Sept. 16, 1952 A. N. CRAWFORD 2,610,416

JOINT LOCK MECHANISM FOR DIGGING CAP OF EXCAVATING TOOTH ASSEMBLIES

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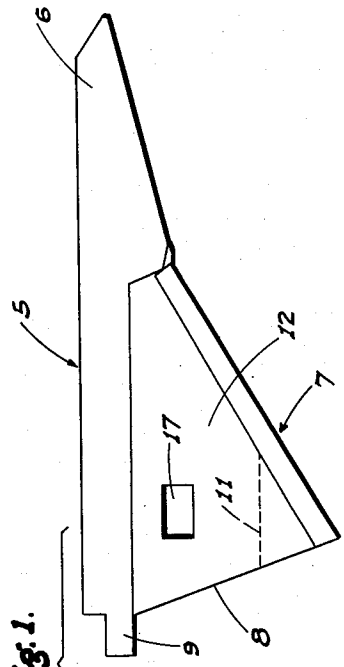
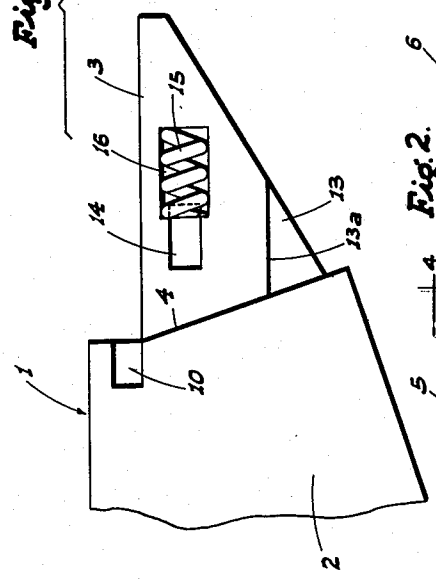


Fig. 1.



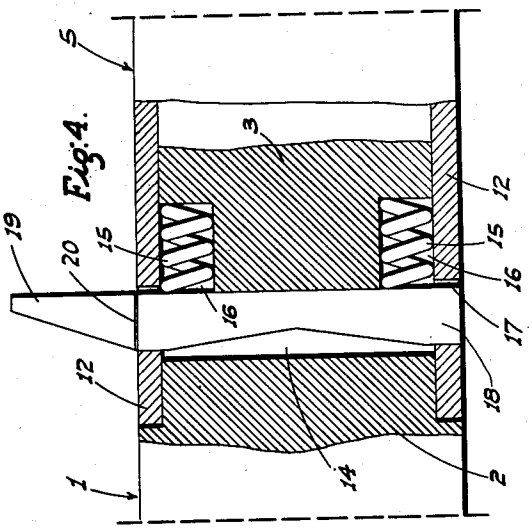


Fig. 4.

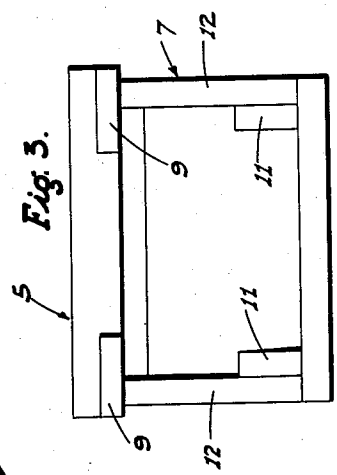


Fig. 3.

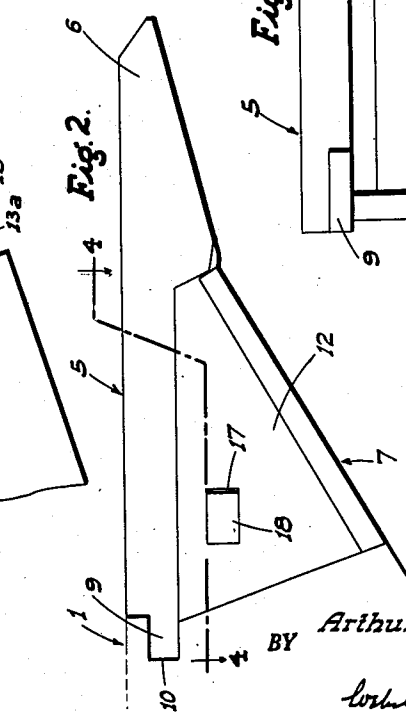


Fig. 2.

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JOINT LOCK MECHANISM FOR DIGGING CAP OF EXCAVATING TOOTH ASSEMBLIES

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Application September 17, 1948, Serial No. 49,705

1 Claim. (Cl. 37—142)

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This invention is directed to, and it is an object to provide, a novel tooth assembly for construction equipment such as a shovel bucket, dredge bucket, or the like; the tooth assembly being of the type which includes a replaceable tooth and an initially separate adapter by means of which the tooth is rigidly mounted in place in the lip of a bucket.

Another object of the present invention is to provide a tooth assembly, as above, which includes an improved releasable locking device between the tooth and adapter; such locking device being designed for ease of placement, and yet when in use securing the tooth and adapter against accidental separation.

A further object of the invention is to provide a tooth assembly, as in the preceding paragraph, in which the locking device includes a transverse key adapted to extend through interengaged parts of the tooth and adapter in drive-out relation; said key being spring-pressed laterally to normally hold the same in place.

An additional object of the invention is to provide a tooth assembly which is designed for ready and economical manufacture.

A further object of the invention is to provide a practical and reliable tooth assembly, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claim.

In the drawings:

Fig. 1 is a side elevation of the tooth assembly showing the tooth and adapter in their relative positions, but separated.

Fig. 2 is a side elevation of the tooth assembly with the tooth and adapter as locked in engagement.

Fig. 3 is a rear end view of the tooth, detached.

Fig. 4 is a sectional plan on line 4—4 of Fig. 2.

Referring now more particularly to the characters of reference on the drawings, the tooth assembly comprises a base or adapter, indicated generally at 1, which adapter includes a body 2 arranged to be affixed to the cutting lip of the bucket of a power shovel, dredge, or the like in forwardly projecting relation. The means for attaching the adapter to the bucket lip is not here shown, and may be conventional.

At its forward end the body 2 includes, in integral relation, a forwardly projecting tongue 3, which tongue is parallel-sided and tapers in a vertical plane.

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The taper tongue 3 is generally symmetrical at its inner end to the adjacent portion of the body 1, but is of somewhat smaller cross section, whereby to provide stop shoulders 4 on said body all about the tongue.

The numeral 5 indicates generally a removable tooth having a rigid point 6 at the front and a tapered socket 7 which opens rearwardly. The socket 7 is adapted to receive the taper tongue 3 in close matching relation, with the rear edges 8 of the socket 7 in abutment with the stop shoulders 4.

Additionally, the tooth 5 includes, at the rear, and adjacent the upper portion thereof, a pair of transversely spaced lugs 9 which project rearwardly for engagement in corresponding, forwardly opening notches 10 in opposite sides of the body 2 of adapter 1.

The arrangement of the lugs 9 and notches 10 serves to reduce the strain on the tongue 3 when the tooth assembly is in use. This strain is further minimized by upwardly facing, locator ledges 11 formed on the sides 12 of socket 7 internally and adjacent the bottom corner thereof. The locator ledges 11 are received in matching cut-away portions 13 on opposite sides of the tongue; the downwardly facing shoulders 13a formed by said cut-away portions riding directly on top of the locator ledges 11 when the tooth assembly is in use.

When the tooth 5 is mounted on the adapter 1 by engagement of the tongue 3 in socket 7, such parts are releasably but normally secured against separation by the following locking device.

Intermediate its ends the tongue 3 is formed with a transverse key slot 14, and a pair of transversely spaced, longitudinally extending, heavy-duty compression springs 15 work into said slot from forwardly projecting pockets or recesses 16 in communication with the latter.

As will be noted from Fig. 1, the diameter of springs 15, and the height of their recesses 16, is greater than the height of the key slot 14. It will also be noted that such recesses cut into the forward side of slot 14 only sufficient to allow the springs to expand into the path of the key while preventing the springs from blocking said path.

Above the locator ledges 11, the sides 12 of the socket 7 include key slots 17, which register with the key slot 14 when the tongue 3 is engaged in the socket 7.

The key slots 14 and 17 are rectangular in cross section, as shown. A transverse key 18, similarly rectangular in cross section, but capable of engagement through the key slots 14 and 17, is disposed therein with a relatively tight but

drive-out fit. When the key 18 is in working position in the key slots 14 and 17, the springs 15 are loaded and bear against the forward edge of said key, whereby to normally hold the same against accidental displacement laterally of the tooth assembly.

The key 18, when in use, is of a length substantially equal to the width of the socket 7, but said key is initially formed with a tapered guide point 19 to facilitate initial entry of the key through the slots 14 and 17. The key is initially transversely scored, as at 20, at the inner end of the guide point 19 whereby, after the key is in place, said guide point can be broken off by the blow of a hammer.

With the described arrangement, the tooth 5 is normally rigidly, but removably, mounted on the adapter 1; the mounting being stable and effective. However, when it is desired to remove the tooth 5 for the purpose of repair or replacement, it is only necessary to drive out the transverse key 18, whereupon the parts may be readily separated.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

A tooth assembly for buckets comprising an adapter having a forwardly projecting tongue, a tooth having a rearwardly open socket to fit over the tongue, the tongue and the sides of the socket having transverse key slots adapted to register when the tooth is mounted on the tongue, a key adapted to be removably driven through the slots, said key having a lateral taper at its forward end, the tongue having a longitudinal recess cut in each side thereof and extending forwardly from the forward side of the tongue slot, the height of the recess being greater than the height of the slot and said recess cutting across the slot from said forward side thereof for a short portion of the width of said slot, and a compression spring fitting and countersunk in each recess and when expanded before placement of the key engaging both ends of the associated recess so as to then project into the path of the key for contraction thereby when said key is driven through the slots.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
821,215	Cantleberry et al.	May 22, 1906
1,167,774	Mentzer	Jan. 11, 1916
1,485,434	Seal	Mar. 4, 1924
2,055,265	Swigert, Jr.	Sept. 22, 1936
2,307,359	Crawford	Jan. 5, 1943
2,312,802	Crawford	Mar. 2, 1943
2,427,651	Baer	Sept. 23, 1947
2,435,847	Robertson	Feb. 10, 1948
2,466,013	Eaton	Apr. 5, 1949