

(No Model.)

J. H. & T. K. BARLEY.

HARROW.

No. 389,188.

Patented Sept. 11, 1888.

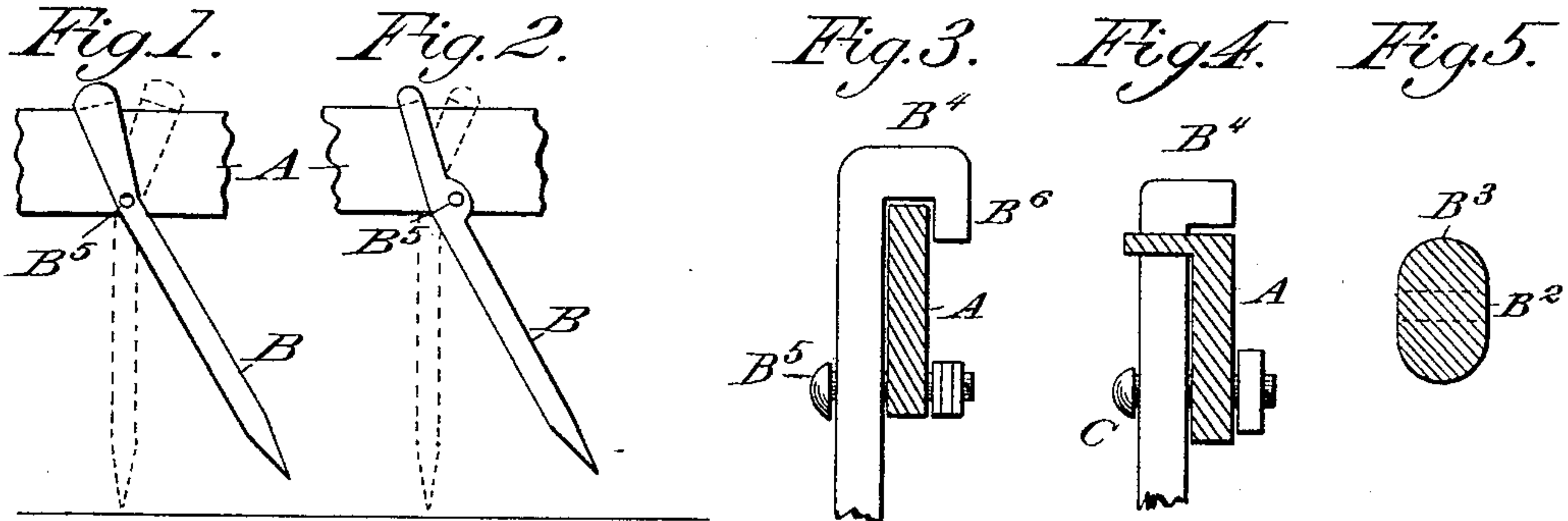
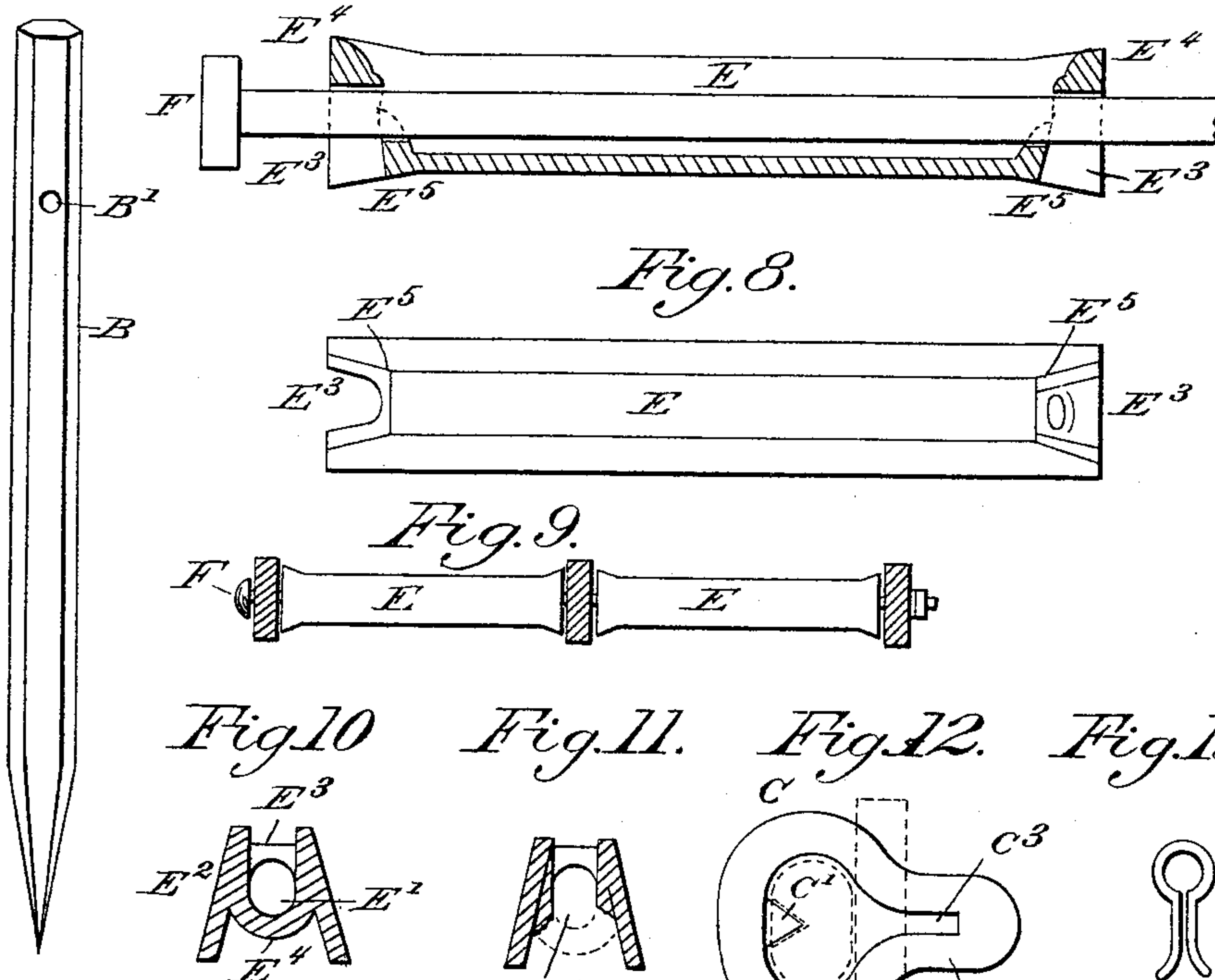


Fig. 6.

Fig. 7.



Witnesses:

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HARROW.

SPECIFICATION forming part of Letters Patent No. 389,188, dated September 11, 1888.

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To all whom it may concern:

Be it known that we, JAMES H. BARLEY and THOMAS K. BARLEY, citizens of the United States of America, residing at Sedalia, in the county of Pettis and State of Missouri, have jointly invented certain new and useful Improvements in Harrows, of which the following is a specification, reference being had therein to the accompanying drawings, making part of this specification, in which like letters of reference refer to like parts, and in which drawings—

Figures 1 and 2 are side elevations or face views of portions of a harrow-tooth bar or rail, showing our improved tooth pivotally attached thereto and supported at different angles; and Figs. 3 and 4 are views of the tooth-supporting bar or rail in vertical cross section, with the teeth attached thereto. Fig. 5 is a view of the tooth in cross section, and Fig. 6 is the tooth in side elevation before the side projecting heads are formed thereon. Fig. 7 is a longitudinal side sectional view of our improved spacing bracket or spool, top downward having a portion of a clamping-bolt in place. Fig. 8 is a plan top view of same. Fig. 9 is an end or cross-sectional view of a harrow-section as formed with three tooth bars or rails, showing the spacing bracket or spool inserted between said rails, and are clamped together by a screw-bolt passing through the rails and bracket. Figs. 10 and 11 are views of the bracket or spool in cross-section. Fig. 12 is a top or side view of the clamping-link, showing tooth and edge of rail in dotted lines. Fig. 13 is a view of a two-prong fastening-key which passes through the point end of the clamping-link.

Our invention relates to certain new and useful improvements in that class of field drag-harrows provided with self-adjusting teeth; and it consists, first, in the combination of a self-adjusting harrow-tooth and rail, said tooth pivotally attached thereto and having a side projecting head formed integral with its upper end and adapted to rest on the upper edge of said rail, whereby said tooth is supported at different angles.

Second. It also consists in a self-adjusting harrow-tooth having a perforation between its point and head adapted to receive a metal

pivot which forms the lower support for said tooth, and having lateral projecting tooth-supports formed integral with one or both sides of its upper end and adapted to rest on the top edge of the bar or rail which forms the upper support for said tooth.

Third. It further consists in a self-adjusting harrow-tooth having integral supports for said tooth, formed projecting laterally on one or both sides of its upper end, and having a perforation between the point and head, and an edge bend at or near said perforation to operate as hereinafter more fully described.

Fourth. It further consists in an improved clamping-link by which the harrow-teeth are pivotally attached to the tooth-supporting bars or rails and securely held in place.

Fifth. Our invention further consists in the novel construction of a metal bracket or spool for holding the tooth supporting bars or rails at suitable distances apart in forming the harrow-sections.

Sixth. It also consists in certain novel constructions and combination of parts, as will be hereinafter more fully described, and pointed out in the claims.

In the drawings, A designates portions of a harrow tooth bar or rail having the teeth B pivotally attached thereto, said teeth having side or lateral projecting heads B', bent or formed at their upper ends.

B' represents a perforation or countersink formed in said tooth, between its point and head, through which a metal pivot may be passed, and through corresponding perforations in the sides of said bars or rails with the side projecting heads B' resting on the top edge thereof, allowing the tooth having a horizontal movement on its pivot and supported at different angles when the motion of the harrow is reversed to the opposite direction, as shown in solid and dotted lines, drawings Figs. 1 and 2. The outer ends of the side projecting heads B' of said teeth may also be bent, forming lips B'', extending down a short distance over the opposite side surface of the upper part of said bars or rails forming side supports for the teeth, thus relieving their connecting-pivots from any liability of breakage when undue strain is brought against their lower portions, as shown at drawing Fig. 3.

If preferred, the teeth may also have an edge bend at or near their connecting-pivots B^5 , as shown at drawings Figs. 1 and 2, for the purpose of more or less equalizing the longitudinal distance the upper bent heads B^4 of said teeth rest on the top part of the bars or rails A at points forward and in rear of their connecting-pivots on which the teeth turn, and at the same time maintain the same angle or inclination of the lower portions of said teeth.

At drawing Fig. 12, C is a link-shaped clamp, which may be used for attaching the teeth to the bars or rails, in lieu of a metal pivot passing through said tooth, as before mentioned, said clamp being passed over the tooth with the V-shaped pivot-point C' provided on its inner part, fitting in a countersink, B' , in the tooth forming the lower support and pivot for said tooth, the rear or outer end, C^2 , of said clamp extending through a perforation in the rail A, and receiving a key which is passed through the opening C^3 thereof; or any other suitable device may be applied to the end C^2 of said clamp to hold the tooth in place.

The teeth B may be formed as shown at drawings Figs. 5 and 6, having flat bearing sides B^2 , and two convex or oval cutting-edges, B^3 , which are set to run in a direct line of draft. It is obvious that a tooth thus formed will be greatly strengthened and less liable to get bent or broken.

E is our improved bracket or spool for harrows, the novel construction of which is shown at drawings Figs. 7, 8, 9, 10, and 11, and is placed between the tooth-supporting bars or rails A, with their ends resting against the side surfaces thereof, and having a screw-bolt passing longitudinally through said bracket and through the sides of said bars or rails, clamping them together, forming the harrow-sections, as shown at drawing Fig. 9. Said bracket or spool may be formed of either cast, malleable, or wrought metal, as shown at said figures, the novel construction of which, consisting of the self-retaining loop-bar E^4 , (having each of its ends formed integral with the side portions, E^2 ,) projecting a sufficient distance beyond the central portion of said bracket, forming a longitudinal opening, E' , and also side and end openings E^3 are produced without using dry-sand cores to form the first-named opening when said bracket is made by a casting process, and when made of wrought metal the self-retaining loop-bars E^4 are readily pressed or bent down from the top portion, E^5 , projecting transversely beyond the central portion of said bracket, forming corresponding side and end openings, E^3 , extending back from one or both of its ends a longitudinal distance about the same as the width of said loop-bars E^4 , which, having sufficient space left between its inner portion and the inner top or body part E^5 thereof (when made of either cast or wrought metal) to admit the clamping screw-bolt F passing longitudinally through the opening E' in said

bracket, as shown at drawings Figs. 7, 8, 9, and 10, whereby they are kept in place between the tooth-rails should the clamping screw-bolt become slackened.

Drawings Figs. 8 and 11 show the retaining-loop bars E^4 removed, leaving the end of the bracket open, but shown in dotted lines, Fig. 11. The longitudinal shape of said bracket may be varied somewhat from the form shown in cross-section, where the sides E^2 converge upward from the base, forming an arch or oval shaped top; or said top may be made flat or nearly so.

We do not, broadly, claim the sole use of a metal spacing bracket or spool inserted between the harrow-tooth-supporting bars or rails, as we are aware they have been used prior to our invention.

Having fully described our invention, what we claim as new and useful, and desire to secure by Letters Patent, is—

1. In a harrow, the combination, with the bars or rails forming harrow-tooth frames, of the teeth pivotally attached to the lower portion thereof, said teeth having their top ends bent or formed projecting horizontally on their sides, with said projecting portion resting on the top edge of said bars or rails at points forward and in rear of the connecting-pivot on which the teeth turn, whereby said teeth are supported either in a vertical or inclined position with respect to the direction in which the harrow is drawn, substantially as described.

2. In a harrow, the combination of a beam having a harrow-tooth pivotally attached to the lower portion thereof, said tooth having an edge bend at or near the pivotal connecting-point thereof, head bent or formed projecting at or near a right angle with the side, with said projecting portion thereof resting on the upper edge of said beam at points forward and in rear of the connecting-pivot on which the tooth turns, substantially as described.

3. A harrow-tooth perforated in its upper portion and having an edge bend at or near said perforation, the upper end of said tooth having side projecting tooth-supports formed integral with one or both of its sides, in combination with a harrow bar or rail having perforations through their lower portions by which said tooth is pivotally attached thereto by a bolt, pin, or rivet inserted therein, forming the lower support for said tooth with its side projecting head resting on the upper edge portion of said bar or rail at points forward and in rear of said pivotal point on which the tooth turns, substantially as described.

4. A harrow-tooth perforated between its point and head and bent at or near said point of perforation, the upper end of said tooth having a side bend forming a hook-shaped head catching over the upper opposite side edge surface of the bar or rail to which said tooth is attached, in combination with a harrow bar or rail having a perforation through the side of its lower portion with the harrow-

tooth pivotally attached thereto by a bolt, pin, or rivet, and to operate substantially as specified.

5. A self-adjusting harrow-tooth having a perforation between its point and head adapted to receive a metal pivot, (which forms the lower support for said tooth,) and having laterally-projecting tooth-supports formed integral with one or both sides of its upper end, substantially as described, and for the purpose specified.

6. A self-adjusting harrow-tooth constructed as described, having integral supports for said tooth formed projecting laterally upon one or both sides of its upper end, and having a perforation between its point and head, and an edge bend at or near said perforation, to operate substantially as specified.

7. In a harrow, the spacing-bracket E, having the following elements embodied in its construction, substantially as described, having the integral projecting side connecting-bar or loop portions E¹ formed at or near one or both of its ends, whereby corresponding depressions or side openings, E³, are produced, and a longitudinal opening, E', formed, through which said opening the clamping bolt or rod is inserted and through the bars or rails, clamping them together in sections, substantially as specified.

8. In a harrow, the spacing-bracket E, constructed substantially as shown at Figs. 11, 12, 13, 14, and 15, having the integral projecting bar or loop portion E¹ formed on one or both of its ends, whereby corresponding depressions or openings E³ are produced extending transversely across or through from the top part of said bracket and terminating at the inner part of said projecting bar or loop portion or portions E¹, forming an opening, E', to admit the clamping bolt or rod passing longitudinally through said bracket, substantially as and for the purpose specified.

9. The combination, with the harrow-tooth bars or rails having clamping screw bolts or rods for uniting them together in sections, of

the spacing-bracket E, inserted between said bars or rails, said bracket, constructed substantially as described, having one or more retaining bars or loop portions, E¹, formed integral therewith, whereby a corresponding depression or opening, E³, is produced, extending from the top side thereof transversely through to the inner part of said bar or loop portion E¹, which said loop portion projects beyond the central part of said bracket a sufficient distance as to form a longitudinal opening, E', between said retaining bar or loop portion, and the inner part of the top portion thereof, through which said opening the clamping-bolt passes and through the bars or rails clamping them in sections, substantially as specified.

10. In a harrow, the spacing-bracket E, constructed, substantially as described, of either cast or wrought metal having integral side connecting bar or loop portion or portions E¹ extending beyond the central part thereof, whereby a corresponding depression or opening is formed extending transversely through said bracket, terminating at the inner part of said connecting bar or loop portion, whereby a longitudinal opening is formed, through which opening the clamping screw bolt or rod passes, substantially as described.

11. In a harrow, the combination, with a pivoted tooth, of the clamping-link C, provided with the pivot-point C' on the inner side thereof to enter recesses in the sides of the teeth, the outer end, C², of said clamp provided with an aperture, C³, adapted to receive a key or other means applied to its end for clamping the tooth to said rail, substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES H. BARLEY.
THOMAS K. BARLEY.

Witnesses:

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C. H. VANDEGRIFT.