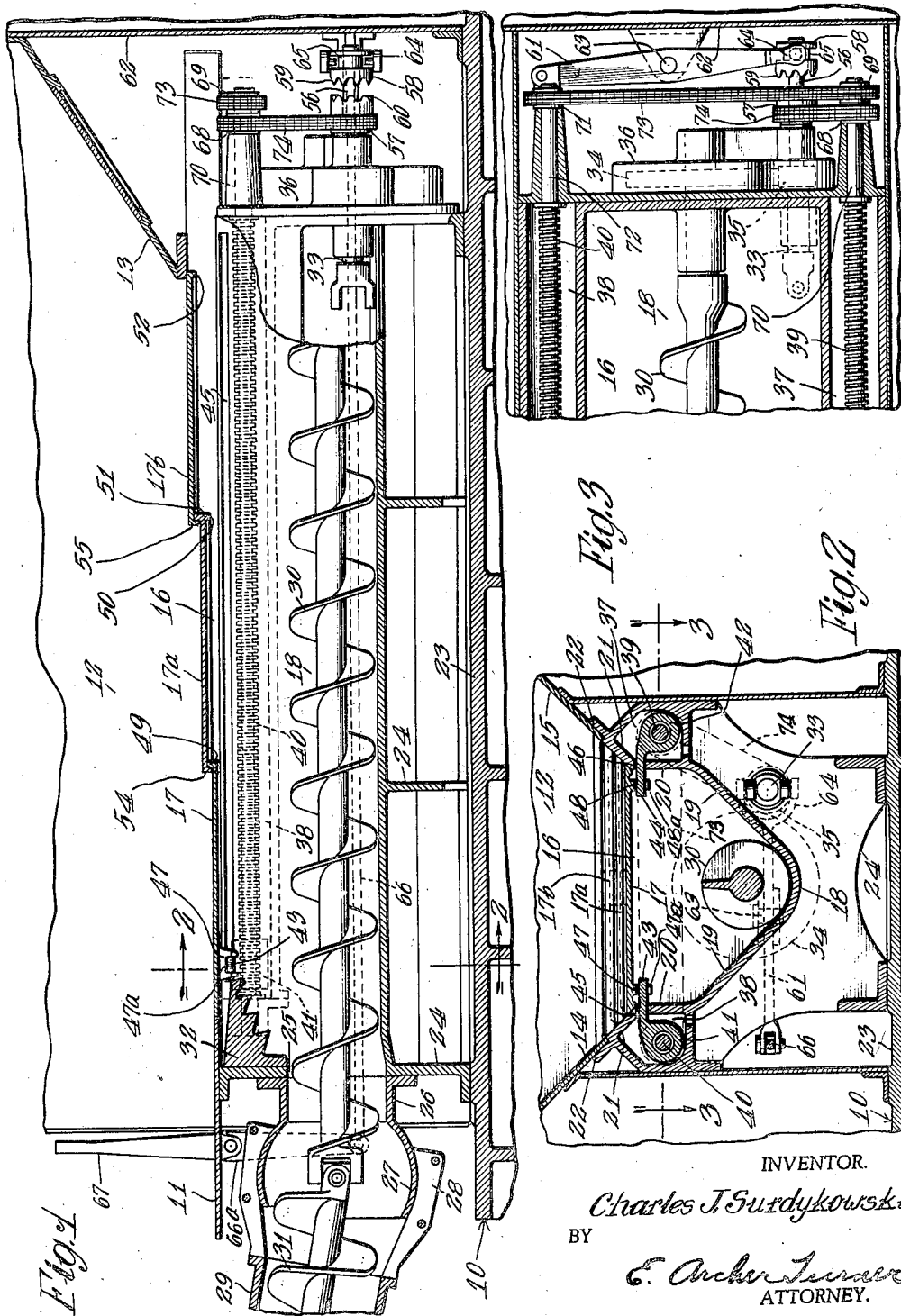


Sept. 18, 1934.

1,974,293

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CHANGE OF NAME C. J. SURDY
LOCOMOTIVE TENDER
Filed Jan. 27, 1932



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1,974,293

LOCOMOTIVE TENDER

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Application January 27, 1932, Serial No. 589,091

4 Claims. (Cl. 198—15)

This invention relates generally to railway rolling stock, and more particularly to new and improved construction and arrangement in tender slideplates of stoker equipped locomotive and tenders.

The principal object of the invention is the provision of power operated slide plates in the floor of the tender fuel bin that are conveniently and efficiently operated and manipulated to successively remove them from covering position, and to return them to their original position.

It is a further object of the invention to provide power operated slide plates in the floor of a tender fuel bin arranged to be operated by the stoking mechanism.

A still further object of the invention is to provide means for throwing the slide plate moving mechanism into or out of operation at the will of the operator.

Other and further objects of the invention contemplate the particular features of construction, combinations of elements and arrangement of parts hereinafter more fully described and illustrated in the accompanying drawing, in which:

Figure 1 is a longitudinal central vertical section through a tender and the tender unit of a stoker with the invention applied thereto and shown in similar section;

Figure 2 is a section taken on the line 2—2 of Fig. 1; and

Figure 3 is a section taken on the line 3—3 of Fig. 2.

Referring now to the drawing, the locomotive tender is generally designated by the numeral 10 and it is provided with a deck 11 and a fuel bin 12 defined by the rear slope sheet 13 and the side slope sheets 14 and 15. The bottom of the fuel bin is provided with a discharge opening 16 adapted to be closed by a plurality of slidable plates 17, 17a and 17b.

An open mouth trough 18 is mounted on the tender beneath the fuel bin 12. The bottom of the trough is rounded to conform with the periphery of the screw flights, and the sidewalls thereof include the upwardly diverging sections 19, continuing in the vertically extending sections 20 and terminating in the outwardly diverging flanges 21. The flanges 21 are provided at their inner upper marginal edge with the horizontally extending grooves 22 in which are received the lower marginal edges of the side slope sheets 14 and 15, for attachment thereto by any suitable means. The trough 18 may be supported from the frame 23 of the tender by means of the transversely extending support members 24

which if it is found convenient or desirable can be formed integral with the trough itself.

The trough 18 is provided with a discharge opening 25 and a tubular conduit 26 is secured to the forward end of the trough surrounding the discharge opening 25. The conduit 26 is provided with a spherical flange 27 arranged to be received in a clamp 28 forming a universal connection between the conduit 26 and the conduit element 29 of a conduit system leading to the locomotive firebox.

A screw conveyor 30 is mounted in the trough 18, flexibly connected at its forward end with a conveyor screw 31, for advancing fuel through the conduit system. Suitable crushing means, as a crusher 32 mounted at the forward end of the trough and arching over the screw conveyor 30, is provided to reduce the fuel to the desired size. The screw conveyor 30 is driven from its rearward end by the power shaft 33 through the gears 34 and 35 housed in the gear casing 36.

It has previously been explained that slide plates are mounted in the bottom of the fuel bin 12 and may be moved from covering position to regulate the delivery of fuel to the trough. It will be appreciated that the weight of tons of coal on the slide plates makes them difficult to move. In cold weather trouble is particularly experienced in moving the slide plates due to the freezing of water at the adjacent edges of the plates and the walls of the fuel bin. The present invention provides power operated means, conveniently arranged and operated for moving the slide plates and which means will now be described more in detail.

Extending longitudinally of the trough 18 and adjacent the vertical sections 20 and flanges 21 thereof are the casing or housing members 37 and 38 which may be formed as an integral part of the trough if desired. Threaded shafts 39 and 40 are rotatably mounted in the casings 37 and 38 respectively in suitable bearing members at the opposite ends of the casings. Nut members 41 and 42 are mounted to travel along the threaded shafts 39 and 40 respectively. They are provided with the extension members 43 and 44 extending inwardly through the openings 45 and 46 in the sidewalls of the trough 18. The plate 17 is provided with the depending lugs 47 and 48, one at each side thereof, which are provided with the openings 47a and 48a respectively for receiving the extension members 43 and 44, whereby the nut members 41 and 42 are kept in engagement with the plate 17.

The slide plates are arranged in stepped ar-

rangement so that as they are moved rearwardly they slide one beneath the other. When the threaded shafts 39 and 40 are made to rotate, the nut members 41 and 42 are forced to travel rearwardly along the threaded shafts and by reason of the engagement of the extension members 43 and 44 with the lugs 47 and 48 of the plate 17, the latter slides rearwardly beneath the plate immediately behind it. The plate 17 slides beneath the plate 17a until the upstanding lug 49 of the plate 17 contacts the depending lug 50 of the plate 17a, after which both plates 17 and 17a slide beneath the plate 17b until the upstanding lug 51 of the plate 17a contacts the depending lug 52 of the plate 17b whence all three plates will be slid rearwardly.

When reversing the direction of rotation of the threaded shafts 39 and 40 to close the opening in the bottom of the fuel bin, the nut members 41 and 42 are forced to travel forwardly along the threaded shafts, thereby drawing the plate 17 forwardly, which plate in turn draws the plate 17a forwardly by engagement of the upstanding lug 49 of the plate 17 with the depending lug 54 of the plate 17a, which in turn draws the plate 17b forwardly by engagement of the upstanding lug 51 of the plate 17a with the depending lug 55 of the plate 17b. In the drawing three plates, 17, 17a and 17b have been shown, but it will be apparent that any desirable number of plates may be used without departing from the scope of the invention.

The threaded shafts 39 and 40 are preferably operated from the power shaft 33, which operates the stoker, in a manner now to be described. The power shaft 33 is provided with an extended shaft portion 56 upon which a sprocket 57 is normally permitted to idle. Keyed to the extended shaft portion 56 and movable longitudinally thereof is a clutch member 58 provided with teeth 59 arranged for engagement with the teeth 60 of the sprocket 57. The clutch member 58 and the sprocket 57 are engaged and disengaged by movement of the lever arm 61. The lever arm 61 is pivotally mounted from the wall 62 as at 63 and is provided with a forked member 64 arranged to be received in the peripheral groove 65 of the clutch member 58. The movement of the lever arm 61 is controlled from the front of the tender by a handle 67, movement of which is transferred to the lever arm 61 by the connecting rod members 66 and 66a.

When the clutch member 58 engages the sprocket 57, it causes the sprocket 57 to rotate with the shaft extension 33. Rotation of the sprocket 57 is in turn communicated to the threaded shafts 39 and 40 by means of the sprockets 68 and 69 mounted on the extension 70 of the threaded shaft 39, the sprocket 71 mounted on the extension 72 of the threaded shaft 40 and the sprocket chains 73 and 74.

For convenience the shafts 39 and 40 are threaded in such a manner that they will move the slide plates rearwardly when the stoker is operated to advance fuel forwardly and will move the slide plates forwardly when the stoker is reversed.

I claim:

1. In a locomotive tender, a fuel bin, a plurality of slidably mounted plates forming a floor portion for said fuel bin, a stoker trough mounted on the tender beneath said fuel bin, a conveyor screw

in said trough, means for operating said conveyor screw, means for moving said plates including a threaded stem extending longitudinally of said bin, and a nut member mounted on said threaded stem and engaging the foremost of said plates, means for restraining rotary motion of said nut member about said threaded stem, means for rotating said threaded stem from said conveyor screw operating means, and a clutch member arranged to place said plate moving means into and out of operation during operation of said conveyor screw operating means.

2. In a locomotive tender, a fuel bin having downwardly and inwardly tapering sidewalls, a plurality of slidably mounted plates forming a floor portion for said fuel bin, a stoker trough mounted on the tender beneath said fuel bin, a conveyor screw mounted in said trough, means for operating said conveyor screw, means for moving said plates including threaded stems mounted longitudinally of said fuel bin adjacent the lower edge of said fuel bin side walls, lugs depending from one of said plates, nut members engaging said lugs and mounted to travel on said threaded stems for moving said plate, means for restraining rotary motion of said nut members about their respective threaded stems, means for rotating said threaded stems from said stoker operating means and a clutch member arranged to place said plate moving means into and out of operation during operation of said stoker operating means.

3. The combination including a fuel bin, a plurality of slidably mounted plates forming a floor portion for said fuel bin, a stoker trough mounted beneath said fuel bin, a conveyor screw in said trough, a power shaft, drive mechanism for said conveyor screw operatively connected to said power shaft, means for moving said plates including a threaded stem extending longitudinally of said bin, and a nut member mounted on said threaded stem and engaging the foremost of said plates, means for restraining rotary motion of said nut member about said threaded stem, drive mechanism for said threaded stem operatively connected with said power shaft, and a clutch member arranged to disconnect at least one of said drive mechanisms from its operative connection with said power shaft during operation of said power shaft.

4. The combination including a fuel bin, a plurality of slidably mounted plates forming a floor portion for said fuel bin, a stoker trough mounted beneath said fuel bin, a conveyor screw in said trough, a power shaft, drive mechanism for said conveyor screw operatively connected to said power shaft, means for moving said plates including a pair of threaded stems extending longitudinally of said bin, there being one stem at each side of the stoker trough, and a nut member mounted on each threaded stem and engaging the foremost of said plates, means for restraining rotary motion of each nut member about its respective threaded stem, drive mechanism for said threaded stems operatively connected to said power shaft, said last named drive mechanism arranged to rotate said threaded stems in unison, and a clutch member arranged to disconnect at least one of said drive mechanisms from its operative connection with said power shaft during operation of said power shaft.

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