breaker are fed preferably in single file, from an inclined shaking chute 64 carried by any suitable supports such as overhead suspension rods not shown. As each lump is discharged to the disc 34 it is carried around in a substantially circular path and finally is brought into contact with the curved orienting blade 48 so that said lumps are discharged from the feed disc 34 to the rolls of the breaker with the greatest length of the lumps extending substantially in the direction of the axes of the breaker rolls.

In Fig. 2 this action is illustrated by the lump which is shown in five different positions 1^1 showing its position as discharged from the chute 64. 1^2 represents the approximate position of the lump after it has been carried around by the disc 34 first striking the blade 48. Positions 1^3 and 1^4 show the result of the coaction between the rotary disc and fixed blade whereby the lump is oriented and 1^5 shows the lump discharged with its

greatest length extending in the direction of the axis of the breaker roll 10.

The curvature of the orienting blade 48 may be changed to correspond with the class of material being handled and also with the speed at which the disc 34 is rotated.

In Fig. 3, I have shown diagrammatically in plan view, the co-operating rolls of a coal breaker and a plurality of feeder discs 34 and orienting blades 48 which are adapted to feed the lumps delivered by the several chutes 64 to different points along the elongated breaker roll 10^a.

The feeder discs herein disclosed and claimed are adapted to retard the movement of the lumps fed thereto so as to prevent them being prematurely discharged.

In handling hard or bright and slippery coal it will be appreciated that lumps fed from an inclined chute would be apt to travel so freely as to travel over the edge of the disc before the latter had time to carry the lump around to position for coaction with the deflector blade. This is particularly true also when handling wet coal. To overcome this problem, I may form the disc with a frictional surface in a number of different ways such as illustrated, for example, in Figs. 4 to 8 inclusive.

In Figs. 4 and 5 the frictional surface is secured by punching downwardly a plurality of tongues 66. This results in leaving apertures 68 whereby the disc is made to present a reticulated surface.

I also form the disc with a slightly upturned edge or flange 70. This serves to prevent the premature falling off of lumps which travel almost to the edge. This peripheral flange or upturned edge is also helpful at the time the lump is brought to discharging position as there is a sort of a wedging action exerted on the lump by both the deflector blade and the upturned edge. That is to say, when the lump reaches the discharging position, for example, as indicated at 1^4 in Fig. 2 the peripheral flange tends to push the lump against the plate and this assists in discharging the lump with its greatest length extending in the required direction. When the frictional surface is secured by punching down the tongues 66 as shown in Fig. 5, said tongues may be ground off on the bottom so as to prevent interference between the overlapping discs when they are arranged as shown in Fig. 3.

Fig. 6 illustrates a fragmentary portion of a feeder disc in which the frictional surface is secured by punching a multiplicity of holes 71 clear through the disc. This does away with the necessity of grinding off the tongues as above referred to.

Fig. 7 illustrates an alternative form of disc in which the frictional surface is secured by roughening the disc either by casting it with a number of projections 72 thereon or such a similar one may be secured by nicking a plate with a suitable tool.

Fig. 8 shows a further alternative construction of disc in which the friction surface is secured by coating the upper surface with a layer of concrete 74 or other material presenting a rough surface which will retard the movement of either wet or dry coal. When such a layer is provided it can be bonded to the disc in any suitable manner as by forming undercut recesses 76 or by merely roughening the surface of the disc.

Though I have described with great particularity certain specific embodiments of the invention herein shown, it is not to be construed that I am limited thereto as various modifications may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What I claim is:

1. A feeder for discharging lumps comprising a rotary member having integral protrusions forming a frictional supporting surface to retard the movement of the lumps fed thereto, and a fixed member mounted above said rotary member adapted to orient the lumps carried thereby so that each lump will fall broadside over the outer edge of the rotary member as the latter turns.

2. A feeder for discharging lumps comprising a rotary disc having an upturned peripheral edge to prevent lumps from prematurely falling off the disc, and a fixed member mounted above the disc adapted to orient the lumps carried thereby and to discharge them with their greatest length extending in a predetermined direction.

3. A feeder for discharging lumps comprising a rotary disc having an upturned peripheral edge to prevent lumps from prematurely falling off the disc, and having a multiplicity of protrusions on its surface to retard the movement of the lumps.

4. A feeder for discharging lumps comprising a rotary disc having an upturned peripheral edge, and a deflector blade adapted to coact with said disc to discharge the lumps with their greatest length extending in a determined direction.

In witness whereof, I have hereunto signed my name.

FRANK PARDEE.