No. 714,819. Patented Dec. 2, 1902.

W. H. PATTEN.

HARROW.

(Application filed Sept. 2, 1902.)

(No Model.)

Fig. 1.

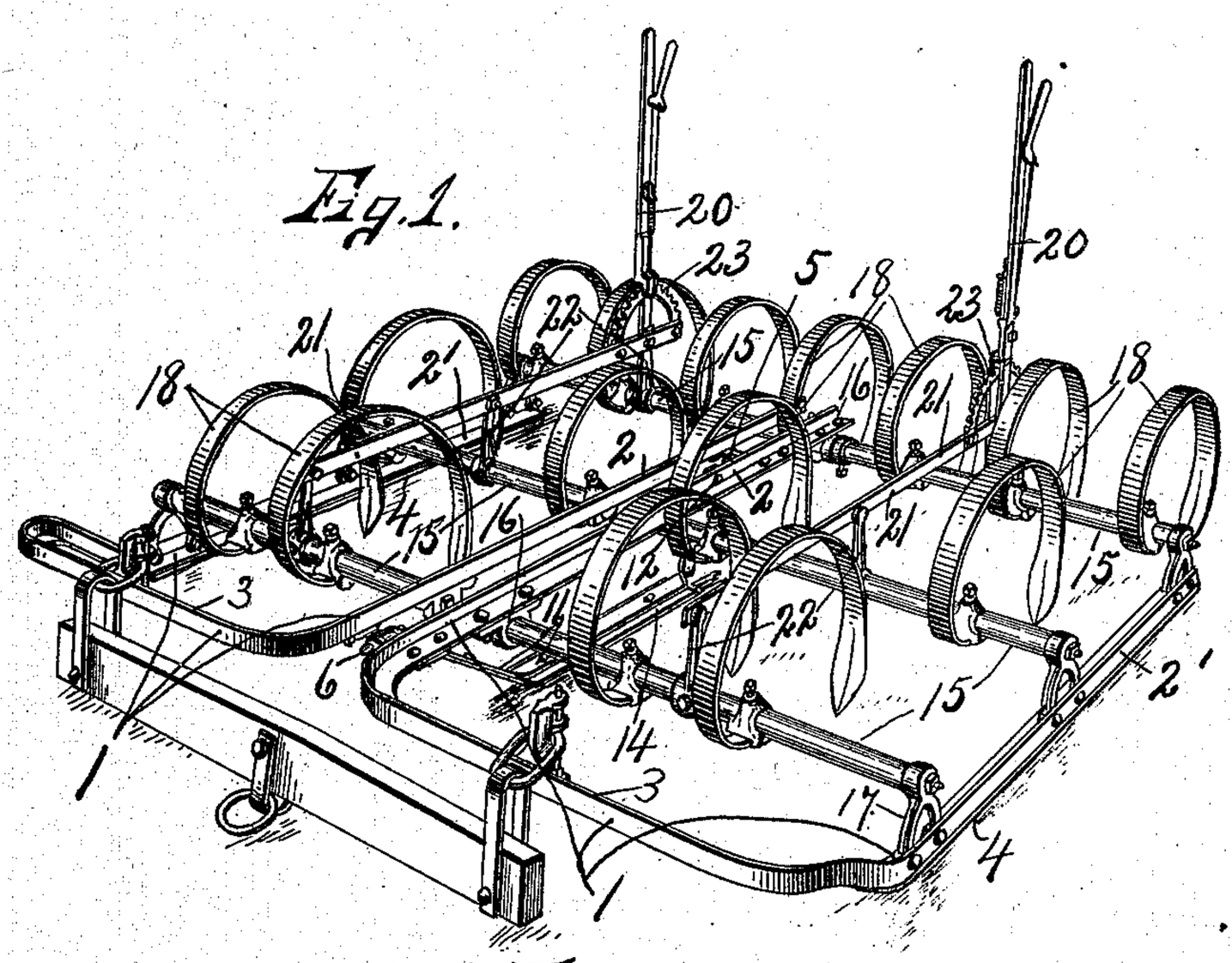


Fig. 2.

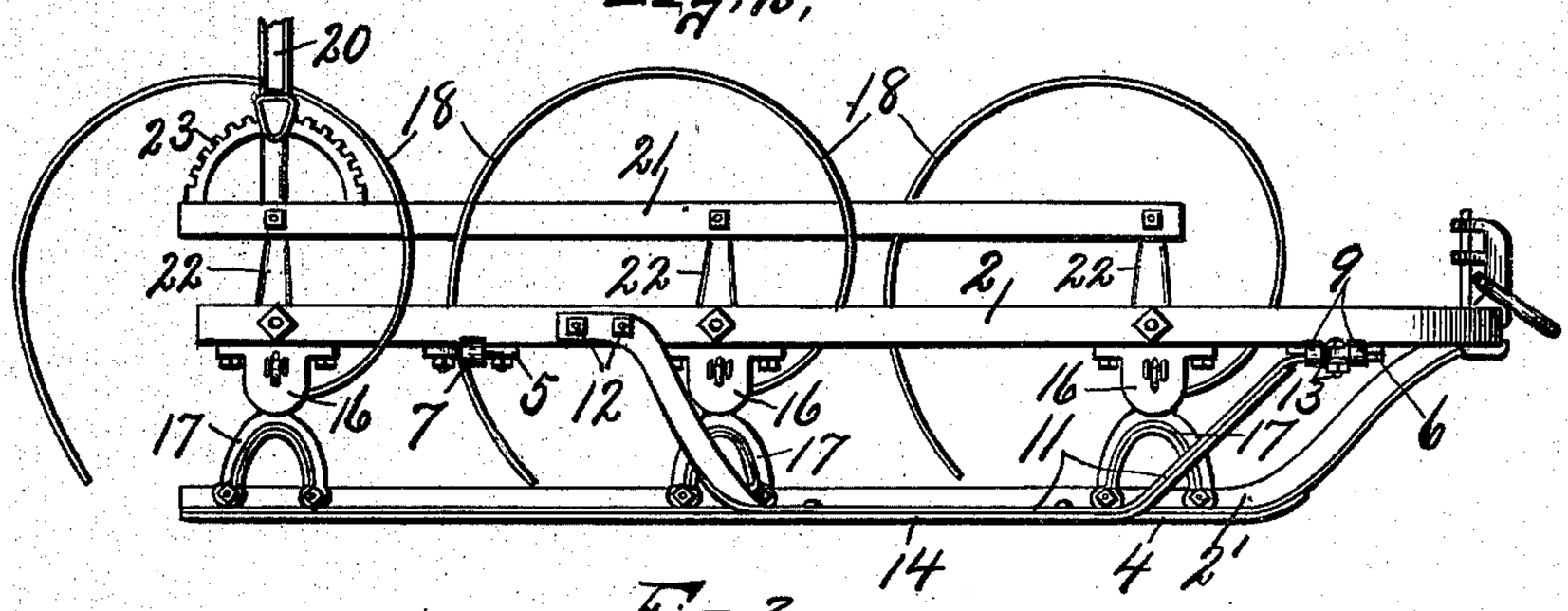
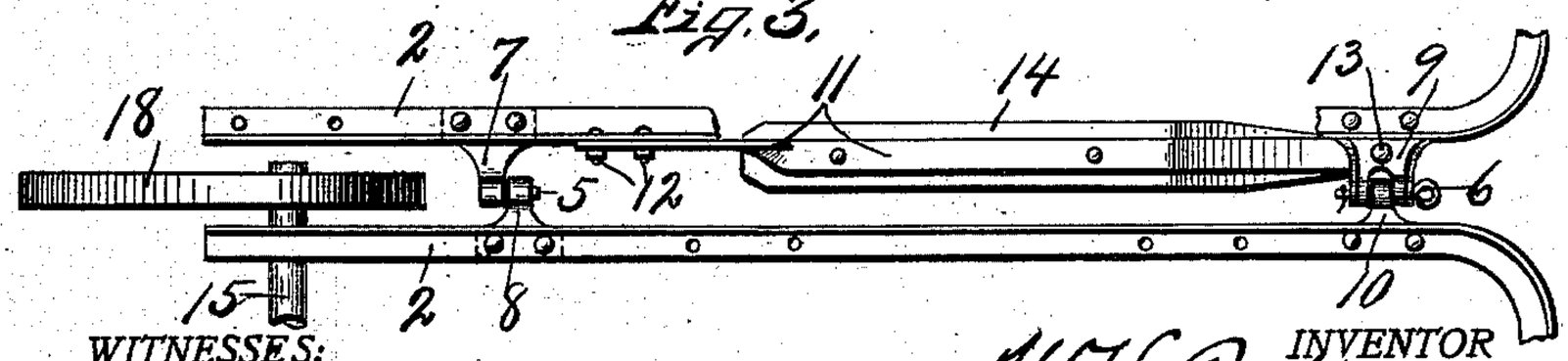


Fig. 3.



WITNESSES:

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HARROW.

SPECIFICATION forming part of Letters Patent No. 714,819, dated December 2, 1902.

Application filed September 2, 1902. Serial No. 121,839. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. PATTEN, of Canastota, in the county of Madison, in the State of New York, have invented new and useful Improvements in Harrows, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in harrows, having more particular reference to sectional spring-tooth harrows. In this class of machines the teeth of each section are staggered, so that their relative lines of draft are uniformly offset one from the other and still in close proximity, and in order to carry out this principle of uniformity it becomes necessary to place a tooth in alinement with the space between the sections. It is also necessary in this class of harrows to provide some means for supporting the hinged meeting edges of the sections from sagging and to also assure a substantially uniform depth of cut or dig for all of the teeth when the harrow is in use and at the same time to afford a sufficient clearance beneath the central portion of the harrow to prevent the accumulation of weeds and other rubbish in front of the central harrow-tooth. In providing for the proper elevation and support for the central portion of the harrow, as well as for the outer side bars, it is found to be of great advantage from an economical standpoint to protect the frame-bars and main central support from undue wear incidental to the movement of the machine along the surface of the ground. It is also found to be of great advantage to construct each of the frame-sections in the form of a U-shaped frame, having its lengthwise arms of uniform length and so disposed when in operative position that the adjacent side bars are elevated above the ground-line and in planes above the outer side bars for the purpose of affording a clearance for the weeds or rubbish from front to rear of the harrow. I have further discovered that this feature of extending the adjacent side bars of the frame-sections continuously from front to rear of the machine adds greatly to the strength of the harrow and materially reduces the cost of production over the present structures in which the rear end of one of the meeting rails is cut away for clearance and a separate elevated extension supplied to support bearings for the rear tooth-supporting bars.

My object, therefore, is not only to provide a better clearance for the weeds and rubbish beneath the lengthwise center of the harrow and at the same time to produce a stronger machine at a reduced cost, but also to provide suitable runners or ground-shoes for the outer frame-bars and for the central supporting-brace, whereby the usual wear of the frame-bars and other fixed portions of the machine is obviated.

To this end the invention consists in the combination, construction, and arrangement of the parts of a sectional spring-tooth harrow, as hereinafter fully described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective view of a harrow embodying the features of my invention. Fig. 2 is an inner side elevation of one of the sections, showing particularly the central supporting-brace and the wearing-shoes for said brace and outer side bar. Fig. 3 is a top plan, partly broken away, of the adjacent bars of the opposite frame-sections, showing particularly the central-supporting-brace shoe attached thereto.

Similar reference characters indicate corresponding parts in all the views.

In carrying out the objects of my invention I provide a pair of oppositely-arranged frame-sections 1, which are similar in form and are located side by side and hinged together at their meeting edges. Each of these harrow-sections preferably consists of a U-shaped frame formed from a single piece of angle-iron and having inner and outer lengthwise bars 2 and 2′ and a transverse draft-bar 3, uniting the front ends of the bars 2 and 2′. The bars 2 and 2′ are arranged parallel with the line of draft, the inner bar 2 being disposed in a plane above the ground-line, and the outer bar 2′ is disposed in a plane beneath the bars 2 and is provided with a wearing-plate or ground-shoe 4, riding upon the surface of the ground. The inner side bars 2 are hinged to each other by suitable studs or hinge-pins 5 and 6, located at the opposite ends of the machine between the adjacent lengthwise bars 2, the rear hinge-pin 5 being usually formed upon a bracket 7, secured to

one of the adjacent lengthwise bars, and is journaled in an apertured bracket 8, secured to the other lengthwise central bar, while the hinge-pin 6 is removably inserted in brackets 9 and 10, secured to the forward ends of the bars 2.

Secured to one of the central lengthwise bars 2 is a brace 11, having one end attached directly to said bar by rivets or bolts 12, and its other end is secured to the under side of the bracket 9 by suitable fastening means, as rivets or bolts 13, the opposite ends of said brace being inclined in opposite directions, and the lower or intermediate portion of said brace is disposed in a substantially horizontal plane coincident with the lower faces of the outer bars 2'. This brace 11 is also provided with a ground shoe or plate 14 and serves to support the central portion of the harrow in an elevated plane above the outer side bars 2'.

The transverse bars 3 are preferably disposed in planes substantially coincident with the adjacent lengthwise central bars 2 and are therefore elevated above the surface of the ground in planes above the outer side bars 2', the forward ends of these outer bars 2' being curved upwardly to the plane of the front transverse bars 3, so as to permit the harrow to be readily and easily drawn over the surface of the ground.

It is evident from the foregoing description that the brace 11 is secured by one of the frame-sections, this brace being interposed between the hinge connections 5 and 6, and therefore affords a central support for the central portion of the harrow and maintains the lengthwise central bars 2 in an elevated position and affords ample clearance for the weeds and other rubbish from front to rear beneath the central portion of the harrow.

The shoes 4 and 14 form the wearing-surfaces of the harrow and may be removed when worn out and others replaced without disassembling any of the other parts of the machine.

Mounted upon each of the frame-sections are a series of tooth-supporting rock-bars 15, which are journaled in brackets 16 and 17, provided, respectively, upon the inner and outer bars 2 and 2', the brackets 16 being secured to the under surface of the central bars 2, and the brackets 17 are mounted upon and rise above the outer bars 2'. Secured to each of these rock-bars are spring-teeth 18, the teeth of one bar being staggered with those of the next adjacent bar in the usual manner and for the purposes well known. The means for rocking these bars preferably consists of levers 20 and links 21, connected to the arms 22, projecting upwardly from the rock-bars 15, each of the links being provided with a toothed rack 23, engaged by a suitable pawl or detent upon the lever for holding the rock-bars and teeth attached thereto in their adjusted position.

The operation of my invention will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that the essential features consist in having the central and outer bars of the frame-sections of substantially the same length and elevating the central bars in planes above their outer bars 2' and also in providing a central supporting-brace secured to one of the adjacent frame-bars at the meeting sides of the harrow-sections and providing both of the outer side bars and central brace with removable wearing plates or shoes.

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

1. In a spring-tooth harrow, the combination of opposite frame-sections having inner and outer lengthwise bars, the inner bars being hinged together and elevated in a plane above the outer side bars, and a lengthwise brace for holding the inner bars in their elevated position.

2. In a spring-tooth harrow, the combination of a pair of U-shaped frame-sections located side by side, the arms of each section being of substantially uniform length and the adjacent arms being elevated in planes above their outer arms and hinged to each other, and means for holding the adjacent arms in their elevated position.

3. In a harrow, the combination of a pair of U-shaped frame-sections arranged side by side and hinged to each other, the central bars being disposed in planes above the outer bars throughout their entire lengths for the purpose described.

4. In a harrow, the combination of a pair of U-shaped frame-sections located side by side and hinged to each other, the adjacent lengthwise arms of said sections being elevated in planes above their outer lengthwise arms, a brace depending from one of the sections, and ground-shoes for the brace and outer lengthwise bars.

In witness whereof I have hereunto set my hand this 21st day of August, 1902.

WM. H. PATTEN.

Witnesses:
HOWARD P. DENISON,
MILDRED M. NOTT.