(No Model.) 3 Sheets—Sheet 1.

J. F. SEIBERLING.

GRAIN BINDING HARVESTER.

No. 348,353. Patented Aug. 31, 1886.

Fig. 1.

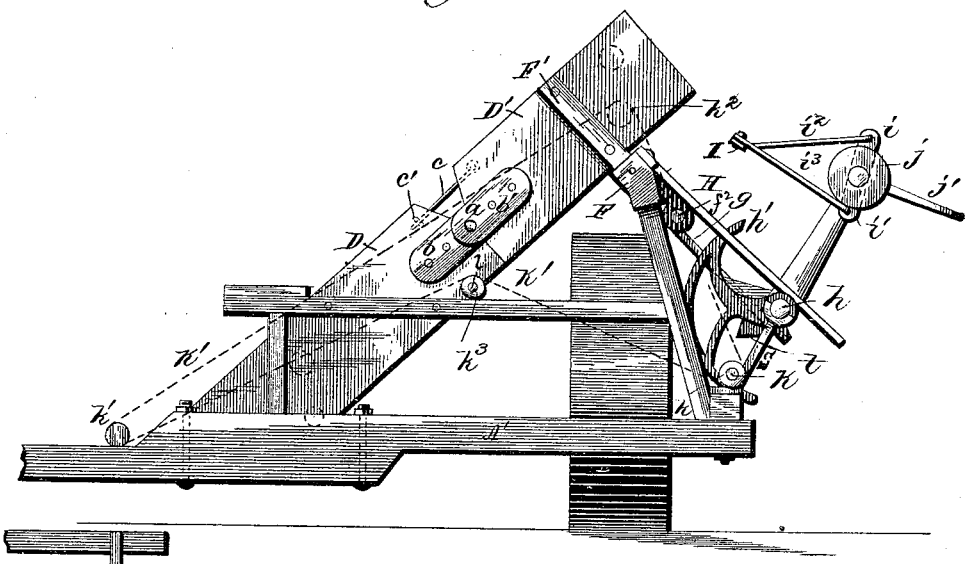
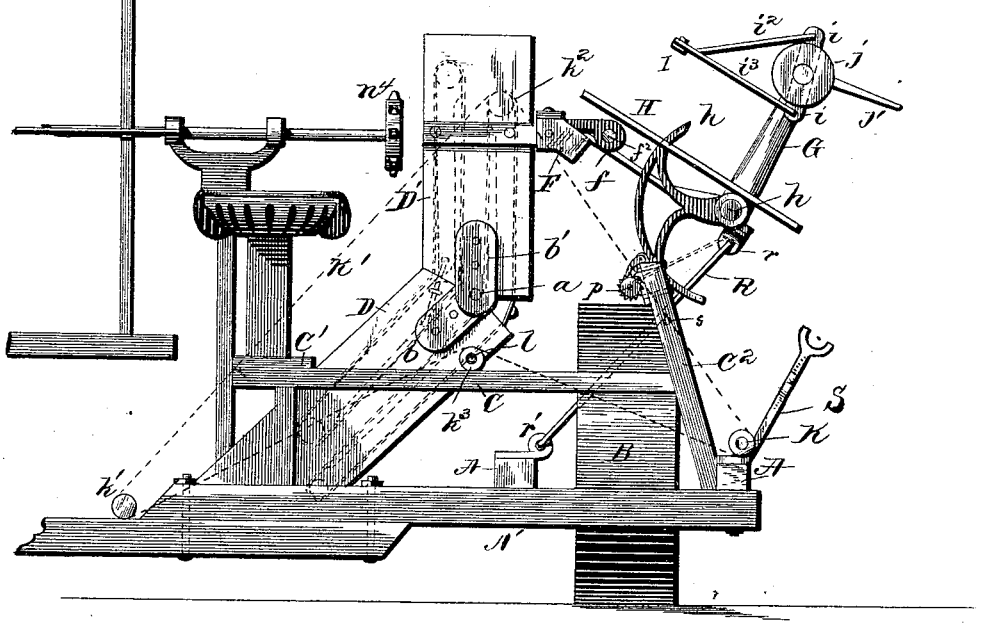


Fig. 2.



WITNESSES

F. L. Ourand

Geo. K. Rundel

INVENTOR

Jno. F. Seiberling

by Dill & Smith

Attorney

(No Model.) 3 Sheets—Sheet 2.

J. F. SEIBERLING.

GRAIN BINDING HARVESTER.

No. 348,353. Patented Aug. 31, 1886.

Fig. 3.

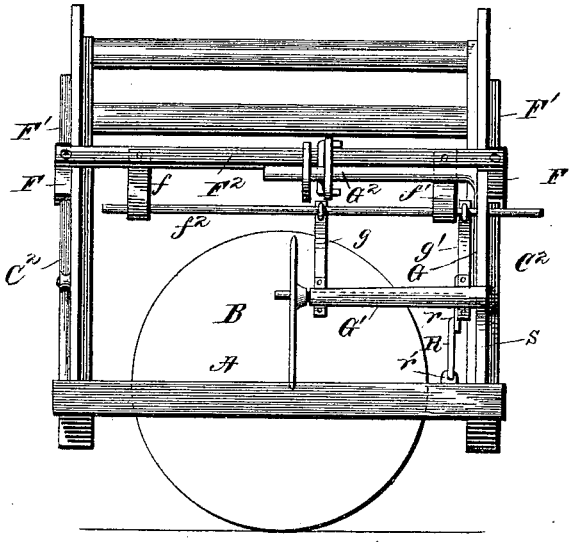


Fig. 4.

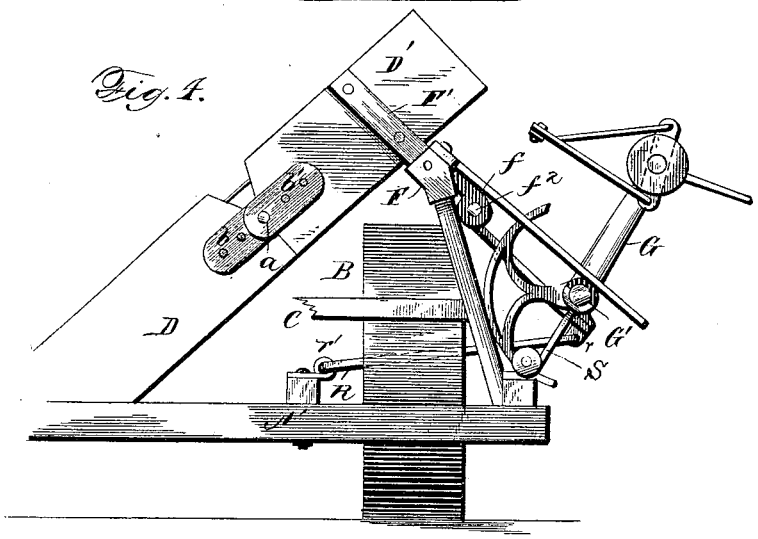
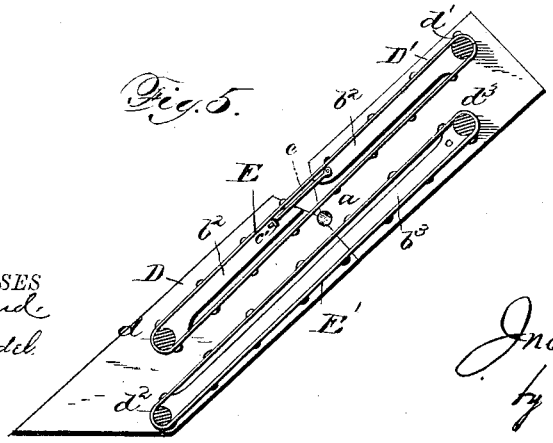


Fig. 5.



WITNESSES
F. L. Ourand
Geo. K. Rundel

INVENTOR
Jno. F. Seiberling
by A. L. Smith
Attorney

(No Model.) 3 Sheets—Sheet 3.

J. F. SEIBERLING.

GRAIN BINDING HARVESTER.

No. 348,353. Patented Aug. 31, 1886.

Fig. 6.

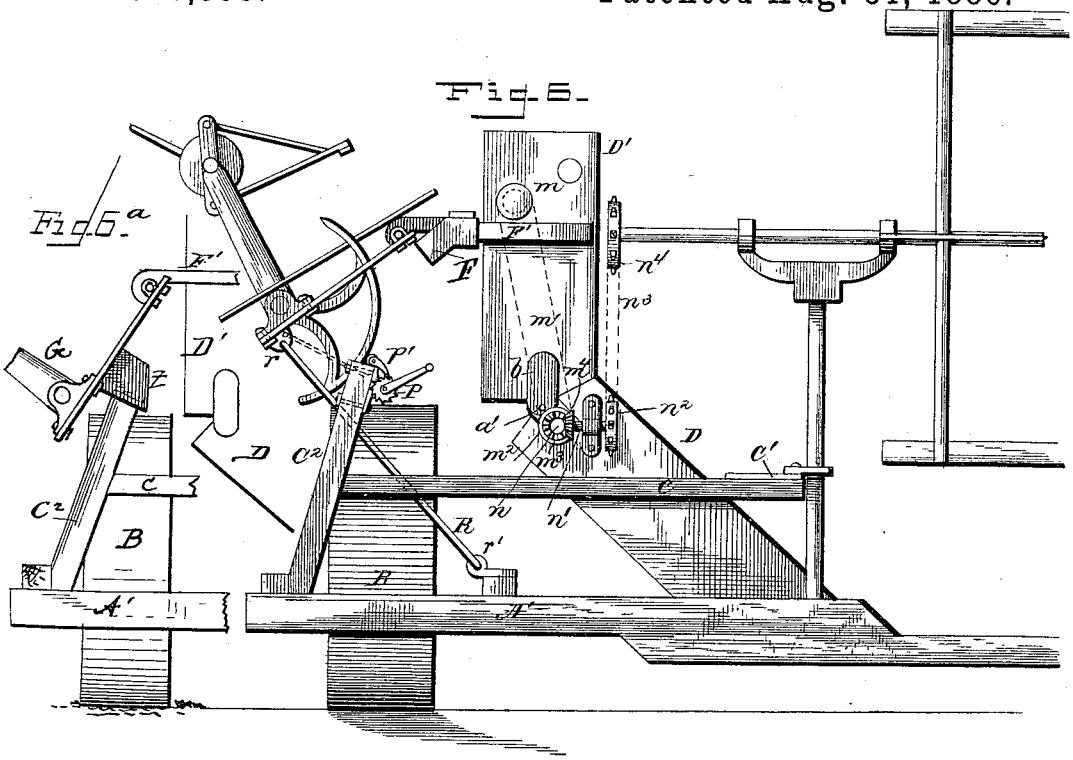


Fig. 7.

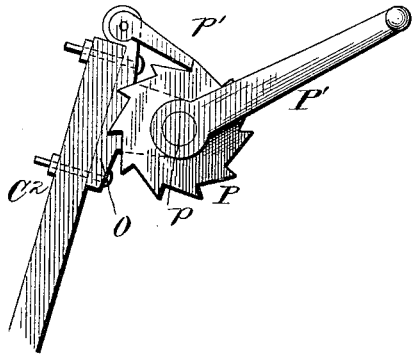
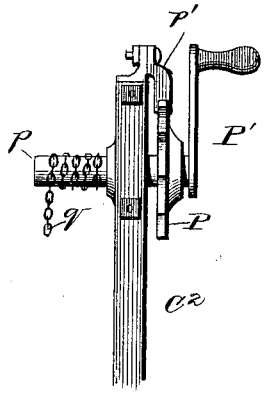


Fig. 8.



WITNESSES

F. L. Ourand.

Geo. K. Rundell

INVENTOR

Jno. F. Seiberling

by A. L. Smith

Attorney

UNITED STATES PATENT OFFICE.

JOHN F. SEIBERLING, OF AKRON, OHIO.

GRAIN-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 348,353, dated August 31, 1886.

Application filed September 14, 1885. Serial No. 177,067. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SEIBERLING, of Akron, county of Summit, and State of Ohio, have invented a new and useful Improvement in Grain-Binding Harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to that class of grain-binding harvesters which employ an elevator to take the grain from the discharging end of the grain-platform or platform-carrier up to the binding mechanism, located at the upper end of said elevator, and ordinarily on the opposite side of the driving-wheel from the platform-carrier; and it consists in providing the elevator with a joint and hinging one part of the frame thereof to the other in such manner as to adapt the part to which the binding mechanism is connected to fold or partially fold over upon the other, carrying the binding mechanism with it, and in hinging the binder frame or support to said elevator, for permitting the machine to be contracted in width, and adapting it to pass through gates or narrow lanes or ways.

It further consists in the means for effecting the adjustment of and supporting the binder, in the arrangement of the endless drive chain in connection with the jointed elevator for driving the latter and permitting its being folded, and in the arrangement in connection with the jointed elevator of the means for driving the reel, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents a rear elevation of so much of the machine as is necessary to show my improvement. Fig. 2 is also a rear elevation with a hinged brace added, and showing the elevator folded for transportation; Fig. 3, a side elevation, taken from the stubble side, of the construction shown in Fig. 2; Fig. 4, a rear elevation, partly broken away, showing the binder in working position. Fig. 5 represents a vertical section through the elevator; Fig. 6, a front elevation; Fig. 6ª, a front elevation of some of the parts, showing a modification in the means for supporting the folded elevator and binder; Fig. 7, a front view, and Fig. 8, a side elevation, of the adjusting-windlass and its support, enlarged.

A A′ indicate the harvester-frame timbers; B, the driving-wheel; C C′ C², an upright frame-work on the main frame, giving additional support to various parts of the machine, and D D′ an elevator-frame, within which are mounted rollers *d d′ d² d³*, carrying the upper and lower elevator belts or aprons, E and E′. C′ of the upright frame-work, referred to, indicates a plank extending over the elevator near its lower end, from front to rear, and forming a support for the seat-standard and seat, also for the driver's feet.

The parts above referred to, except in particulars hereinafter specified, may be of any usual or preferred construction and arrangement.

The elevator-frame is divided at or near the center of its length, and the two parts D and D′ are connected at their adjoining-ends by pivots *a a′*, passing through lapping ears on straps *b b′*, secured to the front and rear bars of the two parts. The ends of the frame-bars below the connecting-pivots are made to abut, one against the other, when the elevator is in working position; but above said pivots the ends are beveled or cut away, forming a V-shaped opening between them when in such position, permitting the outer or upper end of the frame to be folded up into vertical position for transportation.

The elevator-apron rollers are arranged in a manner similar to those in machines where the elevator-frame is not divided or jointed, and to prevent sagging of the apron between the carrying-rollers suitable ledges or ribs, *b² b³*, are formed upon or secured to the inner faces of the longitudinal or front and rear frame-bars thereof, said ledges serving to guide and uphold the edges of the aprons. The V-shaped opening referred to is bridged by means of rods *c*, pivoted at one end to the inner face of the ribs *b²* on the part D′, the opposite ends of the rods passing through eyes or staples *c′* on the part D, adapted to permit the folding of the elevator, as explained, and also to uphold the upper portion of the upper apron when the parts are in operative position. The outer upright frame-posts, C², are set inclining inward toward the elevator, and are extended,

as shown, the ends thereof being adapted to enter sockets in the lower ends of socket-pieces F, connected with the hinged portion of the elevator-frame, and to support said portion of the frame in proper working relation to the lower fixed portion of said frame. The socket-pieces F are secured to the lower ends of bars F′, attached to the front and rear frame-bars of the upper or hinged part of the elevator, and the outer or lower ends of said bars F′ are connected by a longitudinal bar, F^2, to which are secured two arms or brackets, f and f', having perforated ears at their outer ends, in which is secured a cylindrical rod or pipe, f^2, serving as a pivotal support for the binder-frame. The latter consists of two or more transverse bars, g g', pivoted at their inner ends to or by means of the rod f^2, and rigidly connected at their outer ends to the needle-shaft sleeve G′ of the binder-gear standard G, which at its upper end has a second sleeve, G^2, formed upon it, in which the knotter-actuating shaft is mounted or has its bearings. The needle-shaft h, carrying the needle h', is mounted in bearings in the sleeve G′, and the inclined and slotted binder-table H, through which the needle works, is supported on the bars g and g' and sleeve G′ in any suitable manner.

The sleeve G^2, in which the knotter-actuating shaft is mounted, is provided with lugs or ears i and i', from which converging arms or braces i^2 and i^3 extend to a longitudinal bar, I, which in practice serves to uphold a packing mechanism of any usual or preferred form. The knotter-actuating shaft carries on its rear end the usual or any preferred form of knotter-actuating cam and gear-wheel (indicated at j) and a bundle-discharging arm, j', connected therewith.

K is a longitudinally-arranged shaft mounted in suitable bearings on the main frame, and which in practice is geared to and actuated from the main drive-wheel in any suitable manner. This shaft has upon its rear end a sprocket-wheel, (indicated at k,) from which motion is imparted to an endless driving-chain, K′, extending around a sprocket-wheel, k', on the rear end of the shaft of the inner roller of the platform-carrier, and up over a similar wheel, k^2, on the rear end of the upper roller of the lower elevator-apron, as shown. In the movement outward of the driving-chain in the lower portion of its path said chain passes over a guiding sprocket-wheel, k^3, mounted on a stud-shaft, l, located near the pivot or hinge in the elevator-frame, an arrangement permitting the folding of the elevator without materially disturbing the relation or distance apart of the sprocket-wheels, and permitting the adjustment of the hinged portion of the elevator without necessitating the removal or destroying the relation of the driving-chain thereto. The shaft of the upper roller of the lower elevator-apron has a sprocket wheel or pulley, m, fast on its forward end, and a driving chain or belt (indicated at m') passes around said wheel, and a similar wheel, m^2, on a stud-shaft, n, secured to the elevator-frame near its joint. The wheel m^2 has a bevel-wheel, m^3, secured to and rotating with it, from which motion is imparted to a similar wheel, m^4, fast on one end of a short transverse shaft, n', mounted in bearings on the forward bar of the elevator-frame, as shown in Fig. 6. The other end of the shaft n' has a sprocket-wheel, n^2, fast on it, and a chain (indicated at n^3) passes around said wheel, and a wheel, n^4, fast on the reel-shaft, for driving the latter. By this arrangement of means for driving the reel the elevator can be folded without removing the drive-chain m'.

For adjusting the binder-frame and mechanism a windlass or equivalent mechanism is employed, and is shown with its shaft p journaled in a bearing-bracket, O, secured to the forward post, C^2, and provided with a ratchet-disk, P, with which a pawl, p', pivoted to the bracket O, engages for holding the shaft or drum at the desired adjustment. The shaft p is provided with a crank-arm, P′, for operating it, and a cord or chain, q, extends from the shaft or drum to an arm or lug, r, on the binder-frame, or to a hinged brace, R, when the latter is used, if preferred. The brace R is pivoted at its inner lower end to a lug or ear, r', on the main frame, and to a similar lug or ear, r, on the lower face of the binder-frame, and serves to guide the movement and steady the latter, and a pin, s, inserted through the post C^2, and under or through the brace, serves to hold the binder-frame when the elevator is folded and the binder raised for transportation.

When in position for use, the outer end of the binder-frame is supported in a fork or semi-cylindrical socket in an outwardly-inclined standard, S, and when raised for transportation it may be supported by the pin and hinged brace R, as explained, or by the windlass and ratchet and pawl, as shown, or when the brace R is dispensed with by means of a socket-piece, t, on the under side of the binder-frame, engaging the upper end of the forward standard, C^2, as shown in Fig. 6^a. The upper elevator canvas or apron may be driven through a chain and suitable sprocket-wheels from the roller-shaft of the lower canvas, and the binding mechanism may in practice be geared to and driven from the shaft K in any suitable manner.

Having now described my invention, I claim as new—

1. In a self-binding harvesting-machine, an elevator-frame connected to the harvester-frame by flexible connections, permitting the upper end of the elevator to be moved inwardly toward the platform, in combination with a binding apparatus connected to the elevator near the upper end thereof, substantially as described.

2. The combination of the hinged elevator D D′ and the binding apparatus, the latter being connected to the elevator near the upper end by flexible connections, to allow it to be

adjusted to its support when folded for transportation, substantially as described.

3. The combination of the hinged elevator, the binder connected to the upper end of the said elevator, the hinged brace or support R, and the main frame, substantially as described.

4. The combination of the jointed elevator, the binder connected to said elevator near the upper end thereof, the hinged support or brace R, the main frame, and the stationary standards or posts C^2 C^2, substantially as described.

5. The combination of the hinged elevator, the posts C^2 C^2, and the sockets or supports F F, connected to the elevator near the upper end thereof and arranged to rest on the ends of said posts when the machine is in operation, substantially as described.

6. The elevator composed of two hinged sections and the binder-table attached thereto, in combination with the drive-chain, drive-pulley k^3, arranged near the rear pivot of the elevator-hinge for adapting the elevator and binder to be folded without removing the drive-chain, substantially as described.

7. The combination of the jointed elevator-sides and the pivoted and sliding bars *c*, or their equivalents, for bridging the gap in the elevator-sides and guiding the elevator-belts over said gap, substantially as described.

8. The combination of the jointed elevator and the binder, the joint in the elevator-frame located near the center of the length of the elevator, the two sections of the elevator being connected by hinges, permitting the elevator, with the binder attached, to be folded, substantially as described.

9. In a harvesting-machine, a hinged elevator having a binder mechanism connected to it near its upper end and adapted to fold or move with said ends, substantially as described, in combination with the chain and windlass or their equivalents, for the purpose stated.

10. The combination of the hinged elevator, the binder connected to the elevator near the upper end thereof, the hinged support R, and the chain and windlass for moving the binder to a folded position, substantially as described.

11. The combination, with the jointed sections of the elevator, of the sprocket-wheel *m* on the end of the canvas roller-shaft, and the sprocket-wheel m^2, arranged at or near the joint in the elevator, substantially as described.

12. The combination, with the jointed sections of the elevator, of the sprocket-wheel *m* on the end of the upper canvas roller-shaft, the sprocket m^2 at or near the elevator-hinge, the bevel-wheels m^3 and m^4, the sprocket-wheel n^2, and sprocket-wheel n^4 on the reel-shaft, arranged for joint operation, substantially as shown and described.

In testimony whereof I have hereunto set my hand this 9th day of September, A. D. 1885.

JOHN F. SEIBERLING.

Witnesses:

A. W. PEARSON,

HOWARD E. SEARS.