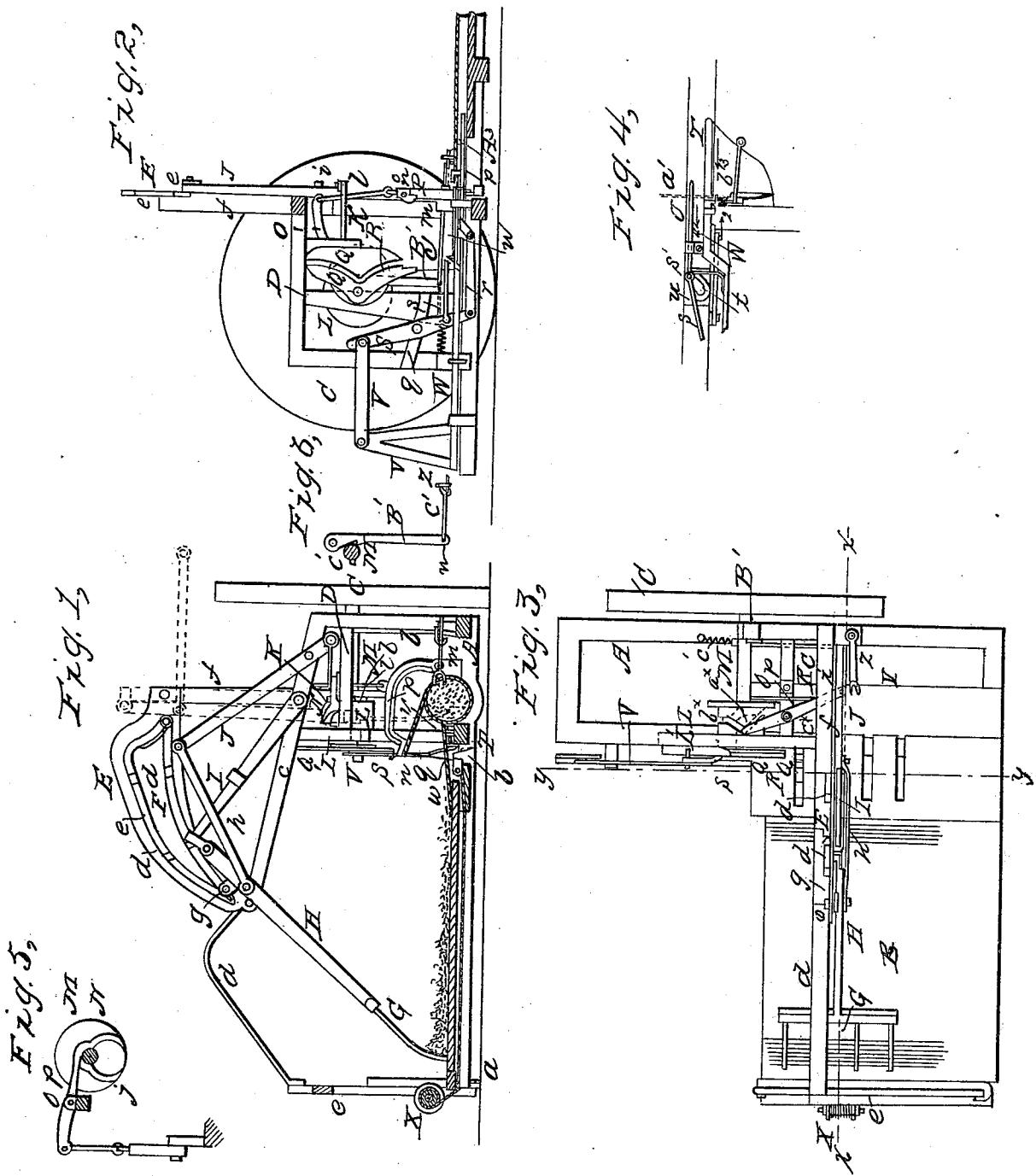


W. L. CHILDS.

Grain Binder.

No. 19,486.

Patented March 2, 1858.



# UNITED STATES PATENT OFFICE.

WILLIS L. CHILDS, OF PIERMONT, NEW YORK.

## IMPROVEMENTS IN HARVESTERS.

*Specification forming part of Letters Patent No. 19,486, dated March 2, 1858.*

*To all whom it may concern:*

Be it known that I, WILLIS L. CHILDS, of Piermont, in the county of Rockland and State of New York, have invented a new and Improved Raking and Binding Attachment to be applied to Reapers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical section of a reaper with my improvement applied to it;  $x x$ , Fig. 3, indicates the plane of section. Fig. 2 is a vertical section of the same, taken in the line  $y y$ , Fig. 3, and looking in the direction indicated by the arrow 1. Fig. 3 is a plan or top view of the same. Fig. 4 is a detached plan or top view of the twisting and tucking device. Fig. 5 is detached view of the device which actuates the arm that adjusts the cord by which the sheaves are bound. Fig. 6 is a detached view of the discharging device.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of a rake in connection with a novel arrangement of parts, which will be hereinafter fully shown and described, whereby the grain, as it is cut by the sickle and thrown upon the platform, is raked into a proper receptacle, a suitable quantity at a time, to form a sheaf or gavel, and then bound with a cord. The device is operated automatically and from the driving-wheel of the machine.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a horizontal rectangular frame, which forms what is commonly termed the main frame of the reaper. B is the platform which is attached to one side of the main frame A, said platform having the usual reciprocating or any proper sickle attached to its front end. C is the driving-wheel attached to the outer side of the main frame A, the outer end of the platform being supported by small wheels  $a$ .

On the main frame A there is placed an upright framing, D, to an upright, b, of which a bar, c, is attached, said bar being somewhat inclined from a horizontal line, and attached to

the upper end of upright b. (See Fig. 1.) The outer end of the bar c has a metal brace, d, attached to it, said brace having its outer end attached to a bar, e, at the outer end of the platform.

To the bar c an upright bar, f, is attached, and to the upper end of the bar f and the outer end of the bar c, a metal plate, E, is attached. This plate E is a curved rim, having a solid plate, F, fitted within it and secured to bars d d, the ends of which are attached to the rim or plate E. The plate F is somewhat smaller than the plate or rim E, so as to allow a slot, e, of equal width all-around between the inner edge of the rim and the plate, as shown clearly in Fig. 1.

G represents a rake, which is attached to the lower end of a rod or bar, H. The upper end of the rod H is pivoted to a bar, I, the lower end of which is pivoted to the bar c at or near the lower end of the upright bar f. The rod H has a pin or friction-roller, g, attached to it, and this pin or roller is fitted within the slot e. To the rod H one end of an arm, h, is pivoted, and this arm, at its opposite end, is pivoted to a lever, J, the lower end of which is connected by a link, i, with the back end of a lever, K, the front end of which has a pin,  $a^x$ , attached, and which pin works or fits in a zigzag groove,  $b^x$ , or a groove composed of zig-zag and straight portions, said groove being made in the periphery of a cylinder, L, which is placed on the axle M of the wheel C.

The above-described parts form the raking device; and it will be seen that as the machine is drawn along the lever K has a vibrating movement given it by the groove  $b^x$  in the cylinder L, the fulcrum of the lever K being at  $c^x$ . The lever K actuates the lever J, which, by means of the arm h, moves the rod or bar H of the rake G. These parts give the horizontal reciprocating movement to the rake, and the up-and-down movement is given by the slot or groove e, formed by the plates E F, and in which slot the pin or roller g, which is attached to the rod or bar H, works. The rake, by means of the guide-slot e, is made to sweep close to the platform B when moving toward the main frame A, and is raised up from it as it is moved toward the outer end of the platform.

To the outer end of the cylinder L there is a circular plate, N, which has a groove, j, made in it, said groove approximating to an annular form and having an eccentric position relatively with the plate N, as plainly shown in Fig. 5. O is a lever, the front end of which has a pin, k, attached, which pin works in the groove j; the back end of the lever is connected by a link or rod, l, with a curved arm, P, one end of which is pivoted to a small upright, m, on the main frame, and the opposite end having a jaw or nipper, n, pivoted to it, as shown at o, Figs. 1 and 2. The link or rod l is attached to about the center of the arm P, as shown clearly in Fig. 1. The groove j gives a vertical vibrating movement to the lever O, which is communicated to the arm P through the medium of the link or rod l; two "dwells" being given the lever O and arm P, one when the pin k is on the periphery of the plate N and the arm P is depressed, and the other when said arm is elevated and the pin k is in the semi-annular portion of the groove j, which is concentric with the shaft M. (See Fig. 5.) The lever O has its fulcrum at p.

To the inner end of the shaft M a circular disk, L', is attached. To this disk two plates Q Q' are attached, a space being allowed between the inner edges of the plates, which are so curved as to form an obtuse V-shaped groove, as shown clearly at R, Fig. 2. S is a lever which is pivoted, as shown at q, to the framing D. The lower end of lever S is connected by a link, r, with a horizontal bar, T, which works on the inner side of the main frame A. (See more particularly Fig. 2.) The lower part of this lever S is also connected by a rod or link, s, with a slide, U, the back end of which has a pin, s', attached to it, which pin is fitted in an oval groove, t, made in a plate, u, which is attached to the main frame A. The plate with its groove, and also the slide U, are clearly shown in Fig. 4.

To the upper end of the lever S one end of a horizontal bar, V, is pivoted; the opposite end of this bar is pivoted to the upper end of an upright framing, v, the lower end of which is attached to a horizontal bar, W, which works over the bar T, and has a small knife or a projection, w, provided with a cutting-edge, attached to its end. This knife w is shown clearly in Figs. 2 and 4.

To the outer end of the platform B a spool, X, is attached, on which a twine or cord, a', is placed. This cord passes underneath the platform B, and underneath a small pivoted blade, b', at the inner side of the platform, the use of which will be presently shown. Y is a receptacle into which the grain is raked previous to being bound, and Z is a discharging device, which is formed of a lever pivoted to the main frame A, and actuated at the proper time by means of a lever, B', and rod C', the lever B' being moved by a pin, c', on the axle M.

The operation is as follows: As the machine is drawn along, the rake G rakes the cut grain off the platform B into the recep-

tacle Y, the arm P being in an elevated state, and having the end of the cord a' secured to it by the jaw or nipper n; and as the rake G forces the grain into said receptacle, the cord a' will be moved back. The arm P descends when the cut grain is raked into the receptacle Y, and the twine or cord a' is consequently drawn entirely around it; and when the end of the arm P has nearly reached its lowest point, the bars T W are moved in opposite directions, as indicated by the arrows 2 3, and the arm P is continued to its lowest point, compressing the sheaf or gavel, while the slide U is also moved at the same time, in the direction indicated by arrow 4; the slide having a hook at its outer end, which hook draws the twine or cord between the bars T W, which, in consequence of the movement of said bars, as described, is twisted, the cord being cut by means of the knife w at the commencement of the movement of bar W. As soon as the end is twisted, or at the completion of the movement of the bars T W, as indicated, and upon their return movement, the movement of the slide U is reversed, and the twisted end of the twine is tucked under the band by the latter movement of the slide, and the lever Z is then actuated by the pin c', lever B', and rod C', and the bound sheaf is thrown from the receptacle Y. The cord a' is caught as the arm P descends, in consequence of the blade b' throwing out the jaw or nipper n at the end of the arm; and the bars T W and slide U are actuated in consequence of the groove R catching a pin on the upper end of the lever S at every revolution of the shaft M, an independent lateral movement being given the slide U, so as to cause the same to tuck the twisted end underneath the band by means of the groove t in the plate u. Thus it will be seen that the cut grain is raked off the platform, bound into sheaves or bundles, and discharged from the machine, the several parts all working automatically.

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

1. The arm P, bars T W, and slide U operated and arranged as shown, or in any equivalent way, so that by their joint operation the twine or cord a' is adjusted around the sheaf, cut off from the main portion, and the ends twisted and tucked under the band, as described.

2. In combination with the above binding device, the rake G, operated as shown, so as to have a proper relative movement with the parts constituting the binding device, as described, whereby the cut grain is raked into the receptacle Y at the proper time.

3. The discharging device, formed of the lever Z, actuated from the axle M, through the medium of the lever B' and rod C', when used in connection with the rake and binding device, as described.

Witnesses:

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