(No Model.)

J. M. CHILDS.

HARROW.

No. 358,839. Patented Mar. 8, 1887.

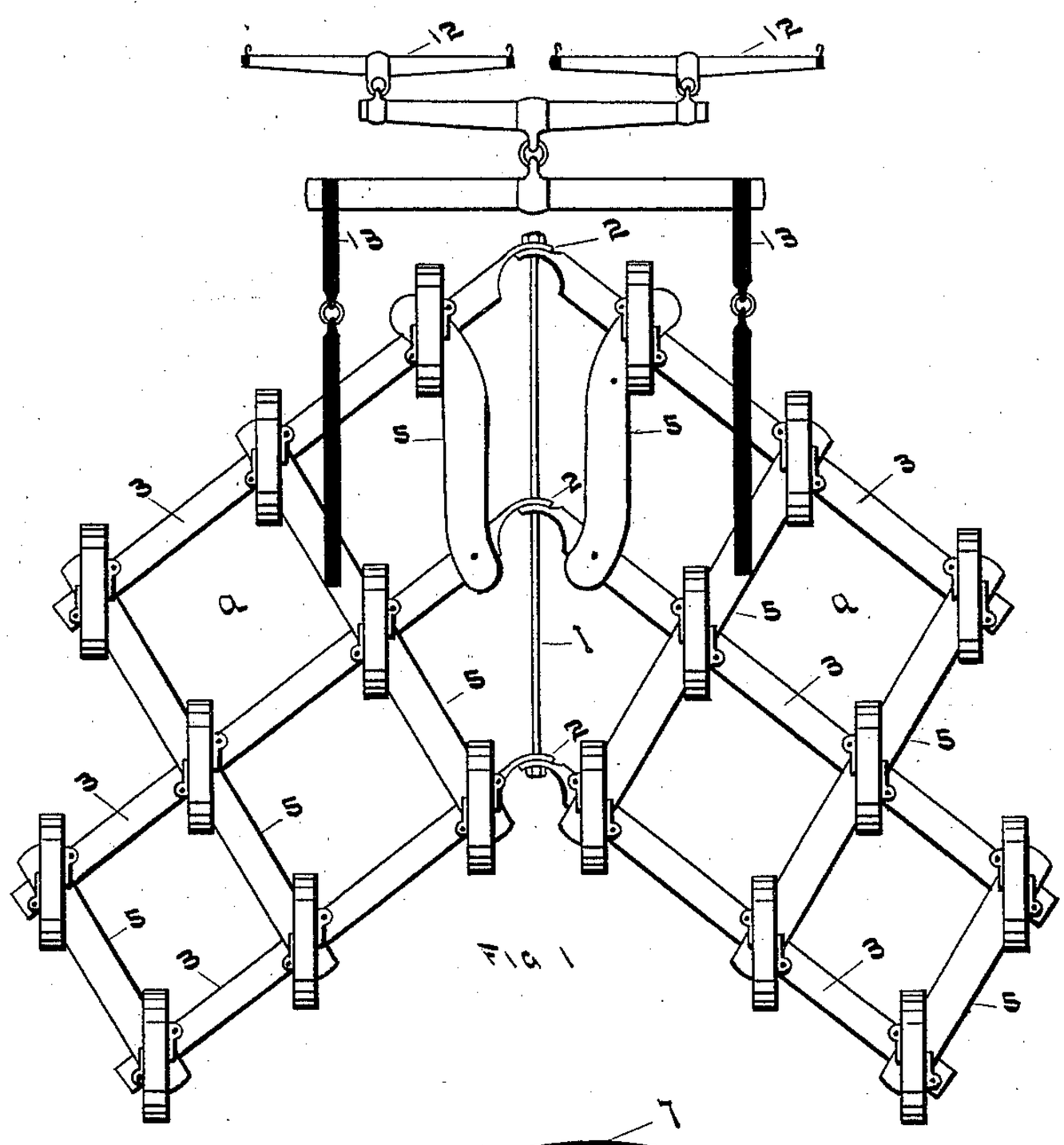

FIG 1

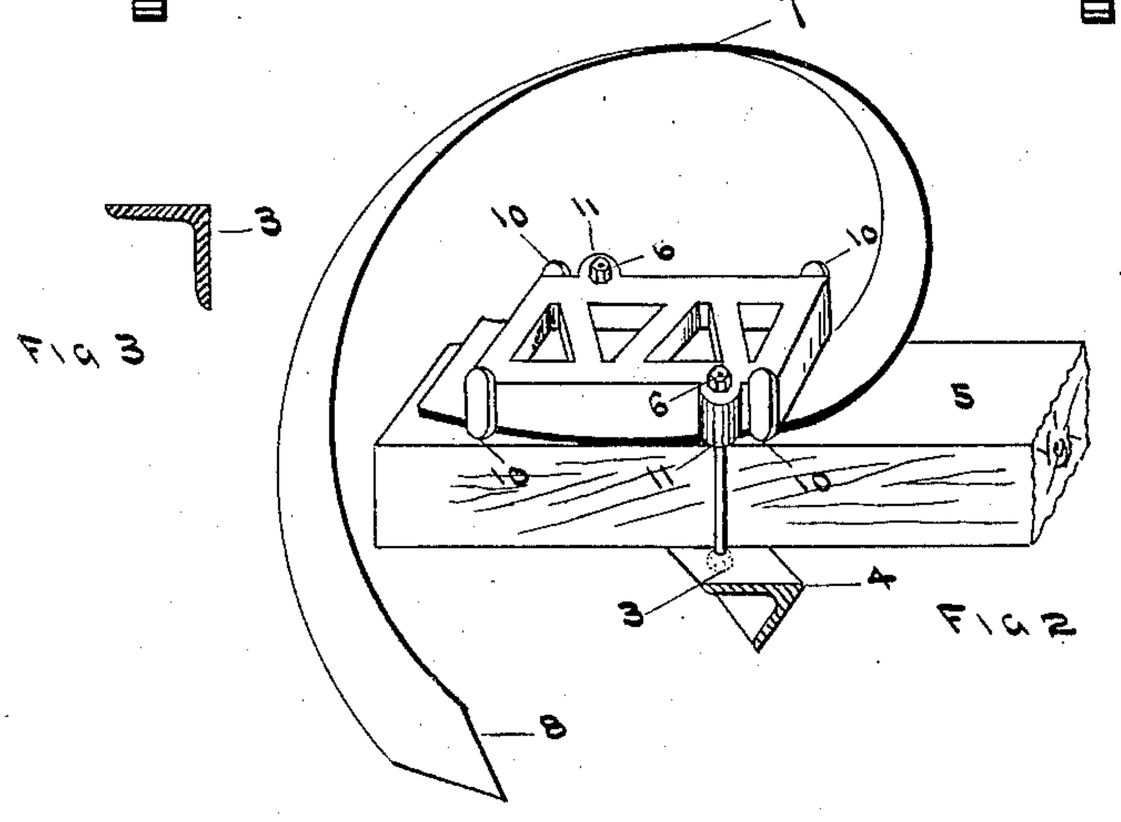

FIG 3

FIG 2

WITNESSES:
W. A. Stone.
Edwin H. Risley

INVENTOR
J. M. Childs
BY
Risley Lewis & Penny
ATTORNEY

UNITED STATES PATENT OFFICE.

J. MORRIS CHILDS, OF UTICA, NEW YORK.

HARROW.

SPECIFICATION forming part of Letters Patent No. 358,839, dated March 8, 1887.

Application filed December 11, 1886. Serial No. 221,261. (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 mechanism hereinafter more fully pointed out and claimed.

In the accompanying drawings, Figure 1 represents a top or plan view of my improved harrow. Fig. 2 represents a side view of a curved spring-tooth and a section of the frame. Fig. 3 represents a cross-section of a metallic angle draft-bar forming a part of the frame.

Heretofore trouble has been encountered in protecting the lower surface of the harrow-frame from wear. This I overcome by providing metallic angle draft-bars on which are mounted cross-bars, forming a durable and reliable harrow-frame.

Trouble has been encountered heretofore in using curved spring-teeth harrows on soft or sandy land where the frame is constructed of wood in such manner as to leave the lower surface of the frame substantially even, as the teeth work into the loose soil, the under side of the harrow-frame is brought into contact with the earth, which is forced up through the frame, greatly increasing the draft and decreasing the usefulness of the harrow. This trouble is overcome in my construction of a harrow-frame by using angle draft-bars formed of angle-iron, one angle projecting downward, with the cross-beams resting on the other angle, thereby forming a downward-projecting surface on each draft-bar which allows the free earth to pass between the draft-bars under the cross-bars of the frame, thus overcoming entirely the trouble heretofore encountered in this class of harrows.

I attain the several beneficial results, with others not heretofore mentioned, by forming the frame of the harrow preferably in sections *a a*, joined at the center by rod and nut 1, passing through the bent, perforated, and overlapping ends of the draft-bars 2 2, which are formed of metal, with an angle, as hereinafter more fully described. By this construction I form a cheap and durable hinge in the center of the frame, which enables the harrow to conform with the uneven surface of the ground and to facilitate its work.

I construct the frame of my improved harrow by providing metallic angle draft-bars 3 3, formed with substantially a right-angle bend in cross-section, although in practice I prefer the metallic angle draft-bars to be formed with an acute angle, 4, in cross-section, as this form of construction inclines the downward-projecting angle backward, enabling the frame to pass obstructions with greater facility, although a right-angle bend, as shown in Fig. 3, works substantially as well, although the frame will not pass an obstruction as easily when constructed of this form of angle-iron.

I mount on the upper surface of the angle draft-bars cross-bars 5 5, preferably of wood, the under surface of the cross-bars resting on one of the surfaces of the metallic angle draft-bars, as shown in Fig. 2. This construction practically forms runners projecting below the cross-beams, which are consequently elevated in such manner as to allow the free earth to pass between the metallic angle draft-bars under the cross-beams, thus freeing the harrow in light soil from a tendency to clog.

Another important feature of this construction consists in protecting the heads of bolts 6 6 from wear.

The angle draft-bars are perforated, as shown in Fig. 2, for receiving bolts each side of the cross-bars, on which cross-bars I mount spring curved tooth 7, which is bent forward, upward, rearward, and downward, point 8 falling below the lower surfaces of the angle draft-bars in the frame. These teeth are placed on the upper surface of the cross-bars. The inner circle of the tooth is engaged by clip 9, having projecting ears 10 10 10 10, which engage the outer edges of the tooth, thereby preventing the same from turning. This clip is provided with perforated ears 11 11, through which the bolts pass. By means of this construction the angle draft-bars, the cross-beams, and spring-

teeth are rigidly held in contact by bolts and nuts 6 6. I do not, however, intend to limit myself to the use of this particular clip or particular means of holding the curved spring-teeth to the frame, as it is quite obvious that any other form of holding the teeth to the frame may be used; nor do I intend to limit myself by the location of the bolts for holding the draft-bars, cross-bars, and teeth in rigid contact with each other, as a variety of changes can be made in this respect without departing from the spirit of my invention.

I preferably attach whiffletrees and evener to the harrow by means of draft-straps 13 13, attached to the harrow-frame. This form of connection is in common use, on which no particular claim is made.

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

The combination of the angle draft-bars, the cross-bars mounted on one angle of the draft-bars, the other angle of the draft-bars projecting downward, the curved spring-tooth mounted on the frame, and means for rigidly holding the angle draft-bars, the cross-beams, and the curved spring-teeth in rigid contact, substantially as set forth, for the purposes stated.

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

J. MORRIS CHILDS.

Witnesses:

EDWIN H. RISLEY,

D. MCGUCKEN.