

No. 638,536.

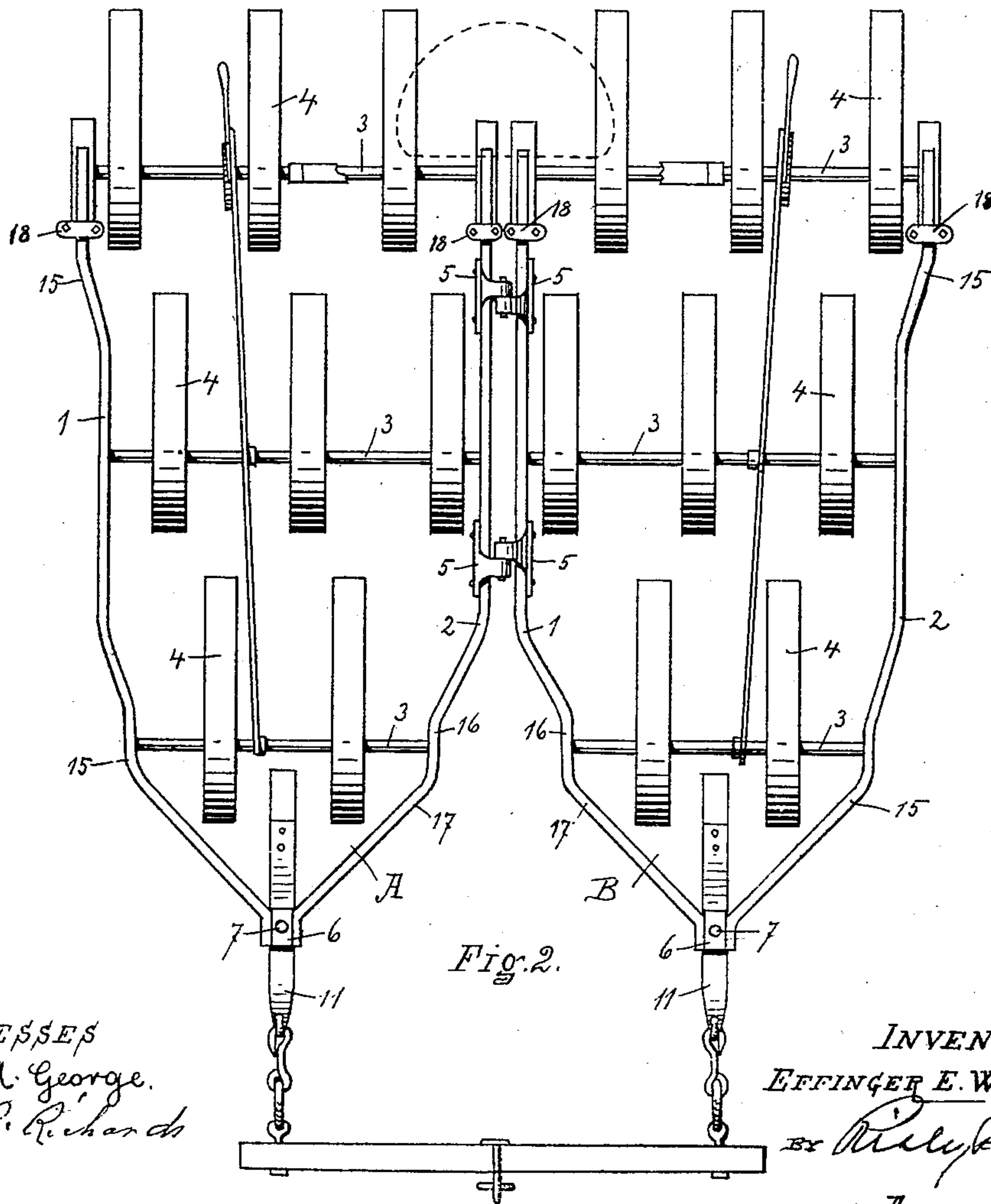
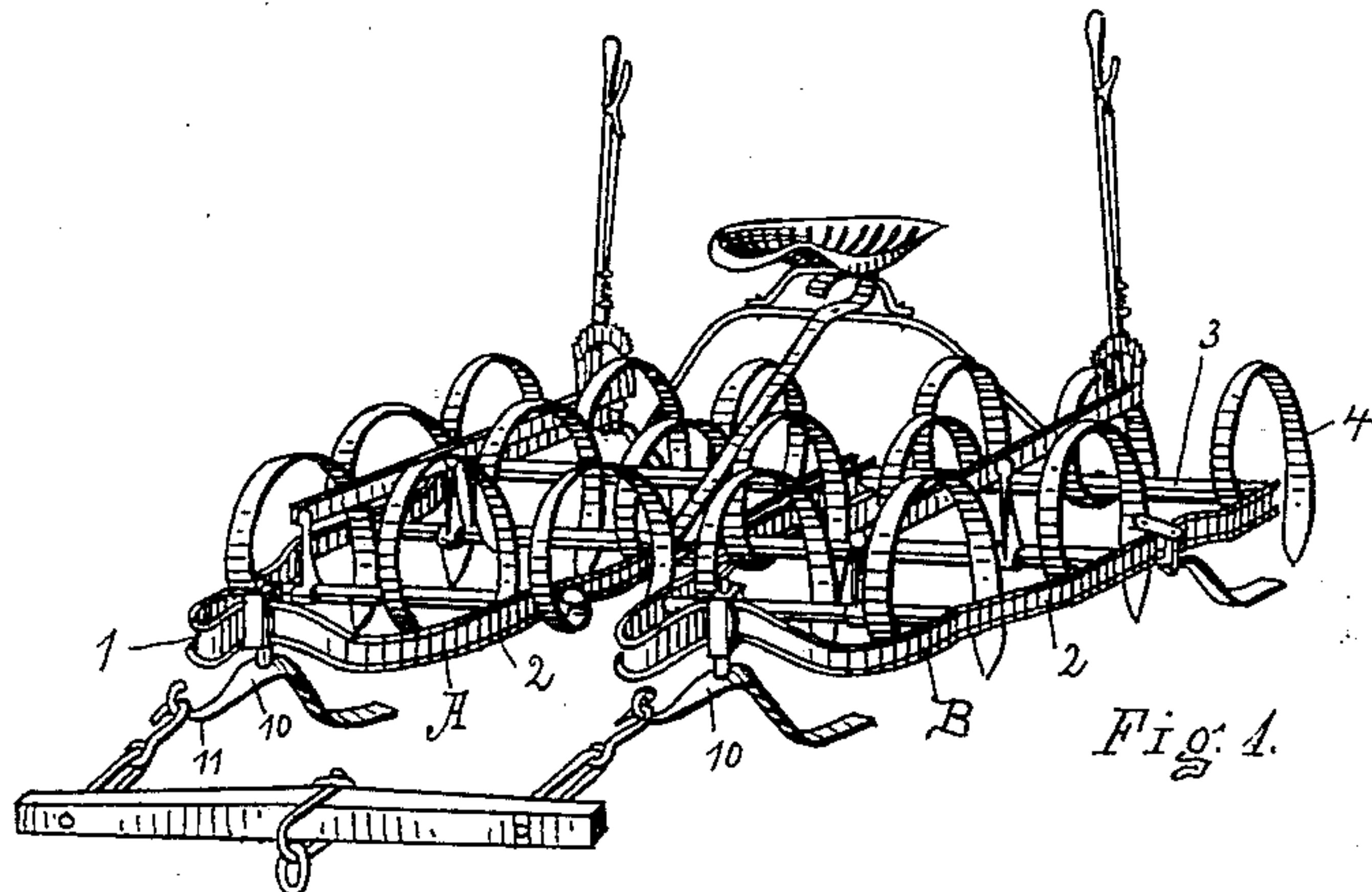
Patented Dec. 5, 1899.

E. E. WHIPPLE.
HARROW.

(Application filed June 13, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

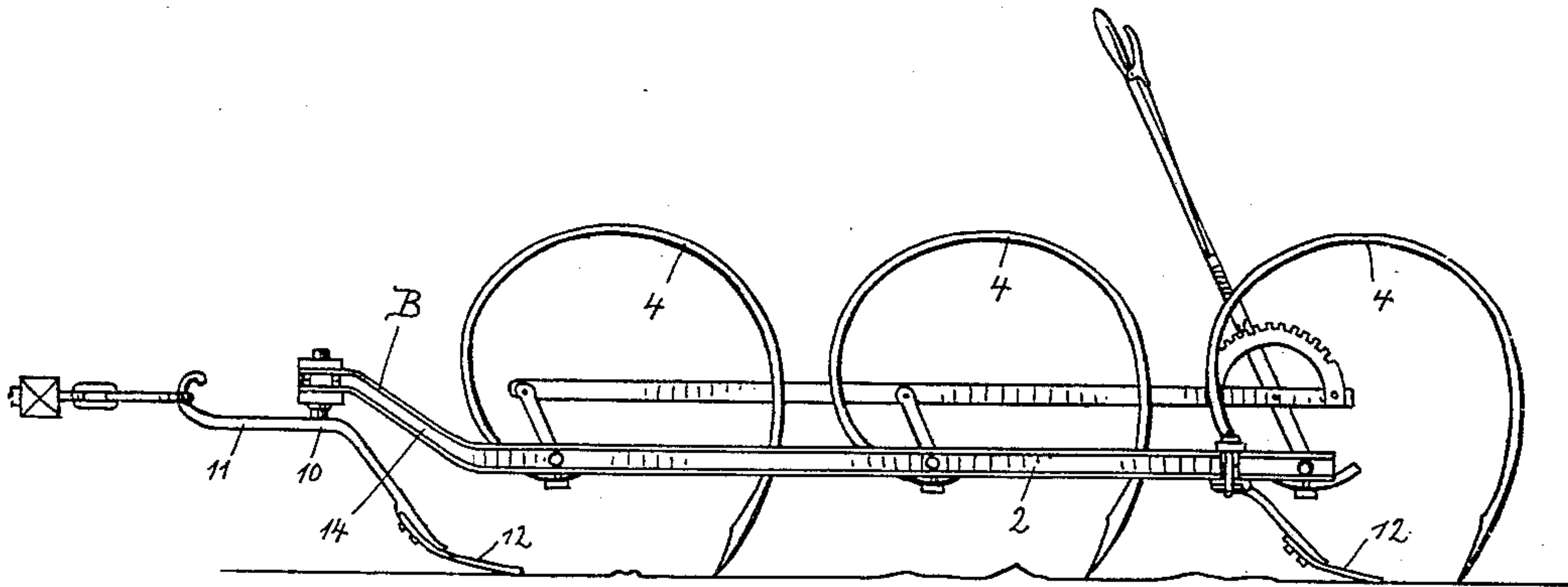


Fig. 3.

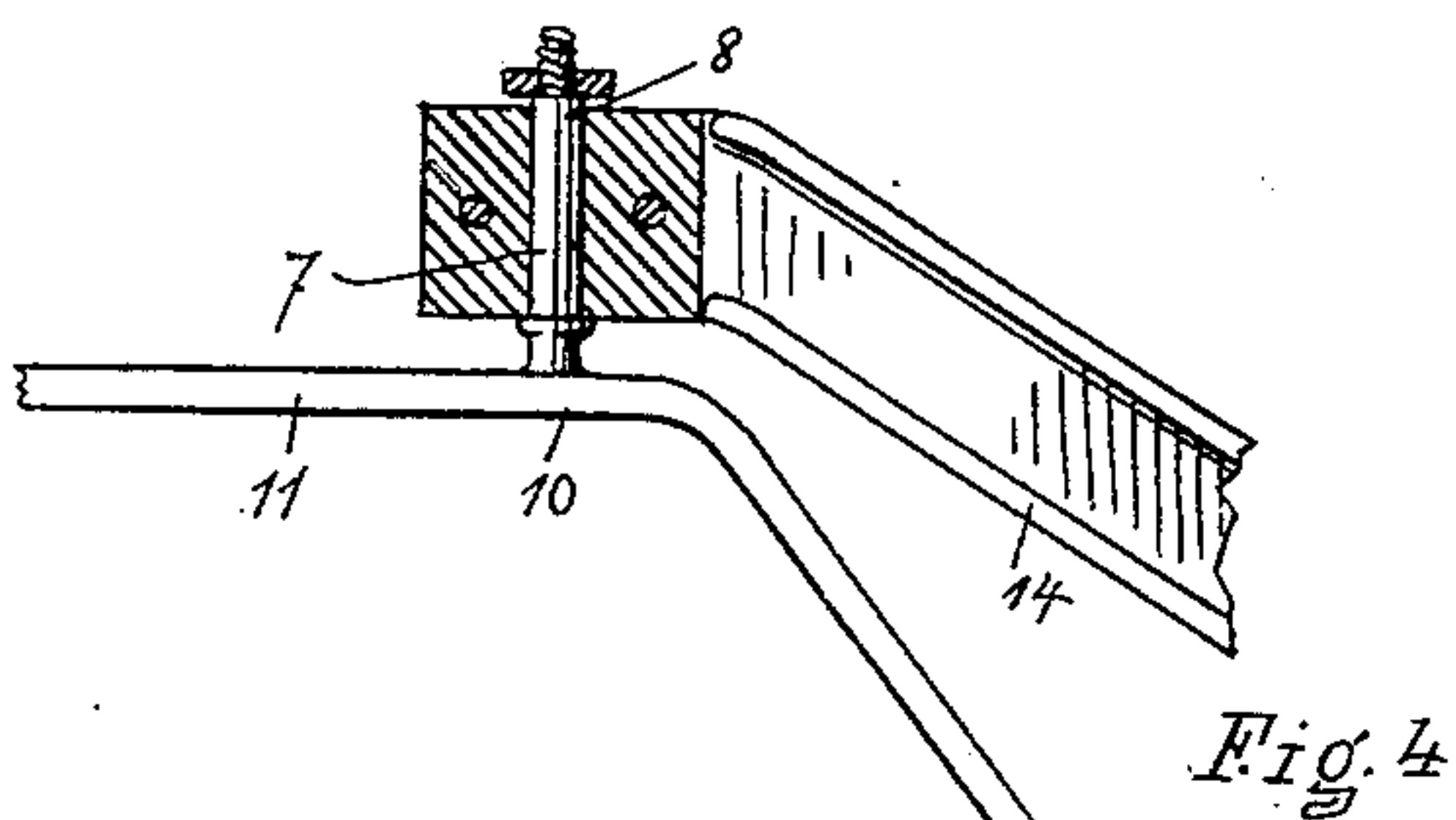


Fig. 4.

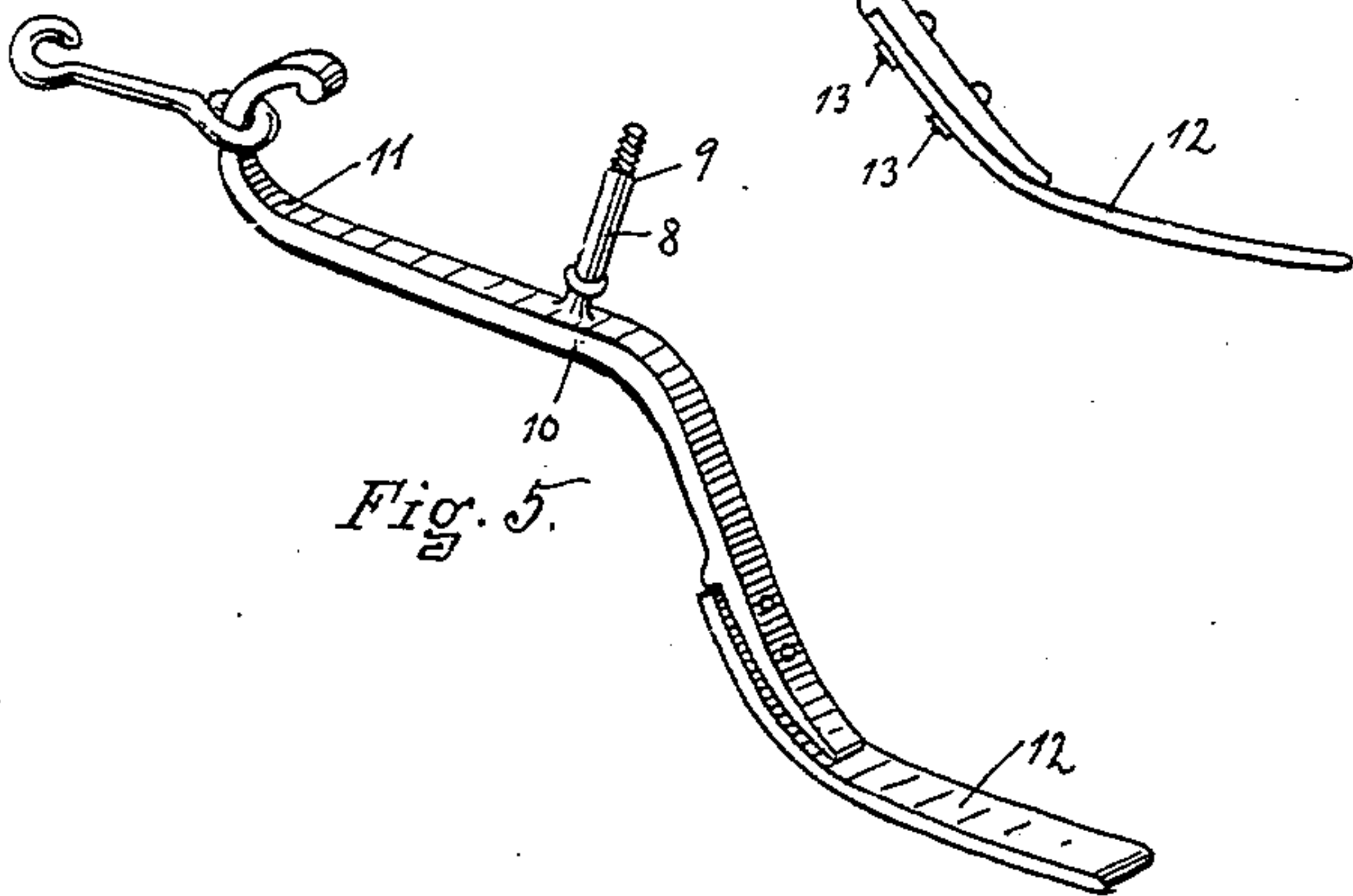


Fig. 5.

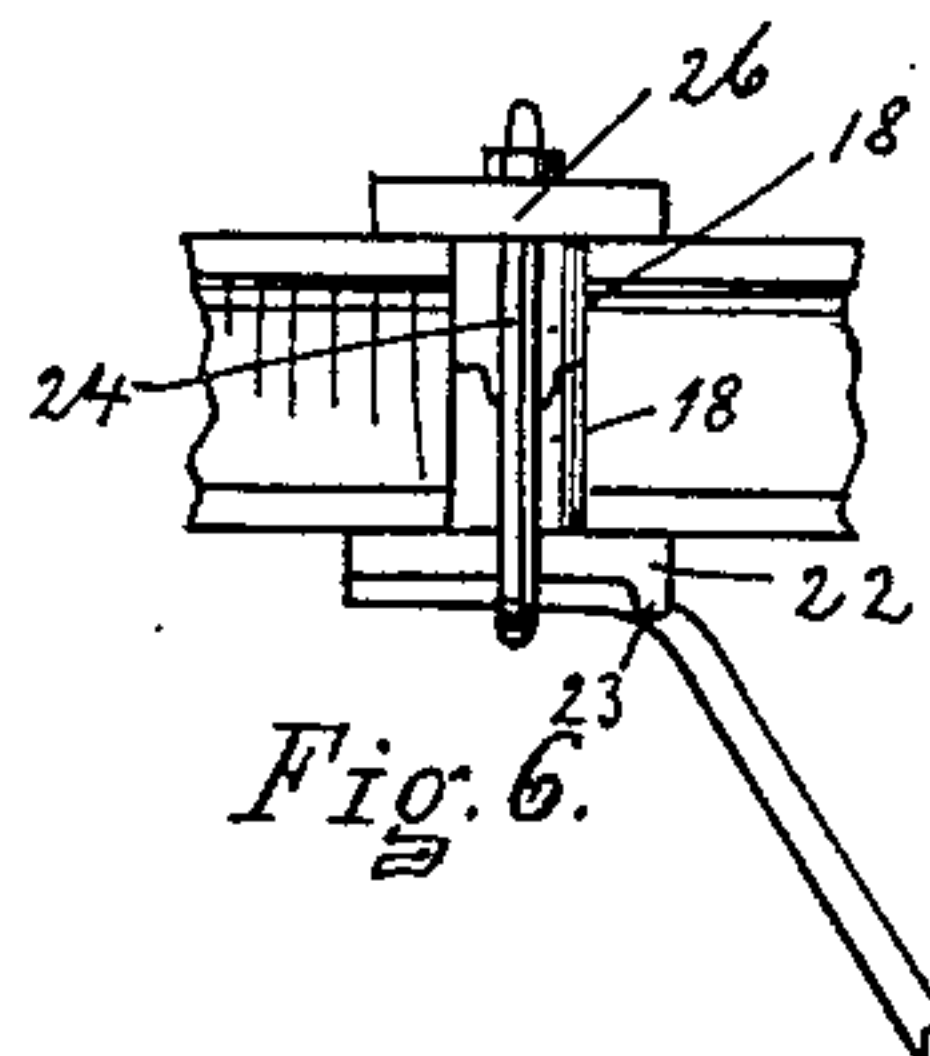


Fig. 6.

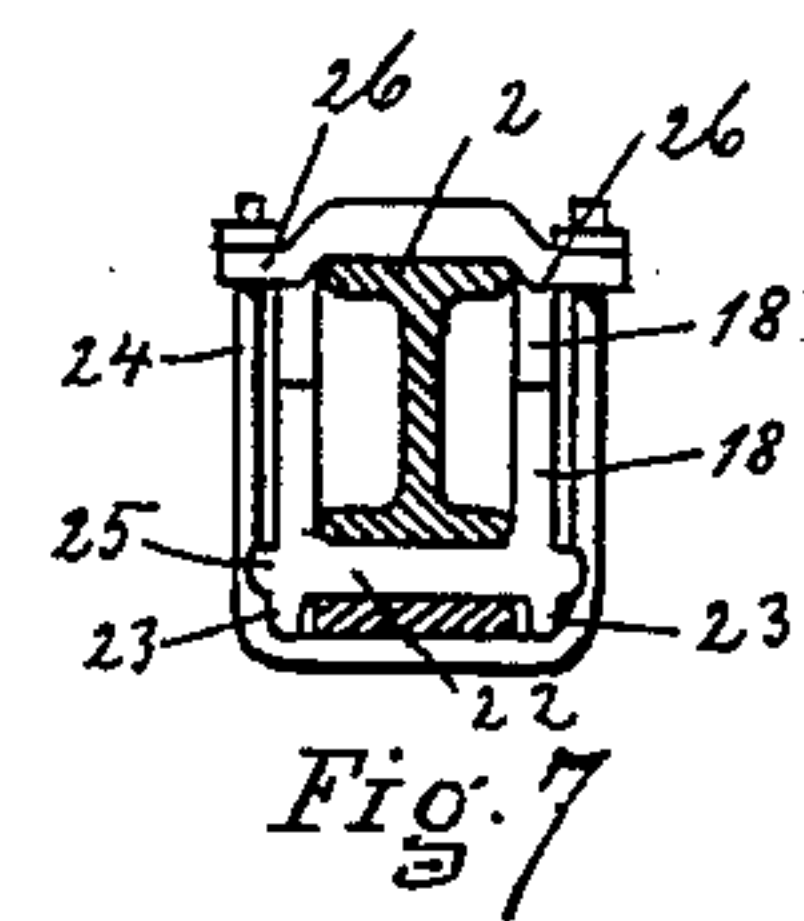


Fig. 7.

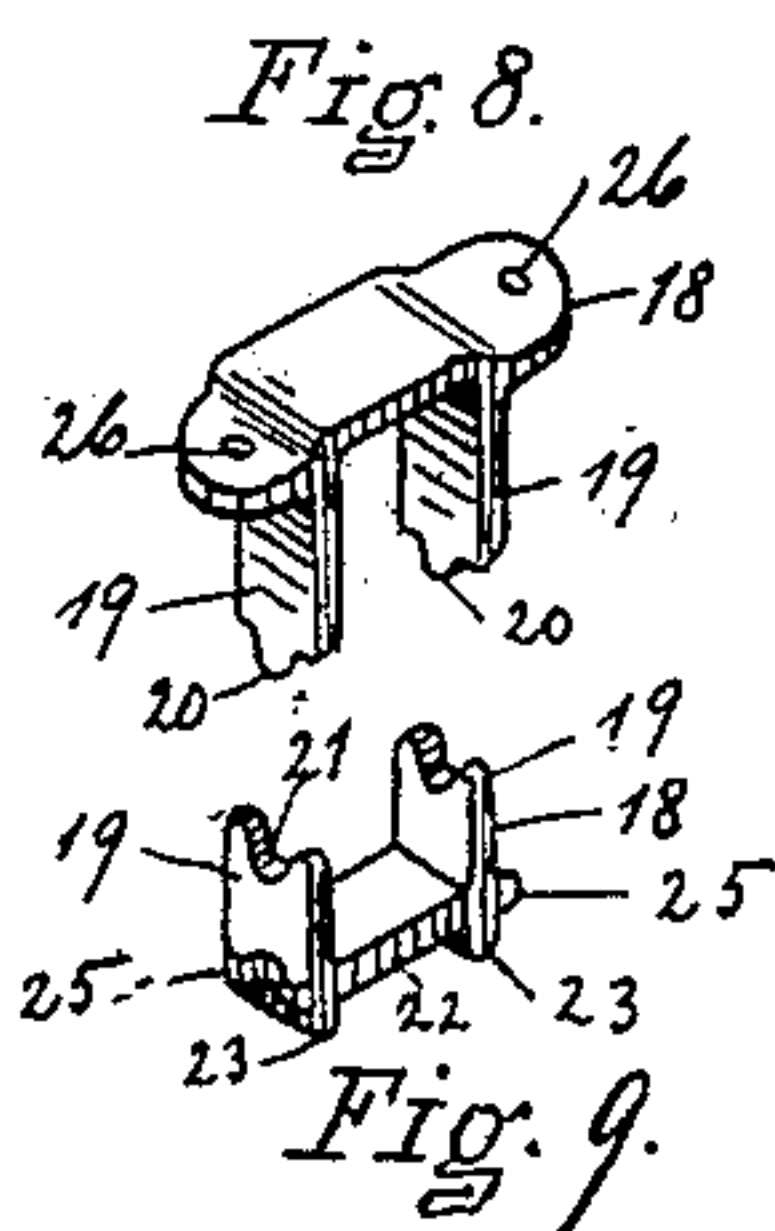


Fig. 8.

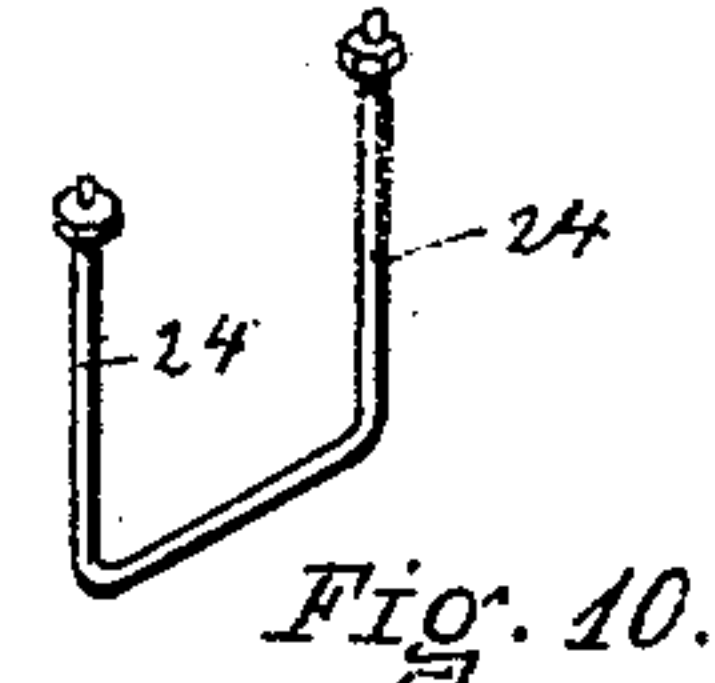


Fig. 9.

Fig. 10.

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UNITED STATES PATENT OFFICE.

EFFINGER E. WHIPPLE, OF UTICA, NEW YORK, ASSIGNOR TO THE
STANDARD HARROW COMPANY, OF SAME PLACE.

HARROW.

SPECIFICATION forming part of Letters Patent No. 638,536, dated December 5, 1899.

Application filed June 13, 1898. Serial No. 683,327. (No model.)

To all whom it may concern:

Be it known that I, EFFINGER E. WHIPPLE, a citizen of the United States of America, and a resident of Utica, Oneida county, New York, have invented certain new and useful Improvements in Harrows, of which the following is a specification.

My invention relates to an improvement in harrows, better known as the "curved spring-tooth" type.

In the drawings accompanying this specification, Figure 1 is a perspective view of my improved harrow. Fig. 2 is a top or plan view of the same, the seat being removed and its location shown in dotted lines. Fig. 3 is a side elevation of the same. Figs. 4, 5, 6, 7, 8, 9, and 10 illustrate details of construction.

In the drawings similar letters and numerals refer to corresponding parts in the various figures.

My invention is applicable to harrows formed in sections or independent structures with or without hinges between the sections; and my invention relates more particularly to details of construction and operation hereinafter more specifically pointed out and claimed.

I have illustrated the best method for practicing my invention, although many modifications of the same will readily suggest themselves to one skilled in the art.

A and B represent sections of the harrow which constitute a complete harrow. Each section is provided with side bars 1 2, which in this instance consist of channel-metal bars in the form of I-beam steel for lightness, and each section is also provided with turnable tooth-bars 3, operated by the usual lever-mechanism for operating turnable tooth-bars of harrows. On the turnable tooth-bars I mount curved spring-teeth 4. In this instance the sections of the frame-bars forming the harrow are provided with hinges 5 5, Fig. 2, for securing the sections forming the harrow in adjustable relation to each other.

The side or draft bars 1 2 converge at the point and are held together at their front by being bolted or riveted to center block 6 6, which carries the vertical hole through the same for the receipt of the fulcrum of the shoe which carries the front end of the har-

row. The vertical opening 7, Fig. 2, is provided to receive the shoe-fulcrum 8, Figs. 4 and 5, and is provided at its upper end with a shoulder 9, (best illustrated in Fig. 5,) which limits the nut's movement on the screw-threaded end for preventing the binding of the fulcrum 8 when the same swings in the opening or socket 7 of the connecting-block at the front of the harrow. The fulcrum in this instance is rigidly attached and made a part of swiveled shoe 10, (best illustrated in Figs. 4 and 5,) which has its front arm extending into a curve for attaching the draft connection to the harrow. This arm is indicated at 11, curving upwardly at its front, to which the draft connections of the harrow are attached, so that when the harrow has occasion to swing or the draft to be turned the shoe is turned with the draft. The shoe from the fulcrum-point curves downwardly and rearwardly, terminating substantially under or in proximity to the front bar of the harrow, as best illustrated in Fig. 5. On the lower end of the arm of the shoe I provide a broad-faced detachable portion of the shoe, (indicated at 12, Figs. 4 and 5,) which is removable by loosening nuts 13 13, (best illustrated in Fig. 4,) so that the detachable portion 12 may be removed and replaced to compensate for wear. In order to give the swiveled shoe free play and to support the front end of the harrow under all the varying conditions of soil where harrows are used, I elevate the side bars 1 and 2, so as to bring the front nose portion of each section into union at an elevated point above the horizontal plane of the remaining portion of the side bars as best illustrated in Figs. 3 and 4 at 14. By this arrangement on the frame-bars the shoes are so formed that the nose of the harrow is free from clogging tendencies, which would otherwise be present if the side bars of the frame continued in the same horizontal plane. The elevation of the front portion of the side bars of each section is accomplished in advance of the front tooth-bar of each section of the harrow.

To facilitate economy in space and utility in operation, the outer frame-bar of each section is provided with deflected side bars, as best illustrated in Fig. 2 at 15, which facili-

tates the handling of harrows in passing obstructions with which side bars of the harrow come in contact, and the inner frame-bars of each section are also provided with parallel portions and diverging portions, the parallel portions being best illustrated in Fig. 2. Between the front sets of hinges and the nose end of each section forming the frame (illustrated at 16 16 17 17, Fig. 2,) the frame or draft bars are deflected into contact at the nose end of each section and held in place by a nose-block interposed between the front end of the frame-bars of each section. By arranging the deflected portions of the inner bars in advance of the parallel portions in connection with the elevation of the bars at their front a clearance is obtained which permits the trash to come within the walls of the side bars in a way that permits it to be carried through the harrow without clogging on the front of the frame-bars, and by supporting the front of each section of the harrow in an elevated plane above the ground on the shoes a complete clearance is obtained in the harrow, which will enable the same to be used in any class of soil where such harrows have not heretofore been capable of being used.

The second important feature of my invention consists in the mechanism provided for applying the shoes on the rear portion of the harrow-frame so as to permit them to be adjusted in the direction of their length in order to vary the height of the rear portion of the harrow and to carry the rear of the sections in any desired horizontal plane for regulating and controlling the depth of the cut of the rear teeth of the harrow, which is accomplished by the combination of mechanism which I will now proceed to describe. I provide the two-part yoke 18. (Illustrated in Figs. 8 and 9.) The yoke has arms 19, which fit on either side of the I-beam side bars 1 and 2, as illustrated in Fig. 7, and at the ends of the arms I provide projections 20 on one portion and depressions 21 on the other portion of the yoke for engaging each other to prevent the same from sliding or slipping. On the bottom of one portion of the yoke I provide a seat 22 (best illustrated in Figs. 6, 7, and 9) for the receipt and retention of the adjustable shoe, which is seated or placed within the seat and is prevented from side or lateral motion by engaging shoulders 23 on each side of the shoe, which is held in place with the yoke by clamping-bolts 24, (best illustrated in Figs. 6, 7, and 10,) the lower or U portion passing under the adjustable shoe and its arms engaging in a recess 25, (best illustrated in Fig. 9,) which holds the lower part of the yoke in position on the frame. By passing the ends of bolt 24 through perforated ears 26 and by the use of the ordinary nuts the whole shoe and its attachments are bolted and secured rigidly to the frame-bars without being bolted thereto, so that the yoke and shoe can be located at any desired point on the frame-bars without perfo-

rating the frame-bar itself. By loosening the nuts on the arms of the bolts the shoe can be shifted in its seat forward or backward, and thus the rear of the harrow-frame can be elevated or lowered and carried in any given horizontal plane desired. On the lower end of the rear shoe I provide detachable portion 12, (best illustrated in Fig. 3 of the drawings,) which can be attached or detached to compensate and replace the wearing portion of the shoe without destroying its attachment to the frame.

What I claim as new, and desire to secure by Letters Patent, is—

1. A sectional harrow having frame-bars, the frame-bars of each section diverging inwardly and upwardly into contact with a perforated block, located between the diverging bars at the front of each section and held therein, in combination with a shoe, fulcrumed to the center block of each section, the fulcrum being between the extremities of the shoe, the front end being provided with draft connection, the rear portion of the shoe being deflected downward and rearward of the fulcrum, a two-part yoke provided with arms with a projection on one section and a depression in the other section of the arms for engaging each other astride of the frame-bars at or near the rear portion thereof having a shoe-seat in one section of the yoke and a clamping-bolt, a shoe deflected downward and rearward mounted on the seat and a clamping-bolt for holding the parts together for carrying the harrow-frame in an elevated plane above the surface of the ground.

2. In a sectional lever-harrow having frame-bars, the frame-bars of each section diverging inwardly and upwardly into contact with a perforated block, located between the diverging bars at the front of each section and held therein, in combination with an adjustable shoe fulcrumed to the center block of each section, the fulcrum being between the extremities of the shoe, the front end being provided with draft connection, the rear portion of the shoe being deflected downward and rearward of the fulcrum, a two-part yoke each part provided with arms with a projection in the arms of one part, and a depression in the ends of the arms of the other part for engaging each other astride of the frame-bars at or near the rear portion thereof having a shoe-seat in one section of the yoke and a clamping-bolt, an adjustable shoe deflected downward and rearward mounted on the seat and a clamping-bolt for holding the parts together for carrying the harrow-frame in an elevated plane above the surface of the ground.

3. A sectional harrow with a shoe or its equivalent for supporting the front of each section of the harrow-frame, and a two-part yoke, each part having arms having an extension and a corresponding depression in the other part for interlocking and provided with a shoe-seat in the lower section, placed astride

of the rear portions of the frame-bar, a curved shoe curving downward and rearward and the yoke-bolt for clamping the parts together, combined, substantially as set forth, for the purposes stated.

4. In a sectional spring-tooth harrow, a shoe or its equivalent for supporting the front of each section of the harrow-frame, and a two-part yoke, each part of the yoke having arms carrying an extension and the corresponding part having depression for interlocking and provided with an adjustable shoe-seat in the lower section, placed astride of the rear portions of the frame-bar, a curved shoe curving downward and rearward and a yoke-bolt for clamping the parts together, combined substantially as set forth for the purposes stated.

5. A spring-tooth harrow, having a curved shoe, for supporting the front of each section of the harrow-frame, in combination with a two-part yoke, each part of the yoke having

straddling arms for inclosing the frame-bars, being provided with locking mechanism; whereby the ends of the arms on the two-part yoke may rigidly engage each other; the yoke made adjustable on the frame in the direction of the length of the frame, a shoe-seat located between the arms of one section of the yoke, arranged to receive a curved shoe, a curved shoe made adjustable in the direction of its length on the seat, with means for clamping the parts together and to the harrow-frame; for the purpose of adjustably supporting the rear of the harrow-frame, for the purposes stated.

Signed by me at Utica, New York, this 1st day of June, 1898.

EFFINGER E. WHIPPLE.

Witnesses:

RICH A. GEORGE,
PHEBE A. TANNER.