March 19, 1935. T. F. McCARTHY 1,995,188

MINING APPARATUS

Filed Dec. 16, 1933

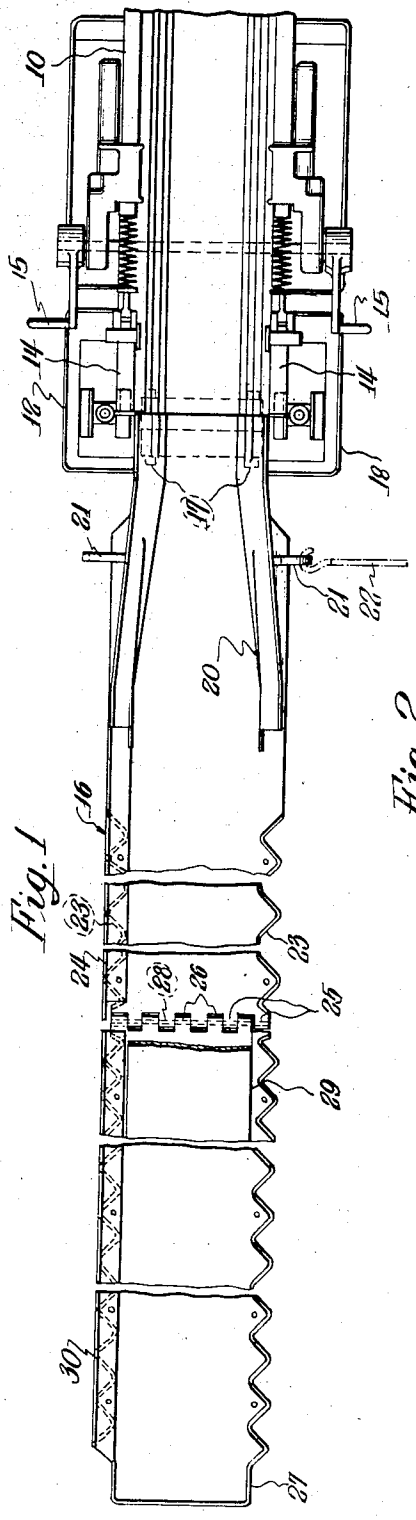


Fig. 1

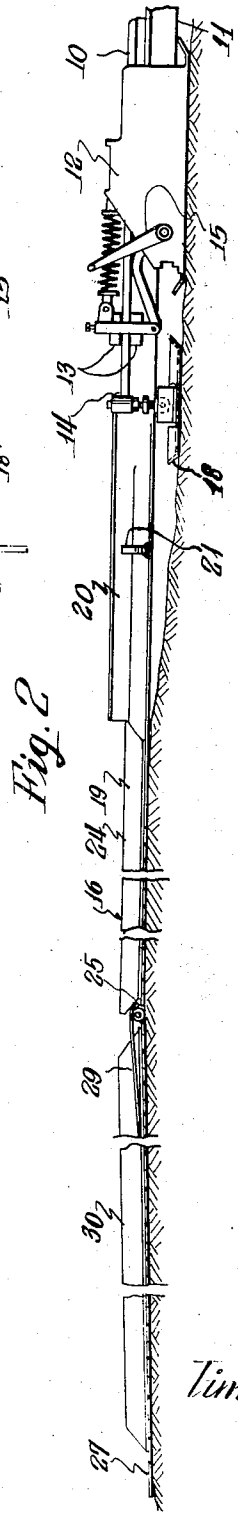


Fig. 2

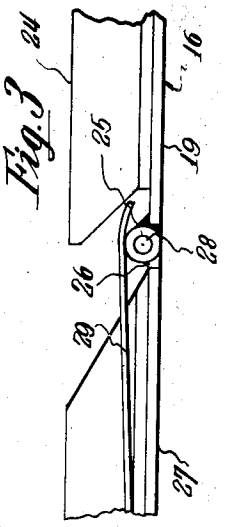


Fig. 3

Inventor
Timothy F. McCarthy
Clarence J. Poole
Attorney

Patented Mar. 19, 1935 1,995,188

UNITED STATES PATENT OFFICE

1,995,188

MINING APPARATUS

Timothy F. McCarthy, Indiana, Pa., assignor to Goodman Manufacturing Company, Chicago, Ill., a corporation of Illinois

Application December 16, 1933, Serial No. 702,661

19 Claims. (Cl. 198—220)

This invention relates to improvements in mining apparatus of the type adapted to cooperate with a conveyor of the shaker or jigging type and be insertable in a kerf cut in a coal face for completely loading the coal therefrom in a continuous operation, and has among other objects to provide a loading pan adapted to be connected with the forward end of a shaker conveyor for insertion in a kerf so arranged as to readily conform to an uneven mine bottom to prevent breakage, fouling or climbing of the apparatus in the coal.

My invention may be more readily understood with reference to the accompanying drawing wherein:

Figure 1 is a top plan view of one embodiment of my invention with parts broken away and in section;

Figure 2 is a side elevation of the device shown in Figure 1; and

Figure 3 is an enlarged detail view showing certain details of the hinge for the loading pan.

In the drawing, one embodiment of my invention is shown as being secured to the forward end of an extensible trough 10 adapted to be nested within and extended from or retracted within an extension trough 11, which trough is secured to the forward end of a shaker conveyor pan line by means of a suitable pivot (not shown).

The extensible trough is extended from or retracted within the extension trough 11 upon reciprocation of said trough by means of a feeder head, generally indicated by reference character 12. The feeder head 12 is of an ordinary construction well known to those skilled in the art and includes pairs of grip blocks 13, 13 adapted to engage longitudinally extending gripping members 14, 14 disposed on each side of the extensible trough 10. The grip blocks 13, 13 are engaged with or disengaged from said gripping members by means of hand cranks 15 and a system of levers and springs in a usual manner so that the extensible trough may be extended from the extension trough 11 upon engagement of the grip blocks 13, 13 with the gripping members 14, 14 on the forward stroke of the shaker conveyor and disengagement of said grip blocks from said gripping members upon the rearward stroke of said shaker conveyor and be retracted within said extension trough in a contrary manner.

The principle of operation of the device of my invention has been fully disclosed in a prior application, Serial Number 667,583, filed April 24, 1933, by Timothy F. McCarthy, and entitled, Improvements in loading apparatus and systems therefor, and so will only be herein described insofar as is necessary to fully disclose my present invention.

With reference now in particular to several of the novel features of my invention, a loading pan 16 is detachably secured to the forward end of the extensible trough 10 in a suitable manner such as connecting bolts, generally indicated by reference character 17. A shoe 18 adapted to slidably engage the mine bottom, adjustably supports the rearward end of the loading pan 16 so said loading pan may be inserted in a kerf disposed above the mine bottom and is particularly adapted for use where a slight ledge is left above the floor after each cut. The shoe 18 is adapted to support the loading pan 16 for tilting movement about longitudinal and transverse axes in a usual manner.

The loading pan 16 includes a rearward section 19 having a trough-like formation 20 disposed adjacent its rearward end and in alignment with the extensible trough 10 for directing material therein. An eyepiece 21 is secured to the rearward section 19 on each side thereof and adjacent the rearward end thereof. The eyepieces 21, 21 are adapted to have a cable or flexible feeding member 22 detachably secured thereto for feeding the loading pan 16 across the coal face in a manner fully described in my aforementioned prior application.

Opposite edges of the rearward section 19 of the loading pan 16 are serrated as is indicated by reference character 23 and a material retaining member herein shown as being an angle 24 is adapted to be detachably secured to either one of these serrated edges depending upon the direction in which the loading pan 16 is traveling during the loading operation for holding material thereon and directing said material into the trough-like formation 20. The forward end of the rearward section 19 is provided with a plurality of aligned horizontally bored formations 25 adapted to register with a plurality of corresponding aligned bored formations 26 extending rearwardly from the rearward end of a forward section 27 of the loading pan 16. A suitable pin 28 is adapted to be inserted in the bores of the aligned bored formations 25 and 26 for securing the forward section 27 to the rearward section 19 and permitting said forward section to pivotally move with respect thereto about a transverse axis.

A shield 29 is secured to the upper surface of the forward section 27 and extends rearwardly

therefrom over the aligned bored formations 25 and 26 to provide a smooth surface along the loading pan 16 and to prevent foreign material from collecting in the hinge and impede movement along said loading pan and also to permit the hinge to operate when the loading pan 16 is buried under the coal.

Opposite edges of the forward section 27 of the loading pan 16 are serrated in a manner similar to the rearward section 19 of said loading pan and a material retaining member 30 similar to the angle 24 is detachably secured to the edge of said loading pan which forms the retreating edge thereof during the loading operation. The material retaining member 30 is in alignment with the retaining member or angle 24 and forms a continuous edge for directing material rearwardly along the loading pan 16 into the extensible trough 10.

It should be noted that the forward end of the angle 24 is cut away and that the rearward end of retaining member 30 is beveled to permit freedom of movement between the forward section 27 and rearward section 19 of the loading pan 16.

With reference now to Figure 2, it may be seen that the loading pan 16 may rest on the mine bottom and readily conform to an uneven mine bottom. Such an arrangement has various advantages over a rigid loading pan in that buckling of the pan or misalignment of the conveyor pan line is prevented as the coal is shot down on the loading pan and in that the pan may more readily follow an uneven mine bottom than formerly.

It may now be seen that a new and improved loading pan has been provided which is adapted to be inserted in a kerf in a coal face and load the coal therefrom after it has been shot down thereon, by reciprocable and extensible and retractible movement with respect to the coal face, and by movement across the coal face in a manner similar to that described in my aforementioned prior application, and that the loading pan is arranged in a novel manner so as to be operable for loading in one direction as well as another and is adapted for varying mining conditions where the bottom is uneven to effectively load in a most efficient manner and prevent the breaking, fouling or climbing of the apparatus.

While I have herein shown and described one form in which my invention may be embodied, it will be understood that the construction and arrangement of the various parts may be altered or changed without departing from the spirit or scope of the invention. Furthermore, I do not wish to be construed as limiting myself to the particular embodiment illustrated, excepting as it may be limited in the appended claims.

I claim as my invention:

1. In a loading apparatus, and in combination with a shaker conveyor, a trough, an extensible trough extensible from or retractable within said trough, and loading means secured to said extensible trough insertable in a kerf cut in a coal face and adapted to rest on and conform to an uneven mine bottom, comprising a hinged loading pan having an open advance edge and material retaining means on the retreating edge thereof.

2. A loading apparatus in accordance with claim 1 wherein the hinged loading pan includes a section secured to the extensible trough, and another section hinged to said first-mentioned section for pivotal movement with respect thereto about an axis extending transversely of said section.

3. A loading apparatus in accordance with claim 1 wherein the hinged loading pan includes a plurality of relatively flat sections hinged together for pivotal movement about a transverse axis, each of said sections having an advance serrated edge and material retaining means on the opposite edge thereof.

4. A loading apparatus in accordance with claim 1 wherein the hinged loading pan includes a plurality of relatively flat sections adapted to engage and slide along the mine bottom having opposite serrated edges and wherein the material retaining members are adapted to be detachably secured to the serrated edge thereof which forms the retreating edge.

5. In a loading apparatus, and in combination with a shaker conveyor, a reciprocably movable trough, an extensible trough extensible from or retractable within said trough, and means secured to said extensible trough adapted to rest on the ground and be inserted in a kerf cut in a coal face and load the coal shot thereon upon reciprocable movement thereof and simultaneous movement across the coal face comprising a loading pan hinged adjacent its central portion and forming a rearward section secured to said extensible trough and a forward section pivotally movable with respect thereto about an axis extending transversely thereof, said loading pan having an open advance edge and material retaining means on the retreating edge thereof.

6. A loading apparatus in accordance with claim 5 wherein the hinged loading pan has an advance serrated edge and a pair of retaining members secured to the retreating edge thereof.

7. A loading apparatus in accordance with claim 5 wherein the hinged loading pan has an advance serrated edge and a pair of aligned retaining members adapted to be detachably secured to the retreating edge thereof.

8. A loading apparatus in accordance with claim 5 wherein the hinged loading pan has advance and retreating serrated edges for loading in opposite directions and a retaining member adapted to be detachably secured to the edge which forms the retreating edge thereof.

9. A loading apparatus in accordance with claim 5 wherein the hinged loading pan has advance and retreating serrated edges for loading in opposite directions and a pair of aligned retaining members adapted to be detachably secured to the edge which forms the retreating edge thereof.

10. In a loading apparatus, and in combination with a shaker conveyor, a reciprocably movable trough, an extensible trough extensible from or retractable within said trough, and means secured to said extensible trough adapted to be inserted in a kerf cut in a coal face and load the coal shot thereon upon reciprocable movement thereof and simultaneous movement across the coal face comprising a loading pan including a section secured to the forward end of said trough, a shoe supporting the rearward end of said section and another section pivotally secured to said first-named section for pivotal movement with respect thereto about an axis extending transversely thereof, said sections having open advance edges and material retaining means on the retreating edges thereof.

11. A loading apparatus in accordance with claim 10 wherein the forward and rearward sections are provided with advance serrated edges and wherein retaining members are secured to the retreating edges thereof.

12. A loading apparatus in accordance with

claim 10 wherein the forward and rearward sections are provided with advance and retreating serrated edges for operation in opposite directions, and wherein retaining members are detachably secured to the edges forming the retreating edges thereof.

13. In combination with a shaker conveyor, means adapted to be inserted in a kerf cut in a coal face for loading material after the coal has been shot down thereon by extensible and retractable movement with respect to the coal face and by movement across the coal face including an extensible pan extensible from or retractable within said shaker conveyor, a loading pan including a rearward portion adapted to be secured to the forward end of said extensible pan and a forward portion extending therefrom said loading pan having an open advance edge and a closed retreating edge, and means for causing said loading pan to conform to an uneven mine bottom comprising a hinged connection between the forward and rearward portions of said loading pan.

14. In combination with a shaker conveyor, means adapted to be inserted in a kerf cut in a coal face for loading material after the coal has been shot down thereon by extensible and retractable movement with respect to the coal face and by movement across the coal face including an extensible pan, extensible from or retractable within said shaker conveyor, a loading pan adapted to be secured to the forward end of said extensible pan, and means for causing said loading pan to conform to an uneven mine bottom comprising a shoe supporting the rearward end of said loading pan, said pan being divided into a forward and rearward section which sections are hinged together for pivotal movement about an axis extending transversely thereof and the advance edge of said loading pan being open and adapted to lie along the mine bottom and the retreating edge of said loading pan being closed.

15. A loading apparatus in accordance with claim 14 wherein the advance and retreating edges of said loading pan are serrated so said loading pan may operate in opposite directions.

16. A loading apparatus in accordance with claim 14 wherein the advance and retreating edges of said loading pan are serrated so said loading pan may operate in opposite directions and wherein material retaining members are adapted to be detachably secured to the edge forming the retreating edge thereof.

17. In a loading apparatus, and in combination with a shaker conveyor, a conveyor trough, and loading means insertable in a kerf cut in a coal face adapted to be attached to said trough and adapted to rest on and conform to an uneven mine bottom comprising a loading pan including a plurality of relatively flat sections hingedly connected together for pivotal movement about a horizontal transverse axis, said loading pan having an open advance serrated edge adapted to lie along the ground and material retaining means on the opposite edge thereof.

18. A loading apparatus in accordance with claim 1, wherein both edges of the loading pan are serrated and wherein material retaining members are adapted to be detachably secured to the serrated edge which forms the retreating edge thereof.

19. In a loading apparatus, and in combination with a shaker conveyor, a conveyor trough, and loading means comprising a loading pan insertable in a kerf cut in a coal face attached to said trough and adapted to rest on and conform to an uneven mine bottom and be advanced across a working place in such a manner that its longest edge is its advance edge, said loading pan including a relatively flat section adapted to engage and slide along the mine bottom having opposite serrated edges, one of said edges being adapted to form the advance edge thereof and the opposite edge thereof being adapted to have a material retaining member detachably secured thereto.

TIMOTHY F. McCARTHY.