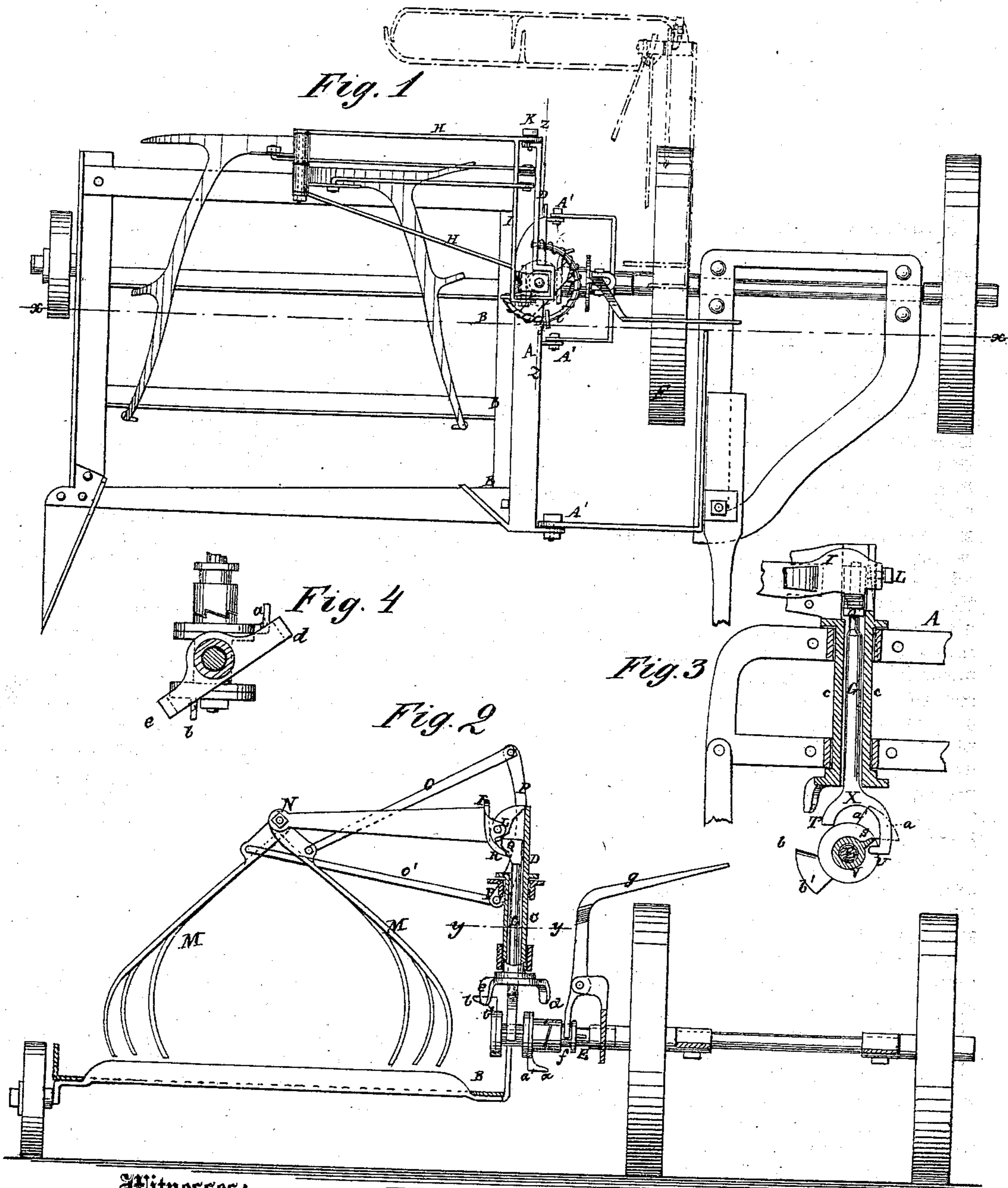


Harvesters.

No. 135,480.

Patented Feb. 4, 1873.



Witnesses:

A. W. Alvqvist
C. Sedqvist

Inventor:

C. Lidren

PER

Munn & Co.
Attorneys.

Attorneys:

UNITED STATES PATENT OFFICE.

CHRISTOPHER LIDREN, OF LA FAYETTE, INDIANA, ASSIGNOR TO HIMSELF
AND R. JACKSON, OF SAME PLACE.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 135,480, dated February 4, 1873.

To all whom it may concern:

Be it known that I, C. LIDREN, of La Fayette, in the county of Tippecanoe and State of Indiana, have invented a new and useful Improvement in Harvesters, of which the following is a specification:

My invention consists of a pair of grab and carrying rakes suspended from a crane which is mounted on the platform of a two-wheeled machine hinged to the truck-frame, the crane being arranged to swing from over the platform around to the rear of the machine and back again by means of cams on the inner end of the axle, or it may be any other shaft arranged to swing it forward and back, and so adjusted as to hold the grab-rakes during the time they are gathering the grain into a gavel, also while they are detaining it; and the said rakes are so arranged, and have mechanism to actuate them so contrived, that they are presented in an open condition above the grain on the platform, the one at one end of said platform and the other at the other end; then dropped down so that the ends of the fingers project below the grain through openings in the platform; then brought together at the middle, moving parallel, or nearly so, to the plane of the platform, raking the grain together in a gavel and securing it; then raised and swung around to the rear, and lowered and opened to discharge the gavel, after which they are thrown out of gear and allowed to remain until grain enough for another gavel has fallen on the platform, when they are put in gear again, raised, swung forward over the grain, and presented for taking another gavel, as before. The swinging of the crane is effected and the mechanism for raising, lowering, opening, and closing the rakes is so contrived and actuated by cams of peculiar construction on the axle that the whole is exceedingly simple in construction, and the operation is in no way impaired or hindered by the oscillations of the platform and the truck relatively to each other.

Figure 1 is a plan view of a harvester with my improved raking and dropping apparatus applied to it. Fig. 2 is a transverse sectional elevation on the line *xx* of Fig. 1. Fig. 3 is a section on the line *zz*, and Fig. 4 is a horizontal section on the line *yy* of Fig. 2.

Similar letters of reference indicate corresponding parts.

A is a strong frame rising up from the inner end of the platform or frame B to support the vertical shaft C of a crane, of which D is the horizontal arm, said shaft being arranged on its axis and mounted over the inner end of truck-axle E, which projects beyond the inner wheel F for gearing with the said shaft, and a vertically-moving rake-actuating rod, G, within the said shaft, which is made hollow to allow the said rod to work in the axis of the shaft. The platform is hinged to the truck-frame at A' in the horizontal plane of the axle E of the truck and in the longitudinal and vertical plane of the crane-shaft C, so that the axle may be geared with the rake-actuating devices, while they are allowed to oscillate on the platform independently. The arm D of this crane carries a strong arm, H, of two members, projecting from one of its sides, the said arm H being attached to a bar, I, which is pivoted to the outer end of the crane-arm at K and to the top of the shaft C at L, so that said arm H can swing up and down on said pivots to raise and lower the rake. This grab-rake carrier and dropper consists of the two members M of broad forks or rakes, which are suspended from a pivot, N, at the outer end of the arm H, one of said members being connected a short distance below the pivot N to one end of a rod, O, which is connected at its other end to a vertical bar, P, rigidly attached to the crane-arm D above the level of the pivots of arm H, and the other member being similarly connected by a rod, O', to the said bar P, below the level of the pivots of the arm H. These two rods O and O' open the two members of the carrier-rake as they fall, and close them as they rise in consequence of being pivoted on different centers. The bar I, carrying arm H, is supported on its pivots, and the arms are raised and allowed to fall again by the rod G, which has a cam, Q, at the upper end, against which a toe or short arm, R, on the bar I of the arm H bears, and this cam rises to let the arm H fall, and descends to raise it. The rod G is moved upward by a toe or tappet, S, on a sleeve, V, on the axle E coming under the end of one branch, T, of a stirrup

on the lower end; and it is moved down by the said toe coming against a lug or projection, U, on the end of the other branch of the stirrup. The crane and the rake are caused to swing over the platform or apron and held there while the rake takes the grain; then swung away, held, and lowered to deliver it by the cams *a a'* and *b b'* on the sleeve V, and the bent arms *d e* on the lower end of the shaft C.

The rake being let down and opened when held at the rear of the machine, as indicated by the dotted lines in Fig. 1, the cam *b* comes against the arm *e* and swings the crane and rake around over the apron, and the part *b'* holds them there; then, while said part *b'* holds the rake over the platform, the tappet S comes against the projection U, forces the rod G down, which closes the rakes upon the grain and raises them ready to be swung back to the place of delivery. The closing of the rake is caused by the rod O, which is pivoted above the axis of arm H, pushing its member of the rake outward when said arm H is raised, and the rod O', which is pivoted below said axis pulling its member inward, and the raising of the rake is caused by cam Q being forced down against the arm R of bar I. Then the cam *a* comes against the arm *d* and swings the crane, the rake, and the gavel back to the place for discharging, and the part *a'* of the cam holds it there while the tappet S comes against the branch T of the stirrup X and lifts the rod G and cam Q to let the rake fall again and be opened to discharge the gavel. The opening is effected when the arm H goes down by the rods O O' swinging upon their respective centers, contrariwise to the motions above described, as will be clearly understood. The cams and tappet S are then thrown out of gear by the clutch *f* and lever *g* to allow the rake to await the accumulation of sufficient grain

for another gavel, when they are put in gear again and the operations above described are repeated, and so on. A bent rod, *i*, is attached to the top of the shaft C, and, partly encircling it, passes through an arm, *j*, fixed on the frame A, and has a coiled spring, *k*, on each side of the arm *j*, one of which is compressed when the crane comes to the limit of its movement in either direction to keep it from swinging too far; also to hold its arms *d* and *e* on the cams, and to start it back at the beginning of each movement to aid the cams at that time.

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

1. The combination of the rake, the crane, and the mechanism for operating and closing the rake, a grain-platform pivoted to the truck-frame of the machine, with the cams and tappet on the truck-axle, and the arms and stirrups of the crane, and rake-actuating rod, all substantially as specified.
2. The combination of hollow crane-shaft, oscillating arm H, vertically-moving rod G, cam Q, and arm R, arranged substantially as specified.
3. The combination and arrangement of the oscillating arm H, rakes M, rods O O', and the stationary arm P, substantially as specified.
4. The combination of the rod *i*, stationary arm *j*, and springs *k* with the crane-shaft C and cams *a'* and *b'*, substantially as specified.
5. The arrangement of the cams *a a'*, *b b'*, and arms *d e* of the crane-shaft, the tappet S and stirrup X of the rod G, and the axle of the truck, substantially as specified.

CHRISTOPHER LIDREN.

Witnesses:

L. W. HOOVER,
JOHN OPP.