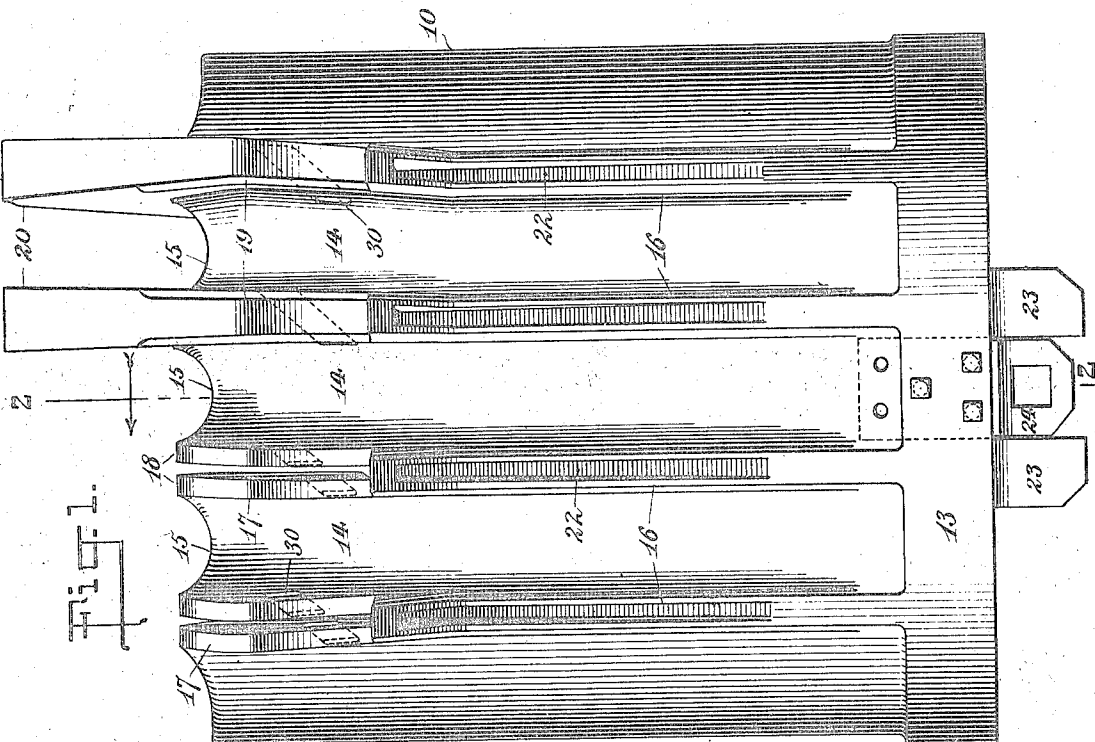
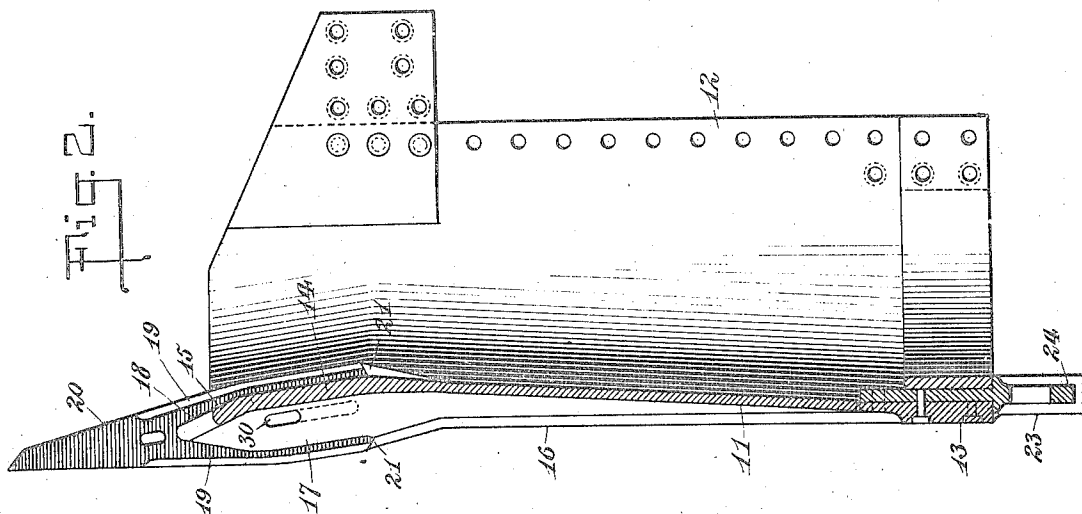


E. E. VANDERHOEF.
 DIPPER FRONT.
 APPLICATION FILED DEC. 10, 1915.

1,208,054.

Patented Dec. 12, 1916.
 2 SHEETS—SHEET 1.

Fig. 2.



WITNESSES

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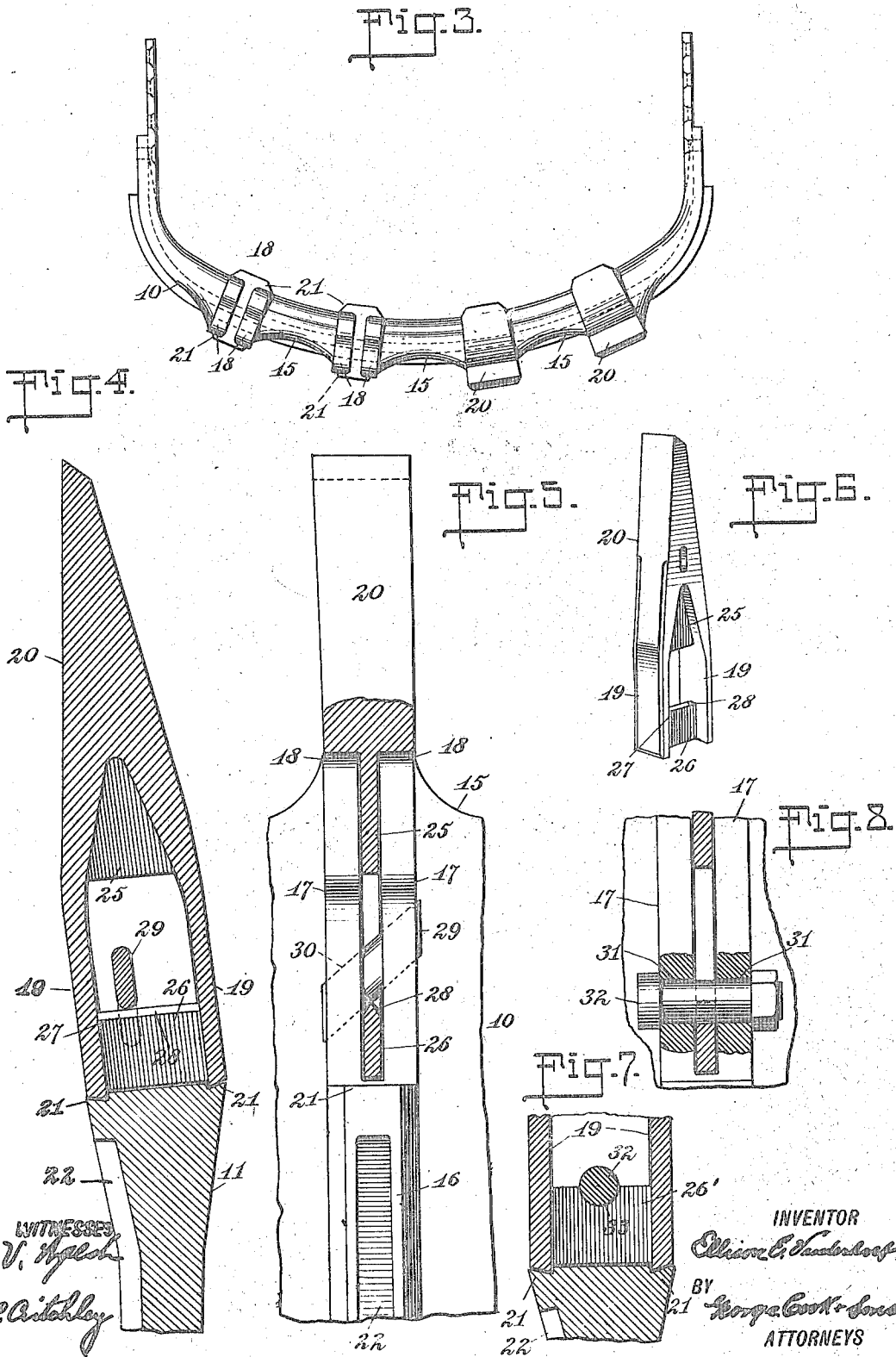
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UNITED STATES PATENT OFFICE.

ELLISON EDWARD VANDERHOEF, OF RUTH, NEVADA, ASSIGNOR TO AMERICAN MANGANESE STEEL COMPANY, OF AUGUSTA, MAINE, A CORPORATION OF MAINE.

DIPPER-FRONT.

1,208,054.

Specification of Letters Patent. Patented Dec. 12, 1916.

Application filed December 10, 1915. Serial No. 66,030.

To all whom it may concern:

Be it known that I, ELLISON EDWARD VANDERHOEF, a citizen of the United States, and a resident of Ruth, in the county of White Pine and State of Nevada, have made and invented certain new and useful Improvements in Dipper-Fronts, of which the following is a specification.

This invention relates to dipper fronts, and more particularly to that type or class which are provided with integral ribs, the upper portions of which provide seats for the reception of reversible dipper teeth.

It is among the objects of the present invention to cast these ribs upon the outer surface of the dipper front, and thus form runners extending longitudinally of the dipper front and protecting the same from undue wear and injury. The external location of these ribs allows the wall of the front to contract or incline slightly in an inward direction toward its top, providing for the efficient discharge of the excavated material through the bottom of the dipper.

Dippers as heretofore constructed, are provided with ribs extending along the inner surface of the front, and the dipper teeth and bases, in addition to materially decreasing the capacity of the dipper, form deep grooves within the dipper, within which rock and other material become tightly wedged. The protrusion of the dipper teeth and bases within the dipper, also requires that it be elevated to a considerable height in order for the excavated material to be dropped into the dipper. These objections are overcome in the present dipper front by arranging the ribs upon the outside of the dipper front, so that the deep grooves between the ribs or teeth bases occur externally of the dipper, and should any of the excavated material become wedged therein, it is forcibly dislodged as the dipper front is moved forcibly through the earth during the next excavating stroke. The height to which the dipper must be elevated for the disposal of the excavated material into the dipper, is considerably lessened or decreased by the external location of the dipper teeth and bases, and the slight forward protrusion of the upper edge or lip of the dipper front. Furthermore, a smooth internal surface is provided, which, being free from obstructions, allows the excavated material disposed within the dipper

to be easily and quickly discharged therefrom.

A further object is to provide a dipper tooth point of such construction that the jaws are braced and reinforced against spreading, and without the use of an excessive amount of non-wearing metal; and to secure the dipper tooth to the base without the use of bolts or rivets.

Other objects and advantages will appear as the description proceeds, wherein it is to be understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit thereof.

The preferred embodiment of my invention is disclosed in the accompanying drawings, wherein:

Figure 1 is a view in front elevation of my improved dipper front embodying the characteristic features of my invention; Fig. 2 is a view in vertical section taken on the line 2—2 of Fig. 1; Fig. 3 is a view in top plan of the dipper front, illustrated in Fig. 1, it being noted that two of the detachable dipper teeth are removed in these several figures; Fig. 4 is an enlarged view in vertical section of a dipper tooth and the base upon which it is secured; Fig. 5 is a view in front elevation, and partially in section, of a dipper tooth and the adjoining parts of a dipper front; Fig. 6 is a view in perspective of one of the detachable teeth; Figs. 7 and 8 are fragmental views in front and side section of a slightly modified form of dipper tooth and base, the modifications residing in the mode of securement of the tooth to the base.

Referring specifically to the several views, the dipper front 10 is formed with the integral front and side walls 11 and 12, the lower extremities of which are thickened and reinforced as at 13. This front wall 11, as clearly illustrated in Fig. 2, inclines inwardly toward its upper extremity, which latter is thickened to form the upper lip 14, the extreme edge 15 of which slopes outwardly so as to correspond with the adjacent surfaces of the dipper teeth bases, as presently described. Formed integral with the front wall 11, and external thereof, are the ribs 16, the front or outermost edges of which, for the greater part of their length, extend substantially vertical, resulting in the gradual increasing in thickness of the

ribs approaching the top of the dipper front.

The upper extremities of the ribs enlarge to form dipper teeth bases 17, the noses 18 of which are wedge-shape so as to receive thereon the diverging jaws 19 of the points 20. The rear portions of the bases 17 are provided with ledges 21 against which the extremities of the jaws 19 of the points contact, providing a smooth and flush surface between the bases and dipper teeth points. The longitudinal axis of the base is inclined upwardly and outwardly, as is customary in this class of dipper fronts. The ribs or runners 16, protect the dipper front against undue wear, and being located upon the outer surface of the front wall 11, do not decrease the capacity of the dipper, nor interfere with the admission of the excavated material into the bucket, nor with its discharge therefrom. This latter feature is further enhanced by the smooth interior surface of the front wall and its slight contraction toward its upper extremity. The outward inclination of the lip 15, conforming, as it does, to the obliquity of the surfaces of the noses 18, results in a strong integral structure, and aids and facilitates the passage of the excavated material into the dipper. The ribs or runners 16 are preferably beveled along their edges, and are provided with the longitudinally extending and centrally disposed recesses 22, these features lightening the entire structure without in any wise sacrificing the length of the serviceable life thereof.

The lower extremity of the reinforced edge 13 of the dipper front is provided with the integral and spaced lugs 23. These lugs form a pocket or receptacle in which is housed the dipper latch keeper 24, which is accordingly protected from injury thereby, considerable difficulty being heretofore experienced by the breaking of these dipper latch keepers, by the swinging of the bucket forcibly against a car, or the striking of other objects during the use of the dipper.

In order to prevent the jaws of the dipper teeth from spreading, and at the same time to incorporate in the wearing point the least amount of non-wearing metal, I provide the dipper tooth point 20 with the centrally-located web 25, the same extending between, and formed integral with, the jaws 19, and extending only between the diverging portions of the confronting faces thereof. A second web 26 is formed integral with the rear extremities of the jaws, and is spaced some little distance from the web 25. The front edge 27 of this rear web 26, is provided with the oppositely beveled surfaces 28, arranged for contact with a holding key 29, this latter extending through the diagonally placed and alined openings 30 formed in the sides of the toothed base 17. The nose of

the base is bifurcated so as to receive these webs therein, and the key 29 is forcibly driven through the openings 30 and between the front and rear webs 25 and 28 of the point. The key contacts with the beveled front edge of the rear web and securely locks and holds the point to the base, and without the use of additional holding bolts or rivets. This key 29 may be slightly tapered in its length, so that a wedging action is obtained.

A somewhat modified securement for the point is disclosed in Figs. 7 and 8, wherein the sides of the bifurcated toothed base are provided with the transversely registering openings 31, through which a bolt 32 extends, which passes through a notch 33 formed in the rear web 26 of the tooth point. This transverse bolt rigidly secures the point in place, and, in connection with the web which holds the jaws of the point against spreading, and other features, as above outlined, forms an efficient and desirable dipper tooth.

What I claim is:—

1. A dipper front comprising a front wall sloping inwardly toward its upper extremity, ribs carried by said front wall and extending longitudinally along the external surface thereof, said ribs of gradually increasing thickness toward their upper extremity, the thickening of the ribs along their upper extremity corresponding to the inward slope of the front wall, whereby the front surface of said ribs extends substantially vertical when the dipper front, considered in its entirety, is so positioned.

2. A dipper front comprising a front wall with integral ribs, said ribs provided at their upper extremities with tooth-supporting bases, with the longitudinal axes of said bases inclined upwardly and outwardly, the upper extremity of said front wall thickened and forming a lip inclined to correspond to the inclination of the longitudinal axes of said tooth bases.

3. A dipper front comprising a front wall with integral ribs, said ribs provided at their upper extremities with tooth-supporting bases, with the longitudinal axes of said bases inclined upwardly and outwardly, the upper extremity of said front wall thickened and forming a lip inclined to correspond to the inclination of the longitudinal axes of said tooth bases, the outmost edge of said lip being bent sharply outward.

4. A single-piece cast metal front for dippers comprising a front wall with integral ribs extending longitudinally thereof, said ribs located upon the outside of said front wall and thickening toward their upper extremities and forming point-supporting bases with wedge-shape noses, said bases provided with overhanging ledges adapted to receive the extremities of the jaws of a

dipper point thereagainst, and to bring the surfaces of said jaws and the ribs flush, and a thickened lip extending along the top of said dipper front, with the upper edge thereof of inclined upwardly and outwardly, corresponding to the obliquity of the noses of said bases.

5. A single-piece cast metal front for dipper having ribs extending along the outside of said front and formed integral therewith, the upper portion of said dipper front thickened and forming a lip inclined outwardly toward its upper extremity, the uppermost edge of said lip being bent sharply outwardly, said ribs provided with teeth-supporting bases at their upper extremities, adapted to support dipper teeth with the one jaw thereof lying adjacent the inner surface of said dipper front.

6. A dipper tooth base having a bifurcated nose, said base provided with diagonally ar-

ranged, and alined, openings, adapted to receive a key therein for the securement of a dipper tooth point thereto.

7. A dipper tooth point comprising a body with rearwardly extending jaws, a web formed integral with said jaws adjacent their connection with said body, a second web formed integral with, and extending between, said jaws, spaced from the first-mentioned web and located adjacent the rear extremities of said jaws, the front extremity of the second-mentioned web provided with oppositely beveled surfaces.

Signed at Ruth, in the county of White Pine and State of Nevada, this 1st day of Dec., A. D. 1915.

ELLISON EDWARD VANDERHOEF.

Witnesses:

O. B. SPENCE,
C. W. HICKS.