C. W. LEVALLEY.

Harvester.

No. 169,275. Patented Oct. 26, 1875.

Fig. 1.

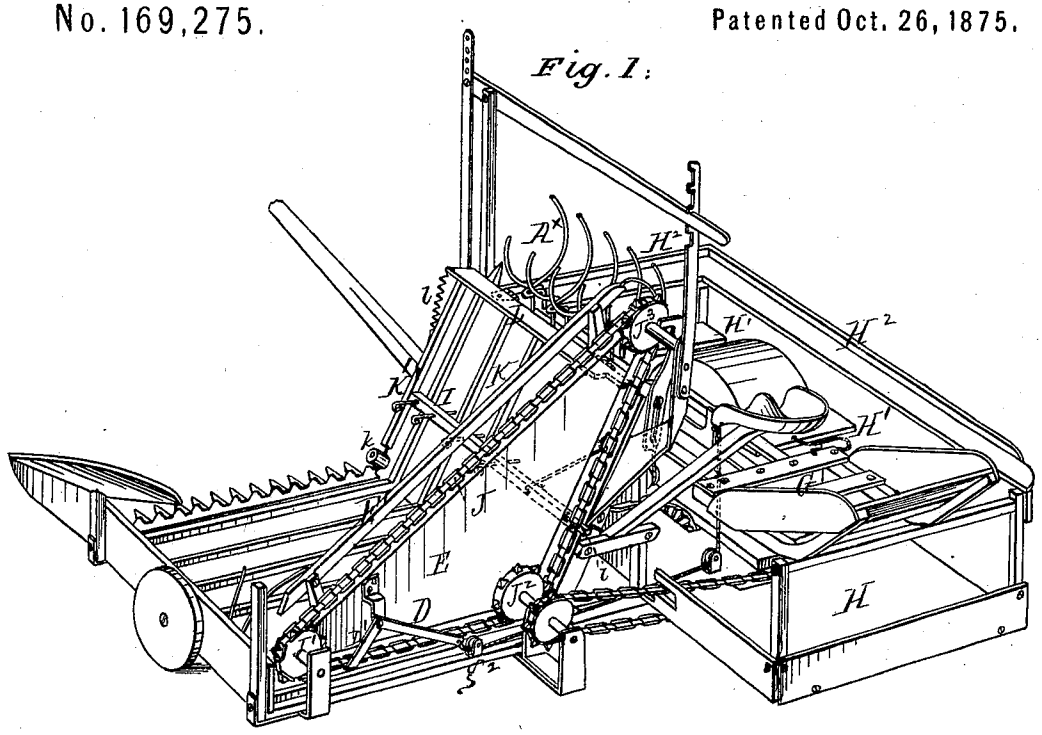
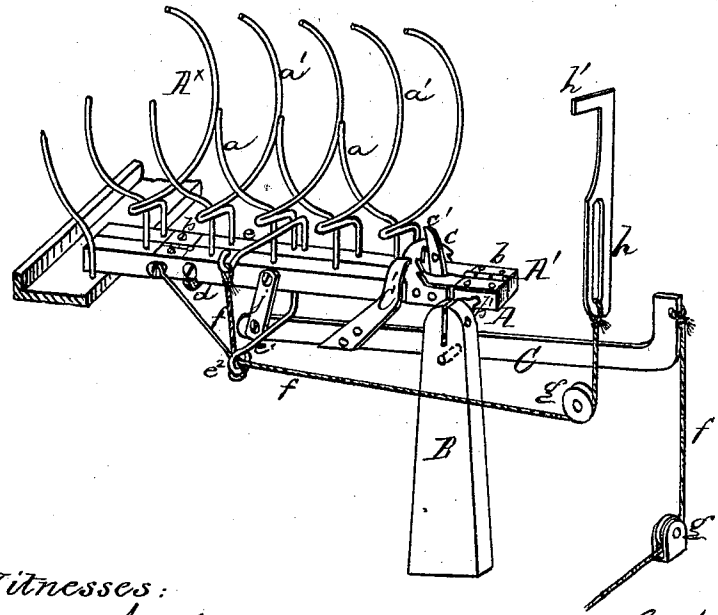


Fig. 2.



Witnesses:

Alex Mahon

John G. Center.

Inventor.

C. W. Levalley,

by A. M. Smith,

Attorney.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHRISTOPHER W. LEVALLEY, OF ST. PAUL, MINNESOTA.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **169,275**, dated October 26, 1875; application filed May 31, 1875.

To all whom it may concern:

Be it known that I, CHRISTOPHER W. LEVALLEY, of St. Paul, county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved machine taken from the rear grain-side corner, and Fig. 2 is a similar view of the grain-receiver and clamp with its connecting devices for causing it to automatically compress the gavel and to discharge the bound bundle.

Similar letters of reference where used in both figures denote the same parts of the machine.

The invention relates to that class of harvesting-machines in which the grain is automatically removed from behind the cutters where it falls, carried up an incline at the inner end of the platform, and deposited in an elevated receptacle, where it may be bound either by hand, by men riding on the machine, or automatically, as preferred; and consists in a novel construction and arrangement of grain-receiver, whereby it is made automatically to clamp the gavel, and, after the band has been secured around it, to discharge the bound bundle. It further consists in certain details of construction and arrangement hereinafter fully set forth.

In the class of machines referred to it has been usual to employ a stationary table or receiver at the delivery end of the elevator, from which the grain is removed by hand, and compressed and bound by men riding on the machine.

One of the principal objects of my present invention is to perform, by mechanism, the operation of compressing the grain into shape to be bound, holding it thus compressed while the band is being applied, and then discharging the bound bundles into the bundle-carrier, leaving to the binder or binders only the work of applying the bands, thus greatly reducing the labor of binding, and rendering it practicable for a single binder to do the work of binding all the grain cut by the machine.

The general organization of the machine to which my improvements are applied may be similar to those in use, except that, instead of locating the main drive-wheel directly underneath the elevator and inside of the grain-receptacle, I prefer to locate it outside of said parts, with the binder's stand inside of the wheel and between said wheel and the grain-receptacle, or in front and rear (either or both) of said wheel; but this is not material, and either of the above, or any preferred, arrangement may be given to the drive-wheel relative to the elevator and grain-receptacle.

The receptacle $A^{\times}$, in which the grain is deposited by the raking and elevating mechanism, is represented detached in Fig. 2, and is composed of two concaves consisting of curved rods or fingers *a a'* united at their lower ends to parallel bars A A', which are connected by hinges *b* in such manner as to permit the concaves to be folded together for compressing the grain and to be separated, as represented in the drawings, for discharging the same, and also for receiving a new gavel. The inner bar A is pivoted at its rear end at *b'* to an upright, B, mounted on the main frame, and the concave, when in position for receiving the grain, rests in a horizontal position with the fingers *a* in close proximity with the upper end of the elevator for taking the grain therefrom, and resting at its forward end upon a table or guard rail to the binders' stand. The bar A has a rack-bar, *c*, connected with it, which curves up and over the bar A', and to the latter is pivoted a spring-latch, *c'*, which, when the fingers *a a'* are closed to compress the gavel, engages with the rack *c*, and prevents the fingers from being opened until the pawl or latch *c'* is released, when a spring, *d*, connecting the lower edges of the hinged bars A A', acts to draw said edges together, and thus to open the concave for the release of the bound bundle and for the reception of another gavel.

The arrangement of means employed for closing the compressing-fingers upon the gavel is as follows: The bar A', which is hinged to and moves upon the bar A, has an angular arm, *e*, attached to its upper face, the horizontal portion of which crosses the bar A, sufficiently removed above said bar to prevent

interfering with the movement of bar A′, and to this arm a cord, *f*, is attached, which passes through an eye or loop at e^2 in an arm, e^1, attached to the bar A, and thence horizontally to and under a pulley, *g*, mounted upon the elevator-frame at its rear outer corner, from which point it extends upward to, and is connected with, the lower end of a vertically-sliding plate, *h*, mounted in ways or guides at the rear of the elevator-frame. The upper end of the plate *h* is provided with a horizontal arm or spur, *h′*, which rests in close proximity with the upper pulley of the endless rake-chain, and parallel with the rear face thereof, and after the rake has discharged its load into the grain-receptacle, and rises to pass around the upper pulley to begin its return movement to the outer end of the platform, a heel-projection, *i*, thereon comes in contact with the arm *h′* and raises the plate *h*, and the latter, acting through the cord *f* and arms *e* e^1, closes the compressing rods or wires *a a′* tightly upon the gavel, when the latch *c′* engages with the racks *c* and hold the rods *a a′*, with the gavel compressed between them, after the heel-projection on the rake has escaped from the spur *h′*. While the grain is thus held the attendant passes the band around it, and, having secured it, is at liberty to take up and prepare, if need be, another band.

For releasing and discharging the bound bundle, the means employed are as follows: To the upright B, below the receiver-bars A A′, is pivoted a horizontal lever, C, the forward end of which is connected, by a link, *j*, to the bar A, and the rear end of this lever has a cord, *f′*, connected with it, which passes down under a guide-pulley, g^1, attached to the frame or to the flooring forming the binders' stand, and thence along the rear of the elevator-frame and platform under a pulley, g^2, and is connected with one arm of an elbow or bell-crank lever, D, pivoted upon the rear face of a rear platform guard or shield, E. The arm D′ of this lever reaches down within the track or path of the heel-extension *i* of the rake, and said extension coming in contact therewith after the rake has completed its return movement to the outer side of the platform, and begins to sweep the grain off said platform, carries the arm D′ with it, and the lever D, acting through the cord *f′* and lever C, tilts the receiver upon the end pivot *b′*, causing it to discharge its bundle into a bundle-carrier, G, when the lever D, having escaped from the heel-projection *i* of the rake, the receptacle drops, by its own gravity, into its former position to receive another gavel. The lever C is provided with an arm or spur, C′, which, as the lever C is vibrated to tilt the receptacle, owing to its eccentric relation to the bars A A′, acts upon the latch *c′*, releasing it, when the spring *d* opens the fingers *a a′* to release the bundle, at the same time the receptacle is tilted to discharge it. The bundle-carrier G is pivoted in rear of the grain-receptacle and clamp, and receives the bundles therefrom until a sufficient number has accumulated to form a shock, when it is tilted either by the driver or by the binder, as may be most convenient, and deposits its load upon the ground behind the machine, and out of the way of the same on its next round. The main frame of the machine, outside of the elevator-frame, has a flooring, H, forming the binders' stand, and this flooring extends in front and rear of the drive-wheel, which is incased above the flooring, to protect the binders, said casing supporting a band table or seat, H^1, for the binders at either end. H^2 represents other tables, which may be applied to the top of the guards surrounding the binders' stand, and which may also be used for carrying prepared bands, if desired.

The rake I, which removes the grain from the platform, and carries it to the grain-receptacle, is connected at its rear end with an endless chain, J, which moves over pulleys J^1 J^2 J^3, three or more, arranged one, J^1, at the outer end of the platform, a second, J^2, at the inner end thereof, and about in the same plane with J^1, and the third at the top of the elevating incline, and mounted in suitable standards or brackets attached to the platform and elevator frames. Upon the forward ends of the shafts of these pulleys, which are arranged at the rear of the platform and elevator, is secured a shield or fender, E, which in outline conforms to the path of the rake-chain, and being in front thereof protects said chain from the straw, &c., which might otherwise obstruct and clog it. A rail, E′, is projected forward and upward from the upper edge of the guard E, for throwing up the forward end of the rake, and preventing its interference with the falling grain on its return movement. By this arrangement the grain is removed from the platform and carried to the receptacle once in each revolution of the chain and rake where but one rake is used, or twice to each revolution of the chain if two rakes are used, the receptacle being actuated, as above described, by the passage of each rake employed.

At the foot of the elevating incline K at the front is a friction-roller, *k*, designed to be acted upon by the projecting butts of the grain in passing by it, and, in turn, to act upon said butts, and to crowd the grain back, so that the butts will clear the forward guard K′, and not be obstructed thereby. If preferred, a positive movement may be given to said roller by any suitable arrangement of belts or gearing.

At the upper end of the elevator incline K is a compressing-board, L, hinged to the top of the elevator-frame, and held in a position at right angles to the incline plane K, or thereabout, by a light spring, *l*, which causes the board to resist the passage of and to compress the grain until the advancing movement of the rake overcomes the tension of the spring *l*, when the board L is turned up and back, and overlaps the fingers *a*, causing the grain

to be discharged in compact form into the grain receptacle and clamp above described, the spring *l*, after the rake has passed by, causing the board L to return to its former position (shown in the drawing) for repeating its action on the grain.

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

1. The folding and tilting grain receptacle and clamp $A^{\times}$, operating to receive the grain from the elevator, and to compress the gavel and discharge the bound bundle, substantially as described.

2. The folding and pivoted grain receptacle and clamp connected with and actuated by the elevating rake or mechanism, substantially as described, whereby the movements of said receptacle and clamp, for receiving, clamping, and discharging the grain, are controlled by and timed to the movements of the rake, as set forth.

3. The triangular guard or fender E, arranged in the described relation to the platform and elevator, and operating as a rear guard or fender thereto, while at the same time protecting the endless rake-chain, as described.

CHRISTOPHER W. LEVALLEY.

Witnesses:

THOS. COCHRAN, Jr.,

THEO. E. BLASE.