March 4, 1924. 1,485,434

V. N. SEAL

DIPPER TOOTH

Filed Nov. 14, 1922

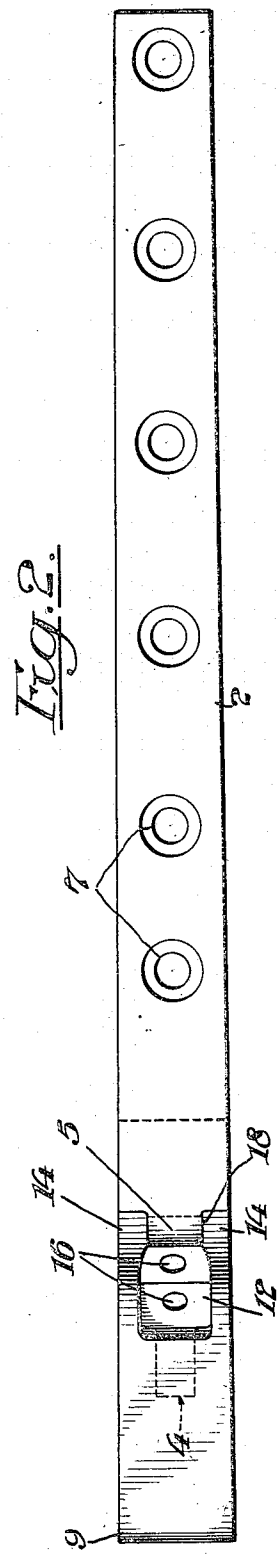


Fig. 2.

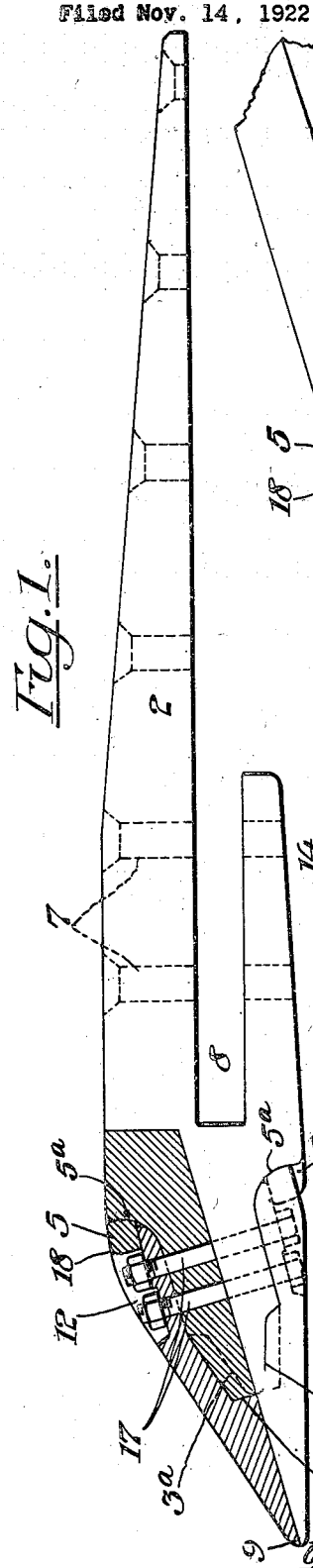


Fig. 1.

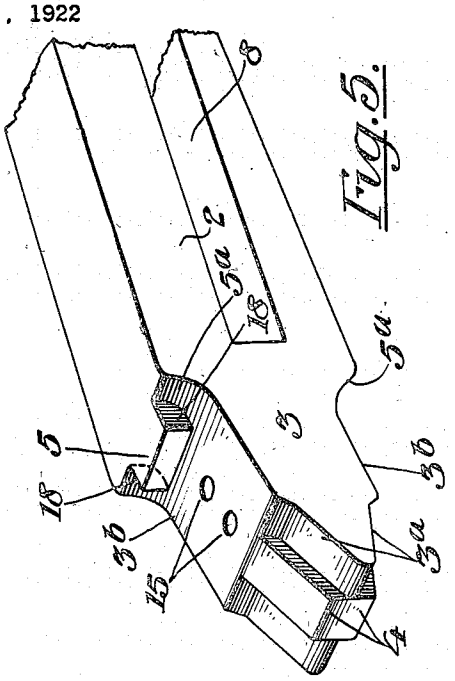


Fig. 5.

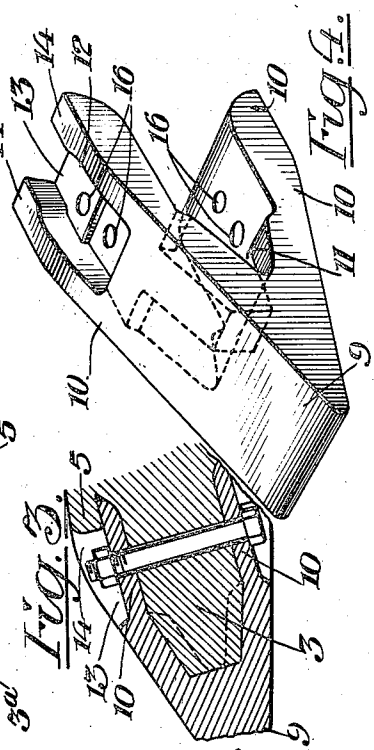


Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

VOORHEES N. SEAL, OF CARLISLE, PENNSYLVANIA, ASSIGNOR TO THE FROG SWITCH & MANUFACTURING COMPANY, OF CARLISLE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DIPPER TOOTH.

Application filed November 14, 1922. Serial No. 600,789.

To all whom it may concern:

Be it known that I, VOORHEES N. SEAL, a citizen of the United States, residing at Carlisle, in the county of Cumberland and State of Pennsylvania, have invented certain new and useful Improvements in Dipper Teeth, of which the following is a specification.

This invention relates to dipper teeth, especially adapted for use in connection with dippers in excavating machines or the like, the invention having to do particularly with an improvement in reversible and renewable two-part dipper teeth.

An object of this invention is to provide a dipper tooth of the foregoing class having improved means for interlocking the parts of the tooth so as to resist the spreading of the bifurcated ends of the tooth point and to relieve the connecting bolt or bolts of excessive strain during use.

Other objects of this invention will appear in the following description thereof, reference being had to the acccompanying drawings forming a part of this specification, wherein like reference characters indicate corresponding parts in the several views and wherein Fig. 1 is a side view partly in section illustrating a form of dipper tooth embodying my invention; Fig. 2 is a top view thereof; Fig. 3 is a fragmentary view partly in section illustrating another form of dipper tooth embodying my invention; Fig. 4 is a perspective view of the dipper tooth point; and Fig. 5 is a fragmentary perspective view of the dipper tooth base.

The present invention embodies certain improvements over my prior Patent No. 1,330,143 dated February 10, 1920. In this patent it will be noted that the wedge-shaped nose of the dipper tooth was provided with a three-stepped formation, and the interlocking lugs at the rear or base of the nose were formed from the rear and bottom walls of the upper step or offset and projected forwardly over the intermediate step, overlapping a shelf or bolt seat in the point.

I have found in use that this structure can be materially strengthened and cheapened by providing the wedge-shaped nose of the dipper tooth base with only two steps or offsets, the upper step thereby being of considerably greater depth, thus permitting an auxiliary bolt to be used when desired, and permitting the rear lugs to be so constructed in spaced relation from the bottom of the upper step or offset so as to cause these lugs to overlap a considerably greater portion of the point. By this improved construction it is also possible for the bolt seats of the point to extend under the major portion of the lugs, and furthermore it is possible to greatly strengthen the bifurcated arms or ends of the point by having the bolt seats extend integrally to the rear of the arms. This last construction strengthens the bifurcated arms against lateral strains or shocks to which the point is subjected in use.

In the drawings, wherein I have illustrated preferred embodiments of my invention, it will be seen that this improved tooth comprises a suitable base 2 having a forwardly projecting wedge-shaped nose 3 of stepped or offset formation. The wedge-shaped nose in this instance comprises a forward tapered step or offset 3^a and a rear tapered step or offset 3^b of considerably greater depth or length, and the nose is provided with two pairs of lugs, the lugs at each side being shown located in alinement one pair forwardly of the other. The lugs 4—4 are located at the apex of the nose or on the forward step 3^a thereof, while the lugs 5—5 are located at the base of the nose or adjacent to the rearward step 3^b thereof. It will be noted that each lug 5 projects forwardly from the rear wall 5^a of the step or offset 3^b, and the major portion of the bottom of the lug is preferably undercut so as to lie in spaced relation from the bottom wall of the step 3^b, as will be clearly seen in Fig. 1. As shown in Figs. 1, 2 and 5, the rearward step or offset 3^b may be provided forwardly of the lugs 5—5 with a pair of bolt openings 15 adapted to receive the bolts for attaching the point and nose. The two sets of lugs are located substantially midway of the width of the nose, and the base 2 is provided with the usual openings 7 for the reception of bolts for attaching the base to the shovel or dipper, the base being bifurcated at 8 for this purpose.

The dipper tooth point 9 is bifurcated to provide a pair of rearwardly extending arms or projections 10, the opposed inner walls or faces of which are provided with suitable recesses 11 for the reception of lugs 4—4. These lugs are adapted to prevent or resist sidewise play or movement of the point relatively to the bolts and therefore assist in preventing any tendency to shear the bolts. Each arm 10 of the point is recessed from the rear end thereof as at 12 to provide a seat or shelf 13 for receiving the connecting bolts, and as shown in Fig. 4, each arm 10 is provided with a pair of bolt openings 16 through which the connecting bolts 17 are adapted to pass.

It will be noted that the opposed end portions 14 of each arm 10, when the point is fitted to the wedge-shaped nose, are adapted to overlie the opposite ends 18 of each lug 5 and each seat or shelf 13 which extends substantially to the rear end of the portions 14, and between the same, projects underneath the major portion of the lug 5, as clearly shown in Figs. 1 and 2. Thus it will be seen that the major part of the bottom wall of each lug 5 is utilized for the purpose of overlapping the shelf or seat 13, the lug being of such width as to fit into the recess 12 between the end portions 14.

As a result of this improved construction, the lugs 5 will resist the spreading of the bifurcated point, will in conjunction with the lugs 4—4 prevent any shifting or sidewise play of the point relatively to the nose, and will cooperate to prevent shearing of the bolts 17. As illustrated in Fig. 3, the point and base may be connected together by means of a single bolt, and since the major portion of the lugs 5—5 overlap the bolt seat, maximum resistance to the shearing of the bolts and to the spreading of the point is obtained.

It will thus be observed that certain important advantages of the present structure over my prior patent are obtained. By this improvement it is possible to provide a considerably stronger structure due to the fact that the rear lugs overlap to a greater extent the bottom of the bolt recesses in the point, and to a greater degree preventing spreading of the bifurcated ends of the point and relieving the bolts of excessive strains or shocks. Considerable saving in the cost of manufacture results due to the fact that it is easier and cheaper to grind the offset portions of the nose and point and provide a proper fit between the parts. Also the increased area of the upper step permits the utilization of a plurality of connecting bolts when it is desired to construct larger or stronger teeth for heavier work. This is furthermore permitted without at the same time necessitating any substantial proportionate increase in the size of the nose and point, thus reducing the amount of material and hence the cost. By virtue of the present construction also the arms 10 are stronger due to the fact that the shelf or seat 13 extends substantially to the rear ends of the arms thereby connecting all of the parts thereof.

It will be understood that by describing in detail herein any particular form, structure, or arrangement, it is not intended to limit the invention beyond the scope of the several claims or the requirements of the prior art.

I claim as my invention:

1. In a dipper tooth, the combination of a base comprising a nose provided adjacent the rear thereof with a forwardly projecting lug spaced inwardly from the side edges of the nose and having substantially the entire bottom thereof spaced from the nose, and a point carried by said base and having a recess for receiving said lug, said recess forming at the sides thereof a pair of spaced substantially parallel ribs and having a bottom wall connecting said ribs together from end to end thereof, said wall extending under said lug substantially the entire length of the lug.

2. In a dipper tooth, the combination of a point bifurcated to form a pair of jaws, each having the outer face centrally recessed to form a pair of spaced ribs and a bottom wall connecting said ribs together substantially from end to end thereof, and a base having a nose extending between said jaws and provided at opposite sides with a centrally located lug extending between said ribs and undercut to cause substantially the entire underface of the lug to overlap said bottom wall.

3. In a dipper tooth, the combination of a base having a wedge-shaped nose, a pair of opposite sides of said nose having each a transverse shoulder located between the ends of the nose and forming a lower tapered face and an upper tapered face of greater depth, each of said upper tapered faces terminating at the rear in a shoulder provided with a forwardly projecting lug having substantially the entire bottom face spaced from the tapered face of the nose, and a point bifurcated to provide a pair of jaws constructed to embrace said nose, each jaw having an exterior recess for receiving one of said lugs and each recess having a bottom wall extending substantially to the rear end of the jaw and overlapped by a lug, and one or more bolts extending through said bottom wall and upper tapered face for connecting the point and base together.

4. In a dipper tooth the combination of a point bifurcated to provide a pair of jaws, each exteriorly recessed to provide spaced lengthwise extending projecting portions and a bottom wall integrally connecting said

projections substantially from end to end thereof, a base having a nose fitting between said jaws, the opposite faces of said nose terminating at the rear in shoulder portions, a lug formed and extending forwardly from each shoulder portion centrally thereof, each lug having the bottom wall thereof spaced from the face of said nose, said lugs extending between said projecting portions and said bottom walls extending underneath substantially the entire lugs.

Signed at Carlisle, Pennsylvania, this 10th day of November, 1922.

VOORHEES N. SEAL.