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DIPPER LIP AND ASSOCIATED TEETH

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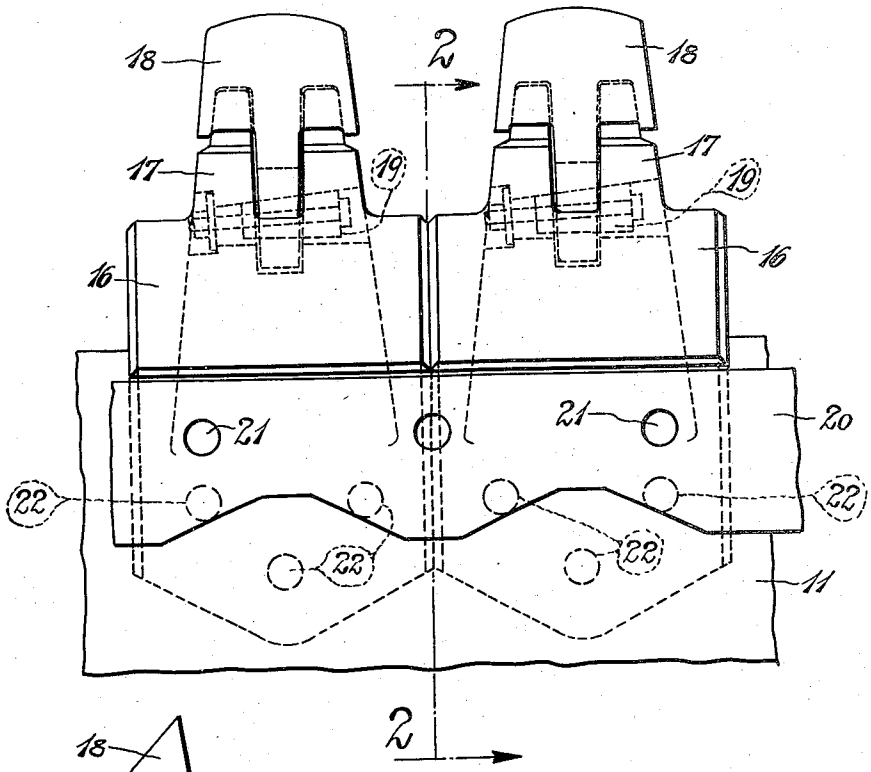


Fig. 1.

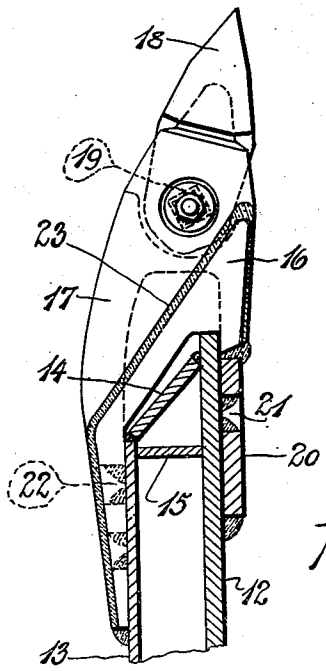


Fig 2.

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DIPPER LIP AND ASSOCIATED TEETH

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8 Claims. (Cl. 37—141)

Our invention relates to new and useful improvements in dipper lips and associated teeth for power shovels.

Dippers for power shovels are well known in the art. In recent years there has been considerable development in built-up dippers, that is to say dippers assembled out of castings and/or forgings, and structural sheet metal, and this development has introduced, inter alia, the following problems: (1) to reduce the weight of the dipper as much as possible, so that the largest possible proportion of the rope-pull can be utilized in lifting pay load; (2) to reduce the cost of patterns for casting; (3) to simplify the patterns, thus reducing the cost of castings; (4) to reduce the size and number of patterns, thus reducing storage cost; (5) to render the lip casting small (thus inexpensive to replace) and easily removable when worn; and (6) to eliminate the use of castings of a sort which have to be purchased.

It is the principal object of our invention to attain these ends, at no sacrifice of digging-efficiency.

In addition to our principal object, above stated, we have worked out a number of novel and useful details, which will be readily evident as the description progresses.

Our invention consists in the novel parts and in the combination and arrangement thereof, which are defined in the appended claims, and of which one embodiment is exemplified in the accompanying drawing, which is hereinafter particularly described and explained.

Throughout the description, the same reference number is applied to the same member or to similar members.

Figure 1 is a front elevation of a portion of the front of our dipper, showing two lip-sections and two teeth.

Figure 2 is a vertical section, taken along the line 2—2 of Figure 1.

Referring to the figures, we see that 11 is the top of the front wall of an excavating dipper. This is built up, in box construction, out of plate material welded together, as follows (see Fig. 2): an outer plate 12, an inner plate 13, substantially parallel thereto, a transverse slanted bar 14, and a transverse spacing bar 15.

The combined lip and tooth base is made up of interchangeable cast sections 16, hooked over the top of the dipper front. Each section carries, integral therewith, a tooth-base 17, capable of supporting in any conventional manner a tooth point 18. In our drawing we have illustrated, merely for example, the same type of base and point and connecting wedge 19, shown, described, and claimed, in United States Patent No. 2,108,075, issued February 15, 1938, to George W. Mork, for improvements in Dipper tooth.

Along the outside of the dipper front, just below and almost abutting the sections 16, are one or more supporting castings or plate sections 20, but these could optionally be pieces respectively integral with the sections 16.

These supporting pieces may contain holes 21. The sections 16 may contain holes 22.

The supporting pieces are welded to plate 12 along their lower edges and around the edges of the holes 21, as shown in Figure 2. The sections 16 are welded to plate 13 along their lower edges and around the edges of holes 22, as shown in Figure 2. The sections 16 are welded to the supporting pieces 20 and to plate 12 along their juncture, as shown in Figure 2.

The sections 16 may also be welded together along their junctures, as shown at 23 in Figure 2.

The pieces 16 and 20 may be cast of relatively inexpensive steel, and can easily be chipped free from the plate front, for replacement as they wear out. The reason for preferably making pieces 20 separate from pieces 16, is that pieces 20 do not wear out so rapidly as pieces 16, and hence need be replaced less frequently.

Having now described and illustrated one form of our invention, we wish it to be understood that our invention is not to be limited to the specific form or arrangement of parts hereinbefore described, except in so far as such limitations are specified in the appended claims.

We claim:

1. In combination: a hollow dipper-front, consisting of an outer plate, an inner plate substantially parallel thereto, a transverse spacing bar substantially perpendicular to these plates, and a transverse slanted bar forming with one of the plates a wedge edge; a plurality of cast lip-sections, hooked over this edge, and each having at least one hole, and being welded to the dipper front through these holes and along their lower edges; at least one supporting piece, just below and abutting the lip-sections, having at least one hole each, and welded to the outer face of the dipper front along the upper and lower edges thereof and through these holes; and at least one tooth-base, cast integral with each lip-section.

2. In combination: a hollow wedge-shaped dipper front; and a plurality of interchangeable lip-sections hooked over the edge of the front,

and secured to the front by welding, each lip-section carrying integral therewith at least one tooth-base.

3. In combination: a dipper front comprising an outer plate, a transverse spacing bar substantially perpendicular thereto, an inner plate substantially parallel to the outer plate, and a transverse slanted bar forming with one of the plates a wedge edge; and a number of interchangeable cast lip-sections hooked over this edge and welded to the dipper front along their lower edges, each lip-section carrying integral therewith at least one tooth-base.

4. The combination of claim 3, plus transverse supporting means, comprising at least one piece, collectively extending clear across the front, abutting all the lip sections, and welded to the front.

5. In combination: a dipper front comprising an outer plate, a transverse spacing bar substantially perpendicular thereto, an inner plate substantially parallel to the outer plate, and a transverse slanted bar forming with one of the plates a wedge edge; and a number of interchangeable cast lip-sections hooked over this edge, welded to the dipper front along their lower edges, and each having at least one hole through which it is welded to the front, each lip-section carrying integral therewith at least one tooth-base.

6. The combination of claim 5, plus transverse supporting means, comprising at least one piece, collectively extending clear across the front, abutting all the lip sections, and welded to the front.

7. In combination: a hollow dipper-front, consisting of an outer plate, an inner plate substantially parallel thereto, a transverse spacing bar substantially perpendicular to these plates, and a transverse slanted bar forming with one of the plates a wedge edge; a plurality of cast lip-sections, hooked over this edge, and being welded to the dipper front along their lower edges; at least one supporting piece, just below and abutting the lip-sections, welded to the outer face of the dipper front along the upper and lower edges thereof; and at least one tooth-base, cast integral with each lip-section.

8. In combination: a hollow dipper-front, consisting of an outer plate, an inner plate substantially parallel thereto, a transverse spacing bar substantially perpendicular to these plates, and a transverse slanted bar forming with one of the plates a wedge edge: a plurality of cast lip-sections, hooked over this edge, and being welded to the dipper front along their lower edges; and at least one supporting piece, just below and abutting the lip-sections, welded to the outer face of the dipper front along the upper and lower edges thereof.

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