(No Model.)

J. M. CHILDS.

HARROW.

No. 348,544. Patented Sept. 7, 1886.

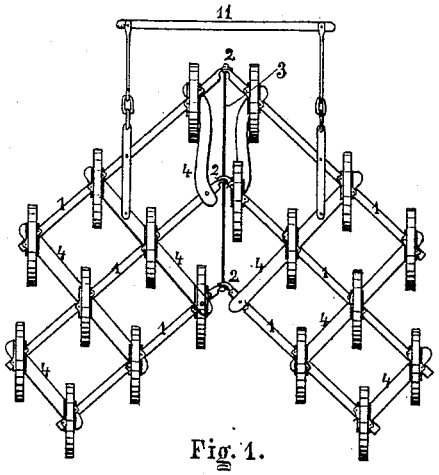

Fig. 1.

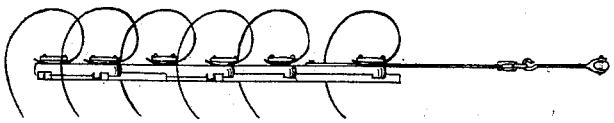

Fig. 2.

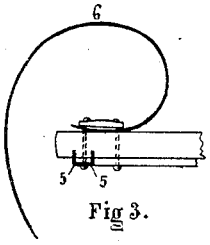

Fig 3.

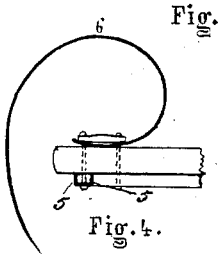

Fig. 4.

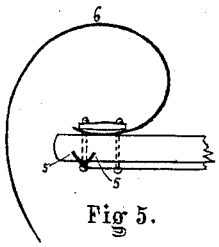

Fig 5.

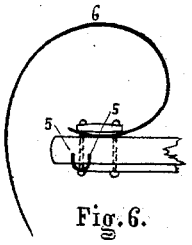

Fig. 6.

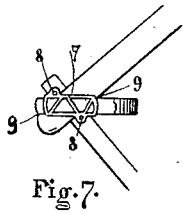

Fig. 7.

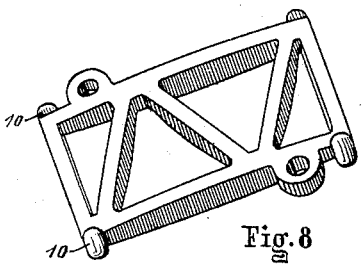

Fig. 8

WITNESSES.

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UNITED STATES PATENT OFFICE.

J. MORRIS CHILDS, OF UTICA, NEW YORK.

HARROW.

SPECIFICATION forming part of Letters Patent No. 348,544, dated September 7, 1886.

Application filed May 1, 1886. Serial No. 200,895. (No model.)

To all whom it may concern:

Be it known that I, J. MORRIS CHILDS, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Harrows; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to an improvement in harrows; and it consists in the combinations of parts hereinafter pointed out and claimed.

In the drawings, Figure 1 represents a top view of my improved harrow. Fig. 2 represents a side view of the same. Figs. 3, 4, 5, and 6 represent details of construction. Fig. 7 represents a section of the harrow with the curved tooth broken off, showing the general form of the clip for holding a tooth in a harrow. Fig. 8 represents the general construction of the clip.

Heretofore great trouble has been encountered in protecting the lower surface of the harrow-frame from wear, and various devices have been used for this purpose. Usually a flat plate of iron is bolted or riveted to the under side of the frame, which occasions trouble by coming in contact with stone and other obstructions, bending the iron downward, not unfrequently seriously injuring the frame, the purpose of my invention being to entirely overcome this trouble by furnishing a wearing-surface of solid metal, preferably iron or steel, formed in angle shape other than right-angle bend, which can be cheaply and easily furnished increasing the durability of the harrow and decreasing cost of construction.

Heretofore a patent was allowed to me for an improvement in harrows, Serial No. 180,821, filed October 24, 1885, in which patent I claimed the use of angle-iron and slotted cross-beams, a spring-tooth, and means for holding the three elements in contact. In the drawings, the angle-iron consisted of a strip with a right-angle bend in the same.

In the drawings, a V-shaped harrow is shown. Any other style of construction may be used without departing from the spirit of my invention, the chief features of which I will now proceed to describe and claim.

I construct the frame of the desired size and shape, provided with a suitable number of draft-bars and cross-bars rigidly secured at their intersection, as hereinafter pointed out. I provide draft-bars I, made from metal, rolled or forged, with two angle-bends in cross-section, as shown in Figs. 3, 4, and 5, the first two presenting broad wearing-surfaces and the third presenting an acute angle, forming a projecting wearing-surface, Fig. 6 representing a draft-bar in cross-section presenting a curved wearing-surface, all of which embrace the general features of my invention as at present—a metallic wearing-surface, the main point to be attained in a harrow—the projecting ends 2 2 2 being hammered or flattened, bent and perforated to overlap each other for forming a central hinge, by means of connecting-rod 3, passing through the perforations of the overlaping ends of the draft-bar, whereby a strong and durable hinge is formed, as described.

It is quite obvious that instead of using a rod, as shown in the drawings, independent bolts may be used for uniting the projecting bent and perforated ends of the draft-bars for forming the hinge. For forming a durable frame I mount on the angle draft-bar suitable cross-bars, 4 4 4, provided with suitable slot or slots, 5, for engaging the angle-iron, whereby the same, when properly bolted, is prevented from rocking or becoming displaced.

In the harrow shown in the patent heretofore allowed to me the slotted cross-beams received one angle of the draft-bars, the cross-beams resting upon the other angles, forming substantially an even surface on the under side of the harrow. It is found by the use of this device that the harrow on sandy soil is likely to clog, by the teeth working too freely into the soil, drawing the under surface of the harrow into contact therewith, thereby forming a clogging-surface, which it is quite desirable to overcome. I attain this by providing metallic draft-bars having two vertical parallel walls and a wearing-surface for receiving the cross-bars, thus preventing the draft-bars from rocking when held in rigid contact with the cross-beams, and at the same time forming

runners projecting below the cross-beams for running in contact with the soil and forming wearing-surfaces. This I consider an important feature.

It is quite obvious that the cross-bars may be mounted on the angle-iron and suitably bolted without departing from the spirit of my invention, although the grooves in the cross-bars are deemed more serviceable than the method just described.

On the top of the frame thus constructed, at the intersecting points of the draft and cross bars, I mount a curved tooth which curves forward, upward, rearward, and downward below the surface of the draft-bars, for engaging the ground, substantially shown and described in Figs. 3, 4, 5, and 6. I attach the curved teeth 6 to the intersection-point of the frame by means of reversible clip 7, having projecting ears 8 8, perforated for receiving a bolt on the corners of the clip 9 9, and on each side of the clip I projecting lugs 10 10, for engaging the opposite edges of the tooth for holding the same from turning when the clip is bolted to the intersecting portions of the frame. This clip is placed over the tooth, and bolts inserted in the ears, which bolts pass through the angle-iron forming the draft-bar, and when properly tightened by suitable nuts, forms a solid and compact arrangement for uniting the draft and cross bars and clip, thereby securing the tooth rigidly to the intersecting-point of the frame, as shown and described. My clip is preferably constructed substantially straight, so that its extremity engages the curve of the tooth, which forms a spring-bearing, thereby preventing the nut from working loose, and at the same time forming a reliable tooth-seat.

11 represents ordinary mechanism for attaching whiffletrees or other mechanism for drawing the harrow, the same being a well-known device.

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

1. The combination, in a harrow, of the iron draft-bars having vertical parallel walls and a wearing-surface on the under side, grooved cross-beams resting on and engaging the top of the vertical walls of the draft-bars, and spring-curved teeth mounted on the frame, with means for holding the draft-bars, the cross-beams, and the curved spring-teeth in fixed relation, substantially as set forth.

2. The combination, in a harrow, of the metallic draft-bars having vertical parallel walls and a wearing-surface, cross-beams resting on the upper surface of the vertical walls of the draft-bars, spring-curved teeth mounted on the frame, and means for holding the draft-bars, cross-beams, and curved spring-teeth in fixed relation, substantially as set forth.

3. In a harrow-frame, the combination, with the cross-beams resting on the upper surface, of metallic draft-bars having vertical parallel walls and a wearing-surface forming projecting metallic wearing-surfaces below the cross-beams, and curved spring-teeth, with means for holding the draft-bars, cross-beams, and spring-curved teeth in fixed relation, substantially as set forth.

4. The combination, in a harrow having cross-beams with grooves on the under side, the metallic angle draft-bars having vertical parallel walls and a wearing-surface projecting below the cross-beams, with means for retaining the two in fixed relation, substantially as set forth.

5. The combination, in a harrow, of the grooved cross-beam and the metallic draft-bars having parallel walls and a projecting wearing-surface below the cross-beams, and the curved spring-tooth mounted on the cross-beams, with means for holding the three in fixed relation at the intersection of the draft-bars and cross-beams, substantially as set forth.

6. The combination, in a harrow, of the cross-beams, the metallic draft-bars having parallel walls, and a projecting wearing-surface below the cross-beams, the curved spring-tooth mounted on the cross-beams, a fastening-clip with projecting perforated ears and lugs for engaging opposite surfaces of the tooth, and means for holding the clip, tooth, cross-beams, and draft-bars in fixed relation to each other, substantially as set forth.

7. The combination of the angle draft-bars with walls 5 5, the cross-beams resting on the upper sides of the same, and the curved spring-tooth and means for rigidly holding the same in contact.

In witness whereof I have affixed my signature in presence of two witnesses.

J. M. CHILDS.

Witnesses:

EDWIN H. RISLEY,

DANIEL MCGUCKEN.