No. 779,520. PATENTED JAN. 10, 1905.

N. H. BLOOM.

HARROW.

APPLICATION FILED MAY 24, 1904.

Fig. 1.

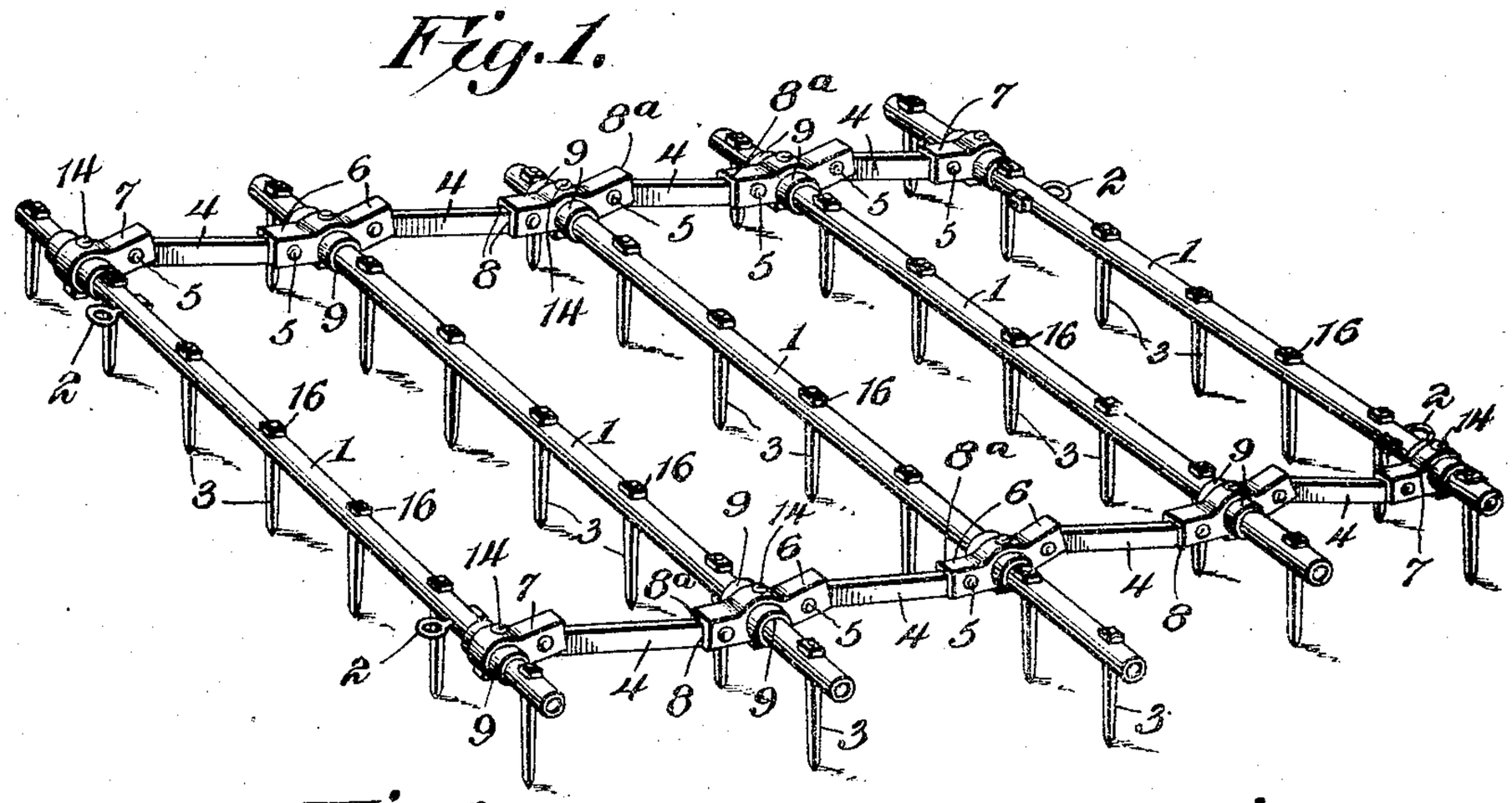


Fig. 2.

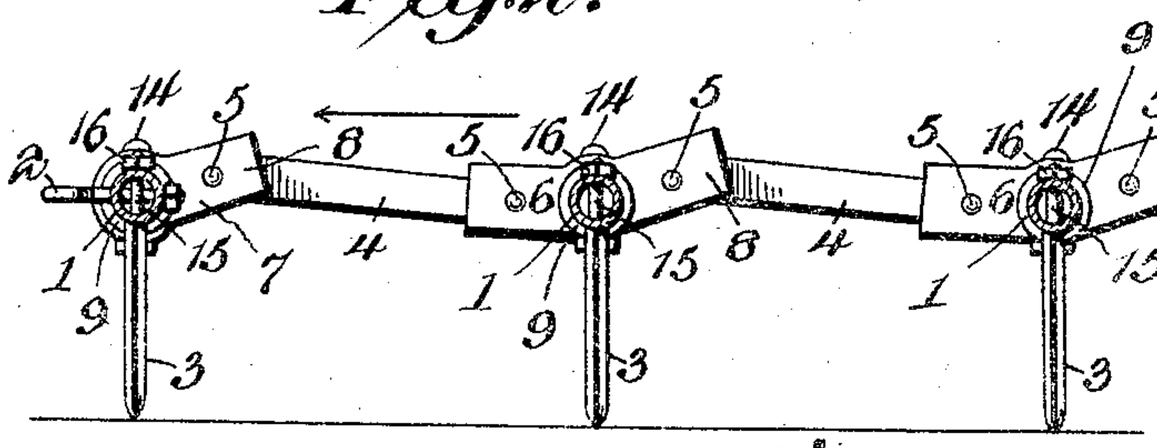


Fig. 4.

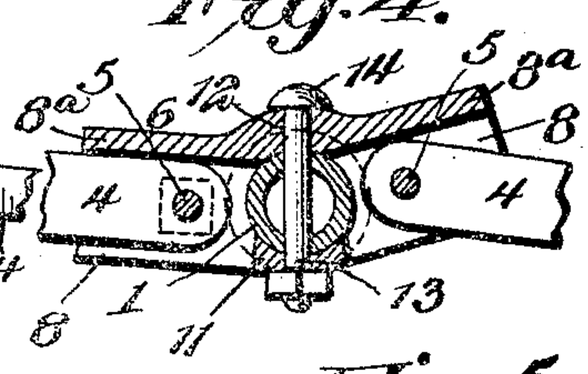


Fig. 3.

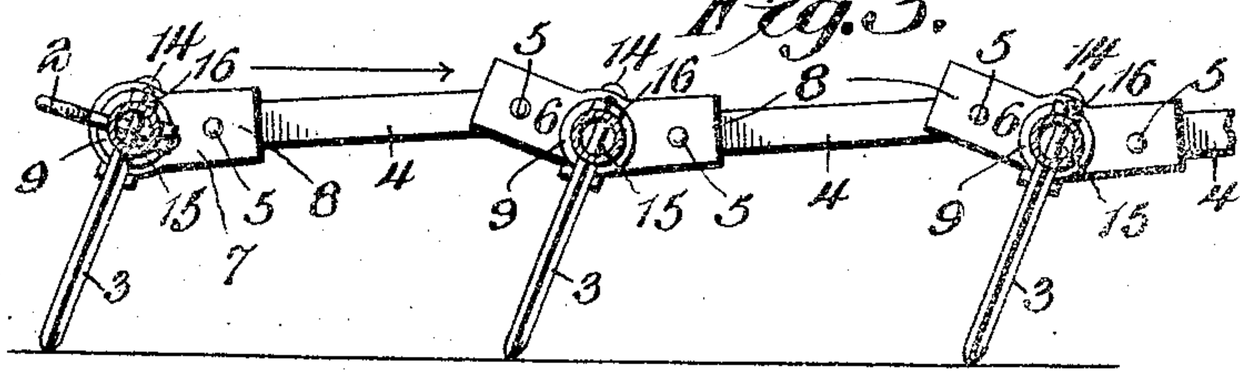


Fig. 5.

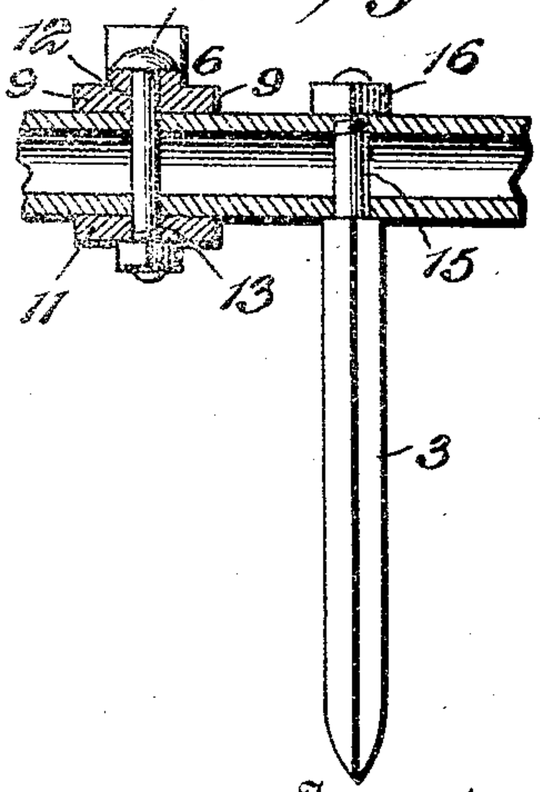
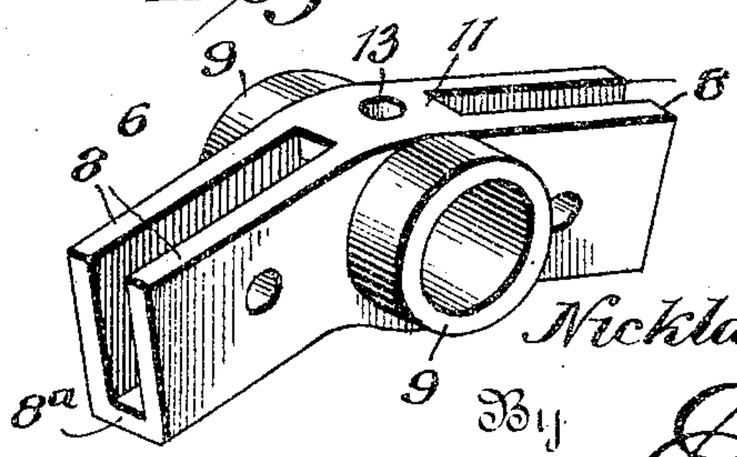


Fig. 6.



Witnesses
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No. 779,520. Patented January 10, 1905.

UNITED STATES PATENT OFFICE.

NICKLAS H. BLOOM, OF NASHUA, IOWA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 779,520, dated January 10, 1905.

Application filed May 24, 1904. Serial No. 209,457.

To all whom it may concern:

Be it known that I, NICKLAS H. BLOOM, a citizen of the United States, residing at Nashua, in the county of Chickasaw and State of Iowa, have invented a new and useful Harrow, of which the following is a specification.

The invention relates to harrows.

The object of the present invention is to improve the construction of harrows, more especially that shown and described in Patent No. 643,739, granted to J. F. Loos and myself February 20, 1900, and to provide a flexible steel harrow of great strength and durability.

Another object of the invention is to simplify the construction of flexible harrows, to reduce the number of joints or points of attachment, and to enable the clips to have a full bearing on the harrow-bars.

With these and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size, and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a perspective view of a flexible harrow constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same, the teeth being arranged vertically. Fig. 3 is a similar view, the teeth being tilted rearwardly. Fig. 4 is an enlarged detail sectional view illustrating the construction of the clips for securing the links to the harrow-bars. Fig. 5 is a detail sectional view taken longitudinally of one of the harrow-bars, illustrating the manner of securing the clips and harrow-teeth to the same. Fig. 6 is a detail perspective view of one of the clips inverted.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

The harrow, like that of the said patent, comprises a plurality of toothed harrow-bars 1, arranged at regular intervals and disposed in parallel relation with each other. The harrow is provided at its ends with draft devices 2, preferably consisting of eyebolts and adapted to enable the draft-animals to be hitched to the harrow, whereby the same may be drawn from either end. The harrow-bars are preferably arranged irregularly, as illustrated in the said patent, to prevent the harrow-teeth 3 from coming in longitudinal alinement and to facilitate the pulverization or breaking up of the soil and to render the harrow easier of draft. The several harrow-bars are connected by links 4, consisting each of a straight metal bar or rod the ends of which are provided with openings to receive bolts, rivets, or other suitable fastening devices 5, which also pass through clips 6, projecting from the harrow-bars at opposite sides thereof. The end clips 7, which are mounted on the front and rear harrow-bars, are constructed like those of the other bars, with the exception that they extend inwardly toward the other harrow-bars only.

Each clip 6 comprises an intermediate portion and a pair of oppositely-disposed substantially U-shaped portions formed integral with the intermediate portion and composed of parallel ears or flanges 8, between which the ends of the links are pivotally received. These flanges or ears are connected at their upper edges, and the connecting portions 8^a constitute shoulders or abutments against which the links strike, thereby limiting the relative movement of the clip and the link in one direction. The oppositely-projecting U-shaped portions of the clips are arranged at an angle to each other for a purpose hereinafter explained. The harrow-bars preferably consist of metal pipes or tubes, and the intermediate portions of the clips 6 are provided with central transverse openings and have opposite annular flanges or sleeves 9 arranged in alinement and receiving the harrow-bars. The flanges or ears are connected at the bottom by a central transverse portion 11, and the clip is provided at the top and bottom with alined perforations

12 and 13, arranged to receive a bolt 14 or other suitable fastening device, which also passes through the harrow-bar, whereby the clip is firmly secured to the same. When the projecting U-shaped link-receiving portions of the clips at one side of the harrow-bars are arranged horizontally, the clips at the opposite side are pitched at an angle or inclined from a horizontal plane upwardly at an angle—say forty-five degrees, more or less, according to the desire of the manufacturer and the requirements of the farmer. When the harrow is drawn from one end, the normally horizontal shoulders of the clips will coöperate with the links and serve to hold the harrow-bars with their teeth projecting straight downward. When the draft-animals are hitched to the opposite end of the harrow, the harrow-teeth by reason of their contact with the soil will be tilted rearwardly, whereby the harrow is prevented from becoming clogged with trash.

The harrow-teeth 3 are preferably provided at their upper ends with threaded shanks 15, having nuts 16 for engaging the tops of the harrow-bars. The harrow-bars by being round and arranged within the cylindrical sleeves or annular flanges of the clips are adapted to be rotated to set the teeth in assembling the parts at the desired angle. Also by removing the bolts 14 the angle of the teeth may be changed, as will be readily understood. In practice suitable perforations will be provided for the said bolts 14.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a harrow, the combination with round harrow-bars, and links, of clips having openings to receive the harrow-bars and provided with projecting link-engaging portions formed integral with each other, said clips being also provided with transversely-disposed integral annular flanges projecting laterally and receiving the harrow-bars, and fastening devices piercing the clips and the harrow-bars between the annular flanges or sleeves, substantially as described.

2. In a harrow, the combination with harrow-bars, and links, of clips, comprising intermediate portions provided with openings for the harrow-bars, opposite approximately U-shaped link-receiving portions formed integral with the intermediate portions and consisting of sides and connecting top portions, integral flanges projecting from opposite sides of the clips and receiving the harrow-bars and transverse connecting portions located at the bottom of the clips, and fastening devices piercing the tops of the clips and the bottom transverse portions and passing through the harrow-bars, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

NICKLAS H. BLOOM.

Witnesses:
R. F. WENTWORTH,
C. G. WAGNER.