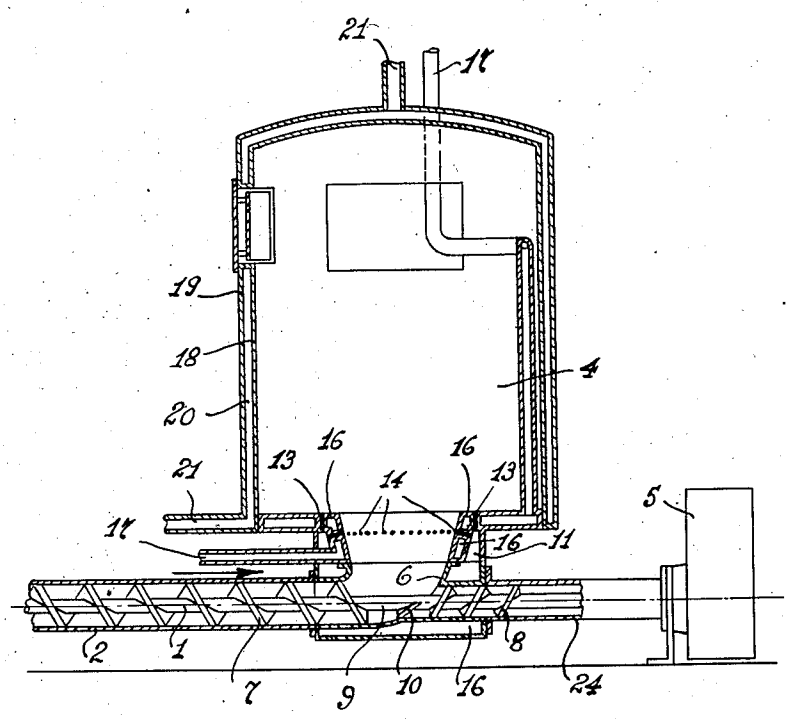
July 5, 1938. J. N. VAN RIJSWIJK 2,122,733

STOKING INSTALLATION

Filed July 31, 1935 2 Sheets-Sheet 1

Fig. 1.



Jacobus Nicolaas van Rijswijk
INVENTOR.

per H. D. Schappelwick ATTORNEY.

July 5, 1938. J. N. VAN RIJSWIJK 2,122,733

STOKING INSTALLATION

Filed July 31, 1935 2 Sheets-Sheet 2

FIG. 2

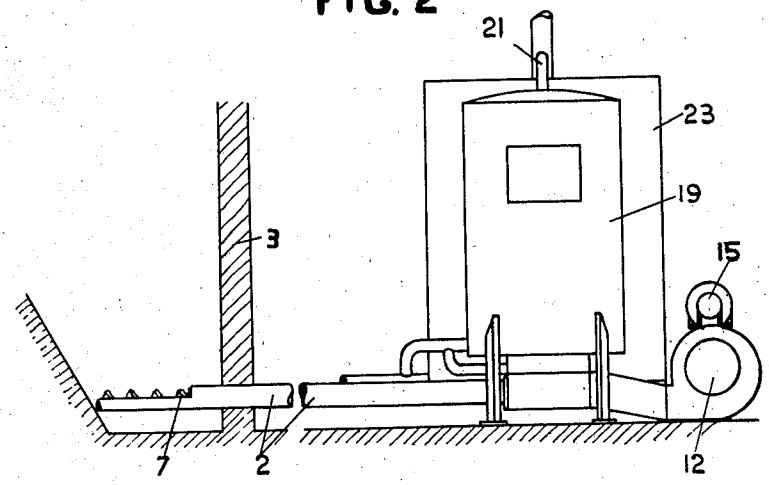
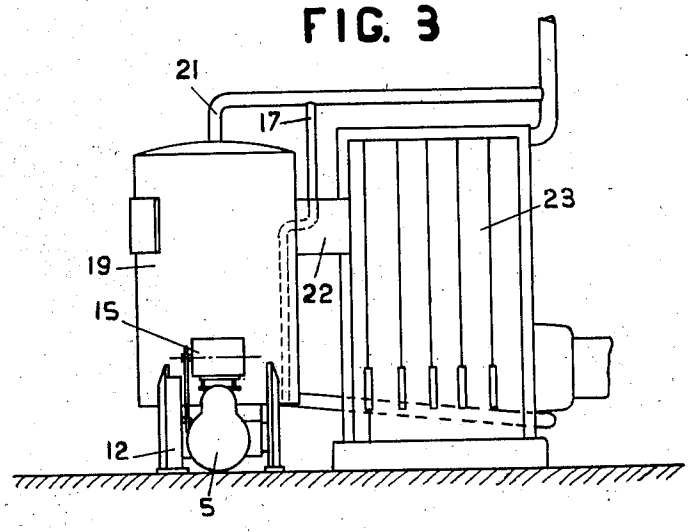


FIG. 3



Jacobus Nicolaas van Rijswijk
INVENTOR.

H. D. Fitzpatrick ATTORNEY

Patented July 5, 1938

2,122,733

UNITED STATES PATENT OFFICE

2,122,733

STOKING INSTALLATION

Jacobus Nicolaas van Rijswijk, 's Gravenhage, Netherlands, assignor to Iron Fireman Manufacturing Company, Portland, Oreg.

Application July 31, 1935, Serial No. 34,041
In the Netherlands August 16, 1934

2 Claims. (Cl. 110—45)

The invention relates to improvements in the so-called "underfeed" stoking-installations.

It is known by means of a driving-mechanism, which drives a feed-screw, to push coals from a coalbunker, placed between a driving-mechanism and a combustion-chamber, to said chamber.

In this arrangement the coalbunker, because it is of limited capacity, must frequently be filled according to the varying consumption of fuel, which is especially a drawback for central-heating-installations. It has been already proposed to make the coalbunker of very large volume, which necessitates same being placed generally rather far from the boiler, and thus necessitates a long feed-screw and which causes the driving-mechanism to be located far from the boiler. As the driving-mechanism is generally provided with a ventilator built to it, a very long air-conduit then exists.

The object of this invention is to prevent the above disadvantages and principally consists therein, that the fuel is pulled (instead of pushed) by a feed-screw from the coal-bunker to the combustion-chamber, which screw passes said chamber and is connected with the driving mechanism. Thus the feed-screw reaches at the one end into the coalbunker, while at the other end it is coupled to its driving-mechanism.

This embodiment has the advantage, that the driving-mechanism with ventilator can be placed near to the boiler, and the regulation of the fire is thereby facilitated.

In order to prevent the part of the screw between the combustion-chamber and the driving-mechanism, towards which the coals are pulled, fouling and sticking fast, according to the invention an opposite handed screw, preferably with larger speed or pitch than the feed-screw, can be located to this shaft part, the supplied coals being repulsed by said opposite handed screw.

In order to remove regularly the coals under the shaft, according to the invention, a projection such as a cam or blade preferably screw-shaped, can be mounted to the shaft. Instead of this cam or blade, for this purpose also a wedge-shaped piece can be secured to the bottom of the firepot.

The coals then are turned off sideways, while pulverizing and dust-accumulation are prevented.

In order to avoid a high temperature of the fire-box-walls, according to the invention said fire-box is water-cooled, and the cooling-jacket may be connected to the circulation of the central-heating-installation.

This firepot or box consists preferably of ingot-iron, but it also can be made of cast-iron or other metal.

It has been found that with such a water-cooled firepot no slack affects the metal and the slack does not set hard in front of the air-openings, but is pressed upwardly by the fresh fuel and forms itself into a flat annulus, which lies round the firepot. With such a firepot each fuel can be stoked with high profitable effect.

Finally according to the invention the combustion-chamber can also be water-cooled, and the cooling jacket may be connected to the central-heating installation.

This combustion-chamber can be connected by a preferably cooled main-flue with a fire door hole or an ash door hole of an existing boiler. The drawings which are in part diagrammatic illustrate the invention by way of example.

Fig. 1 is an elevation mainly in section of a combustion-feeding and stoking-mechanism according to the invention.

Fig. 2 is an elevation partly in section showing the mechanism applied to a central heating installation with a coalbunker located at a considerable distance therefrom as shown by the break in the coal tube.

Fig. 3 is an elevation taken at right angles to Fig. 2.

According to the illustrated construction a feeding screw 1 is mounted in a tube 2 with the one end projecting into the bottom of the coalbunker 3 (Fig. 2). This coalbunker can be at any place and distance with regard to the combustion-chamber 4, to which the coals have to be supplied. The feedscrew 1 extends to a driving-mechanism 5, which is near the combustion-chamber 4 but on the opposite side of the combustion-chamber from the coalbunker 3.

The feedscrew 1 passes the fire-box 6, which is under the chamber 4. The feedscrew has a part 7 with a thread adapted to move the coal to the right, said part lying between the coalbunker 3 and the firepot 6, and a part with an opposite screwthread 8, lying between the firepot 6 and the feeding-mechanism 5.

If the screw rotates, then the coals are pulled by the screwpart 7 from the coalbunker 3 to the firepot 6, while the screwpart 8 takes care, that coal-dust does not penetrate into the bearing of the screw-spindle and the driving-mechanism, because it always pushes back the fuel into the firepot 6. On the part 9 of the screw passing through the firepot 6 is a screw-shaped blade 10, which serves to remove the coals from under the shaftpart 9 on rotation of the screw.

Fig. 1 further shows the air-box 11, to which air can be supplied by a ventilator 12 (Figs. 2 and 3), which air can come through openings 13 in the combustion-chamber 4 and through openings 14 in the fuel in the firepot 6. In Figs. 2 and 3 the motor is denoted by 15.

From Fig. 1 it is seen that the firepot 6 is provided with a water-cooling jacket 16, which by means of tubes 17, can be connected to the circulation-installation of a central-heating arrangement.

The combustion-chamber 4 is located in a boiler 18 having an external wall 19 which constitutes a watercooling jacket 20, which may be connected through tubes 21, 21 on the water circulation of a central-heating arrangement.

The watercooled combustion-chamber 4, 18, 19, 20 is connected to a boiler 23 (Fig. 3) with underfeed by means of a main-flue 22, which also may be water-cooled.

Preferably the tube 24, in which the screwpart 8 between the fire-box 6 and the driving-mechanism 5 is located, is of air-tight construction.

The word "surrounding" in the claims means "partially or complete surrounding."

I claim:—

1. In combination, a retort section having a curved coal passage therethru receiving coal in a horizontal direction and discharging the coal upwardly, a tuyère section adjacent the retort section to form therewith a fire-pot, a tube forming a cylindrical space intersecting the coal passage wall coaxially with the horizontally positioned coal receiving end of the coal passage, a worm shaft having a right line axis extending through the horizontal portion of the coal passage and also entirely through and beyond the cylindrical space which intersects the coal passage wall, and flights of opposite pitch on said worm shaft, one flight substantially fitting the horizontal portion of the coal passage and the other flight substantially fitting the cylindrical space formed by the tube so as to form a bearing for the worm shaft, and a motor for driving the worm shaft from the end extending through and beyond the cylindrical space.

2. A stoker fire-pot comprising a tuyère section and a retort section, said sections having an uywardly curved coal passageway therethru, a pipe intersecting the curved passageway at one side, a coal conduit leading to the entry end of the curved passageway and coaxial with said pipe but of larger diameter, a screw conveyor within the conduit for conveying coal from a coal storage space through said conduit to said retort section, the shaft of said screw conveyor passing through the wall of the curved passageway and extending into the pipe, a reversely directed flight on the extended portion of the shaft for preventing coal from passing through the pipe, and a motor for driving the screw shaft from the end passing through the pipe.

JACOBUS NICOLAAS VAN RIJSWIJK.