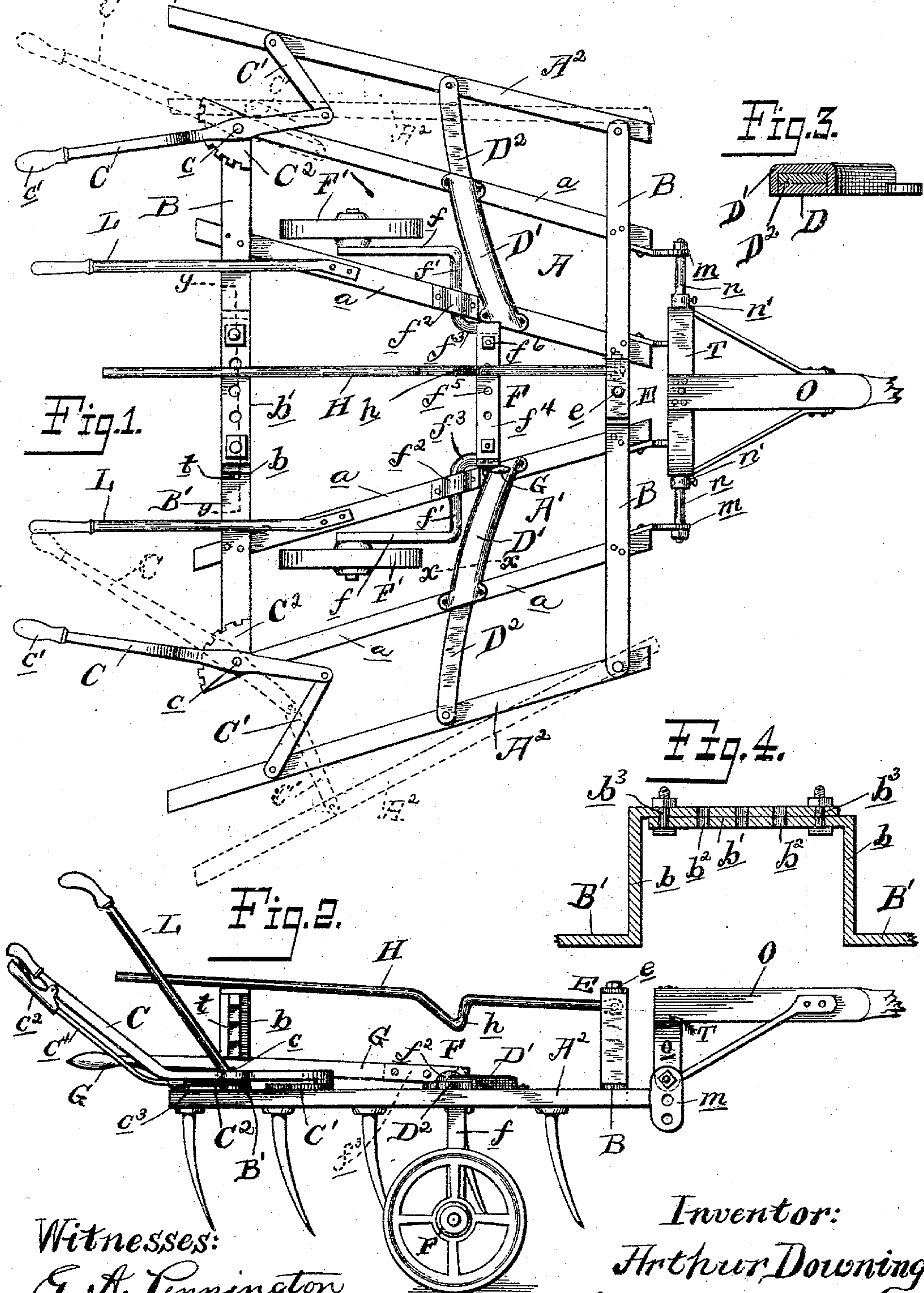


(No Model.)

A. DOWNING.
CORN HARROW.

No. 551,435.

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UNITED STATES PATENT OFFICE.

ARTHUR DOWNING, OF SHELL ROCK, IOWA.

CORN-HARROW.

SPECIFICATION forming part of Letters Patent No. 551,435, dated December 17, 1895.

Application filed August 16, 1895. Serial No. 559,482. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR DOWNING, a citizen of the United States, residing at Shell Rock, in the county of Butler and State of Iowa, have invented certain new and useful Improvements in Corn-Harrows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in harrows, and it consists in the construction and arrangement of parts hereinafter described, and definitely pointed out in the claims.

The object of the invention is to form an improved harrow having improved means for varying the width thereof, improved means for enabling an easy transportation of the same, and in so forming and arranging the several parts that a very useful, inexpensive and durable harrow is provided.

The invention is illustrated in the accompanying drawings, wherein like letters of reference designate corresponding parts in the several views, and in which—

Figure 1 is a plan view showing parts in dotted lines adjusted to different positions. Fig. 2 is a side elevation. Figs. 3 and 4 are sections on the lines xx and yy , respectively, Fig. 1.

In the drawings, $A A'$ designate two rectangular frames, composed of two parallel tooth-bars a , fixedly secured at their outer ends by the cross-bars $B B'$. The cross-bars B extend laterally beyond the frames and have pivoted to their outer ends the laterally-adjustable side tooth-bars $A^2 A^2$. The bars A^2 extend back slightly beyond the ends of the frames $A A'$ and are connected to the rear cross-bars B' by the pivoted levers C and links C' . The levers are pivoted back from their link ends by the pivots c carried by the bars B' , and their outer ends have the handles c' thereon carrying the spring-hand-levers c^2 which actuate the dog c^3 through the medium of the connecting-rods c^4 . The dogs engage with the rack-segments C^2 on the cross-bars B' . By shifting the levers C laterally the ends of the bars A^2 are moved out or in, as the case may be, and through the

instrumentality of the dogs and racks are held in their shifted or adjusted positions.

To support the central portion of the frames and bars A^2 , central curved cross-bars D are secured to the bars of the frame. The curved bars D are surmounted by the parallel guide-bars D' arranged slightly above the same to form intermediate spaces in which the curved tongues D^2 , secured to the bars A^2 , work. By this means a sliding connection is formed between the central portion of the frames and sides A^2 , acting throughout the entire movement of the sides A^2 . As the sides A^2 move in the arc of a circle, the bars $D D'$ and tongues D^2 are correspondingly curved. The inner ends of the bars B are bent up at right angles and their upper ends bent in and overlap each other, as at E , at which point a pivot-bolt e is passed through the same.

The inner ends of the bars B' are carried in beyond the frames and then bent up vertically, as at b , their upper points being bent horizontally and overlapped, as at b' . Each of the overlapping ends is perforated at b^2 throughout, and the securing-bolts b^3 are passed through two or more of the perforations for securing the parts together.

When it is desired to vary the distance between the rear ends of the frames, it is only necessary to remove the bolts b^3 and move the overlapping points b' out until the proper perforations register and then reinsert the bolts. The forward point of the machine needs no adjustment, but permits the rear adjustment through the medium of the pivot-bolt e .

By means of the above-described construction it will be seen that a very strong structure is formed and that the frame can be relatively adjusted, while the outer bars are permitted an independent adjustment.

For transporting purposes a wheeled frame F is formed, consisting of the vertical portions f , on the lower ends of which are formed stub-axes carrying the wheels F' . The upper ends of the parts f are bent inward at right angles, forming the arms f' , which are journaled in suitable boxes f^2 on the top of the inner tooth-bars of the frames. From the boxes the arms f' are bent horizontally at right angles, forming the extensions f^3 , while the ends of the extensions are bent inward

and flattened, as at f^4 , and overlap each other. Each of the overlapping ends is provided with a series of perforations f^5 through which the bolts f^6 may pass, and by which the parts may be adjusted in a manner similar to that of the rear yoke connection of the back bars B' . The frames F are, as will be seen, composed of the multo-cranks, consisting of the parts f , f' , f^3 and f^4 adjustably connected at their inner ends. The wheels occupy a position within the plane of the space between the bars of the frames A A' , so that they may be moved to points below or above the frames. To move the wheels a lever G is secured to one of the cranks or portions f^3 and extends beyond the same. This lever is in line with the vertical portion of the rear yoke, and is formed of laterally-yielding material, which, when lowered, engages the ratchet-teeth t , formed on the yoke. These teeth serve to hold the lever G in its lowered position and the wheels below the frame. When the wheels are raised to points above the frame the lever is moved slightly forward beyond the boxes f^2 and the overlapping sections of the wheel-frames are engaged by a catch or inclined tooth h formed on a rod H , pivoted to the front yoke and extending to the rear of the machine.

L designates the handles at the rear. At the front of the bars a are the clevises m connected, respectively, by the draft-bars n adjustably or removably secured in place.

O designates the tongue having the brace T at its rear end formed with the downwardly-extending arms o perforated to receive the draft-bars. Clips n' on the bars n are arranged to hold the arms in various positions on the bars n when the line of draft is changed or to be altered.

In operation, when the width of the harrow is to be varied, it is only necessary to adjust the side bars or when the frames are to be relatively adjusted to remove the connection between the overlapping ends of the connecting-bars, as above stated.

The peculiar formation of the multo-crank-wheel frames enables the wheels to be forced below or above the frames and by the ratchet-teeth t and rod H are held in their proper positions.

The weight of the wheels will hold the connected portion of the wheel-frame against the shoulder of the catch h on the bar H .

By elevating the tongue the doubletrees are carried above the plane of the corn, and by forming the arches corn can pass between

the frames. The purpose of adjusting the sides A^2 is to carry the outer teeth in proper position relative to the rows, and to vary the cultivation according to the exposure of the roots, &c.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a harrow, the combination with the two side frames, pivotally united at their forward ends, a laterally adjustable connection between the rear ends thereof, comprising a yoke having overlapping ends and adjustable means for securing the ends together, a wheel frame intermediate the ends of and between the frames, consisting of two multo-cranks, each carrying wheels at their outer ends, between the bars of the frames, means for pivotally securing the cranks to the frames, adjustably connected overlapping inner portions on the cranks, a lever connected with one of the cranks, securing means on the rear connection with which the lever engages, and a pivoted catch engaging the wheel frame, when the lever is forced forward, said catch having an extension projecting to the rear of the machine, substantially as described.

2. In a harrow, the combination with the laterally adjustable frames, of the laterally adjustable side bars, the curved connecting bars for the frames, and the curved bars on the side bars, slidingly engaging the curved connecting bars, and means for adjusting the side bars, substantially as described.

3. In a harrow, the combination with the side frames, of a wheel frame consisting of the vertical sections, each carrying wheels at their lower ends, the inwardly extending horizontal sections, journaled on the frames, the rearwardly extending sections f^3 , the overlapping adjustably connected sections, and means for moving the frame, substantially as described.

4. In a harrow, the combination with the adjustable sections, and the adjustable transportation wheels, of the draft bars at the front of the harrow, the tongue having a cross bar at its rear, downwardly extending arms on the cross bar, and adjustable means for securing the arms to the draft bars, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR DOWNING.

Witnesses:

S. DOWNING,

CHAS. A. VAN VLACK.