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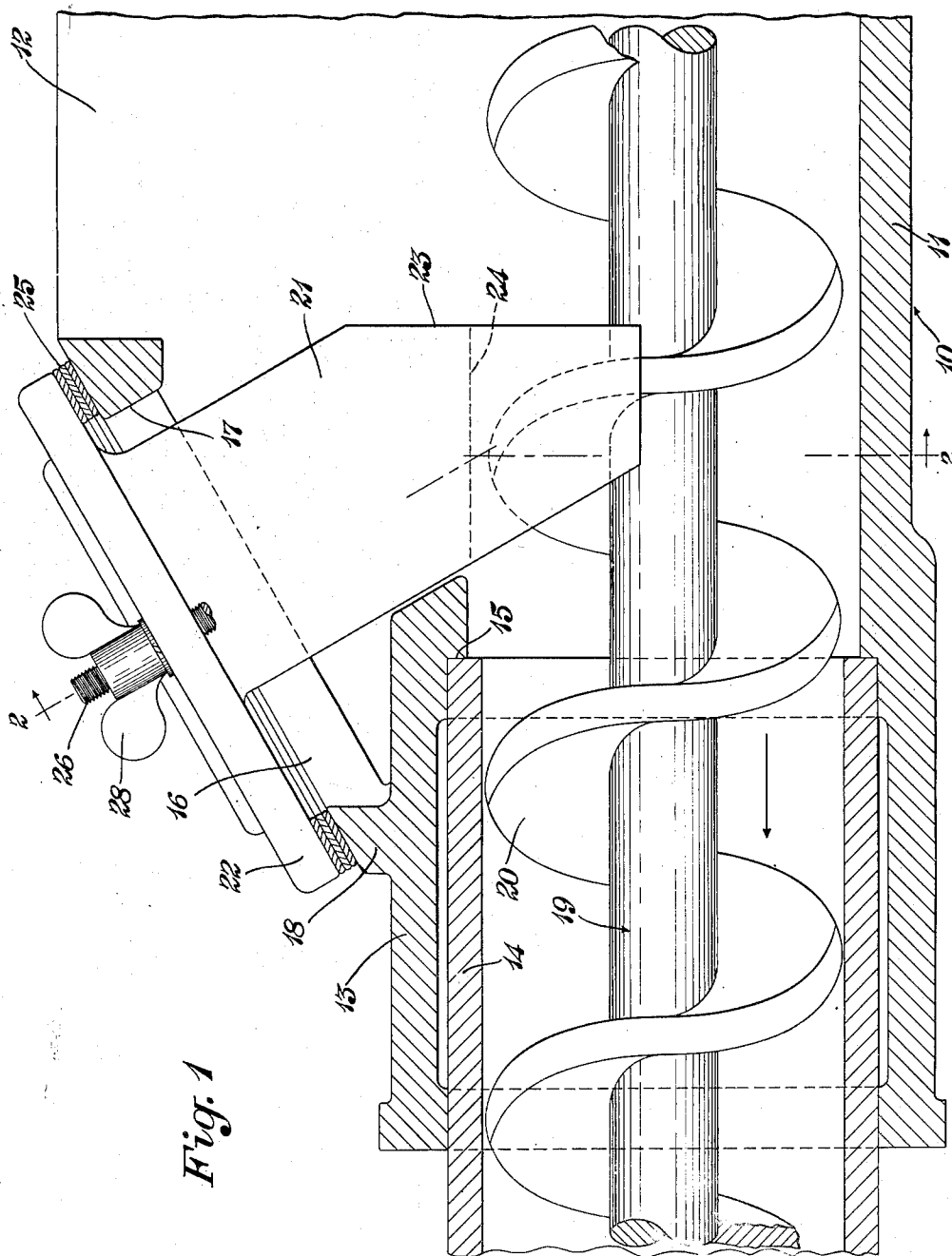
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COAL METERING AND CLEANOUT BLOCK FOR STOKERS

Filed March 18, 1949

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

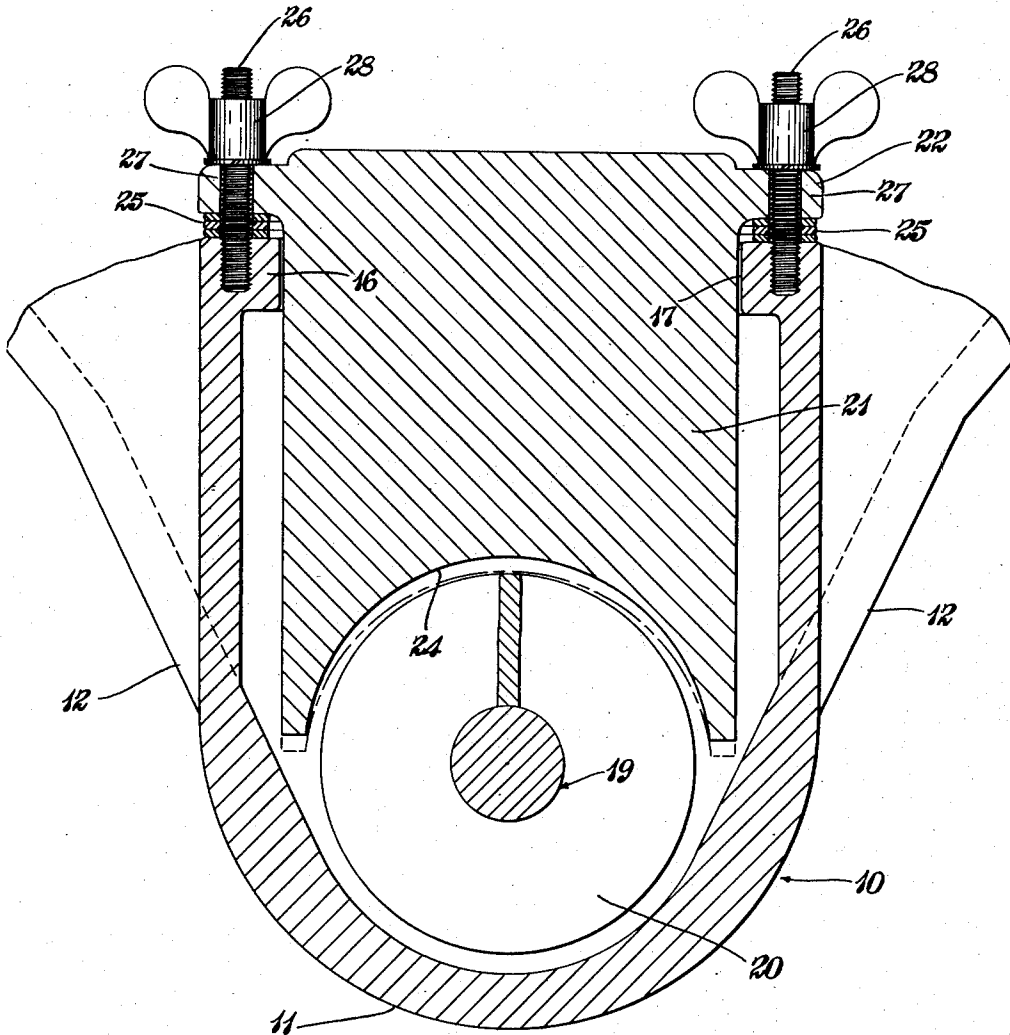


Fig. 2

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COAL METERING AND CLEANOUT BLOCK
FOR STOKERSEdward G. Baer, Orrville, Ohio, assignor to The
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2 Claims. (Cl. 222—317)

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The invention relates to stokers in which a feed screw carries coal from a hopper through a coal feed tube to the furnace, and more particularly to a coal metering and cleanout block located adjacent to the entrance end of the coal feed tube for varying the amount of coal fed through the tube as conditions require.

In apparatus of the character referred to both the screw and the tube through which coal is fed by the screw become worn by the continual movement of the coal in contact therewith so that in time either the screw or the tube, or both, become worn to such an extent that during the operation of the coal feed screw the tube is not sufficiently filled with coal, whereby smoke is permitted to pass back from the furnace back through the coal tube to the hopper.

It also happens that where coarse coal is being used, this smoke back condition prevails. In either event this is a very annoying and unpleasant condition, as the smoke passing back through the coal tube and out of the hopper fills the basement, utility room or other place in which the hopper is located.

In stokers of this character it is customary to provide shear pins which will be readily sheared when coal becomes packed in the tube due to overloading of the screw.

This shear pin is provided to immediately stop the rotation of the coal feed screw when it is overloaded, in order to prevent damage to the motor and drive mechanism which operate the screw. Thus while the shear pin is necessary in order to prevent damage to the apparatus, frequent shearing of the shear pin is undesirable since this results in the immediate stoppage of the operation of the stoker and requires that the coal which has become packed in the tube must be removed and the shear pin replaced before the stoker again is ready for operation.

It is an object of the present invention to provide an adjustable coal metering and cleanout block by means of which the amount of coal fed through the coal tube can be varied as conditions require.

Another object is to provide such a metering block having a substantially semi-cylindrical cut-out portion surrounding the feed screw and spaced therefrom providing a clearance between the screw and the block, with means for increasing this clearance to allow more coal to enter the tube to prevent smoke back conditions resulting either from the use of coarse coal or the use of a worn coal tube and/or screw.

A further object is to provide a coal metering

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block of the character referred to with means for decreasing the clearance between the screw and the block so as to allow less coal to enter the coal tube in order to prevent the shear pin from being sheared by packing of coal in the tube.

A still further object is to provide a coal metering block of this character having a flanged head providing a covering for a cleanout opening adjacent to the entrance to the coal tube.

Another object is to provide for adjusting the coal metering block by means of removable gaskets located between the flanged head of the block and the housing, whereby the addition of gaskets will increase the clearance between the block and the screw, and the removal of gaskets will decrease this clearance.

A further object is to provide threaded studs and nuts for holding the block in adjusted position.

The above and other objects, apparent from the drawings and following description, may be attained, the above described difficulties overcome and the advantages and results obtained by the apparatus, construction, arrangement and combinations which comprise the present invention, a preferred embodiment of which, illustrative of the best mode in which applicant has contemplated applying the principle, being set forth in detail in the following description and illustrated in the accompanying drawings, in which;

Figure 1 is a fragmentary, longitudinal sectional view through the entrance end portion of a coal tube and the adjacent portion of the hopper, with a coal feed screw therein, showing the improved coal metering and cleanout block to which the invention pertains; and

Fig. 2 a transverse sectional view, taken as on the line 2—2, Fig. 1.

A portion of the housing of a conventional hopper for stokers is indicated generally at 10, having the rounded bottom wall 11 and upwardly and outwardly diverging side walls 12. This hopper terminates at its outlet end in a tubular portion 13, into which the entrance end of the coal tube 14 is inserted, the inner end of said tube abutting the annular shoulder 15 in the tubular portion 13 of the hopper.

The discharge end of the hopper has the downwardly and forwardly inclined top portion 16 in which is located a cleanout opening 17 surrounded by the annular rib or flange 18.

A conventional coal feed screw 19, having the usual continuous spiral flange 20 thereon, is located through the hopper and the coal tube for conveying coal from the hopper through the

tube to the furnace, in the direction of the arrow shown in Fig. 1, as in usual and customary manner.

The coal metering block to which the invention pertains is indicated at 21, and is provided at its upper end with the flanged head 22 arranged to extend over the rib or flange 18 and cover the cleanout opening 17.

As shown in Fig. 1, the block 21 may be inclined rearwardly within the hopper and the lower portion thereof may be tapered as indicated at 23. The lower portion of the block has the substantially cylindrical cutout portion 24, adapted to encircle substantially the upper half of the spiral flange 20 of the screw at this point in the hopper adjacent to the inlet end of the coal tube.

With the block 21 in the position shown in the drawings, which is considered the normal position, the clearance between the screw and the block is uniform as best shown in Fig. 2. It will be evident that as the block 21 is raised this clearance is increased and as the block is lowered toward the screw, the clearance is decreased.

For the purpose of adjusting the block 21 toward or away from the screw, any desired number of gaskets, preferably of fiber, as indicated at 25, are placed between the flanged head 22 of the block and the rib 18 of the housing.

By increasing the number of gaskets used at this point, it will be seen that the block is raised so as to increase the clearance between the block and the screw and by removing some of the gaskets, the block may be lowered so as to decrease the clearance between the block and the screw.

For the purpose of holding the metering block in adjusted position threaded studs 26 may be mounted in the housing and adapted to pass through suitable openings 27 in the flanged head 22 of the block, wing nuts or the like, as indicated at 28, being screwed down against the flanged head of the block as shown in the drawings.

From the above it will be obvious that a simple, inexpensive and easily adjusted metering device is provided for varying the amount of coal fed through the tube as conditions may require, whereby smoke back conditions may be corrected by allowing more coal to enter the tube, and overloading, resulting in the shearing of shear pins from the packing of coal, can be corrected by reducing the amount of coal entering the tube.

According to the provisions of the patent statutes, I have explained the principle of my invention and described one embodiment thereof, but I desire to have it understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. In a stoker comprising a hopper, a coal tube communicating with one end of the hopper, said one end of the hopper having a top wall downwardly inclined toward the coal tube and having a cleanout opening providing access to the interior of the hopper from the exterior thereof, and a coal feed screw located through the hopper and the coal tube, a coal metering block located through said cleanout opening and having a semi-cylindrical cutout portion in its underside surrounding substantially the upper half of the screw and spaced therefrom, a flanged head upon the upper end of the coal metering block forming a cover for the cleanout opening, and means for adjustably mounting the flanged head upon said inclined top wall of the hopper for closing the cleanout opening and adjusting the coal metering block toward and from the screw for controlling the amount of coal fed to the coal tube from the hopper.

2. In a stoker comprising a hopper, a coal tube communicating with one end of the hopper, said one end of the hopper having a top wall downwardly inclined toward the coal tube and having a cleanout opening providing access to the interior of the hopper from the exterior thereof, and a coal feed screw located through the hopper and the coal tube, a coal metering block located through said cleanout opening and having a semi-cylindrical cut-out portion in its underside surrounding substantially the upper half of the screw and spaced therefrom, a flanged head upon the upper end of the coal metering block forming a cover for the cleanout opening, and means for adjustably mounting the flanged head upon said inclined top wall of the hopper for closing the cleanout opening and adjusting the coal metering block toward and from the screw for controlling the amount of coal fed to the coal tube from the hopper, said means comprising removable annular gaskets located between said flanged head and said inclined top wall and screw means located through the flanged head and inclined top wall.

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