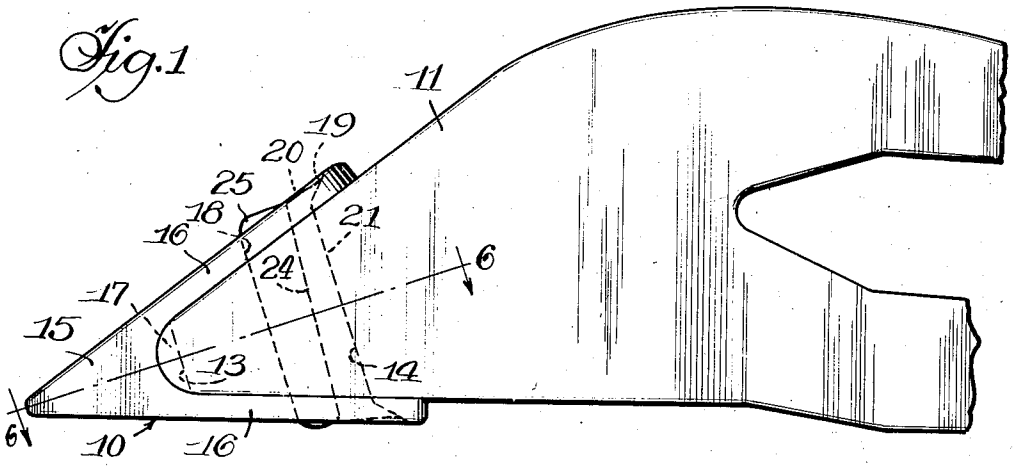
Dec. 15, 1936. J. W. FELLMETH 2,064,059

DETACHABLE DIPPER TOOTH

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Fig. 1



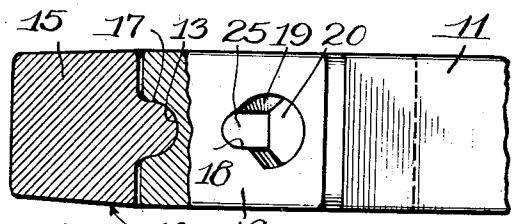


Fig. 2

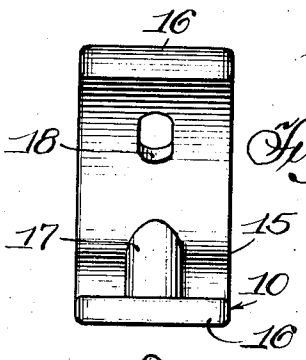


Fig. 4

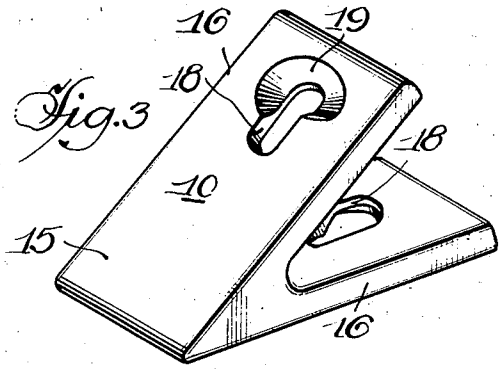


Fig. 3

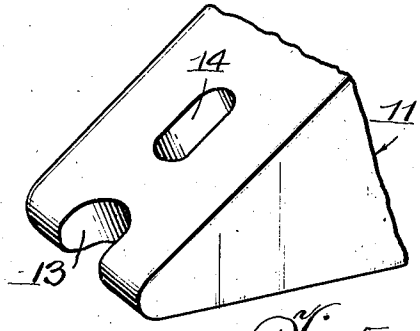


Fig. 5

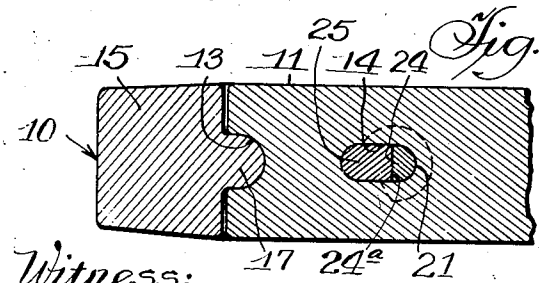


Fig. 6

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Dec. 15, 1936. J. W. FELLMETH 2,064,059

DETACHABLE DIPPER TOOTH

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Fig. 9

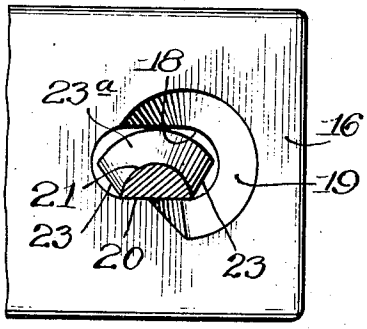


Fig. 10

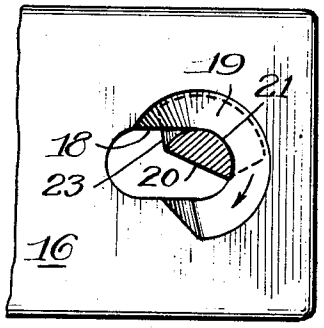


Fig. 7

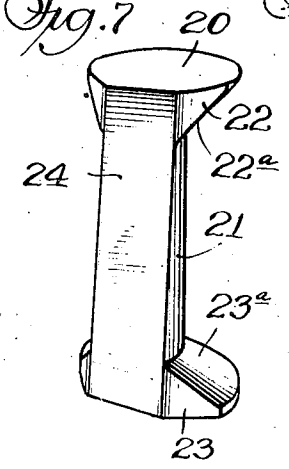


Fig. 8

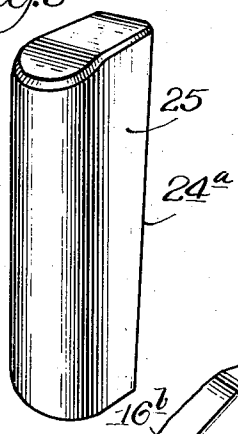
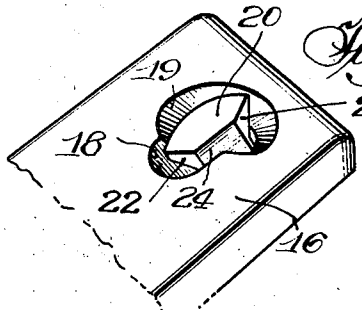


Fig. 11



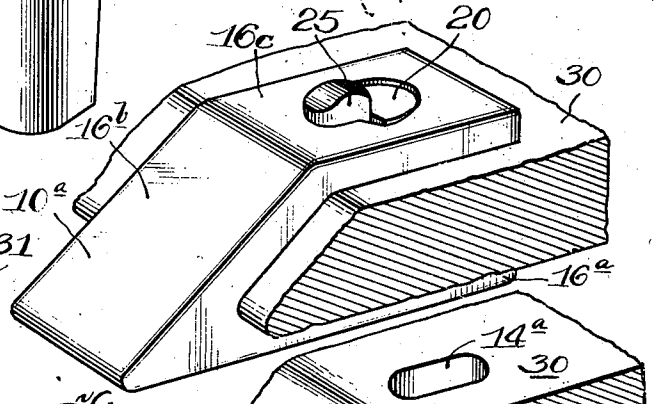


Fig. 12

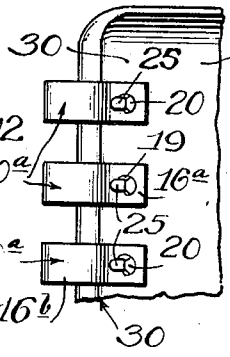


Fig. 13

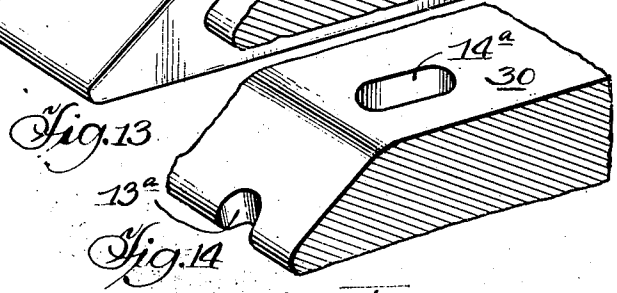


Fig. 14

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Patented Dec. 15, 1936 2,064,059

UNITED STATES PATENT OFFICE

2,064,059

DETACHABLE DIPPER TOOTH

Jacob William Fellmeth, Danville, Ill., assignor to A. Finkl & Sons Company, Chicago, Ill., a corporation of Illinois

Application December 21, 1934, Serial No. 758,544

2 Claims. (Cl. 37—142)

This invention relates to improvements in dipper teeth of the detachable type, adapted for renewal or replacement from time to time due to wear or breakage thereof.

Among the objects of my invention is to provide a simple form of removable tooth, together with a simple locking device for rigidly securing the detachable portion to its base, but permitting quick and easily operable means for unlocking and removing said detachable portion when desired.

The invention may best be understood by reference to the accompanying drawings, in which

Fig. 1 is a view in side elevation showing one embodiment of my invention as applied to a dipper tooth.

Fig. 2 is a plan view of the device shown in Fig. 1, with the end portion thereof shown in horizontal section.

Fig. 3 is a perspective view of the tip detached from the base.

Fig. 4 is a rear view of the detachable tip.

Fig. 5 is a perspective view of the base of the tooth on which the tip may be detachably mounted.

Fig. 6 is a detail section taken on line 6—6 of Fig. 1.

Fig. 7 is an enlarged perspective view of the rotatable locking piece.

Fig. 8 is an enlarged perspective view of the wedge end which cooperates with the rotatable locking member.

Figs. 9 and 10 are enlarged fragmentary detail views taken from the upper surface of the detachable tip and showing the rotatable locking piece in part section, and illustrating the method of introducing said locking piece into locking position.

Fig. 11 is a fragmentary perspective view showing the locking piece inserted in partially locked position in the tip.

Fig. 12 shows a modified form of detachable tooth as applied directly to the front lip of a dipper or similar material-gathering device.

Fig. 13 is an enlarged perspective view of the form of device shown in Fig. 12.

Fig. 14 is a perspective view showing a fragmentary portion of the lip of the dipper to which the detachable tooth may be secured.

In the embodiment of my invention illustrated in Figs. 1 to 11, the detachable tooth portion 10 or tip is adapted for attachment to a projecting tooth base 11 of the type usually secured to dippers or buckets for digging rock or earth. In this form, the tip is of the reversible type, in which the two side plates of said tip are similar and are arranged at equal angles to the median plane indicated by the section line 6—6 on Fig. 1, so that said tip can be attached to the base in either of two reversible positions, as desired. The base portion 11 is provided with a wedge-shaped front lip having a slightly rounded front edge with a semi-circular recess 13 formed centrally thereof. Rearwardly of the recess 13 is formed a hole or aperture 14 extending perpendicularly to the median plane of the lip, said hole being elongated longitudinally of the tooth, as clearly shown in Fig. 5.

The tip 10 has a wedge-shaped point 15, and two side plates 16, 16 forming continuations of the wedge surface of said point 15, and shaped so as to fit closely over the point of the base 11. A semi-circular web 17 is formed at the base of the point between the plates 16, 16, which web is arranged to fit snugly into the recess 13 formed in the base 11, to hold the point and base against lateral displacement relative to each other when in assembled position shown in Figs. 2 and 6.

The plates 16 are provided with similar elongated apertures 18, 18 adapted to register with each end of the slotted aperture 14 in the base 11. Each of said apertures 18 is cut away or counter-sunk on an outwardly inclined plane along its side and rear edges so as to form an inverted partially conical surface 19 as clearly indicated in Fig. 3. These cut away portions are designed to receive a portion of the locking device as shown in Figs. 3, 9 and 10.

The locking device includes an elongated member 20 which resembles a half of a spool, split substantially along its longitudinal axis. Said spool is shown in detail in Fig. 7 and comprises a semi-cylindrical intermediate portion 21 and upper and lower heads 22 and 23 formed with inner shoulders 22^a and 23^a, respectively. These shoulders are tapered or inclined outwardly at substantially the same angle as the counter-sunk surfaces 19, 19 formed on the exterior of the plates 16, 16, for a purpose that will presently appear.

In the preferred form shown, the inner face along which the locking piece 20 is split longitudinally, is arranged at a slight angle to the longitudinal axis of the locking piece 20 so as to form a tapered surface 24, as clearly shown in Figs. 1 and 7. This tapered surface is adapted to be engaged by a wedge pin 25, having a similar surface 24^a but tapered in the opposite direction, as indicated in Fig. 1.

The arrangement and method for detachably

locking the tip 10 on the base 11 may now be described. The locking piece 20 with its enlarged heads 22 and 23 is of such shape and size that it may be passed through the apertures 18, 18 when the greatest dimensions of said heads extend in a direction longitudinally of the slotted apertures 18, as clearly shown in Fig. 9. Thus when the tip 10 is moved into engagement with the base 11, and the slotted aperture in said base registers with both ends of the slotted apertures 18, 18 of said tip, the locking piece 20 may be inserted through either side of the tip, and through the apertured base 11, to a position in which the heads 22 and 23 register laterally with the counter-sunk portions 19, 19 formed on the outer faces of the plates 16, 16, as clearly shown in Fig. 11. In this position the locking piece may then be rotated through an angle of approximately 90°, with the conical surfaces 22^a and 23^a of the heads 22 and 23 fitting over the counter-sunk surfaces 19, 19 which are arranged at substantially the same angles, as previously described. After the locking piece has been swung through 90° as described, the wedge pin 25 may then be inserted in the forward end of the slotted aperture 18, it being understood, of course, that the smaller end of the wedge pin should be initially inserted in engagement with the smaller end of the locking piece 20, and with the tapered surface 24^a of the wedge pin in engagement with the tapered surface 24 of the locking piece. The wedge pin 25 may then be driven home as shown in Figs. 1 and 2, so as to securely lock all of the parts together. In this position, the tapered surfaces of the locking piece 20 and wedge pin 25 are in mutually reversed relation so that the rear face of the locking piece and the front face of the wedge pin are parallel with each other and to the adjacent sides of the aperture 14, as shown in Fig. 1. This arrangement permits the locking piece and wedge pin to be inserted from either side of the tip 10, and also renders the latter fully reversible with respect to the base 11.

It will be also observed that when in locked position, as shown in Figs. 1 and 2, both heads 22 and 23 of the locking piece 20 are counter-sunk below the surface of the plates 16, 16 of the tip so as to be protected from excessive wear. The wedge pin 25 may project slightly above the top or bottom of the tip, but the length of said wedge pin may be varied within reasonable limits without affecting the proper co-operation of the parts. The tip may be readily unlocked merely by driving out the wedge pin 25 from its smaller end, which will release the locking piece 20 so that it may be rotated and withdrawn from apertures 14 and 18.

In a modified form of the device shown in Figs. 12, 13 and 14, I have shown a removable form of tooth 10^a which may be applied directly to the lip 30 of a material-handling dipper or bucket 31 of any suitable form. In such case the lip 30 is itself provided with an aperture 14^a spaced from the front edge thereof, and a recess 13^a for receiving a web similar to the web 17 previously described in connection with the form of device shown in Figs. 1 and 2. In the modified form shown in Figs. 12 and 13, however, the tooth portion 10^a is of the non-reversible type, in which the bottom plate 16^a is parallel with the dipper lip 30, while the upper plate includes a forward portion 16^b extending at an angle to the plane of the dipper plate 30 and a rearward portion 16^c extending parallel to and spaced from the lower plate 16^a as clearly shown in Fig. 13. In other respects, however, the construction and method of attachment of the tooth 10^a is the same as has been described in connection with the reversible form of tip shown in Fig. 1.

Although I have illustrated and described certain embodiments of my invention, it will be understood that I do not wish to be limited to the exact construction shown and described, but that various changes and modifications may be made without departing from the spirit and scope of my invention as defined in the appended claims.

I claim:—

1. A dipper tooth including a base and a detachable tip, said tip consisting of a wedge point and diverging side plates adapted to span opposite sides of said base, said base having an aperture therethrough, each of said side plates having an aperture therein adapted to register with the aperture in said base when the parts are in assembled relation, and each of the apertures in said side plates being counter-sunk adjacent the rear outer end thereof with inclined conical surfaces, a locking piece adapted to pass through all of said apertures and having enlarged heads at opposite ends thereof provided with opposed conical surfaces adapted to fit the counter-sunk portions in said side plates, and a removable pin adapted to extend in lateral engagement with said locking piece to force the heads of the latter into locking engagement with the counter-sunk portions of said plates.

2. A dipper tooth including a base and a detachable tip, said tip consisting of a wedge point and diverging side plates adapted to span opposite sides of said base, said base having an elongated aperture therethrough, each of said side plates having an aperture therein adapted to register with the aperture in said base when the parts are in assembled relation, and each of the apertures in said side plates being counter-sunk adjacent the rear outer end thereof with inclined conical surfaces, a locking piece having integral enlarged heads at opposite ends thereof provided with opposed conical surfaces adapted to fit the counter-sunk portions of said side plates, said heads extending from one side of said locking piece so that the latter may pass through all of said apertures when held with said enlarged heads disposed crosswise of said apertures, said locking piece and heads thereafter being arranged to be rotated at substantially 90°, with said heads fitting in the counter-sunk portions of said side plates, and a removable pin adapted to extend in lateral engagement with said locking piece to hold the heads of the latter rearwardly in locking engagement with the counter-sunk portions of said side plates.

JACOB WILLIAM FELLMETH.