Jan. 1, 1924 **1,479,340**

J. A. TRAINOR

STEAM SHOVEL OR DREDGE DIPPER

Filed March 17, 1923

Fig. 1.

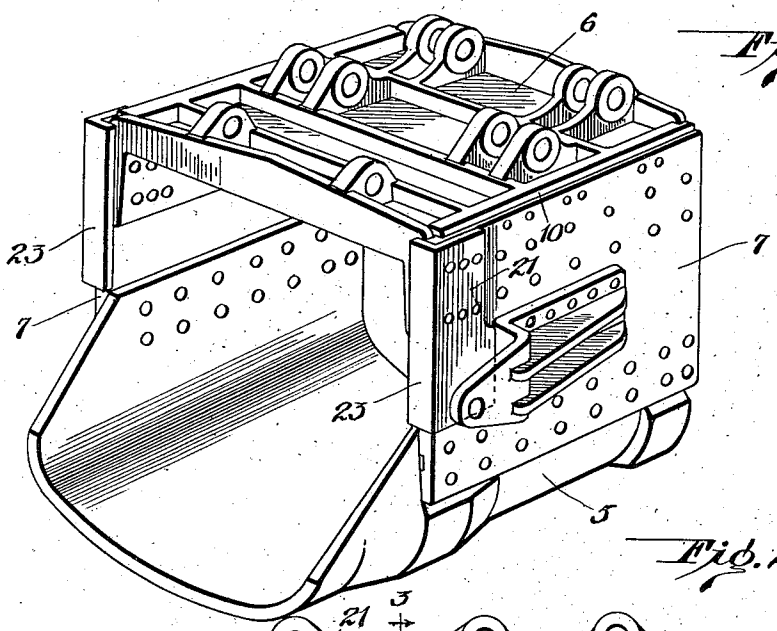


Fig. 2.

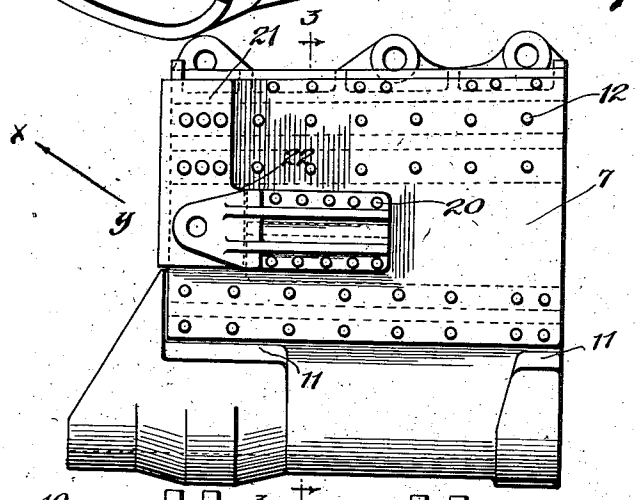
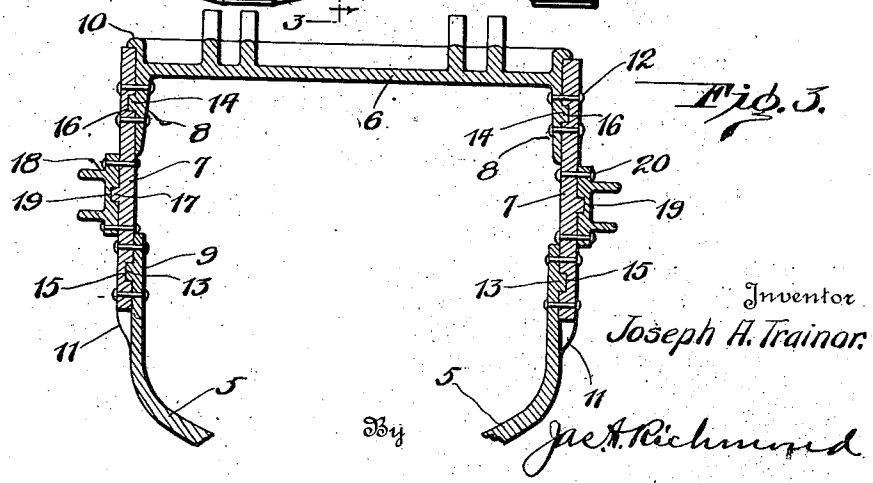


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH A. TRAINOR, OF HIGH BRIDGE, NEW JERSEY, ASSIGNOR TO TAYLOR-WHARTON IRON AND STEEL COMPANY, OF HIGH BRIDGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

STEAM SHOVEL OR DREDGE DIPPER.

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To all whom it may concern:

Be it known that I, JOSEPH A. TRAINOR, a citizen of the United States, residing at High Bridge, in the county of Hunterdon and State of New Jersey, have invented certain new and useful Improvements in Steam Shovels or Dredge Dippers, of which the following is a specification.

Steam shovel or excavating dippers are expensive to manufacture and their upkeep is also a serious item of expense. Hence, they are usually of composite or built-up construction so as to admit of the use of comparatively inexpensive metal in those sections less exposed to continuous shock and wear and so as to facilitate the renewal or replacement of the more exposed sections which are generally formed of manganese steel or other alloy steel. The elements are rigidly connected by lap joints and by rivets. Hence, the dipper offers little or no resilience to the shocks and stresses to which it is subjected and a heavy strain is imposed upon the rivets which frequently work loose and are subject to shearing.

Principal objects of my invention are to reduce the cost of manufacture and the upkeep of dippers; to provide a dipper of composite construction which shall be possessed of great strength and of sufficient flexibility or resiliency to relieve the strain on the rivets; to provide a dipper constituted of four principal parts—front, back, and sides—connected by a novel form of compensating lock joint; to provide a novel form of mounting for the bail brackets; to provide a stop or abutment for the bail brackets to relieve the strain on the rivets thereof; and to provide means for protecting the sides against excessive wear.

An embodiment of the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view of the improved dipper.

Fig. 2 is a side elevational view of the same.

Fig. 3 is a section on line 3—3 of Fig. 2.

In the specific embodiment illustrated, the dipper comprises a front 5, a back 6, and a pair of side panels 7. The front and back, except as hereinafter stated, are, or may be, as usual, and may be equipped as usual. They are joined by the side panels which are rectangular plates of the full depth of the dipper. For this purpose the back has L extensions 8 in line with the extensions 9 of the front. The panels 7 overlie said extensions and their longitudinal edges abut and are protected by lugs 10 and 11, respectively. The usual rivets are indicated at 12. In order to relieve the strain on the rivets, a compensating lock joint is provided. This is accomplished by longitudinally ranging ribs 13 and 14 on the front and back extensions and by corresponding mortises or grooves 15 and 16 in each of the side panels. The pair of mated joints admit of the necessary compensating or yielding movement to avoid undesirable strain on the rivets.

Each of the side panels is equipped with an external rib 17 and the bail brackets 18 are correspondingly mortised, as at 19, to establish a yielding or compensating tongue and groove connection with the panels. The usual rivet connection is indicated at 20.

Another merit of the invention is the provision of the aprons 21 which are carried by the side panels and have a two-fold function, that is to say, to protect the top edges of the panels and to act as stops or abutments for the bail brackets and so relieve the strain on the rivets thereof when the general direction of stress is as indicated at x—y in Fig. 2. The elements 21 are preferably manganese steel plates positioned to take the wear incident to the operation of the bail. They bear against the body of the bail bracket, as indicated at 22, and each has a flange 23 which overlies the top edge of a side panel. The flange 23 extends from front to back and thus protects the side panels from violent contact with the material being handled.

It will be manifest to those familiar with the construction and operation of excavating machinery that by the described construction and arrangement of parts I am enabled to effect an economy by using full size side plates or panels; and that the degree of flexibility imported by the panels through the medium of the double tongue locks obviates undesirable strain on the rivets.

Having described the nature, objects and utility of the invention, I claim:—

1. A dipper embodying a front and back having confronting extensions, and side

panels overlying said extensions and having a double tongue lock connection therewith to impart a degree of flexibility to the dipper to enable it to resist shocks and stresses.

2. A dipper embodying a front and back having confronting extensions, side panels overlying said extensions and having a double tongue lock connection therewith, and lugs on said extensions and co-operating with the longitudinal edges of the panels.

3. A dipper embodying a front and back joined by side panels of the full depth of the dipper and capable of compensating movement to relieve the strain on the rivet connections, and bail brackets riveted to the side panels and having tongue lock connections therewith to relieve the strain on the rivets.

4. A dipper embodying a front, a back, and a pair of side panels, bail brackets carried by the side panels, and aprons which shroud and protect the top edges of the panels incident to the operation of the bail and constituting abutments for the bail brackets.

5. A dipper embodying a front, a back, and a pair of said panels, bail brackets carried by the side panels, and abutments for the bail brackets and having flanged portions which overlie the top edges of the side panels.

6. A dipper embodying a front and a back with spaced sides joined by separate side panels consisting of rectangular plates interlocked with the front and back and having their longitudinal edges confined by surface projections.

7. A dipper embodying a front and a back with spaced sides joined by separate side panels consisting of rectangular plates interlocked with the front and back and having their longitudinal edges confined by lugs on the front and back.

8. A side panel for dippers, consisting of a rectangular plate having on one side thereof grooves adjoining the longitudinal edges, and having on the other side a rib intermediate the grooves.

9. A dipper embodying a front and a back and separate side plates intermediate thereof and of the full depth of the dipper, said side plates being riveted to the front and back and also having an interlocking connection therewith to relieve the strain on the rivets.

10. A dipper embodying a front and back with spaced side extensions having substantially parallel longitudinal offsets, and side plates secured relatively to said extensions and having their longitudinal edges abutting said offsets.

11. A dipper embodying a front and back with spaced side extensions having lateral offsets, side plates secured relatively to said extensions and having their longitudinal edges bearing against said offsets, and aprons carried by the side plates for protecting the top edges thereof.

In testimony whereof I affix my signature.

JOSEPH A. TRAINOR.