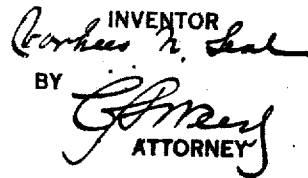


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UNITED STATES PATENT OFFICE.

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DIPPER-TOOTH.

1,330,143.

Specification of Letters Patent.

Patented Feb. 10, 1920.

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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 teeth for dippers for excavating and similar machines, and particularly to a two-part dipper tooth comprising a supporting base or shank having a wedge-shaped nose and a detachable, reversible and renewable bifurcated point supported by said nose, the object of the invention being to provide a structure of the character specified having improved means for locking or interlocking the two parts thereby to prevent the spreading of the bifurcated ends of the point, and which means will also take the strain off of the bolt used to connect the point and base and thus prevent the shearing off of such bolt.

The bifurcated point is usually connected to the nose by means of a bolt. The side thrusts on the tooth in operation and the sudden dropping of the dipper frequently causes the shearing off of the bolt due to the tendency of the bifurcated ends of the point to spread.

In the present improvement I have provided a very simple, inexpensive and efficient means of preventing the spreading of the bifurcated ends of the point, and thus have prevented the tendency of the bolt to shear in operation.

In the drawings accompanying and forming a part of this specification, Figure 1 is a top view of the improved dipper tooth; Fig. 2 is a side partly sectional view thereof; Fig. 3 is a perspective view of the point; Fig. 4 is a perspective view of the nose end of the base; Fig. 5 is a cross-sectional view taken on line *a-a* Fig. 2; Fig. 6 is a cross-sectional view taken on line *b-b* Fig. 2; and Fig. 7 is a partly sectional view taken on line *c-c* Fig. 2.

Similar characters of reference indicate corresponding parts in the several figures of the drawings.

In the preferred form thereof, herein shown, this improved tooth comprises a suitable base 2 having a forwardly projecting stepped nose 3, and which nose is provided with two pairs of lugs, the lugs at each side

being shown located in alinement one forwardly of the other. The lugs 4-4 are located at the apex of the nose or on the forward step thereof, while the lugs 5-5 are located as it were at the base of the nose or on the rearward step thereof, and project forwardly of a recessed portion forming the step 6 of the nose, which portion or intermediate step 6 is provided with a bolt opening 15 adapted to receive the bolt for attaching the point and nose. The two sets of lugs are located substantially midway of the width of the nose. The base is of course provided with the usual openings 7 for the reception of the bolts for attaching the base to the shovel or dipper and the base is shown as bifurcated as at 8 for this purpose. The point 9 is provided with a pair of rearwardly extending bifurcated projections or arms 10, the opposed walls or faces of which are provided with recesses 11 for the reception of the lugs 4-4 which are helpful in preventing sidewise play of the point relatively to the bolt and therefore assist in preventing a tendency to shear the bolt. Each bifurcated portion of the point is also provided with a recess 12 for the reception of the lug 5. Each of these recesses 12 is provided at one part thereof with a bottom or shelf 13 for the reception of the holding bolt attaching the point to the base, the opening for said bolt being shown at 14 in the point and 15 in the base. This shelf or bottom of the recess 12 is also so located that it will extend under the lower portion of the lug 5 so that the lug 5 will thus overlap this portion of the point when the point is fitted to the nose and consequently these lugs 5 will prevent the spreading of the bifurcated point adjacent to the attaching bolt while at the same time the lugs 5 will assist in preventing, together with the lugs 4, any shifting or sidewise play of the point relatively to the nose.

I am aware of Patent No. 1,275,589 to Nichols dated August 13, 1918 in which it has been attempted to prevent the spreading of the bifurcated arms and point by means of dove-tailed lugs and recesses, but there are certain disadvantages in this construction,—first in that they are rather expensive to form and unless these dove-tailed projections are accurately fitted they are not as efficient as they should be and the accurate fitting thereof is expensive since

this would require the machining of the lugs, which when made of manganese steel must be done by a grinding operation, which is tedious and expensive.

5 In the present improvement however, the overlapping lugs 5 and the shelf 13 require but little machining or grinding and are flat surfaces and not curved surfaces, therefore they can be easily ground without difficulty, and this very quickly, so that an accurate fit
10 can be readily obtained when desired.

It will thus be observed that I have provided a very simple means for preventing the spreading of the bifurcated points and one
15 which is efficient in use and one which increases the holding effect of the bolt so that shearing thereof is prevented.

It will also be observed that the wedge-shaped nose of the base and the point are so
20 constructed and attached to each other that the point is not only detachable but is readily reversible.

It will be understood that the various details may be more or less changed without departing from the spirit or scope of the present improvement.

In the present improvement it will be observed that the side walls of each recess 12 are deeper than the shelf 13, in consequence
30 of which the side walls of the lug 5 of the nose are overlapped to a greater extent than the shelves 13 of the point are overlapped by the lugs 5. This permits the shelves 13 to have the bolt openings therein and the use of
35 a bolt passing through a part of the interlocking means at right angles to the sides of the point and nose immediately forward of the lugs 5, so that such bolt will connect the point and nose adjacent to the interlocking
40 parts of the point and nose, and in fact enables the bolt, as stated, to pass through a part of such interlocking elements, thus securing the nose and point together where the greatest strain comes and so securing them
45 together at the interlocking parts thereof that there is no opportunity for movement of the interlocking parts one relatively to the other, so that such interlocking parts have high efficiency to prevent the shearing off of
50 the bolt.

Moreover, it will be observed that the lug of the nose is located substantially midway of the width or between the two sides thereof, and that this is true also of the recesses 12 of the point, which permits the bolt to be likewise located substantially midway of the width of the point and the nose.

I claim as my invention:

1. In a structure of the class described, the combination of a supporting base having a
60 wedge-shaped nose provided with a pair of forwardly projecting lugs each located substantially midway of the width of the nose, a bifurcated point having recesses for the reception of said lugs and also having a shelf
65

adjacent to said recesses underlapping said lugs, and a bolt connecting said point and nose and passing through said shelf.

2. In a structure of the class described, the combination of a base having a wedge-
70 shaped nose, said nose having two sets of outstanding projections, one behind the other, a bifurcated point having two sets of recesses for the reception of said projections, one pair of said recesses having a shelf underlapping
75 a pair of projections of said nose.

3. In a dipper tooth, the combination of a wedge-shaped nose having a pair of forwardly projecting lugs adjacent to the base
80 thereof, said nose being recessed below said lugs and having a bolt opening forwardly of said lugs, a bifurcated point having a pair of recesses for the reception of said lugs and having at the base of said recesses a shelf provided with a bolt opening and which
85 shelf is in position to be overlapped in the rear of said bolt opening by the lugs of the nose, and a bolt passing through said bolt openings for securing the point and nose together.

4. In a dipper tooth, the combination of a wedge-shaped nose having a pair of forwardly projecting lugs adjacent to the base
90 thereof, said nose being recessed below said lugs and having a bolt opening forwardly of said lugs, a bifurcated point having a pair of recesses for the reception of said lugs and having at the base of said recesses a shelf provided with a bolt opening and which shelf
95 is in position to be overlapped in the rear of said bolt opening by the lugs of the nose, said nose also having forwardly of said lugs another pair of lugs and said point also having in front of its bolt opening a pair of recesses
100 for the reception of said last lugs.

5. In a dipper tooth, the combination of a base having a forwardly projecting wedge-shaped nose provided with two pairs of outstanding lugs, one pair adjacent to the apex
105 of said nose and the other pair adjacent to the base thereof, said nose having a bolt opening extending therethrough between said two pairs of lugs, said nose having a recess at the under-side of each rear lug, and a bifurcated detachable and reversible
110 point having opposed recesses for the reception of the forward lugs and a pair of recesses at the rear of the bifurcated portions thereof for the reception of the rear projecting lugs, said point having adjacent
115 to each of said last recesses a shelf or base provided with a bolt opening, which shelf or base is in position to be overlapped by the rear projecting lugs of the base.

6. A dipper tooth point having a pair of
120 bifurcated ends, each provided with a recess terminating in a base or shelf located substantially midway between the sides of the point, said shelves having a bolt opening there-through.

7. A dipper tooth point having a pair of bifurcated ends, each provided with a recess terminating in a base or shelf having a bolt opening therethrough, the side walls of the recess projecting rearwardly beyond the shelf.

8. A dipper tooth point having a pair of bifurcated ends, each provided with a recess terminating in a base or shelf having a bolt opening therethrough, said point also having a pair of opposed recesses.

9. A dipper tooth point having a pair of bifurcated ends, each provided with a shelf having a bolt opening, said point having at two sides of said bolt opening a pair of recesses.

10. A dipper tooth base having a wedge-shaped nose provided with a pair of forwardly projecting lugs adjacent to the base of said nose, each located substantially midway between the sides of said nose, said nose having a bolt opening at the front of the lugs and in proximity thereto.

11. In a structure of the class described, the combination of a point, a supporting base having a nose adapted to support said point and provided with a forwardly projecting lug overlapping the rear end of said point, and a bolt passing through the point and base from top to bottom thereof for holding them together.

12. A dipper tooth base comprising a wedge-shaped nose having two pairs of projecting lugs, one pair adjacent to the base of the nose and the other pair adjacent to the apex thereof.

13. A dipper tooth base comprising a wedge-shaped nose having two pairs of projecting lugs, one pair adjacent to the base of the nose and the other pair adjacent to the apex thereof, said nose having a bolt opening therethrough between the two pairs of lugs.

14. A dipper tooth base comprising a wedge-shaped nose having a stepped formation and provided with a bolt opening and also having a pair of forwardly projecting lugs on the rear step of said base and extending forwardly of the rear wall of the adjoining step.

15. A dipper tooth base having a wedge-shaped nose provided with a stepped formation and comprising an inner, an outer and an intermediate step, the outer step having a pair of projecting lugs, the inner step having a pair of forwardly extending lugs projecting forwardly of the rear wall of the inner step and said intermediate step having a bolt opening therethrough.

16. A dipper tooth comprising a wedge-shaped base having a stepped formation consisting of an inner step, an outer step and an intermediate step, said outer step having a pair of lugs, said inner step also having a pair of forwardly projecting lugs

extending forwardly of the rear wall of the inner step and said inner step having there-through a bolt opening, and a detachable and reversible bifurcated point having opposed recesses for the reception of the lugs of the outer step and also having recesses in its bifurcated ends for the reception of the lugs of the inner step, said point also having a pair of shelves adjacent to said last recesses provided with bolt openings and in position to be overlapped by the lugs of the inner step of said base.

17. In a structure of the class described, the combination of a bifurcated point, a supporting base having a wedge-shaped nose adapted to receive said point and provided with a pair of forwardly projecting lugs in position to overlap a part of the rear spaced-apart ends of the point thereby to prevent the spreading of the spaced-apart ends, and a bolt passing through the point and base from top to bottom thereof and located in front of and in proximity to said lugs for holding the point and base together.

18. In a structure of the class described, the combination of a bifurcated point having a pair of recessed rear ends, each recess having a bottom wall, a supporting base having a wedge-shaped nose adapted to receive said point and provided at the base of said nose with a pair of forwardly projecting lugs in position to extend into the recesses of the point and overlap the bottom walls of said recesses thereby to interlock the point and the base against sidewise and also top and bottom movement of the point relatively to the nose, and means fixedly connecting the base and point together and passing through said bottom walls of the recesses at right angles to the sides of the point.

19. In a structure of the class described, the combination of a bifurcated point having at its rear spaced-apart ends, a pair of recesses, one in each end, each having a bottom wall, and a supporting base having a wedge-shaped nose provided with a pair of forwardly projecting lugs adjacent to the base of said nose and in position to project into said recesses and overlap the bottom walls of said point recesses, the side walls of said point recesses overlapping the sides of said lugs to a greater extent than the lugs overlap the bottom walls of said recesses, and a bolt extending through said base and bottom walls of said point adjacent to said lugs whereby both lateral and up and down movement of the point relatively to the base is prevented.

20. In a structure of the class described, the combination of a bifurcated point, a base having a wedge-shaped nose adapted to receive said point, said nose and point having at the rear end of the point and at the base of the nose cooperating interlocking means

effective to prevent the spreading of the point at its rear ends relatively to the nose and to assist in preventing sidewise movement of the point relatively to the nose, and including a pair of projecting lugs carried by one of said parts, and a bolt passing through said point and base from top to bottom thereof adjacent to said lugs for connecting the point and the base together.

21. In a structure of the class described, the combination of a bifurcated point, a base having a wedge-shaped nose adapted to receive said point, said nose and point having at the rear end of the point and at the base of the nose cooperating interlocking means effective to prevent the spreading of the point at its rear ends relatively to the nose and to assist in preventing sidewise movement of the point relatively to the nose, and a bolt passing through a part of said interlocking means for connecting the point and the base together.

22. In a structure of the class described, the combination of a bifurcated point having at its rear spaced-apart ends each having

a recess located substantially midway between the sides of the point and provided with a bottom wall and a supporting base having a wedge-shaped nose provided with a pair of forwardly projecting lugs likewise located substantially midway between the sides of the nose and adjacent to the base of said nose and in position to project into said recesses and overlap the bottom walls of said point recesses, the side walls of said point recesses overlapping the sides of said lugs to a greater extent than the lugs overlap the bottom walls of said recesses, and a bolt extending through said base and bottom walls of said point in front of and adjacent to said lugs and substantially midway between the sides of the point and the base for securing said point and base together whereby both lateral and up and down movement of the point relatively to the base is prevented.

Signed at Carlisle, county of Cumberland, and State of Pennsylvania, this 18th day of August, 1919.

VOORHEES N. SEAL.