A. L. JOHNSON & J. STURROCK.

HARROW.

APPLICATION FILED AUG. 19, 1908.

908,104. Patented Dec. 29, 1908.

Fig. 1.

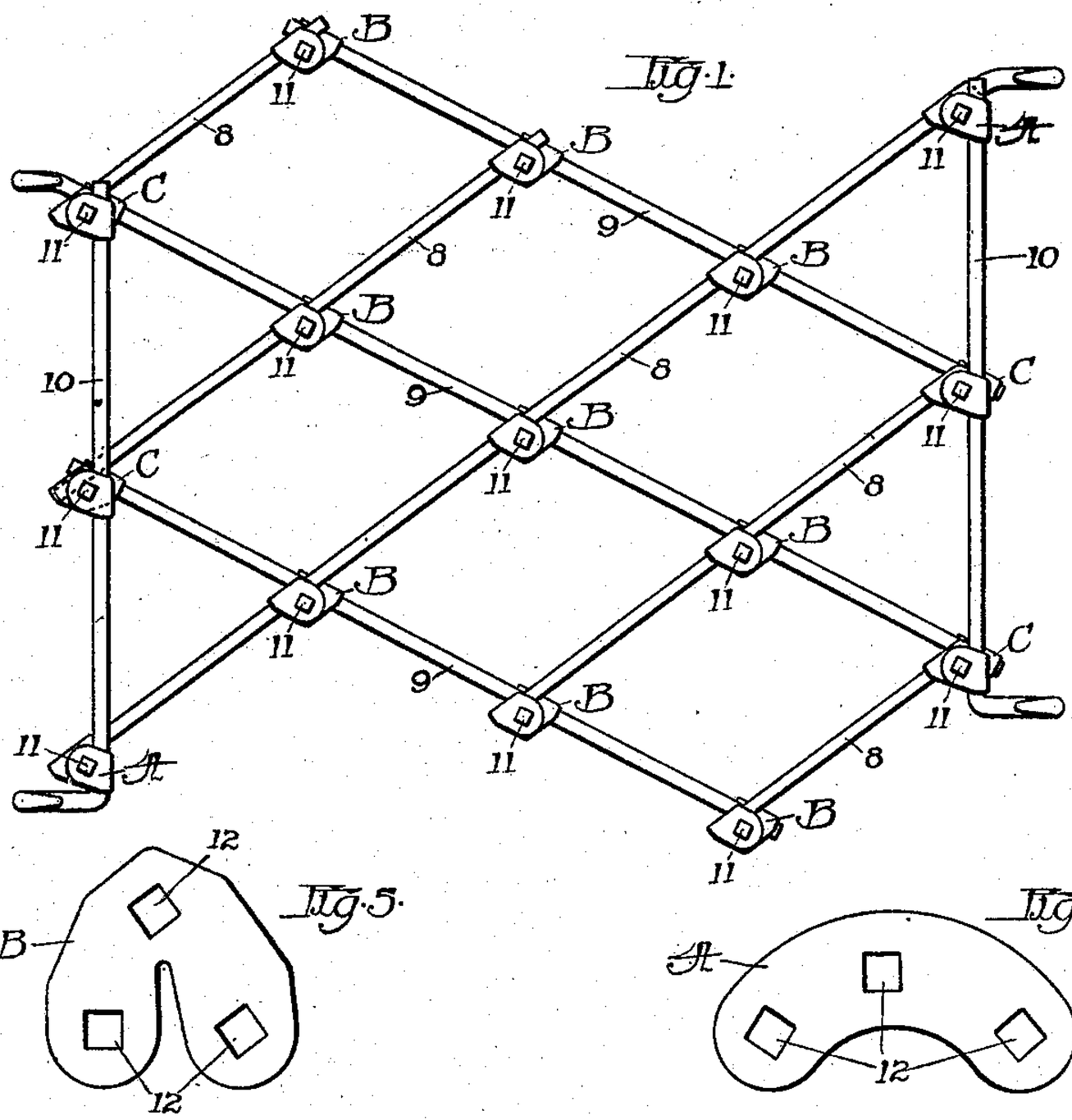

Fig. 5.

Fig. 6.

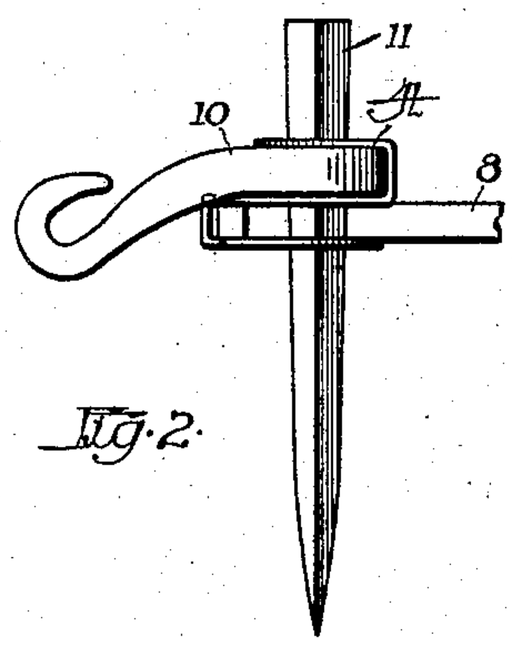

Fig. 2.

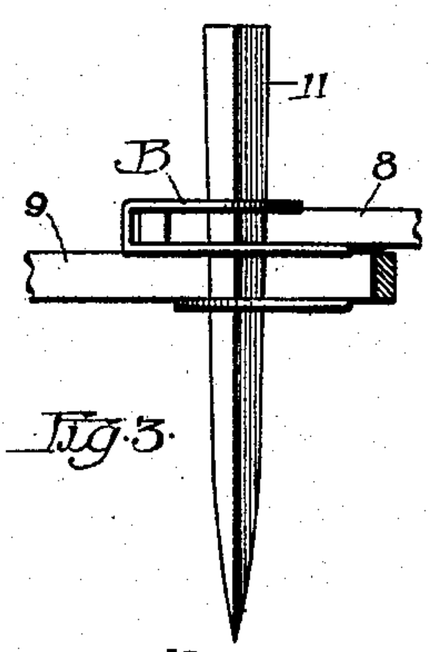

Fig. 3.

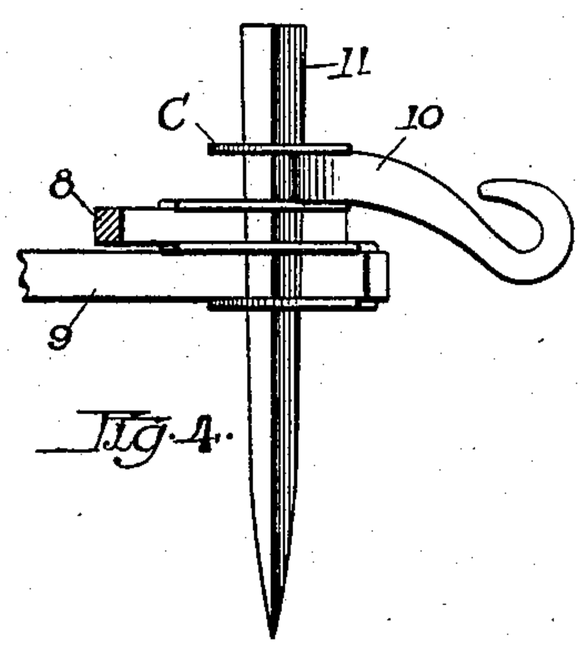

Fig. 4.

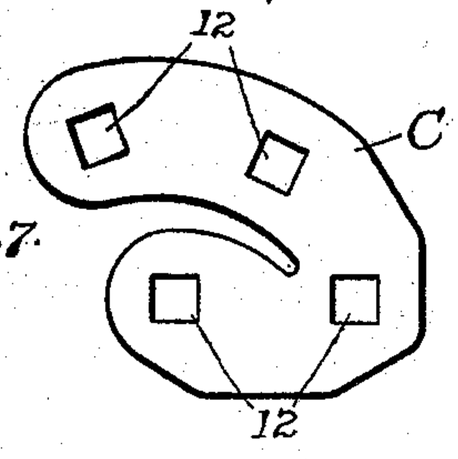

Fig. 7.

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UNITED STATES PATENT OFFICE.

ANDREW L. JOHNSON AND JOHN STURROCK, OF HAMILTON, ONTARIO, CANADA, ASSIGNORS TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

HARROW.

No. 908,104. Specification of Letters Patent. Patented Dec. 29, 1908.

Application filed August 19, 1908. Serial No. 449,304.

To all whom it may concern:

Be it known that we, ANDREW L. JOHNSON, a citizen of the United States, and JOHN STURROCK, a subject of the King of Great Britain, both residing at Hamilton, in the county of Wentworth, Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Harrows, of which the following is a specification.

Our invention relates to that class of harrows commonly called diamond frame peg tooth harrows, and in particular to a combined tooth and frame bar clamp made from sheet steel and adapted to receive the frame bars of the harrow and a tooth in a manner to securely retain the associated parts in operative relation, its object being to provide a harrow having few parts, light and rigid in construction. We attain these objects by means of the mechanism illustrated in the accompanying drawing, in which—

Figure 1 represents a plan view of a section of a harrow having my invention forming a part thereof. Fig. 2 represents a side elevation of opposite corners of the section as designated by letter A, showing the tooth clamp engaged with two of the frame bars. Fig. 3 represents a side elevation of other corners of the section and its interior angles as designated by letter B, showing the tooth clamp and tooth engaged with two of the frame bars in angular relation with each other. Fig. 4 represents a side elevation of other angles of the section as designated by the letter C, showing the tooth clamp engaged with a tooth and three of the frame bars in a manner to retain them in angular and operative relation. Fig. 5 represents a sheet steel blank in one stage of its development before having its parts formed into a complete clamp, as designated by letter B. Fig. 6 represents a sheet steel blank before it is formed, as designated by letter A; and Fig. 7 represents a similar blank before it is formed, as designated by letter C.

The same reference characters designate like parts throughout the several views.

Referring to the drawings, wherein the harrow section includes two series of bars diagonally arranged relative to the line of draft, one of said series being inclined in one direction and designated by the numeral 8, and the other series inclined in an opposite direction and designated by the numeral 9, and having transverse bars 10 at opposite ends of the section. At the points of intersection of the frame bars they are secured together by means of combined tooth and frame bar clamping members, as designated by reference letters A, B, C, each clamp being formed from a single piece of sheet steel, having various forms, as shown in Figs. 5, 6 and 7, and adapted to have one part thereof folded over another in the manner indicated in Figs. 2, 3 and 4.

11 designates the teeth driven through openings 12 in the blanks that are in vertical alinement, and the blanks are folded and engage adjacent faces of the frame bars at their angle of intersection in a manner to secure the associated parts in operative relation.

What we claim as our invention, and desire to secure by Letters Patent, is:

1. A harrow having, in combination, angularly arranged frame bars, teeth, combined tooth and frame bar clamps, said clamps being formed from sheet metal blanks, provided with tooth openings and having one part thereof folded over another in a manner to receive one or more frame bars, and having said tooth openings in vertical alinement.

2. A harrow having, in combination, angularly arranged frame bars, teeth, combined tooth and frame bar clamps, said clamps being formed from sheet steel blanks, provided with tooth openings and having one part thereof folded over another in a manner to receive one or more frame bars, and having said tooth openings in vertical alinement, and a tooth received by said openings in a manner to engage adjacent faces of said frame bars.

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