

R. Rakestraw. HARROW.

116991

PATENTED JUL 11 1871

Fig. 1.

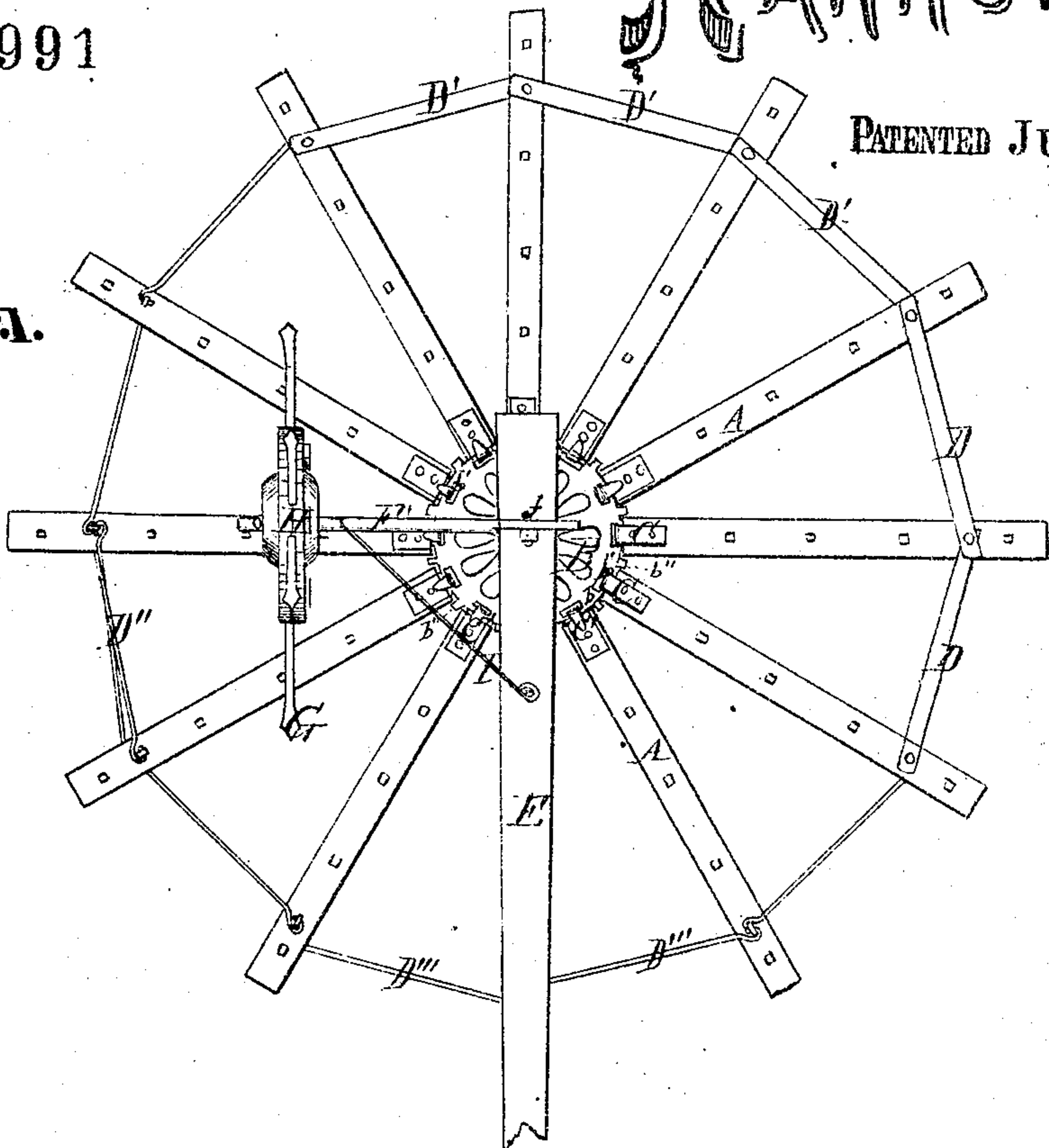
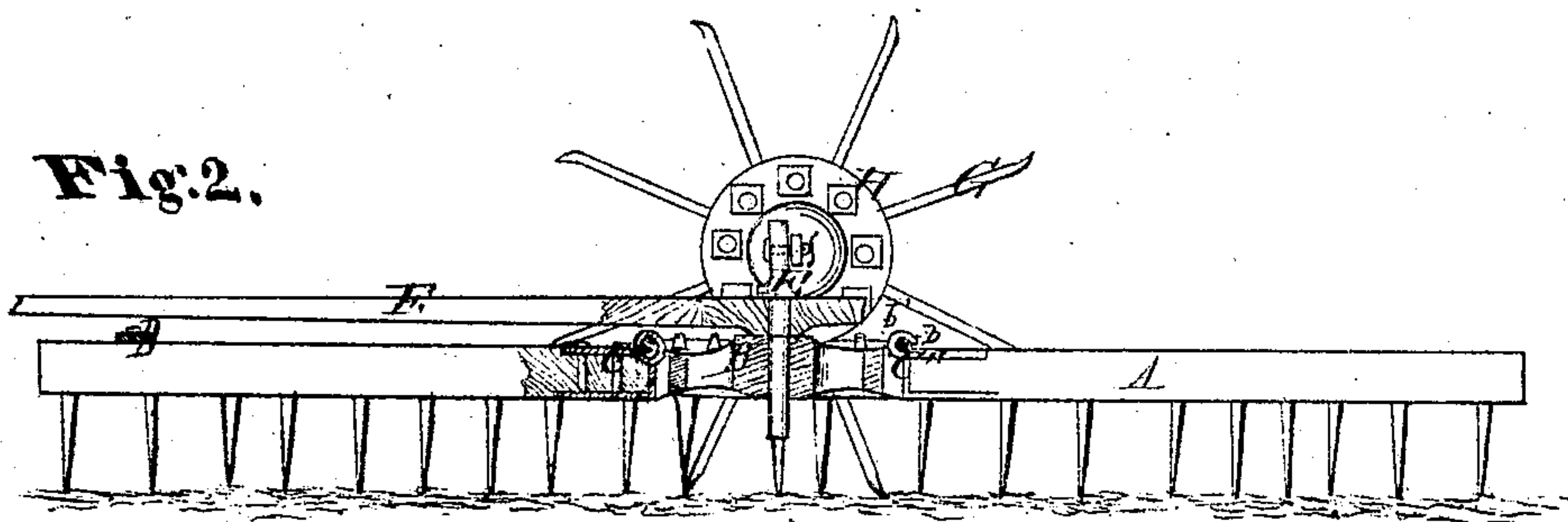


Fig. 2.



Witnesses.

Cha. Kemper
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Inventor.

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UNITED STATES PATENT OFFICE.

ROLAND RAKESTRAW, OF WYOMING, ILLINOIS.

IMPROVEMENT IN ROTARY HARROWS.

Specification forming part of Letters Patent No. 116,991, dated July 11, 1871.

To all whom it may concern:

Be it known that I, ROLAND RAKESTRAW, of Wyoming, in the county of Stark and State of Illinois, have invented a new and valuable Improvement in Rotary Harrows; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a plan view of my invention. Fig. 2 is a vertical section of the same.

This invention has relation to certain novel improvements in the construction of rotary harrows. The implement which is the subject of said improvements is composed of a number of radial arms, provided with teeth, and coupled at their inner ends to a central disk or wheel. A draft-beam is attached to said disk by a vertical king-bolt, which supports on its upper end an adjustable shaft, upon which a spade-wheel is so journaled that the spades on the ends of the spokes, by coming in contact with the soil, arrest the spokes, and by this means cause the harrow to rotate without the intervention of any gearing whatever. The improvements consist in the hereinafter-described modes of coupling the radial arms to the central disk, and of connecting their outer ends together. Also, in the peculiar construction of the spade-wheel, whereby broken or bent spokes may be easily removed and others substituted, all the spokes being secured in place in such a manner as will conduce to their strength and durability.

In the accompanying drawing illustrating this invention, A represents the radial arms, provided with any kind of known teeth in equal or alternately varying numbers. B designates a central disk constructed with a flange, *b*, surrounding its upper part, through which are cut vertical slots *b'*, of equal number with the arms A. Under each of these slots is a recess, into which the inner end of a radial arm fits, and between these recesses are projections *b''*. The radial arms A may be coupled with the disk B by any of the three methods shown in the drawing, viz., by means of a clevis, C; by means of a simple hook, C', on the top of the arm, and hooking upward through one of the slots *b'*; or by means of a

hook formed on a clevis, C'', and projecting from the top part thereof in like manner through one of said slots. By having the arms thus coupled to the disk B a certain degree of vertical play is allowed, sufficient to overcome the ordinary inequalities of the surface over which the implement passes. By having the hooks by which said coupling is accomplished to enter their appropriate slots in an upward direction the ends of the radial arms may be arranged within the recesses in the periphery of the disk B in such a manner that the arms cannot be doubled in toward the disk in a downward direction. The employment of hooks in themselves, independently of the precise position in which they are placed, allows the harrow-arms A to be readily removed and replaced. The outer ends of the radial arms may be connected by any of the four following-described methods clearly illustrated in the drawing, viz.: 1st, by means of two transverse bars, D, one placed on top and the other underneath two adjoining arms, to which they are secured by bolts and nuts. For greater security, a third bolt may be placed between the arms through the bars D. 2d, by means of a transverse bar of like character, D', having one end bolted to the upper side of an arm, and the other end bolted to the under side of the next arm. 3d, by means of two rods, D'', of proper size for strength, placed between two adjoining arms, one reaching transversely from the upper side of one arm to the under side of the next, and the other rod reaching from the upper side of the latter to the under side of the former. 4th, by the use of but a single rod, D''', reaching diagonally from one arm to the next, as shown in Fig. 1. When either double or single rods are used, as specified, they are made with a hook at one end, and at the other end bent and inserted upward through an arm, and an eye formed at the bent end, into which the hooks catch, as represented in the drawing. This eye is so turned that when the hook of the next rod is fastened therein it cannot become unhooked without so turning the rod that the eye will stand parallel with the radial arm. The last hook should be fastened by a key in the end thereof, which, when removed, will enable the operator to unfasten the last rod and turn it so that the next may be unfastened, and so on. E represents the draft-beam or tongue, attached to the disk B by a central king-bolt, F.

F' represents an adjustable shaft, perforated properly and secured to the king-bolt by a pin, *f*. G designates the spokes of the spade-wheel with their outer ends flattened, pointed, and bent, as shown in drawing. These spokes are secured between two plates, H, which are grooved radially to receive them, and are held together by bolts and nuts so that they may be separated in order to remove a spoke. The plates H constitute a hub for the spade-wheel, and are journaled on the end of the shaft F'. I designates a rod connecting the tongue E and shaft F'.

The draft of this implement is central, and when the harrow is drawn forward over the soil the spokes of the spade-wheel enter the same and cause the wheel to rotate, and the rotation thereof by the leverage of the spokes against the radial arms A causes the harrow to rotate. The

ends of the spokes are bent so as not to catch on the arms A.

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

1. The center disk B, constructed with the outside arms *b'*, substantially as and for the purpose set forth.

2. The disk B, in combination with the radial arms A, independently hooked to the disk to allow the vertical play, as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

Witnesses: ROLAND RAKESTRAW.

AUGUSTUS G. HAMMOND,
OLIVER D. BARTO.