Nov. 1, 1932. W. H. BRUNE 1,885,326

DIGGING TEETH AND MEANS FOR MOUNTING THEM UPON EXCAVATING IMPLEMENTS

Filed Feb. 6, 1930

Fig. 1.

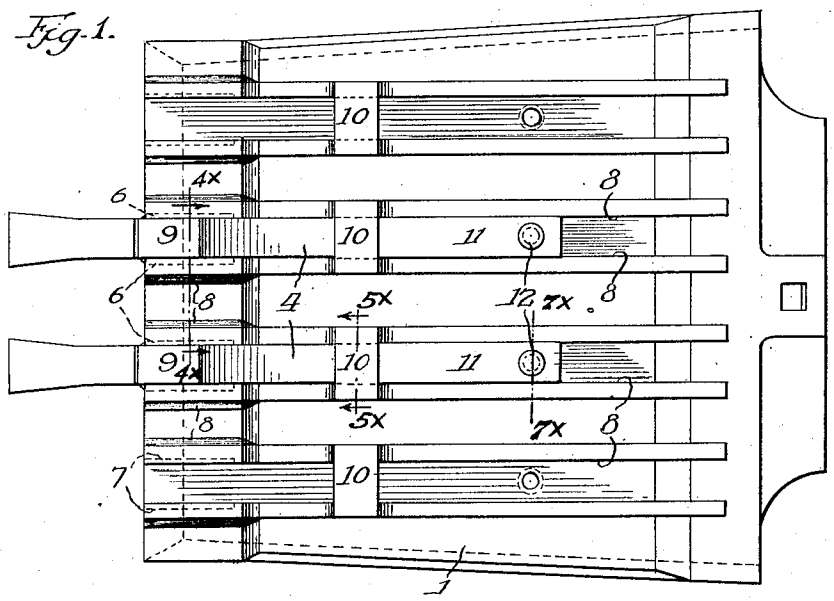


Fig. 2.

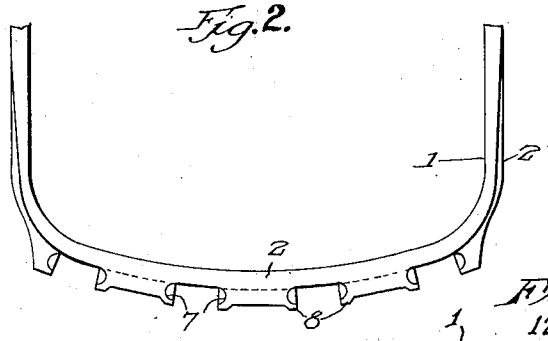


Fig. 5.

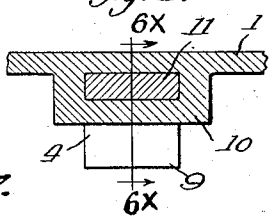


Fig. 7.

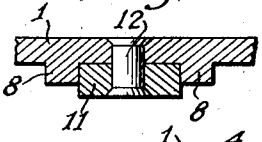


Fig. 6.

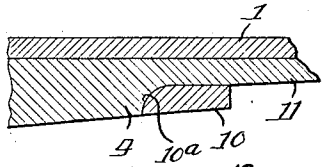


Fig. 4.

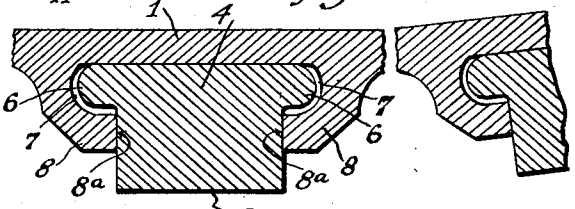
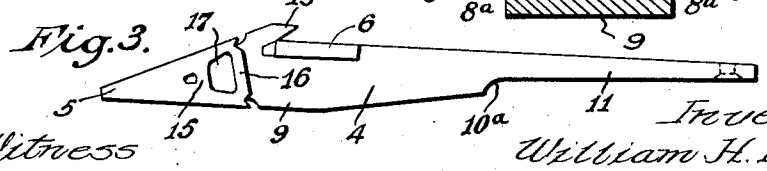


Fig. 3.



Witness
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UNITED STATES PATENT OFFICE

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DIGGING TEETH AND MEANS FOR MOUNTING THEM UPON EXCAVATING IMPLEMENTS

Application filed February 6, 1930. Serial No. 426,208.

This invention relates to toothed digging walls of excavating implements, and particularly to toothed walls of the class in which, for the sake of economically maintaining the digging efficiency of the wall, the wall and its teeth are constructed and assembled in a manner to permit the teeth to be taken off and replaced when worn out; without interfering with the penetrating points of the teeth which, preferably are made reversible and replaceable upon the bodies or bases of the teeth in order to prolong the time during which the bases of the teeth may be used without displacement.

It has long been the practice to make the digging wall, generally called the front, of an excavating implement as a separate element and incorporate it in the implement by riveting it to the back or remaining portion thereof; and it has been the practice to make the digging teeth with deep attaching shanks which overlie the front or digging wall of an excavating implement and assume the relation to such wall of longitudinal protecting runners; but these attaching shanks have generally been secured in position by laboriously riveting them to the implement wall, and have been removable only upon cutting away, burning out, or otherwise laboriously disposing of the rivets, when replacement was necessary.

One object of the present invention is to provide the tooth-receiving wall of the implement with seats in which teeth may be fitted and confined against displacement independently of riveting, so that it is merely necessary to employ some means to resist movement of a tooth in its seat in the direction opposite to the direction of assembly in order to hold the tooth in place; the seat for a tooth, according to the preferred embodiment of this part of the invention, consisting of a pair of longitudinal ribs on the digging wall between which a tooth may lie and be laterally confined as in a channel, and means whereby the confining ribs may interengage with the tooth to hold it against displacement, in a direction perpendicular to the digging wall, such interengaging means consisting, in the illustrative embodiment of the invention, of tongues projecting laterally from opposite sides of the forward portion of the tooth and entering grooves in the opposing faces of the ribs, and a strap bridging the space between the two ribs and overlying a rear portion of the tooth so that a tooth may be firmly assembled by a rearward longitudinal movement and will remain assembled upon the implement so long as longitudinal movement in the opposite direction is resisted by any convenient means, for instance, a single rivet passed through a portion of the tooth and the digging wall upon which the tooth is mounted. In addition to the described means for holding the tooth in assembly, the tooth is preferably equipped also with a known construction of divergent embracing jaw between which and the base of the tooth the digging lip of the implement will be received, as a further safeguard against outward displacement of the tooth under stresses encountered in use.

Preferably the forward portions of the ribs which confine the teeth laterally upon the digging wall will be of materially greater dimension or more massive than the remainder of the ribs in order to afford ample mass of metal in which to form the grooves that receive the tongues on the sides of the tooth base, but the transverse dimensions of the bases of the teeth which are received in the seats of the digging wall are of still greater depth so that the shanks or bases of the teeth extend materially beyond the digging wall and provide the striking surfaces that protect the implement when in use. Thus, this part of the invention contemplates an excavating implement having a digging wall with open tooth-seating channels extending longitudinally thereof, and in which are fitted the shanks or attaching bases of teeth in the assembly of the teeth with the implement. It also contemplates such open longitudinal channels when provided with laterally groove or undercut opposing side walls for the reception of interengaging portions of teeth inserted in the grooves.

In the accompanying drawing, in which

the preferred embodiment of the invention is shown by way of illustration:

Figure 1 is an elevational view of the digging wall of an implement presented in upstanding position and constructed in accordance with the present invention, but omitting several of the teeth intended to be used in connection therewith.

Figure 2 is a front edge view of the digging wall of an excavating implement with the main body of the implement broken away.

Figure 3 is a detail view, in side elevation, of a digging tooth constructed in accordance with the present invention.

Figure 4 is a section on the line 4*x*—4*x* of Figure 1.

Figure 5 is a section on the line 5*x*—5*x* of Figure 1.

Figure 6 is a section on the line 6*x*—6*x* of Figure 5.

Figure 7 is a section on the line 7*x*—7*x* of Figure 1.

1 represents the front or digging wall of an excavating implement, for instance, a power operated dipper, and 2 and 3 represent frame-like enlargements thereof constituting, respectively, the digging lip of the implement and a portion of the rear open end thereof. 4 represents the attaching shank or base, and 5 the reversible point of a separately formed tooth constructed in accordance with the present invention. Some of the features of design, particularly in the digging wall of the implement, used for purposes of illustration of the present invention, are not germane to the present invention but constitute features of novelty claimed in copending application Serial No. 516,884, filed February 19, 1931. It is therefore to be understood that failure to claim such features herein shall not be taken as a dedication of right to claim the same.

A base 4 of each digging tooth, any suitable number of which may be used upon the implement, is constructed with a relatively deep forward portion 9 formed with laterally presented tongues 6 on the forward inner portion of said deep portion and preferably adjoining the inner face of the tooth base through which it seats upon the implement; and these tongues 6 are relatively shallow in depth or dimension perpendicular to the plane of the wall upon which the teeth are mounted and they are restricted to the said forward inner portions of said teeth. Said teeth are further provided upon their forward inner portions, that is to say the deep forward portions 9 of the tooth base with embracing jaws 13 immediately above the tongues 6 and in position to constitute rearward seating faces of the teeth through which they are received upon the wall of the implement. Upstanding from the outer face of the wall 1 of the implement, are longitudinally extending ribs 8 which constitute the confines of open channels in which the teeth bases are received and by which said bases are confined against lateral displacement on the implement. The inner forward portions of these ribs 8 are provided with grooves 7 that receive the tongues 6 on the teeth thereby constituting an interengagement between the teeth and the implement wall, or interlock against displacement in a direction perpendicular to the plane of the wall. The portions of the ribs 8 which form the outer confines of the grooves 7 have material depth or dimension in a direction perpendicular to the wall of the implement so that they provide lateral seats 8*a* (see Fig. 4), and the enlarged portion 9 of each tooth, develops sufficient depth in the same direction beyond the tongues 6 which are adjacent to its inner seating face to provide substantial lateral bearings for the tooth against said lateral seats. Moreover the section of the enlarged portion 9 is such as to leave, projecting beyond the confines of the groove, a runner which supports the forward portion of the implement wall out of contact with the ground and thereby saves the wall from wear.

From the foregoing it will be seen that the invention contemplates a longitudinally extended open channel on the digging wall of an implement constituting the seat for a digging tooth which is confined laterally by the side walls of such channel, said side walls being preferably undercut, hollowed, grooved, or otherwise adapted for the reception of an enlarged lateral dimension of the tooth to cause interengagement of the tooth in the grooved channel against displacement in a direction perpendicular to the digging wall.

In rear of the front portion of a seating channel constructed as already described, the digging wall of the dipper is provided with a tooth embracing strap 10 which overlies the rear portion of the base 4, which is preferably reduced in dimension to provide an anchoring tail 11. The ribs 8 which constitute the lateral confines of the open seating channel, are preferably continued to and, if desired, beyond the strap 10. The anchoring tail 11 may extend materially beyond the strap 10 and receive at its rear end means such as a rivet 12 to prevent forward unseating of the tooth. At the point of juncture between the tail 11 and the main body of the base 4, the base is provided with a seat 10*a* to receive the strap 10.

I claim:

1. An excavating implement constructed with a digging wall and digging teeth mounted upon a face of said wall; said face of the wall being constructed with longitudinally extending upstanding ribs that constitute the lateral confines of open channels in which said teeth fit and receive lat-

eral confinement; said confines and teeth being provided with interengaging tongues and grooves that confine the teeth against displacement perpendicularly to the digging wall; and said tongues and grooves being restricted to the forward inner portions of said teeth and walls.

2. An excavating implement as described in claim 1 in which the forward portion of each tooth is enlarged in section relatively to the rear portion thereof; the interengaging tongues and grooves are located adjacent the forward meeting portions of the tooth and wall; and the said enlarged forward portion of the tooth extends outwardly beyond the confines of the channel.

3. An implement as described in claim 1, in which, in addition to the interengaging tongues and grooves extending along a portion of the length of the teeth, the channels have their side walls connected by straps which overlie other portions of the teeth.

4. As a new article of manufacture a tooth for excavating implements having a longitudinally extended attaching base with a relatively deep transverse section at its forward part, and its rear portion tapering in section therefrom; said tooth having upon its deep forward portion longitudinally restricted laterally presented interlocking tongues, of restricted depth, adjacent the inner face of the tooth through which it meets the wall of the implement when in use.

5. In an excavating implement, a wall having longitudinal channels, teeth seated in said channels and held thereby against lateral displacement on the wall, tongue and groove securing means resisting displacement of the teeth perpendicularly to the wall at one portion of the length of the teeth, straps connecting the sides of the channels and securing the teeth at other points in the length of the teeth, said teeth being adapted to assemble with the channels and the tongue and groove and strap securing means by longitudinal rearward movement of the teeth relatively to the wall, and anchoring means securing the teeth against longitudinal movement in the direction opposite to that of their assembly.

6. A digging wall for excavating implements in which longitudinal tooth confining channels are provided and the lateral confines of said channels are constructed for tongue and groove interlock with and connected by straps adapted to overlie teeth inserted in the channels and confine said teeth against displacement perpendicularly to the wall.

7. In a digging wall for toothed excavating implements, longitudinal channels in said wall adapted to receive and laterally confine the elongated bases of digging teeth; the said channels having in the forward portions of the lateral confines of their channels means for interlocking with the sides of inserted tooth bases and in rear of said forward portions having bridging straps which overlie the inserted tooth bases; and said channels extending rearwardly from said straps whereby they are adapted to laterally confine tooth bases at points remote from interlocking portions of the channels.

8. In a digging wall for toothed excavating implements, longitudinal channels in said wall adapted to receive and laterally confine the elongated bases of digging teeth; the said channels having in the forward portions of the lateral confines of their channels, means for interlocking with the sides of inserted tooth bases and in rear of said forward portions having bridging straps which overlie the inserted tooth bases; said channels extending rearwardly from said straps whereby they are adapted to laterally confine tooth bases at points remote from interlocking portions of the channels; and said straps being constructed to enter into longitudinal abutment with inserted tooth bases.

9. A digging wall for excavating implements, having longitudinally extending ribs approximating the length of the longitudinal dimension of the wall and related in pairs as lateral confines of receiving channels for tooth bases to be mounted upon said wall; the ribs of each pair being connected intermediate of their ends by cross straps affording confinement of the inserted tooth bases in directions perpendicular to said digging wall.

Signed at Chicago, Illinois, this 4th day of February, 1930.

WILLIAM H. BRUNE.