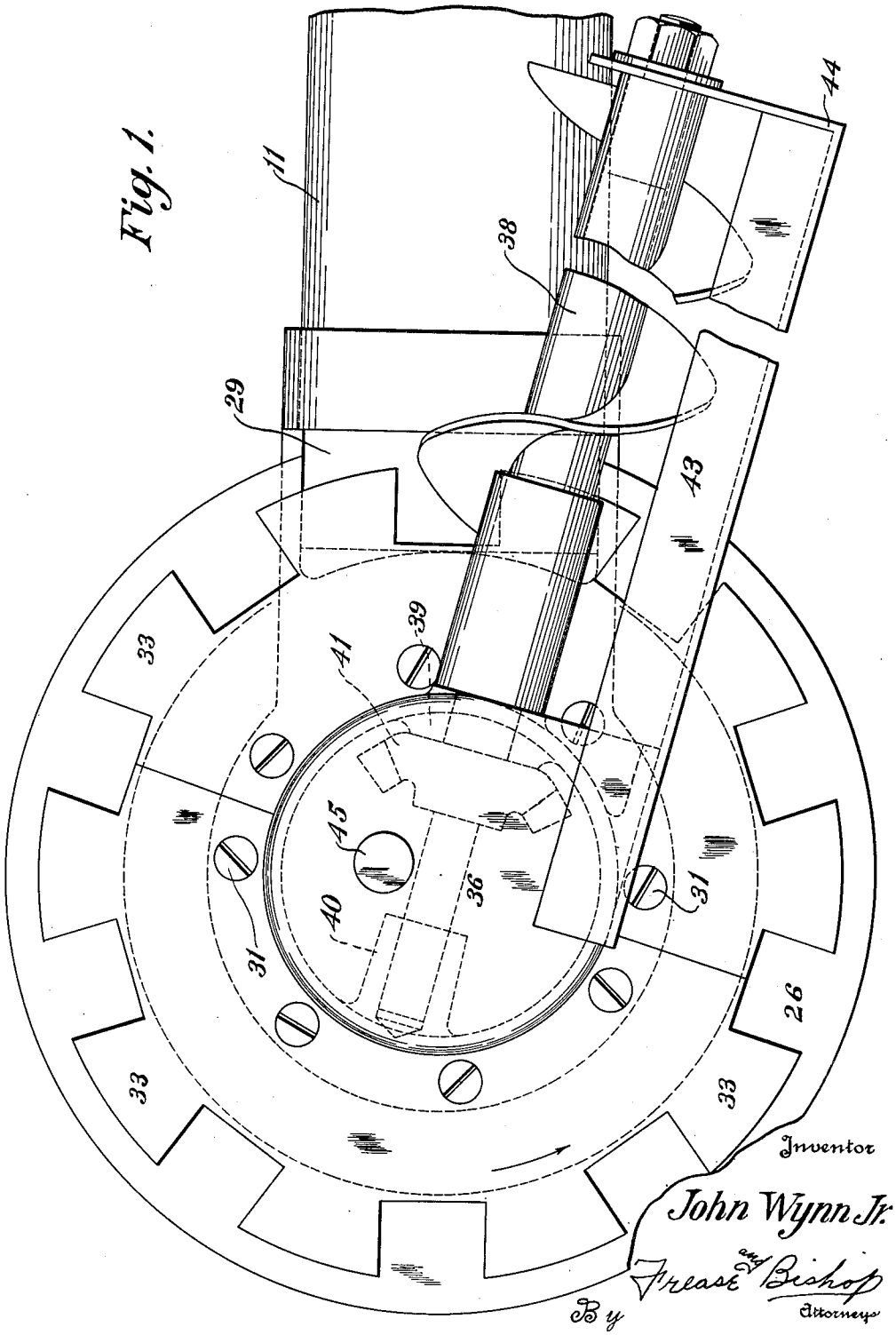
July 25, 1933. J. WYNN, JR 1,919,972

AGITATING AND FEEDING MECHANISM FOR STOKERS

Filed April 13, 1931 2 Sheets-Sheet 1

Fig. 1.



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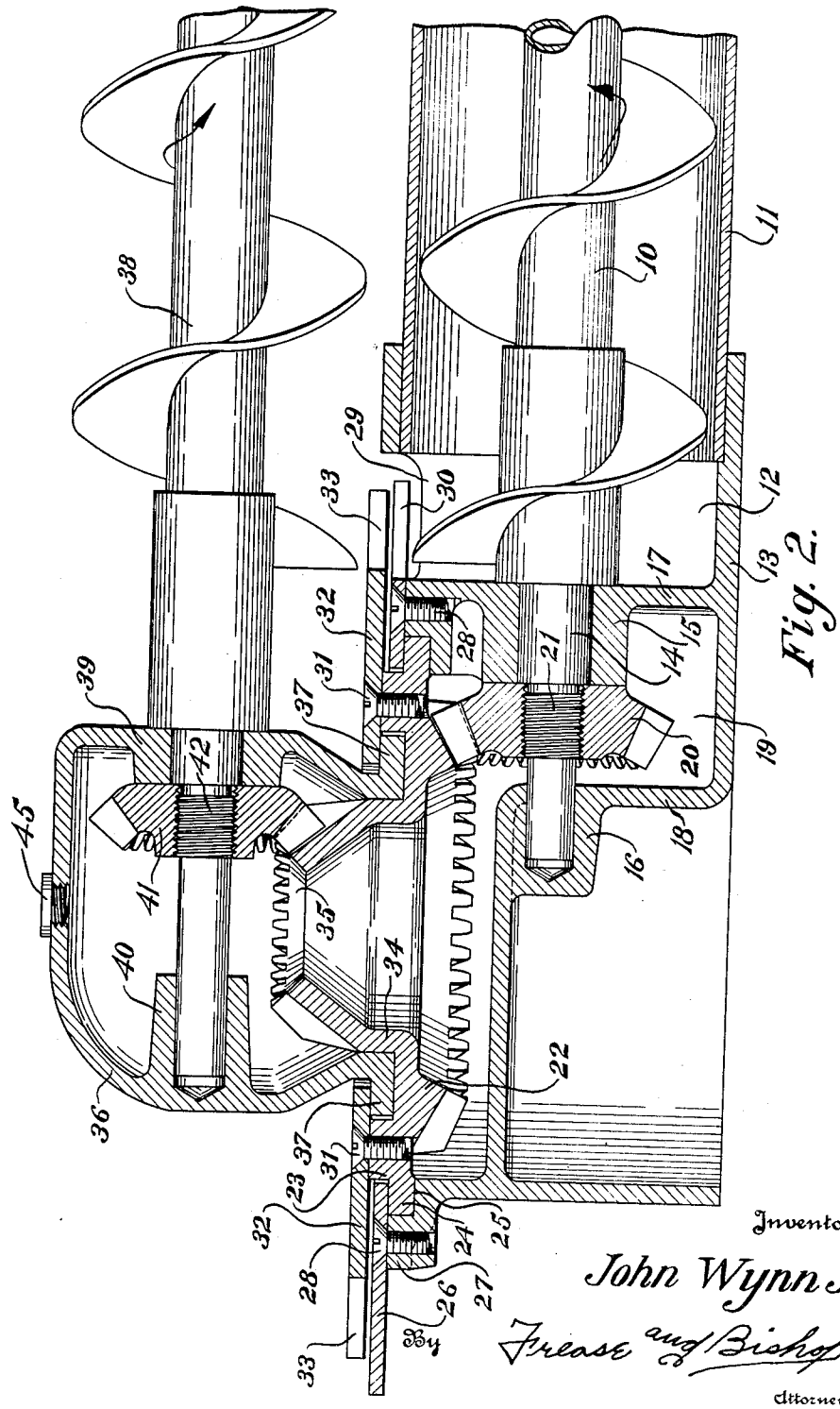


Fig. 2.

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UNITED STATES PATENT OFFICE

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AGITATING AND FEEDING MECHANISM FOR STOKERS

Application filed April 13, 1931. Serial No. 529,560.

The invention relates to stoker furnaces and more particularly to an agitating and feeding mechanism for feeding the fuel from a coal bin or the like to a screw or other conveyer leading to the furnace.

An object of the improvement is to provide a rotatable arm, preferably in the form of a conveyer screw for agitating and feeding fuel from all parts of the coal bin to the sizing and feeding mechanism, and arranged to automatically adjust itself within the coal bin.

Another object is to provide a rotatable notched disk in the lower portion of a coal bin or the like for agitating the coal and feeding fuel of proper size to a conveyer leading to the furnace.

Another object is to provide agitating and feeding mechanism including a driven conveyer screw leading to a furnace, a rotatable feeding disk driven by said screw, a housing rotatably mounted upon the disk and a second feed screw journaled in the housing and operatively associated with the disk.

The above, together with other objects which will be apparent from the drawings and the following description, or which will be later pointed out, may be attained by constructing the improved feeding and agitating mechanism as illustrated in the accompanying drawings, in which

Figure 1 is a plan view of the feeding and agitating mechanism to which the invention pertains; and

Fig. 2, a longitudinal sectional view thereof.

Similar numerals refer to similar parts throughout the drawings.

Although the invention is especially adapted for agitating and feeding slack, finely divided coal or similar fuel from a coal bin or the like to a furnace, it should be understood that it is equally adapted for agitating and feeding any kind of finely divided solid material from a bin or receptacle.

In carrying out the invention, a conveyer, which may be in the form of a screw 10, extends from a central point in the bottom of the bin to the furnace or other apparatus to which the material is to be fed, and is located within a tubular housing 11.

The charging end of the conveyer housing 11 extends into a compartment 12 formed in the casting 13 and the conveyer screw 10, which may be driven by a motor or other well known means (not shown), is extended into this compartment and the end portion 14 of the shaft thereof is journaled in suitable bearings 15 and 16 formed in the casting 13 upon opposite side walls 17 and 18 respectively, of the gear chamber 19. A pinion 20 is fixed upon the shaft 14, as by the screw threads 21, and located within the gear chamber 19.

A multiple ring gear 22 meshes with the pinion 20 and is provided upon its upper surface with the concentric annular rib 23, the peripheral portion 24 of said ring gear being journaled within the annular socket 25 formed in the upper portion of the casting 13.

A ring disk 26 rests upon the peripheral rib 27 of the casting 13, being fixed thereto as by the screws 28, the inner edge of said disk extending over the peripheral portion 24 of the ring gear 22 cooperating with the annular socket 25 in the casting to form a journal bearing for the ring gear.

The ring disk 26 is provided, above the opening 29 to the compartment 12, with a cut-out portion or notch 30 registering with said opening. Located above the ring disk 26 and fixed upon the annular rib 23 of the ring gear so as to be coaxial therewith, as by screws 31, is a feeding disk 32 provided around its periphery with spaced notches 33 of a size to admit the maximum size of fuel desired to be fed from the disk to the conveyer screw 10.

The ring gear 22 is provided with the vertical cylindric portion 34 having a bevel pinion 35 formed at its upper end. A housing 36 is rotatably mounted around the cylindric portion 34 of the ring gear for movement about the axis of the gear, and the housing is provided at its lower end with the horizontally disposed peripheral flange 37 journaled between said ring gear and the inner edge of the disk 32 whereby the housing 36 and ring

gear 22 may normally rotate relative to each other.

A radial agitating bar preferably in the form of a feed screw 38, is carried by the rotatable housing 36, the inner end portion of the shaft thereof being journaled in the bearings 39 and 40 formed in opposite walls of the housing 36. A pinion 41 is fixed upon the shaft of the screw 38 as by the screw threads 42 and meshes with the bevel pinion 35 upon the ring gear.

The conveyer screw 38 may be of any desired length depending upon the dimensions of the bin within which the mechanism is located, it being understood that the casting 13 is located substantially at the center of the bin and the conveyer screw 38 is of sufficient length to feed the coal from all sides of the bin toward the center.

For the purpose of steadying the conveyer screw 38 as well as to provide means for assisting the same in feeding coal from the extremities of the bin toward the center thereof, a supporting arm 43 may be attached to the upper portion of the rotatable housing 36, the outer end thereof being bent at right angles as at 44 to provide a bearing for the outer end of the conveyer screw.

In order to provide for running all of the gears in grease or other suitable lubricant, a grease cap 45 may be provided in the top of the rotatable housing 36, whereby grease may be forced down through the ring gear and into the gear compartment 19.

In the operation of the mechanism the conveyer screw 10 is driven by a motor or other suitable device operatively connected thereto in the direction of the arrow shown in Fig. 2. Through the pinion 20 the ring 22 and ring pinion 35 are thus rotated in a direction to drive the conveyer screw 38, through the bevel pinion 41, in the direction of the arrow shown thereon in Fig. 2.

Coal will thus be fed by the conveyer screw 38 onto the rotating notched disk 32 and as this disk is rotated by the ring gear 22, fuel of proper size will drop through the notches 33 of the disk and through the opening 30 in the fixed ring disk 26 into the compartment 12 where it will be picked up by the conveyer screw 10 and fed outward through the tubular housing 11 to the furnace or other apparatus to which it may be desired to convey the material.

As the screw 38 conveys all of the fuel from any particular location in the bin, it will be seen that the housing 36 will be permitted to rotate with the ring gear 22 until the screw 38 is again brought into contact with the fuel in the bin, at which time the rotation of the rotatable housing will be stopped and the screw 38 will again feed fuel to the disk. The screw 38 will thus slowly feed all of the coal from the bin onto the disk 32, slowly eating its way into the fuel pile until it has rotated entirely around the bin and has fed all of the fuel within its reach.

It will thus be seen that substantially all of the coal in the bin may be automatically fed to the feeding disk and from there to the conveyer screw 10 without manual assistance, whereby a stoker furnace may be operated for indefinite periods of time, depending only upon the amount of coal placed in the bin.

Throughout the specification and claims it should be understood that where a bin is referred to this term should be considered as referring to a pile or heap of coal or other material as the mechanism will operate just as well within or beneath a pile of material as though it were enclosed in a bin or receptacle.

I claim:

1. Feeding and agitating mechanism including a conveyer, a rotatable feeding member cooperating with the conveyer, and a bar extending from a point above the center of the rotatable member beyond the periphery thereof and mounted for rotary movement relative to the rotatable member around the axis thereof.

2. Feeding and agitating mechanism including a conveyer, a rotatable feeding member cooperating with the conveyer, and a second conveyer extending from a point above the center of the rotatable member beyond the periphery of the rotatable member and movable around the axis of the rotatable member.

3. Feeding and agitating mechanism including a conveyer, a rotatable feeding member cooperating with the conveyer, and a conveyer screw extending from a point above the center of the rotatable member beyond the periphery of the rotatable member and movable around the axis of the rotatable member.

4. Feeding and agitating mechanism including a driven conveyer, a rotatable feeding disk cooperating with the conveyer, a second conveyer extending from a point above the center of the disk beyond the periphery of the disk and movable around the axis of the disk, and means operatively connecting said conveyers.

5. Feeding and agitating mechanism including a driven conveyer, a rotatable feeding disk cooperating with the conveyer, a conveyer screw extending from a point above the center of the disk beyond the periphery of the disk and movable around the axis of the disk, and means operatively connecting the driven conveyer and conveyer screw.

6. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring gear in the housing meshing with the pinion, a feeding disk carried by the ring gear, a

rotatable housing journaled upon the ring gear and operatively connected thereto and a radial bar carried by the rotatable housing.

7. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a multiple ring gear in the housing meshing with the pinion, a feeding disk carried by the ring gear, a rotatable housing journaled upon the ring gear, a second conveyer screw journaled in the rotatable housing and a pinion upon said second conveyer screw meshing with the ring gear.

8. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring gear in the housing meshing with the pinion, a feeding disk carried by the ring gear, a rotatable housing journaled upon the ring gear, and a second conveyer screw journaled in the rotatable housing.

9. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring gear in the housing meshing with the pinion, a feeding disk carried by the ring gear, a rotatable housing journaled upon the ring gear, a second conveyer screw journaled in the rotatable housing, and adapted to move into contact with material to be conveyed.

10. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring gear in the housing meshing with the pinion, a feeding disk carried by the ring gear, a rotatable housing journaled upon the ring gear, a radial bar carried by the rotatable housing and adapted to move into contact with material to be conveyed.

11. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring gear in the housing meshing with the pinion, a feeding disk carried by the ring gear, a rotatable housing journaled upon the ring gear, a ring pinion fixed upon the ring gear, a second conveyer screw journaled in the rotatable housing, and a pinion upon said second conveyer screw meshing with the ring pinion.

12. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring disk fixed upon the top of the housing, and having an opening above the charging end of the conveyer screw, a ring gear journaled in the housing and meshing with said pinion, a feeding disk carried by the ring gear, a rotatable housing journaled between the ring gear and feeding disk, a second conveyer screw journaled in the rotatable housing and a pinion upon said second conveyer screw operatively connected to the ring gear.

13. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring disk fixed upon the top of the housing and having an opening above the charging end of the conveyer screw, a ring gear journaled in the housing and meshing with said pinion, a feeding disk carried by the ring gear, a rotatable housing journaled between the ring gear and feeding disk, a pinion in the rotatable housing operatively connected to the ring gear, and a radial arm carried by the rotatable housing.

14. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring disk fixed upon the top of the housing and having an opening above the charging end of the conveyer screw, a ring gear journaled in the housing and meshing with said pinion, a feeding disk carried by the ring gear, a rotatable housing journaled between the ring gear and feeding disk, a second conveyer screw journaled in the rotatable housing, a pinion upon said second conveyer screw operatively connected to the ring gear, and a bar connected at one end to the rotatable housing and at its other end to the second conveyer screw.

15. Feeding and agitating mechanism including a conveyer, a rotatable feeding member cooperating with the conveyer, and a bar extending from a point above the center of the rotatable member beyond the periphery thereof and adapted to feed material from the outer end of the bar inward to the rotatable member.

16. Feeding mechanism including a driven conveyer, a rotatable member above the conveyer and operatively connected thereto, and means above the rotatable member normally rotatable relative thereto around the axis thereof for feeding material to the conveyer.

17. Feeding mechanism including a driven conveyer, a rotatable member above the conveyer and operatively connected thereto, and means above and operatively connected to the rotatable member and normally rotatable relative thereto around the axis thereof for feeding material to the conveyer.

18. Feeding mechanism including a driven conveyer, a rotatable member above the conveyer and operatively connected thereto, and means operatively connected to the rotatable member for normal relative rotation about the axis thereof for feeding material to the conveyer.

19. Feeding mechanism including a driven conveyer, a rotatable feeding member

above the conveyer and operatively connected thereto, and means normally rotatable relative to and carried by the rotatable feeding member for feeding material to the conveyer.

20. Feeding mechanism including a driven conveyer, a rotatable feeding member above the conveyer and operatively connected thereto, and means normally rotatable relative to and carried by and operatively connected to the rotatable feeding member for feeding material to the conveyer.

21. Feeding mechanism including a driven conveyer, a rotatable feeding member above the conveyer and operatively connected thereto, and means operatively connected to the rotatable feeding member for normal relative rotation about the axis thereof for feeding material to the conveyer.

22. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring gear in the housing meshing with the pinion, a feeding disk carried by the ring gear, a rotatable housing journaled in said mechanism for normally rotating with the ring gear, and a radial bar carried by the rotatable housing.

23. Feeding and agitating mechanism including a housing, a driven conveyer screw extending into said housing, a pinion upon the inner end of said conveyer screw, a ring gear in the housing meshing with the pinion, a feeding disk carried by the ring gear, a rotatable housing journaled in said mechanism, a radial bar carried by the rotatable housing, and means operatively connecting the ring gear to the radial bar for rotating the rotatable housing.

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