(No Model.)

2 Sheets—Sheet 1.

S. D. MADDIN.

HARVESTER.

No. 396,409. Patented Jan. 22, 1889.

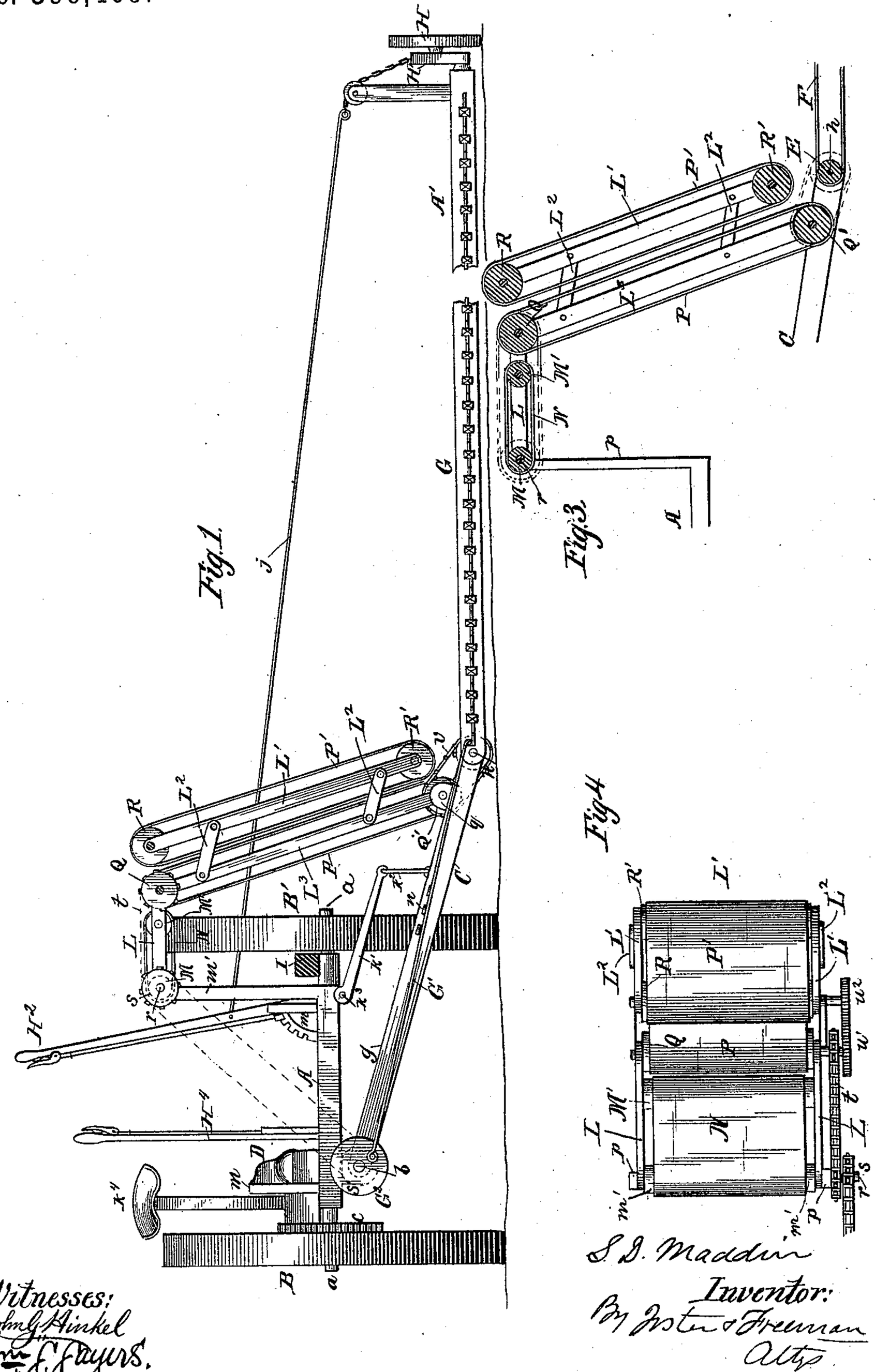

Fig. 1.

Fig. 3.

Fig. 4

Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

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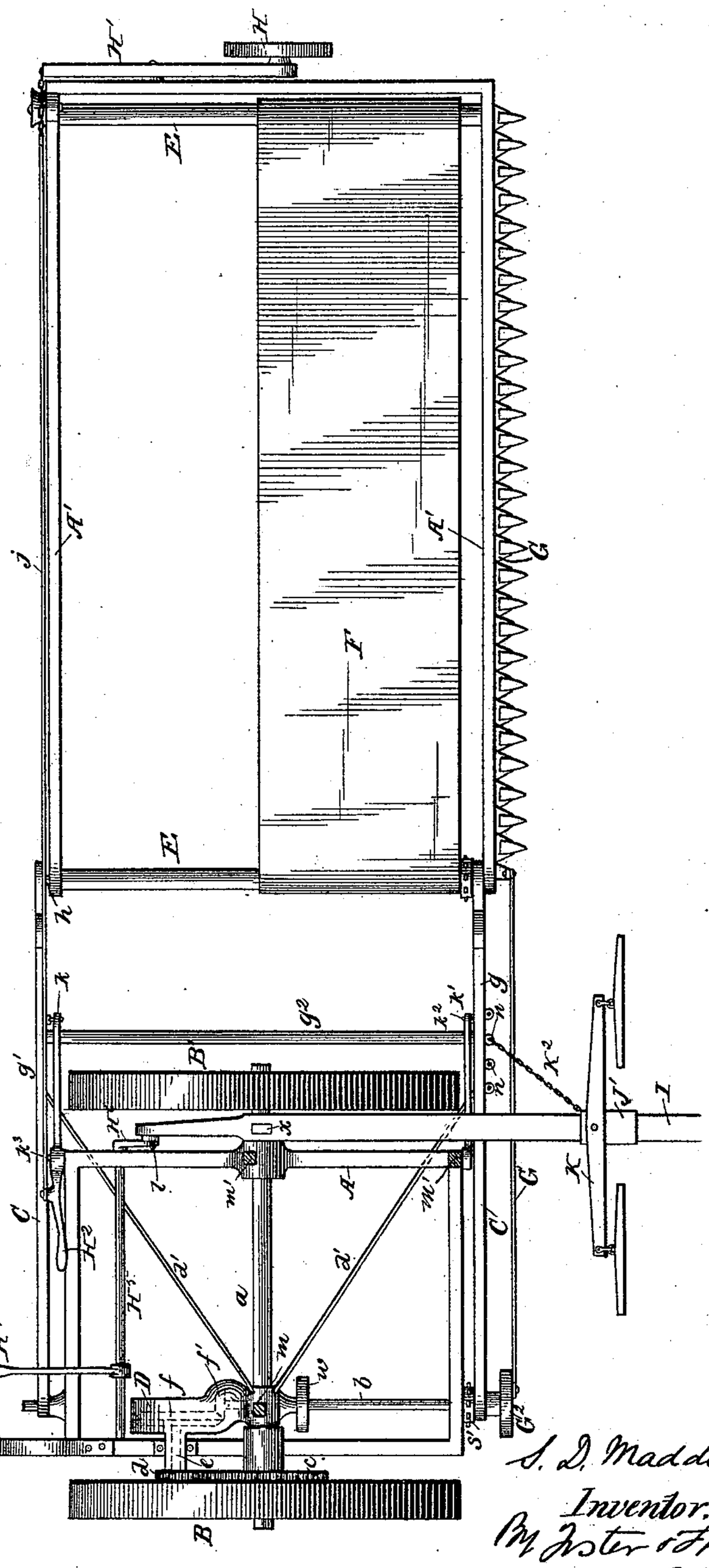
Fig. 2.



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UNITED STATES PATENT OFFICE.

SAMUEL D. MADDIN, OF MIAMISBURG, OHIO, ASSIGNOR TO MARY MADDIN, OF SARNIA, ONTARIO, CANADA.

HARVESTER.

SPECIFICATION forming part of Letters Patent No. 396,409, dated January 22, 1889.

Application filed June 13, 1884. Serial No. 134,776. (No model.) Patented in Canada February 25, 1885, No. 21,150.

To all whom it may concern:

Be it known that I, SAMUEL D. MADDIN, a citizen of the United States, residing at Miamisburg, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Harvesters, of which the following is a specification.

My invention is a harvester constructed, as fully set forth hereinafter, so as to connect the platform-frame securely with the main wheel-frame, yet permit its ready vertical and angular adjustment without injuriously interfering with the connections between the driving-shaft and the cutter-bar or the said shaft and elevating appliances. The construction whereby these and other advantageous results are secured is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of my improved harvester. Fig. 2 is a plan view, the elevator being detached. Fig. 3 is a sectional view illustrating the construction of the elevator, and Fig. 4 is a plan view of the elevator.

There are three frames in the machine—viz., the main wheel-frame A, platform-frame A′, and connecting intermediate frame, C—the main wheel-frame A being supported by the wheels B B′, each of which is a driving-wheel, and connected in the usual manner by ratchets to the revolving axle *a*, so that either wheel can turn backward without turning the axle.

The platform-frame A′ is jointed to the intermediate connecting-frame, C, at the outer end of said frame C, the inner end of the intermediate frame being hung to the main wheel-frame A near the stubble side thereof, the pivot-points being in line with a shaft, *b*, which turns in bearings upon the main wheel-frame, and is driven by the revolution of the axle *a* through the medium of the cog-wheel *c* upon the axle, a pinion, *d*, upon a shaft, *e*, carried by the main wheel-frame A, and bevel-gears *f f′*, arranged as shown in dotted lines, Fig. 2, the shafts *e* and *b* being supported in bearings in a closed case, D, which also covers the bevel-gears *f f′*.

The intermediate frame, C, consists of front and rear bars, *g g′*, and a cross-bar, g^2, and it projects grainward beyond the wheel B′. The platform-frame A′ is pivoted to the intermediate frame, C, by the shaft *h*, which carries one of the rollers E, which support the carrying-belt F, so that the platform-frame A′ may swing upon its joint without slacking the belt.

The cutter-bar G is connected by a pitman, G′, to the wrist of a crank-wheel, G^2, upon the end of the shaft *b*, and as the intermediate frame, C, is pivoted to said shaft any change in the position of said intermediate frame, C, will not affect the movements of the cutter-bar.

The outer end of the platform-frame A′ is supported by a grain-wheel, H, carried by a lever, H′, pivoted to the platform-frame, and a chain or other flexible connection, *j*, extends from the rear end of the lever H′ to a hand-lever, H^2, upon a shaft, k^3, on the main wheel-frame, having arms *k k′*, which are connected by links k^2 to the intermediate frame, C.

The driver's seat k^4 is arranged upon a support near the rear stubble corner of the main wheel-frame A, and the lever H^2 is accessible therefrom and can be manipulated so as to raise or lower the inner end of the intermediate frame, C, and also through its connection with the lever H′ simultaneously raise or lower the grain end of the platform-frame A′, whereby the cutters may be elevated to any desired position, yet maintained parallel with the surface of the ground.

It will be seen that this adjustment of the platform or cutter frame A′ is effected without in any way altering the position of the main wheel-frame A, which is steadily supported by the wheels B B′, and that the connection between the main wheel-frame A and the platform-frame A′, while permitting the vertical adjustment of the latter, is a very rigid one, so that the platform-frame A′ will not yield or spring out of position in respect to the other parts of the apparatus, and that the adjustment of the platform-frame A′ to any desired extent does not interfere with the operation of the cutters. It will also be seen that the platform-frame A′ may be elevated to nearly a vertical position without disarranging its connections with the other parts of the apparatus.

The pole I is pivoted to the main wheel-frame A at a point, *x*, near its support upon

the axle *a*, and a hand-lever, H^4, is connected, by a shaft, H^5, crank-arm H^6, and link *l*, to a rearward extension of the said pole, so that the driver, by manipulating the lever H^4, can rock the main wheel-frame A upon its axle, and thereby rock all the frames to any desired extent to alter the tilt or angle of the cutters in respect to the ground. It will of course be understood that the levers H^2 H^4 are provided with the usual appliances for holding them in any position to which they may be adjusted. By this construction and arrangement of parts the driver by manipulating but two levers can both rock and raise the platform A′, which is maintained parallel with the ground, while the main wheel-frame A is wholly relieved of the weight of the platform-frame A′.

I do not limit myself to the use of the special arrangement of levers and connections shown, as it will be obvious that other equivalent means may be employed for effecting the same result.

Where the machine is large and it is desirable to increase the rigidity of the intermediate frame, C, braces *d′ d′* may extend from a point upon the frame A near the axis of the shaft *b* diagonally toward the outer corners of the intermediate frame, C.

The main wheel-frame A is provided with supports or standards *m m′*, forming a part thereof for the binder, so that the weight of said binder is wholly carried by said frame and the driving-wheels, thereby imparting an increased traction to the said wheels without increasing the drag upon the other parts of the machine. Inasmuch as the main wheel-frame A is centrally mounted and rocks upon the axle, the placing of the binder thereon relieves the operator of the necessity of lifting the binder when adjusting the platform-frame, as is necessary in ordinary construction, and it also enables him to make the adjusting-frames much lighter in weight and less costly than when the binder is connected to such parts.

By placing the driver's seat k^4, the shaft *b* and connections therewith, and the pivots of the intermediate frame, C, adjacent to the outside wheel, B, I throw upon said wheel a weight which is practically equal to the weight of the binder, the heaviest part of which, together with the weight of the pole and of the elevators, arranged as hereinafter described, is of necessity adjacent to the wheel B′.

Heretofore the pole has been placed as near as possible to the line of draft, generally between the drive-wheel and the grain-wheel, so as to overcome side draft, necessitating the placing of the inner end of the cutter a considerable distance to the outside of the pole to allow space for the draft-horse out from the standing grain.

I place the pole I in a position about midway of the length of the intermediate frame, C, and connect the doubletree K to a sleeve or bearing, J′, sliding upon the pole, and I extend from the sleeve J′ a chain, K^2, to any one of a series of eyes, *n*, upon the forward part of the intermediate frame, C, a hook at the end of the chain permitting a connection to be made with any eye. While the pole maintains the position of the team opposite that portion of the machine which is outside of the standing grain, the chain-connection K^2 permits the draft to be actually brought upon a point of the machine at a distance from the pole and more nearly midway between the extreme points of resistance, and the adjustable connection of the chain with the machine permits the line of draft to be varied as circumstances may render necessary. By this construction I not only avoid any increase of the length of any portion of the frame for the purpose of balancing the apparatus, but also tend to cause the draft to lift the fore part of the frame, counteracting the tendency of the power-wheels to depress it.

As the binder is outside of the driving-wheel B′, it is necessary to elevate the grain from the carrier-belt F to the binder over the said wheel B′, and to do this without interfering with the free adjustments of the parts, either in operating or transporting the machine, I make use of a jointed elevator-frame, as I will now describe.

The elevator which delivers the cut grain from the grain-platform over the wheel B′ to the binder devices consists, essentially, of two frames, L and L^3, jointed or connected to each other, the former of which is substantially horizontal and extends across the top of the wheel B′, being hinged at its outer end to the standards *m′*, rising from the main wheel-frame, while the other one, which is inclined, is secured at its lower end to ears *q* on the intermediate frame adjacent to the inner end of the grain-platform. The frame L carries three rollers, M M′ Q, the shaft of the former being concentric with the joint between the frame L and the standards *m′*, and around the rollers M M′ extends an apron, N. The lower elevator-belt, P, is carried by two rollers, Q Q′, the shafts of which are concentric with the upper and lower joints of the frame L^3, and the upper elevator-belt, P′, which is parallel to the belt P, is carried by rollers R R′, the shafts of which turn in the upper frame, L′, connected by links L^2 to the lower frame, L^3, as shown. The shaft *r* of the roller M carries at its front end a sprocket-wheel, *s*, around which a chain or band passes to a sprocket-wheel, *s′*, upon the crank-shaft *b*, and the shafts of both rollers M Q are connected by an endless chain, *t*, passing around sprockets, as shown in dotted lines in Fig. 1 and full lines in Fig. 4. The shafts of the rollers Q R have gears *w′* w^2, with long teeth, so that they will remain interlocked, notwithstanding possible change in the positions of the frames L^3 L′.

It will be seen that the elevator-frame thus constructed and connected to the main wheel

and intermediate frames will accommodate itself to the varying positions of these frames without throwing the parts out of connection.

The upper elevator-belt, P′, may be carried by friction with the grain, or it may be driven positively by gearing together either of the parallel rollers Q R or Q′ R′, and the roller E is driven by a chain, *v*, from a sprocket-wheel upon the shaft of the roller Q′. By this connection of rollers and driving-chains positive movements are imparted to all the driving-belts in time with each other and without any variation resulting from the varying positions of the frames.

It will be seen that in a machine constructed as above described the adjustment of the platform or cutter frame and the operation of the cutters will be in no way injuriously affected by the fact that the main wheel-frame is passing over uneven ground and that one or the other of the driving-wheels is thereby elevated.

It will be seen that the rollers of the elevator are all geared upon the front ends of the shafts, whereby the grain which is carried between the belts is permitted to extend at the rear beyond the elevator. I am thus enabled to carry up grain of any length, the butts only being compressed and the heads extending beyond the belt-frames.

I have not shown a reel; but one will of course be employed.

The elevation of the platform-frame A′ to or beyond a vertical position can be effected, as the elevator-frame will swing upward and backward to a sufficient extent upon its pivotal points. This permits the machine to be moved with facility over ordinary roads and bridges and through narrow gateways.

I do not limit myself to the precise construction shown of the main wheel and intermediate frames, as the construction of the main wheel-frame A will depend to a certain extent upon the character of the binder, and the construction of the intermediate frame, C, will vary more or less with that of the main wheel-frame A; nor do I limit myself to the use of an elevator of the character shown, although an elevator composed of jointed frames connected both to the intermediate frame, C, and the main frame A can be most advantageously employed in the construction of apparatus shown. It will be understood that the binder is driven from one of the shafts of the machine, preferably from the crank-shaft *b*, which is provided with a driving-wheel, *w*, for the purpose.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination of the main wheel-frame, a pivoted platform-frame extending laterally beyond the main wheel-frame, an intermediate pivoted connecting-frame, and an elevator consisting of two frames, each supporting a grain-conveying belt, and one frame being upwardly and outwardly inclined and hinged to the intermediate frame near the inner end of the grain-platform and jointed at its upper end to the other frame, which is arranged substantially horizontally and is jointed to standards upon the main wheel-frame, substantially as described.

2. The combination of the main wheel-frame supported by two wheels, a pivoted platform-frame extending laterally beyond the main wheel-frame, an intermediate frame pivoted to the wheel-frame and extending laterally in front and rear of one of the supporting-wheels, and an elevator consisting of two parts or frames jointed together and one hinged to standards upon the main wheel-frame and the other to the said intermediate frame, substantially as described.

3. The combination, with a main wheel-frame supported upon driving-wheels, a platform-frame, and an intermediate frame pivoted at its opposite ends to said main and platform frames, of an elevator composed of two frames jointed together and one hinged to the main wheel-frame and the other to the intermediate frame, rollers journaled in said frames and provided at their forward ends with driving-wheels, a driving-belt between the said wheels, and elevator-belts mounted upon said rollers, substantially as described.

4. The combination, with the main wheel-frame supported by two wheels and the grain-platform frame, of the grain-elevator, which delivers the cut grain from the grain-platform over the inner wheel, consisting of a substantially-horizontal frame, L, hinged to supports on the main wheel-frame,an inclined elevating-frame, L^3, pivoted at its upper end to the frame L and supported at its lower end adjacent to the grain-platform, and the upper belt-frame, L′, hinged by links to the frame L^3, substantially as described.

5. The combination of the main wheel-frame, its supporting-wheels, the platform-frame in lateral alignment with said main wheel-frame and intermediate frame connecting said main wheel and platform frames and extending laterally in front and rear of one of the supporting-wheels, the jointed elevator composed of frames L L^3, the frame L^3 being connected at its lower end to said intermediate frame, the frame L being hinged to supports on the main wheel-frame, and the upper belt-frame, L′, connected to the frame L^3 of the jointed elevator by links whereby to move independent of said jointed elevator, and whereby, also, both frames forming the elevator are moved toward the main wheel-frame when the platform-frame is raised, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL D. MADDIN.

Witnesses:
ADAM CLAY,
T. MERZ.