Aug. 31, 1954 E. L. LAUNDER 2,687,585

CONNECTING ELEMENT FOR EXCAVATING BUCKET TOOTH POINTS

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Fig. 1.

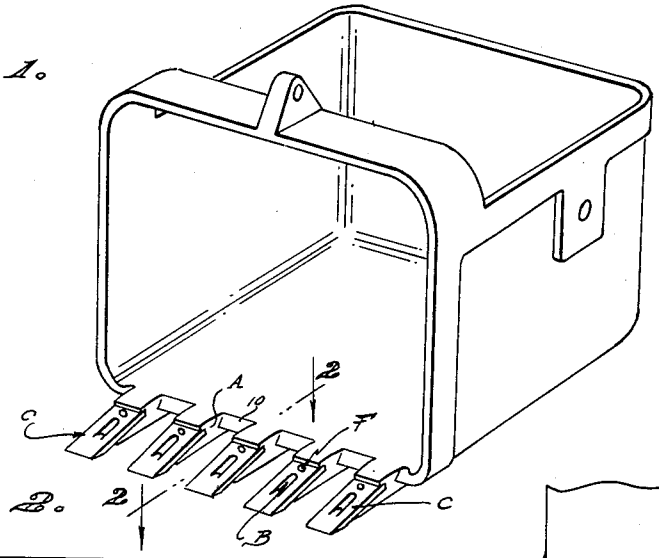



Fig. 2.

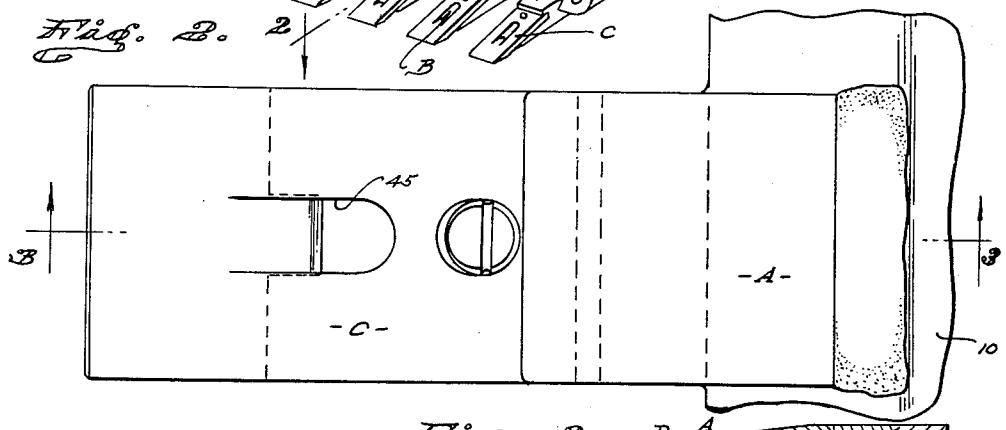



Fig. 6.

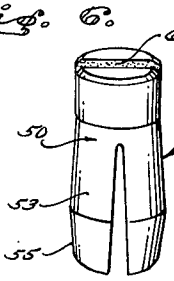



Fig. 3.




Fig. 4.

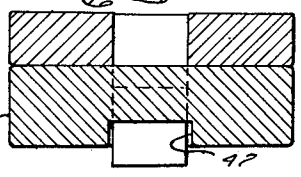
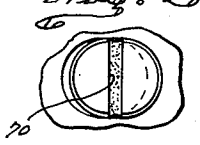



Fig. 5.




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## CONNECTING ELEMENT FOR EXCAVATING BUCKET TOOTH POINTS

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4 Claims. (Cl. 37—142)

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This invention has to do with a digger tooth and it is a general object of the invention to provide a simple, practical, dependable and improved digger tooth construction involving a tip which supports a blade and means releasably maintaining the blade on the tip.

The structure in which the present invention is included involves, generally, an elongate tip having a base portion with a front face in which there is a forwardly opening recess. A tip body projects forward from the base and has a flat top and a flat bottom which parts converge to a point. A flat plate-like blade seats on the top of the body and has a working part projecting forward therefrom. Anchoring means releasably anchors the rear end portion of the blade to the tip, preferably to the base of the tip. This means may involve a single tongue on the blade projecting into the recess provided in the base of the tip. Means releasably retains the forward portion of the blade at the forward portion of the body of the tip and preferably includes a tongue projecting rearwardly and downwardly from the blade to engage under the body of the tip and preferably in a recess or channel in the bottom of the body. Means releasably retains the blade in position on the tip and preferably acts to yieldingly urge the blade rearwardly on the tip to maintain the structure tight and properly engaged. The retaining means preferably includes a pin releasably carried by the tip and having a head which yieldingly urges the blade rearwardly. The pin is preferably serrated or split to have legs which frictionally engage the body and the head is sectional and has a section supported by a cushion or pad of rubber, or the like, so that it presses rearwardly against the blade.

A general object of this invention is to provide a tooth construction of the general character referred to in which the blade is effectively anchored at both ends while a dependable retaining means serves to maintain the blade properly engaged with the tip.

Another object of the invention is to provide a tooth construction of the general character referred to in which the blade is provided with forward and rear tongues that cooperatively engage the tip and serves to maintain the blade down on the tip and also against movement laterally of the tip.

Another object of the invention is to provide a tooth construction of the general character referred to in which the retaining means that maintains the blade anchored to the tip involves a simple pin releasably engaged with one part and having pressure engagement with the other.

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A further object of the invention is to provide a retainer pin for a tooth construction having legs frictionally engaging one part of the structure and a head having a section that yieldingly engages another part of the structure.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of my invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a perspective view of a bucket equipped with a plurality of teeth each of which involves structure provided by the present invention. Fig. 2 is an enlarged plan view of one tooth being a view taken substantially as indicated by line 2—2 on Fig. 1. Fig. 3 is an enlarged longitudinal sectional view of the tooth construction taken as indicatedy by line 3—3 on Fig. 2. Fig. 4 is a transverse sectional view taken as indicated by line 4—4 on Fig. 3, and Fig. 5 is a transverse sectional view of the head of the retainer pin being a view of the pin taken as indicated by line 5—5 on Fig. 3. Fig. 6 is a perspective view of the retainer pin.

The tooth construction provided by this invention is useful, generally, in cutting or digging teeth and it is particularly practical as applied to teeth employed on implements such as trenchers, buckets, and the like. In the drawings and for purpose of example I show the tooth construction applied to the teeth of a bucket, it being understood that in practice details such as I am about to set forth may be varied depending upon the class of implement on which the tooth is used or the class of service to be performed.

In the case illustrated the invention is included in a tooth which involves a tip having a base A and a forwardly projecting body B on the base. A blade C is mounted on the top of the body B and has a working part projecting forward therefrom. Anchoring means D anchors the rear end portion of the blade C to the tip while anchoring means E anchors the forward portion of the blade to the forward portion of the tip. A retaining means F releasably retains the blade engaged with the tip and with the means D and E operative to anchor the blade relative to the tip.

The shank A of the tip extends or projects longitudinally of the tooth and in the case illustrated it is shown applied to the forward portion of a suitable mounting or bucket bottom 10. The base A has a flat front face 11 and in the form of the invention illustrated a socket 12 is provided in the base from the face 11 and opens or faces forward immediately above the body B of the tip.

The body B of the tip is preferably an integral extension or projection on the forward end or face of the base A and in the case illustrated it is a forwardly converging projection that extends forward from the face 11 of the base. The particular tip body B shown in the drawings involves a flat top 15 and a flat bottom 16 and the body has flat parallel vertical sdies 17. The top 15 and bottom 16 converge as they extend forward to join or form the tip 18 of the body. A feature of the body B of the tip is a recess 20 provided in the body B to accommodate the means E. The recess is in the lower forward portion of the body and may be wholly or mainly in the bottom 16 of the body. Another feature of the body is an opening 21 preferably in the form of a bore which extends through the body B preferably from the top to the bottom thereof and is located in the rear or inner portion of the body where the body is of substantial thickness and is such as to accommodate an element of the means F as will be hereinafter described.

The blade C as provided by the present invention is preferably a flat elongate plate having a flat bottom 30 which seats on the flat top 15 of the body B and may completely cover or occupy the top 15. The blade has a forwardly projecting working portion 31 that projects forward of or beyond the tip 18 of body B and the front or end 32 of the part 31 is preferably finished or dressed to have the desired cutting or digging action.

The anchoring means D acts to anchor the rear end portion of the blade C to the tip so that the blade is maintained on the top 15 of the body B. The means D as illustrated in the drawings involves a tongue or extension 35 at or continuing from the rear end portion of the blade and entering the recess 12. The tongue portion 35 is, in effect, the rear end portion of the blade and, in practice, it is preferred that the part 35 be snugly seated in the recess 12 so that the rear end portion of the blade cannot lift or move away from the top 15 of the body B.

The anchoring means E serves to anchor the forward portion of the blade C on the top 15 of body B so that this portion of the blade will not lift away from the body and it also serves to hold the blade against shifting laterally on the body. In the preferred form of the invention the means E involves a tongue 40 which is carried by or anchored to the blade C and which projects downwardly and rearwardly therefrom to enter or be held in the recess 20 provided in the body B. In the particular form of the invention illustrated the tongue 40 is integral with the blade C, the blade being provided with a U-shaped cut 45 which establishes the tongue and the tongue is located in the desired manner by being bent or formed so that it extends down and rearward from the point where it is integrally joined to the blade. In the preferred form of the invention the top 46 of the tongue 40 is flat and seats against the flat bottom of recess 20 which is pitched or angularly related to the top 15 of the body to extend downwardly and rearwardly therethrough. Through this action wedging engagement is established between the structure formed by the blade and tongue and the body B which enters between the blade and the tongue. The sides or walls 47 of the recess 20 confine the tongue against lateral movement or shifting and thus the tongue acts to maintain the blade C against movement laterally of the body B.

The retaining means acts to releasably retain the blade C in engagement with the tip so that



the means D and E are engaged as shown in Fig. 3 of the drawings. In its preferred form the means F involves a retaining pin 50 releasably engaged with the body B of the tip and having engagement with the blade C so that it holds it in the desired position on the body. In the preferred form of the invention the pin has a main portion which fits into the bore 21 provided in the body B and it has a head portion which is engaged in an opening 52 provided in the blade. The main portion of the pin is preferably split to have divided parts or legs 53 which are normally somewhat divergent and are inwardly flexed or contracted when the pin is in place in the bore 21. It is further preferred that the legs have their end portions 55 somewhat beveled or tapered to facilitate entrance of the pin in the bore. When the pin is in place in the bore the legs 53 bear outwardly against the wall of the bore and thus maintain the pin tight in the body B. The head of the retaining pin enters the opening 52 which may be a bore through the plate forming the blade, the opening 52 being in register with the bore 21 when the blade is in place on the tip. In the preferred construction the head of the retaining pin is sectional and has a section 60 integral with the main part of the pin carried in the body and a blade engaging section 62 which is shiftably relative to section 60 and is supported therefrom through a pad or cushion 64 that is resilient. In practice I prefer to employ a pad 64 of rubber or the like bonded to the head sections 60 and 62 so that the pad couples the head sections. In the preferred construction the head sections are substantially semi-circular in cross sectional configuration and have opposed flat faces 70 to which the rubber pad 64 is bonded. In the preferred form of the invention the various parts of the retaining pin are formed and related so that the faces 70 of the head sections are in planes at right angles to the direction or plane of the opening that occurs between the legs 53 of the main part of the pin. In practice the opening 52 is so located in the blade C that when the pin is in place retaining the blade in engagement with the tip the section 62 of the head is moved forward or toward the head section 60 from its normal position, putting the cushion 64 under pressure. The cushion thus normally yieldingly urges or presses the head section 62 rearwardly so that it bears against the wall of opening 52 in a manner to normally yieldingly urge the blade rearwardly on the head B.

From the foregoing description it will be apparent that the retainer pin not only serves to maintain the blade in position where the means D and E are engaged, but it also holds the rear portion of the blade against shifting laterally relative to the head B. It will be apparent from the drawings and from the foregoing description how the blade with the elements or means D and E thereon can be easily formed and can be easily engaged with the tip. With the blade in place on the tip the structure is made secure by forcing or driving the retaining pin into place, as shown in Fig. 3. The pin being tight or frictionally held in the body of the tip remains in place during operation of the structure and when it is desired to remove the blade it is merely necessary to drive the pin out of engagement with parts and with which it is shown engaged in the drawings.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details

herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims.

Having described my invention, I claim:

1. In combination, an elongate tooth tip having a forwardly projecting body with a flat top and an opening extending transversely therethrough, a flat elongate blade of uniform thickness from one end to the other and seated on the body and projecting forward therefrom, a rearwardly projecting tongue at the rear end of the blade rigid therewith and engaging the tip and anchoring the rear portion of the blade on the tip, a rearwardly projecting tongue at the forward portion of the blade anchoring the forward portion of the blade on the tip, and a retainer pin frictionally held tight in the opening and a head on the pin engaged in an opening in the blade and holding the blade engaged on the body, the rearwardly projecting tongue being of the same thickness as the blade and terminating forward of the retainer.

2. In combination, an elongate tooth tip having a forwardly projecting body with a vertical opening therein, a blade seated on the body and projecting forward therefrom and having an opening registering with the opening in the body, means anchoring the rear portion of the blade on the tip, means anchoring the forward portion of the blade on the tip, and a retainer between said means and engaging the tip and blade holding the blade against both longitudinal and lateral movement relative to the tip and including, a pin terminating at one end at a lower end portion held tight in the opening in the body and terminating at the other end at a head engaged in the opening in the blade, the lower portion of the pin having frictional engagement with the wall of the opening in the body of the tip, the head on the pin having two separate sections, one integral with the pin and the other yieldingly bearing rearwardly on the blade to hold it against moving forward on the body, there being a body of resilient material between the sections of the head.

3. In combination, an elongate tooth tip having longitudinally spaced forwardly opening recesses therein and a vertical opening therein, an



elongate flat blade seated on the tip and having rearwardly extending tongues engaged in the recesses and having an opening registering with the opening in the tip, and means holding the blade against both longitudinal and lateral movement relative to the tip and including a unitary pin held tight in the opening in the tip, the pin having legs normally tending to spread apart and frictionally engaging the walls of the opening in the tip and a head carried by the pin and engaged in the opening in the blade, the head having two separate sections, one integral with the pin and the other in yielding pressure engagement with the wall of the opening in the blade, there being a body of resilient material between the sections of the head.

4. In combination, an elongate tooth tip with an opening extending therethrough from top to bottom, the tip having longitudinally spaced forwardly opening recesses therein, an elongate flat blade seated on the top of the tip and having rearwardly projecting tongues engaged in the recesses, and means holding the blade against both longitudinal and lateral movement relative to the tip including a pin having spaced legs normally tending to spread and frictionally engaged in the opening in the tip, and a head in the opening in the blade and in yielding pressure engagement with the blade urging the blade rearwardly on the tip, the head including two separate sections, one integral with the pin and projecting up therefrom and into the opening in the blade and the other rearward of the first mentioned section and bearing against the wall of the opening in the blade, and a pad of resilient material between the sections.

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