May 3, 1932. P. T. ROBIN 1,856,930

DIPPER TOOTH STRUCTURE

Filed Dec. 16, 1929

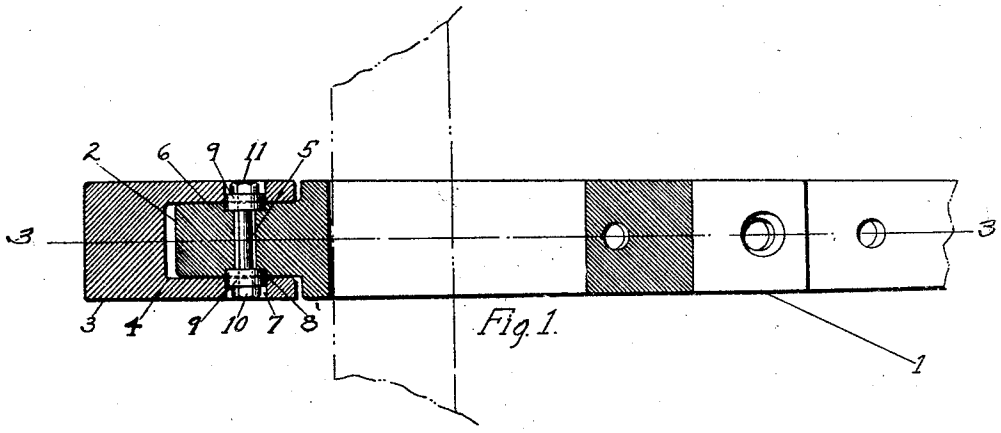

Fig. 1.

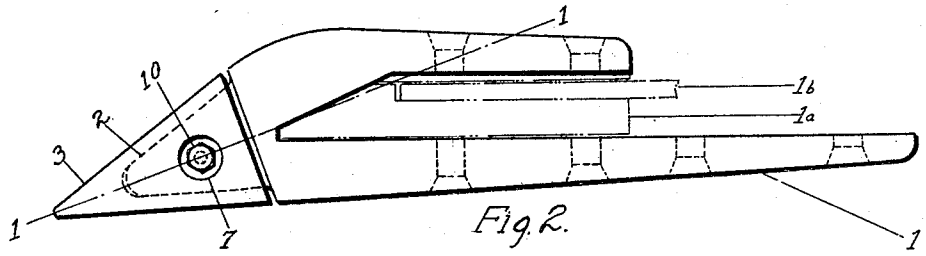

Fig. 2.

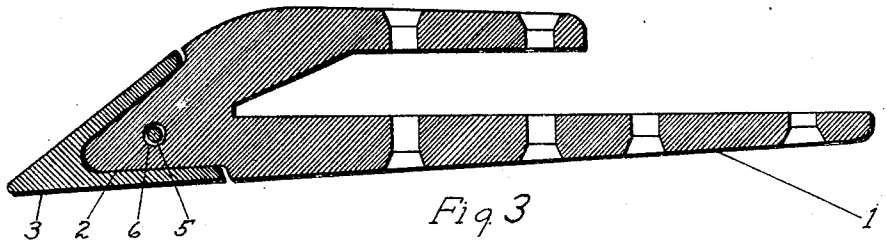

Fig. 3

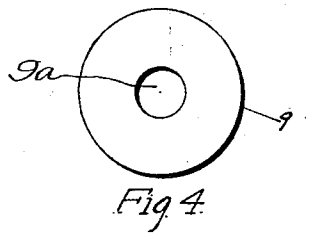

Fig. 4.

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UNITED STATES PATENT OFFICE

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DIPPER TOOTH STRUCTURE

Application filed December 16, 1929. Serial No. 414,305.

The present invention is directed to simplifying and making more rugged the dipper tooth conections between the detachable dipper teeth and their bases. These teeth are subjected to very severe strains and the connections must be rugged enough to sustain this strain. Features and details of the invention will appear from the specification and claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings as follows:—

Fig. 1 shows a section on the line 1—1 in Fig. 2.

Fig. 2 a side elevation of the structure.

Fig. 3 a section on the line 3—3 in Fig. 1.

Fig. 4 a plan view of the key plug.

1 marks the tooth base which is secured to the lip 1*a* of a dipper 1*b* in the usual manner. The base has a tongue, or projection 2, preferably tapered to conform to the taper of the ordinary dipper tooth.

The dipper tooth 3 has the forward point and is provided with a socket 4 which is adapted to receive the tongue 2.

A bolt 5 extends through an opening 6 in the tongue 2, the opening 6 being preferably larger than the bolt. The walls of the socket 4 are provided with openings 7 somewhat larger than the opening 6 but concentric therewith and sockets 8 are provided in the faces of the tongue 2 of the same size as the openings 7 and registering therewith.

Key plugs 9 are placed in the openings 7 and extend into the sockets 8. The bolt 5 extends through openings 9*a* in the key plugs, a head 10 and a nut 11 being housed in the openings 7, the plugs terminating far enough from the outer surfaces of the tooth to provide the housing space.

With this structure the violent strains on the tooth are sustained by the key plugs and the bolt is relieved of the direct shearing strains and only operates to hold the key plugs in place. The walls of the opening 6 being larger than the bolt, the bolt is out of contact with the walls of the opening. The ends of the bolt are properly housed so as to prevent injury to the bolt.

It will be noted that the bolt 5 is arranged approximately in the center of the projecting tongue and the engaged surfaces of the tooth. With this arrangement the strains on the tooth which tend to move the tongue are sustained by the tongue surfaces engaging the surfaces of the walls of the socket and the plugs are thus very largely relieved of the more severe strains to which the teeth are subjected.

While I have termed this a dipper tooth, it will be understood that it is my intention to give to the word "dipper" a wide enough meaning to include such implements as are ordinarily termed drag line buckets, clamshell buckets and the like.

What is claimed as new is:—

1. The combination of a dipper tooth base; a detachable tooth on said base, said base and tooth having a tongue and socket connection, the outer member of the connection having a key plug receiving opening and the inner member of the connection having a key plug receiving socket; a key plug in the opening extending into the key plug receiving socket locking the tooth on the base, said key plug being insertable into the opening and from the opening into the socket; and a bolt extending through the members of the connection locking the key plug in place.

2. The combination of a dipper tooth base; a detachable tooth on said base, said base and tooth having a tongue and socket connection, the outer member of the connection having a key plug receiving opening and the inner member of the connection having a key plug receiving socket; a key plug in the opening extending into the key plug receiving socket locking the tooth on the base, said key plug being insertable into the opening and from the opening into the socket; and a bolt extending through the members of the connection locking the key plug in place, the opening forming a housing for the end of the bolt.

3. The combination of a dipper tooth base; a detachable tooth on said base, said base and tooth having a tongue and socket connection, the outer member of the connection having key plug receiving openings and the inner member of the connection having key plug receiving sockets; plugs in the openings ex-

tending into the key plug receiving sockets locking the tooth on the base, said key plug being insertable into the opening and from the opening into the socket; and a bolt extending through the members and the key plugs locking the plugs in place.

4. The combination of a dipper tooth base; a detachable tooth on said base, said base and tooth having a tongue and socket connection, the outer member of the connection having key plug receiving openings and the inner member of the connection having key plug receiving sockets; plugs in the openings extending into the key plug receiving sockets locking the tooth on the base, said key plug being insertable into the opening and from the opening into the socket; and a bolt extending through the members and the key plugs locking the plugs in place, the openings forming housings for the ends of the bolt.

5. The combination of a base having a tooth-receiving tongue extending therefrom, said tongue having an opening therethrough and a key plug receiving socket; a tooth having a tongue-receiving socket, said tooth having a key plug receiving opening registering with the plug receiving socket; a plug in the opening extending into the socket, said plug being insertable through the opening and from the opening into the socket; and a bolt extending through the plug and opening in the tongue locking the key plug in place.

6. The combination of a base having a tooth-receiving tongue extending therefrom, said tongue having an opening therethrough and a key plug receiving socket; a tooth having a tongue-receiving socket, said tooth having a key plug receiving opening registering with the plug receiving socket; a plug in the opening extending into the socket, said plug being insertable through the opening and from the opening into the socket; and a bolt extending through the plug and opening in the tongue locking the key plug in place, the opening in the tooth forming a housing for the end of the bolt.

7. The combination of a base having a tooth-receiving tongue extending therefrom, said tongue having an opening therethrough and key plug receiving sockets at the ends of the opening; a tooth having a tongue-receiving socket, said tooth having key plug receiving openings registering with the key plug receiving sockets; a plug in the opening extending into the socket, said plug being insertable through the opening and from the opening into the socket; and a bolt extending through the plugs and the opening in the tongue locking the key plugs in place.

8. The combination of a base having a tooth-receiving tongue extending therefrom, said tongue having an opening therethrough and key plug receiving sockets at the ends of the opening; a tooth having a tongue receiving socket, said tooth having key plug receiving openings registering with the key plug receiving sockets; a plug in the opening extending into the socket, said plug being insertable through the opening and from the opening into the socket; and a bolt extending through the plugs and the opening in the tongue locking the key plugs in place, the openings forming housings for the ends of the bolt.

In testimony whereof I have hereunto set my hand.

PHILIP T. ROBIN.