

May 29, 1928.

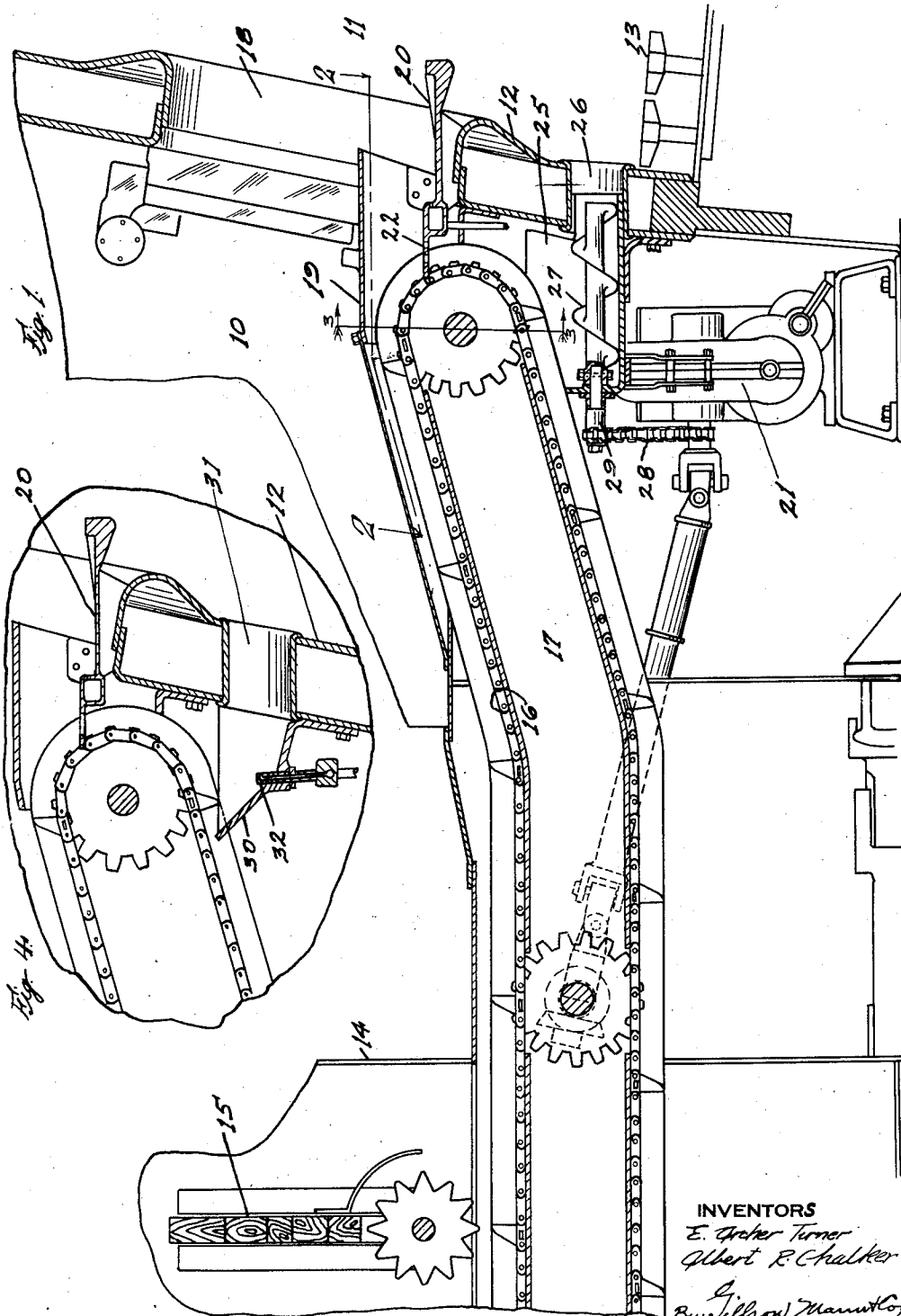
1,671,331

E. A. TURNER ET AL

LOCOMOTIVE STOKER

Filed Feb. 4, 1927

2 Sheets-Sheet 1



INVENTORS

E. Greer Turner
Albert R. Chalker
By: J. J. Lillson, Manufacturer

attys.

May 29, 1928.

1,671,331

E. A. TURNER ET AL

LOCOMOTIVE STOKER

Filed Feb. 4, 1927

2 Sheets-Sheet 2

Fig. 2.

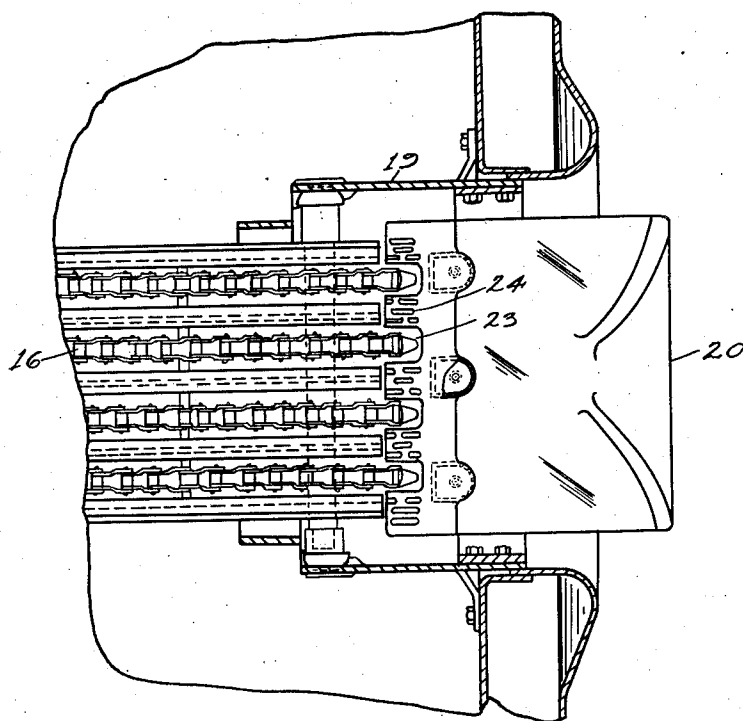
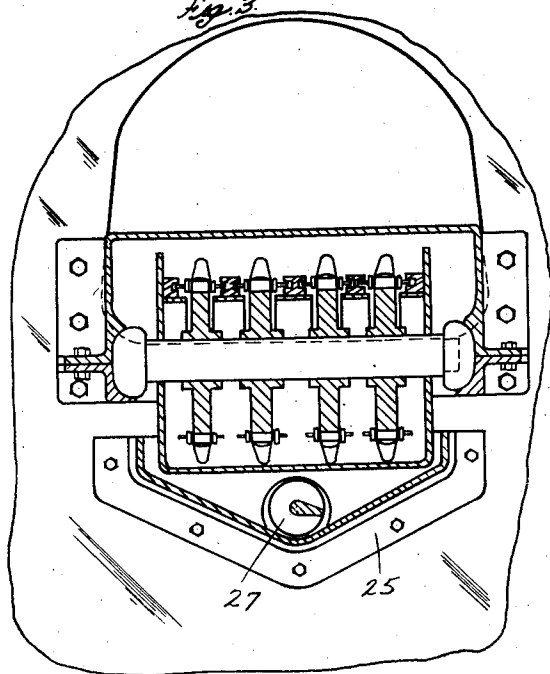


Fig. 3.



INVENTORS

E. Archer Turner
Albert R. Chalker

By: Wilson, Mann & Co.

Attys

UNITED STATES PATENT OFFICE.

EDWIN ARCHER TURNER AND ALBERT R. CHALKER, OF PITTSBURGH, PENNSYLVANIA, ASSIGNORS TO LOCOMOTIVE STOKER COMPANY, A CORPORATION OF PENNSYLVANIA.

LOCOMOTIVE STOKER.

Application filed February 4, 1927. Serial No. 165,830.

The invention relates to stokers of the scatter-feed type in which the fuel is brought forward from the locomotive tender to an opening in the backhead of the locomotive boiler through which it is discharged into the firebox and scattered over the grate.

used only for the purpose of illustration and is not intended as imposing any limitation upon the scope of this invention.

The distributor plate 20 may be of any preferred form except that its rearward portion as indicated at 22, upon which the fuel is delivered by the transferring conveyor, is apertured to constitute a riddle through which the finer particles of the fuel may drop. The apertures in the rearward portion 22 include the openings 23 through which the chains 16 pass, additional openings here shown in the form of slots 24, being provided as may be found necessary to accomplish the riddling action.

The object of the invention is to provide for the separation of the finer from the coarser particles of fuel at the point of delivery to the firebox, the finer portions being dropped into a hopper from which it is discharged into the firebox through another opening in the backhead.

A hopper 25 below the rearward end of the distributor plate receives the fine coal and communicates with the firebox through a supplemental opening 26 in the backhead 12. A screw conveyor 27 housed within the hopper urges the fuel forwardly into the firebox. This screw is driven from the motor 21 by any suitable means, there being shown for this purpose a sprocket chain 28 turning over a sprocket wheel formed on the engine shaft and another formed on a shaft 29 journaled in the rear wall of the hopper 25 and pinned to and carrying the shaft of the screw 27.

While the invention is applicable to stokers of other forms it is shown and described in connection with the transferring mechanism forming the subject of a pending application of Nathan M. Lower, Serial No. 169,219, filed February 18, 1927.

The supplemental opening 26 of the backhead being adjacent to the grates 13 the fine fuel is delivered upon the latter without scattering, and hence is not in danger of being taken up by the strong draft through the firebox and carried unconsumed into the boiler flues. The fuel delivered over the distributor plate 20 is sufficiently coarse to be uninfluenced by the draft and as a result a substantial saving in fuel is secured.

In the accompanying drawings:

Fig. 1 is a detail vertical central longitudinal section through the rear portion of a locomotive and the forward portion of its tender, and through the stoking device;

The modified form of construction shown in Fig. 4 is especially applicable to locomotives having deep fire-boxes. The same form of riddling distributor plate 20 may be employed. The hopper 30 for receiving the fine coal comprises a three-sided structure, bolted to the backhead 12 to enclose the supplemental opening 31 therein, which is located above the normal surface of the fire bed. A steam nipple 32 projects through and is suitably secured within the rear wall of the hopper 30 and is ported to discharge jets through the opening 31 for the purpose of throwing the fuel into the firebox. Preferably low steam pressure is applied to this nozzle in order that the fine

Fig. 2 is a detail horizontal section on the line 2—2 of Fig. 1;

Fig. 3 is a detail transverse vertical section on the line 3—3 of Fig. 1; and

Fig. 4 is a detail longitudinal vertical section of the backhead of the boiler and the delivery end of the stoker, showing a modified form of construction.

A portion of the cab of a locomotive is represented at 10; the firebox chamber is indicated at 11; the backhead of the boiler is designated 12; and the firebox grate is shown at 13.

At 14 there is represented the forward end of the tender of the locomotive, the fuel bin of which is located back of the coal gate 15. The transfer conveyor for carrying the fuel forward from the tender to the locomotive comprises a plurality of endless chains 16 housed within a casing 17 which extends under the floor of the fuel bin of the tender and forwardly approximately to the firing opening 18 in the backhead 12, where it is flexibly attached to a delivery nozzle 19 projecting into the firing opening and delivering the fuel upon a distributor plate 20.

The chains 16 are driven from a motor 21 mounted on the frame of a locomotive.

The parts referred to are substantially the same as are shown and described in the Lower application, but this form of construction is

5

10

15

20

25

30

35

40

45

50

55

60

65

70

75

80

85

90

95

100

105

110

fuel may not be thrown into the zone of action of the draft through the firebox.

The location of a supplementary firing opening immediately below the main point of delivery to the firebox insures an adequate supply of fuel directly under the upper distributor, permitting the designing of this distributor with view to insuring adequate delivery to back corners of the fire box.

The invention may be differently embodied either in connection with stoking mechanism of the drag chain type, or other forms.

We claim as our invention:

1. In combination, a locomotive having a firebox provided with a pair of vertically alined firing openings in its backhead, a distributor plate projecting through the upper opening and having a riddle at its rearward end, means for delivering fuel across the riddle and onto the plate, means for discharging fuel from the plate, a hopper below the riddle and communicating with the lower opening, and means for discharging fuel from the hopper through such opening.

2. In combination, a locomotive having a firebox and a pair of vertically alined firing openings in the backhead thereof, an endless chain conveyor for delivering fuel to the upper opening, a distributor plate receiving from the conveyor and projecting into such opening and having apertures in its rearward end for the passage of the chains on return, a hopper for receiving fuel from such apertures and communicating with the lower firing opening, means for discharging fuel from the distributor plate, and means for forcing fuel from the hopper through the lower firing opening.

3. In combination, a locomotive having a firebox provided with fuel feed openings at different elevations in its backhead, a dis-

tributor plate projecting through an upper opening and having apertures in its rearward end, an endless drag chain transfer conveyor for delivering fuel onto the distributor plate, its chains passing through the plate apertures on return, means for discharging fuel from the plate into the firebox, and means for receiving fuel discharged through the plate apertures and guiding it to a lower backhead opening.

4. In combination, a locomotive having a firebox provided with fuel feed openings at different elevations in its backhead, a distributor plate projecting through an upper opening and having apertures in its rearward end, an endless drag chain transfer conveyor for delivering fuel onto the distributor plate, its chains passing through the plate apertures on return, means for discharging fuel from the plate into the firebox, means for receiving fuel discharged through the plate apertures and guiding it to a lower backhead opening, and a screw conveyor for forcing fuel through such opening.

5. In combination, a locomotive having a firebox provided with feed openings at different elevations in its backhead, a distributor plate projecting through an upper opening and having apertures in its rearward end, an endless drag chain conveyor for delivering fuel onto the plate, its chains passing through certain of the plate apertures on return, means for discharging fuel from the plate into the firebox, and means for receiving fuel discharged through the plate apertures and guiding it to a lower backhead opening.

In witness whereof we affix our signatures.

E. ARCHER TURNER.
ALBERT R. CHALKER.