Nov. 5, 1946. D. BAILEY 2,410,561

FLEXIBLE LOADING PAN

Filed Jan. 22, 1945 2 Sheets-Sheet 1

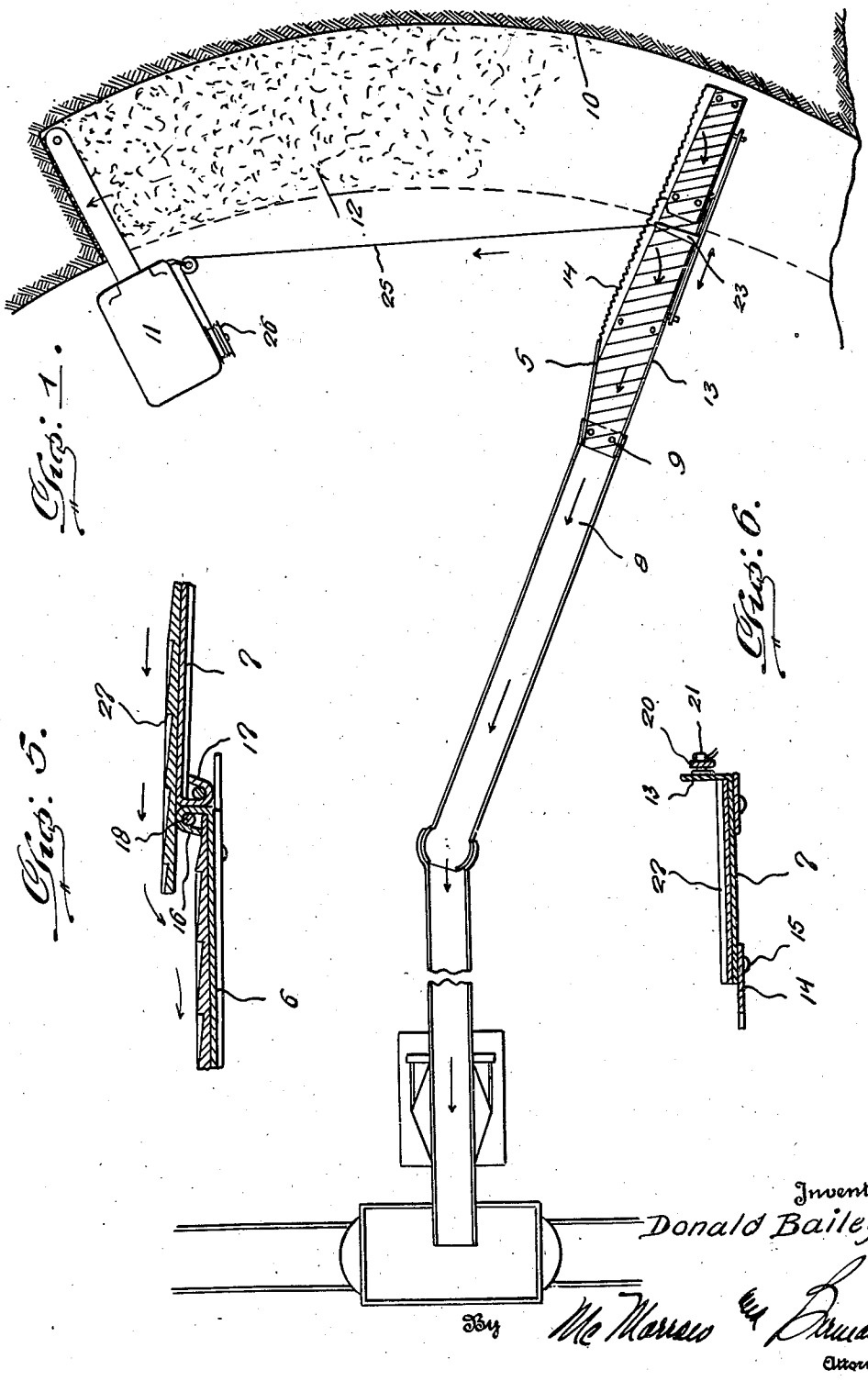


Fig. 1.

Fig. 5.

Fig. 6.

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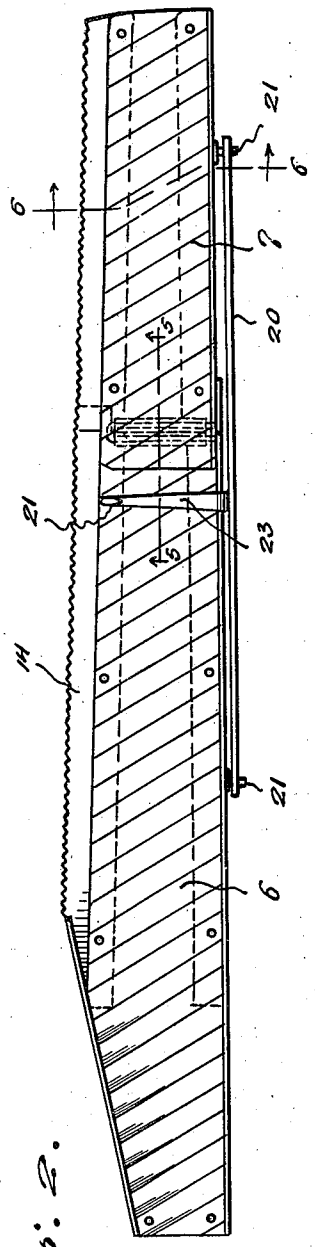


Fig. 2.

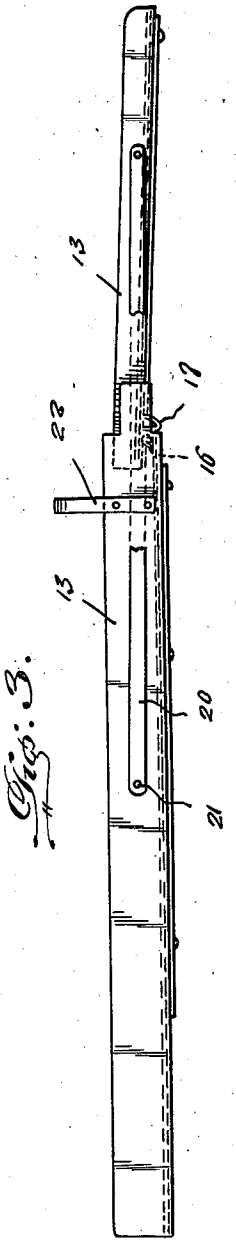


Fig. 3.

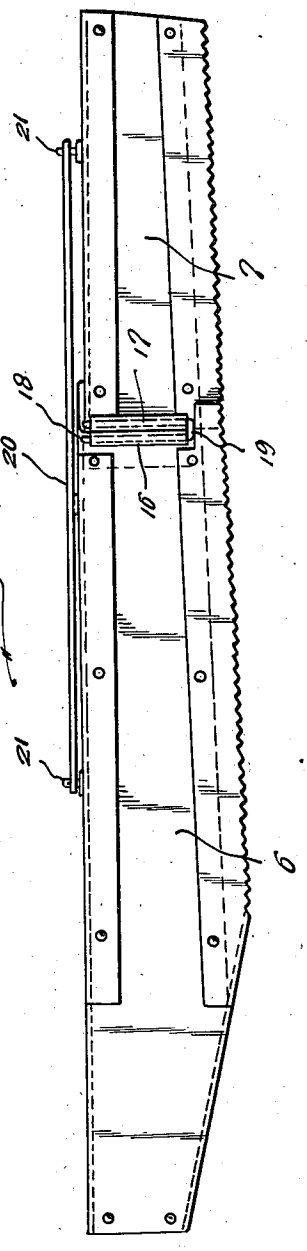


Fig. 4.

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Patented Nov. 5, 1946

2,410,561

UNITED STATES PATENT OFFICE

2,410,561

FLEXIBLE LOADING PAN

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Application January 22, 1945, Serial No. 573,911

4 Claims. (Cl. 198—14)

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The present invention relates to new and useful improvements in apparatus used in coal mining, and more particularly to a loading pan adapted for loading the loose coal onto a shaker conveyor to remove the coal from the mine working.

An important object of the present invention is to provide means for loading the loose coal onto the shaker conveyor, whereby to eliminate the usual practice of shoveling the coal by hand onto the conveyor.

A further important object of the present invention is to provide a flexible loading pan adapted for attaching to the front end of a conventional form of shaker conveyor and adapted for moving one edge of the loading pan under the loose coal for picking up the coal and transferring the same to the conveyor.

A further object of the invention is to provide a loading pan of this character formed of longitudinally connected sections and in which the outermost of said sections is pivotally attached to the innermost of said sections for limited vertical pivotal movement of the outermost loading section to compensate for irregularities in the surface of the mine working.

Another object of the invention is to provide creepers on the upper surface of the loading pan by means of which the coal is moved rearwardly onto the shaker conveyor during the action of the conveyor.

Another object of the invention is to provide means operatively connected with a coal cutting machine for pulling the loading pan under the loose coal which has been cut by the machine for loading the coal onto the pan.

An additional object is to provide means for attaching a flexible operating member to the loading pan for pulling the latter transversely of the mine working under the loose coal for picking up the coal and in which said attaching means also functions as a gauge or grader to limit the size of the lumps of coal fed from the loader onto the conveyor.

An additional object of the invention is to provide an apparatus of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture and install in operative position on the conveyor, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings

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forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a top plan view.

Figure 2 is an enlarged top plan view of the loading pan removed from the conveyor.

Figure 3 is a side elevational view thereof.

Figure 4 is a bottom plan view.

Figure 5 is a fragmentary longitudinal sectional view taken substantially on a line 5—5 of Figure 2.

Figure 6 is a transverse sectional view taken substantially on a line 6—6 of Figure 2.

Referring now to the drawings in detail, wherein for the purpose of illustration I have disclosed a preferred embodiment of the invention, the numeral 5 designates the loading pan generally which comprises inner and outer elongated flat scoops 6 and 7, the inner end of the inner scoop 6 being adapted for attaching to the receiving end of a conventional form of shaker conveyor designated generally at 8, the loading pan being attached to the conveyor by means of rivets, bolts or the like 9 so that the loading pan extends longitudinally outwardly beyond the receiving end of the conveyor. The conveyor 8 is adapted to swing horizontally adjacent the floor of a mine working designated at 10, and the loading pan 5 attached to the outer end of the conveyor likewise swings horizontally along the floor of the mine working.

A conventional form of cutting machine 11 is employed for cutting the coal, the loose coal lying on the floor of the mine being designated at 12.

The longitudinal edges of the inner and outer scoops 6 and 7 at the side thereof remote from the machine 11 are provided with upstanding flanges 13, while the opposite longitudinal edges of the scoops, and which constitute the front edges thereof, have toothed blades 14 secured to the under side thereof by means of rivets or the like 15, the blades 14 facilitating the movement of the scoops under the loose coal 12 during the horizontal swinging movement of the conveyor and the loading pan.

The inner edge of the outer scoop section 7 overlies the outer edge of the inner scoop section 6, as will be apparent from an inspection of Figure 5 of the drawings, and the adjacent ends of the sections of the scoops are rolled, as indicated at 16 and 17 to provide transversely disposed parallel bearings for receiving the legs 18 of a U-shaped hinge pin 19, whereby to provide limited vertical pivotal movement of the outer scoop section 7 relative to the inner scoop section 6.

A bar 20 extends longitudinally at the rear surface of the flanges 13, the bar having its ends pivoted to the flanges of the respective scoop sections by means of pins or the like 21.

A combination grader and hook includes a vertical leg portion 22 which is attached to the rear of the flange 13 of the inner scoop section 6, the leg 22 being provided at its upper end with a horizontally arranged portion 23 extending transversely of the loading pan and having a hook 24 formed at its free end.

A cable or other flexible member 25 is attached to the hook 24 for winding about a drum 26 carried by the cutting machine 11.

The upper surfaces of the scoop sections 6 and 7 are formed with creepers 27 by means of which coal loaded onto the loading pan will be moved inwardly onto the conveyor.

In the operation of the device and with the loading pan 5 attached to the front end of the shaker conveyor 8 in a manner as illustrated in Figure 1 of the drawings, the loading pan may be manually pushed or pulled by the cable 25 laterally of the mine working under the loose coal 12, whereby the coal will be picked up by the toothed blades 14 at the front longitudinal edges of the scoop sections 6 and 7 and through the operation of the shaker conveyor 8 in the usual manner will be moved rearwardly onto the conveyor for removal from the mine in the usual manner.

The pivotal connection of the outer scoop section 7 of the loading pan will permit vertical pivotal movement of said outer section to compensate for irregularities in the floor of the mine working.

During the rearward movement of the coal along the loading pan, the gauge 23 will function as a grader for limiting the size of the lumps of coal passing rearwardly of the loading pan onto the conveyor.

In view of the foregoing description taken in conjunction with the accompanying drawings, it is believed that a clear understanding of the construction, operation and advantages of the apparatus will be quite apparent to those skilled in the art. A more detailed description thereof is accordingly deemed unnecessary.

It is to be understood, however, that even though I have herein shown and described the preferred embodiment of my invention, the same is susceptible of certain changes fully comprehended by the spirit of the invention as herein described, and the scope of the appended claims.

Having thus described the invention, what I claim is:

1. A loading pan of the class described comprising an elongated scoop adapted for attaching to the outer end of a shaker conveyor for horizontal swinging movement with said conveyor, an upstanding flange on one longitudinal edge of said loading pan, the other longitudinal edge of the pan being open and adapted to receive loose coal onto the pan upon a lateral movement of the pan under loose coal in a mine working, and a grader carried by said flange and extending transversely of the pan in spaced relation above the bottom thereof.

2. A loading pan of the class described adapted for attaching to the front end of a shaker conveyor for horizontal swinging movement with said conveyor, an upstanding flange on one longitudinal edge of said pan, the other longitudinal edge of the pan being open to facilitate movement of the said sections under loose coal in a mine working during lateral swinging movement of the loading pan in said working, and a combined cable-attaching hook and grader carried by the flange and extending transversely of the pan and adapted for attaching a power-operated cable thereto for dragging the pan horizontally under the coal.

3. A loading pan of the class described and comprising inner and outer elongated scoop sections adapted for attaching in longitudinally extended relation to the front end of a shaker conveyor for horizontal swinging movement with said conveyor, means pivotally attaching the outer scoop section to the inner scoop section, upstanding flanges on one longitudinal edge of said scoop section, toothed blades at the other longitudinal edge of said scoop section and adapted to facilitate movement of the said sections under loose coal in a mine working during lateral swinging movement of the loading pan in said working, creepers formed on the upper surface of said scoop sections for movement of the coal rearwardly onto the conveyor during operation of the latter, and a grader carried by one of said scoop sections.

4. A loading pan of the class described and comprising inner and outer elongated scoop sections adapted for attaching in longitudinally extended relation to the front end of a shaker conveyor for horizontal swinging movement with said conveyor, means pivotally attaching the outer scoop section to the inner scoop section, upstanding flanges on one longitudinal edge of said scoop section, toothed blades at the other longitudinal edge of said scoop section and adapted to facilitate movement of the said sections under loose coal in a mine working during lateral swinging movement of the loading pan in said working, creepers formed on the upper surface of said scoop sections for movement of the coal rearwardly onto the conveyor during operation of the latter, a grader attached to one of said scoop sections and comprising a horizontal bar extending transversely above said scoop section, and means carried by the grader for attaching a power-operated cable thereto for swinging the loading pan and the conveyor laterally of a mine working under loose coal on the floor thereof.

DONALD BAILEY.