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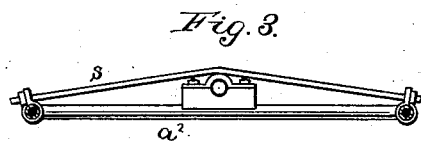
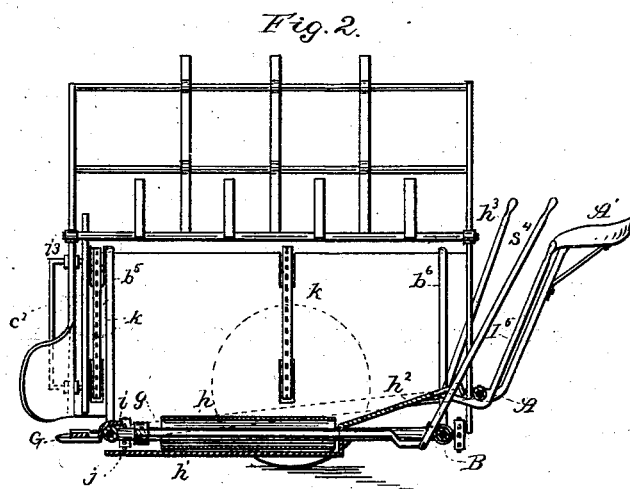
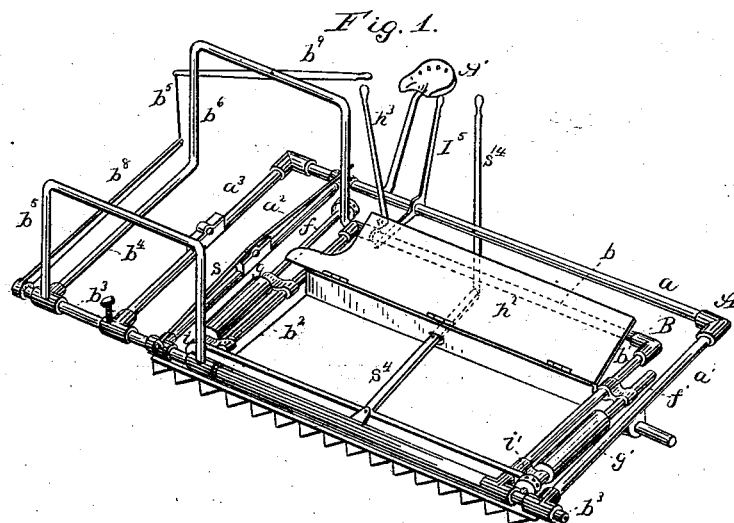
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S. D. MADDIN.

HARVESTER.

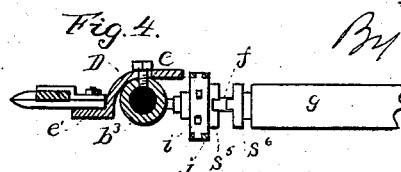
No. 261,367.

Patented July 18, 1882.



Witnesses:

J. L. Wildman
E. W. Cady



S. D. Maddin

Inventor:

By his attorney
Chas. E. Fiske

(No Model.)

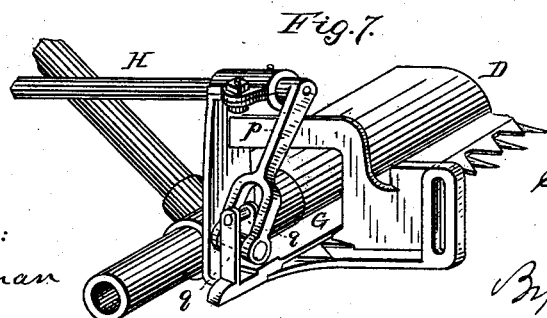
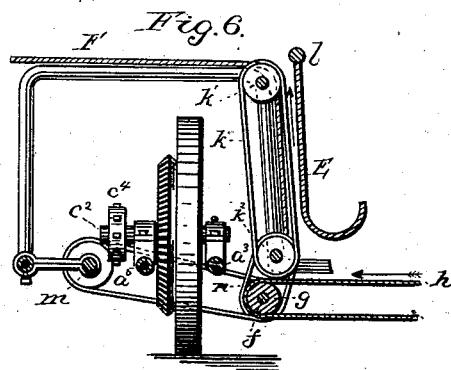
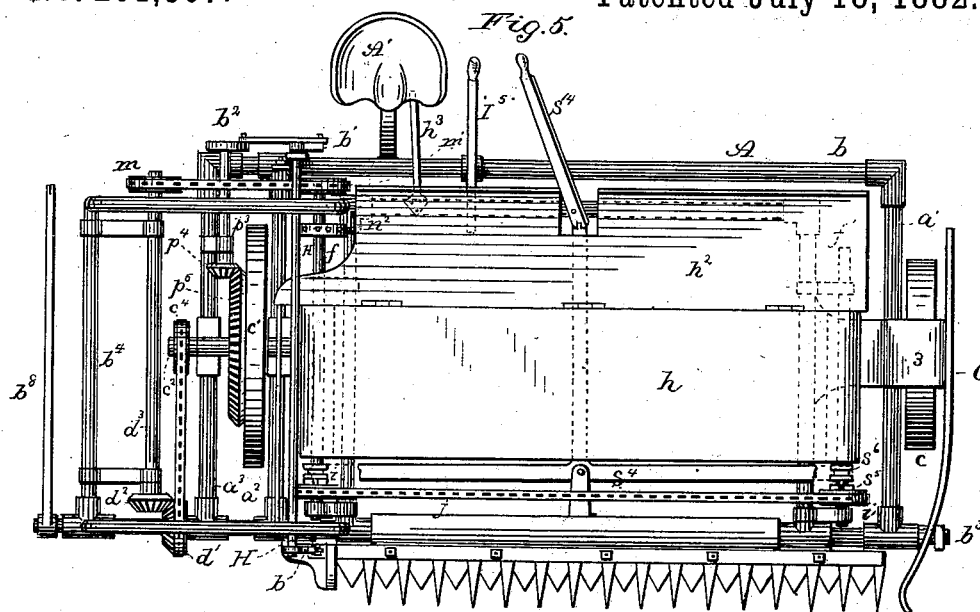
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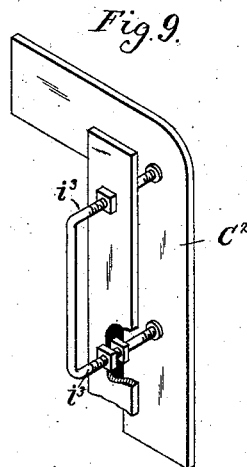
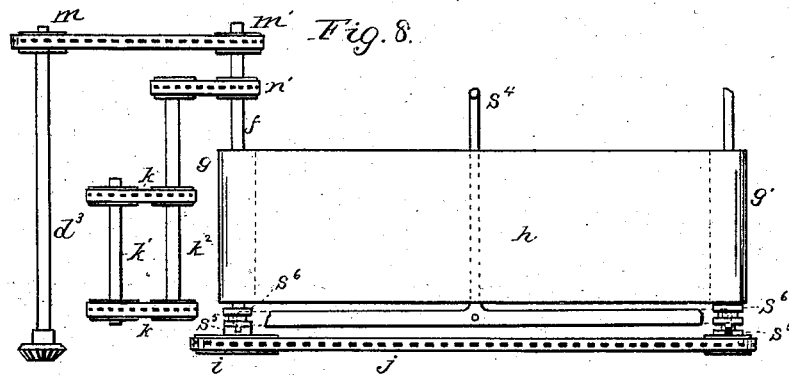
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

SAMUEL D. MADDIN, OF ST. PAUL, MINNESOTA.

HARVESTER.

SPECIFICATION forming part of Letters Patent No. 261,367, dated July 18, 1882.

Application filed February 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL D. MADDIN, a citizen of the United States, and a resident of St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Harvesters, of which the following is a specification.

My invention consists of certain improvements in harvesters, fully described hereinafter, whereby the efficiency of the same is increased.

In the drawings, Figure 1 is a perspective view, showing mainly the construction of the frames. Fig. 2 is a transverse sectional elevation of the machine. Fig. 3 is a detached view of one of the bearing-bars. Fig. 4 is a detached section through the cutter-bar. Fig. 5 is a plan, the binder-platform removed. Fig. 6 is an elevation in section of the driving-wheel and adjuncts. Fig. 7 is a perspective view, showing the cutter-driving appliances. Fig. 8 is a diagram illustrating the connection of the driving-shafts, belts, cutter-bar, and elevators. Fig. 9 is a detached perspective view of the butt-board.

The main frame A consists of the back bar, *a*, and the bars *a'* *a*² *a*³, at right angles to the back bar, and socketed at their forward ends for the passage of the front bar, *b*³, which may be solid or hollow, and on which also swings the frame B, consisting of a back bar, *b*, parallel to the bar *b*³, connecting-bars *b'* *b*², the side bar, *b*⁴, and arched frames *b*⁵ *b*⁶, connected to the side bar, *b*⁴, and to the bar *b*², as shown. Both frames are made of connected tubes, which secures strength with light weight, and the bar *b*³ may turn with the frame B or independently thereof. The main frame has a fixed axle for the side wheel, *c*, and bearings on the bars *a*² *a*³ for the axle *c*² of the driving-wheel *c'*. The main frame A carries the driver's seat *A'*, and is supported at a uniform distance from the ground by the wheels *c* *c'*. The frame B, with the extension-frames *b*⁴ *b*⁵ *b*⁶, which support the binder appliances, swings on or with the bar *b*³, and the latter, with the cutters *d*, may be turned so as to bring the cutters to any desired angle to the ground to cut at any height. The tilting of the frame B is effected by the driver through the medium of suitable appliances—for instance, a lever, *l*⁵, hung to

the bar *a*, and extending beneath the rear bar of the frame B, as shown.

The grain-divider C is pivoted to the end of the bar *b*³ by the extension of the latter through a hole in the divider, which is connected by a yoke, 3, to the frame B, so as to move with the latter. The bar *b*³ is the cutter-supporting bar, and a bent strip, D, attached thereto by bolts *e*⁸, forms at the rear a flange, *e*, and at the front a support, *e'*, for the cutters and guards. At the end of the bar *b*³ is an arm, *b*⁸, connected by a rod, *b*¹⁰, to a lever, *b*⁹, by means of which the operator can turn the bar to alter the angle of the cutters to the ground. The bar *b*³ may, however, be clamped so as to move temporarily with the frame B, or an arm from the bar *b*³ may extend to and be connected permanently to the frame A, so that the motion of the frame B will not alter the angle of the cutters.

The frame B has bearings for two shafts, *f* *f'*, on which are secured the rollers *g* *g'*, that support the band or canvas *h*. On the shaft *f* turns freely a pulley, *i*, round which and round a smaller pulley, *i'*, turning freely on the shaft *f'*, passes a sprocket-chain, *j*, which may be driven faster or slower than the belt, so as to carry the butts of the grain faster or slower than the stalks, to bring the whole into proper position in the canvas to deliver it properly to the elevator.

Endless chains *k* pass round pulleys on shafts *k'* *k*², against which the grain is pressed by a presser-plate, E, hung to a bar, *l*, which may be turned by the operator to raise or lower the plate, the lower end of which is curved to permit the grain to pass between it and the elevator-chains and condense and pack it against the latter, the body of the plate holding the grain until it passes to the horizontal platform F of the binder.

As the binding devices constitute the subject of a separate application for Letters Patent, I will not describe them here.

The means by which the movements are imparted to the belts, sprocket-chain, carriers, elevator, as well as to the cutters, will be best understood by the diagram Fig. 8.

The driving-wheel shaft *c*² carries a pulley, *c'*, from which a chain passes round a pulley, *d'*, turning freely on the bar *b*³, and with miter-

teeth engaging with those of a miter-pinion, d^2 , on a shaft, d^3 . A belt passes round pulleys m m' —one on the shaft d^3 and the other on the shaft f —and another belt, n , passes round a pulley, n^2 , on the shaft k^2 and a pulley, n' , on the shaft f .

It will be seen that the belt or canvas h derives its motion from the driving-wheel c' through the shaft of the latter, and the pulleys, wheels, and shafts c^4 d' d^2 d^3 m m' f and roller g , in the order named. The sprocket-chain derives its motion from one or other shaft, f f' , according as the pulley i or i' is clutched to its shaft, each pulley having a clutch-section, s^5 , which engages with a clutch-section, s^6 , sliding on the shaft, according to the position of a \perp -lever, s^4 , pivoted back of the bar b^3 . This lever s^4 is moved from the driver's seat by a lever, s^4 . The pulley i is larger than the roller g and pulley i' , so that when the pulley i is clutched to the shaft the chain travels faster than the belt, but when the pulley i' is clutched to its shaft the chain is driven slower than the belt.

The cutter-bar G is driven from a rock-shaft, H , the arm p at the forward end of which, or a cross-bar thereof, enters between two upright studs, q q , on the knife-bar, allowing plenty of play, so that the tilting of the cutter-bar b^3 or of the frame B does not interfere with the free communication of the motion. I have found this connection to be a most effective one, as there is no strain of the parts, friction is reduced to a minimum, and all jerking is prevented.

The shaft H has at the rear another arm, p' , that is connected by a pitman to a wrist-pin on a crank-wheel on the end of a shaft, p^3 , driven from the main shaft c^2 by miter-wheels p^4 p^5 .

It will be obvious that other gears and devices may be used for moving the different parts without departing from the main features of my invention.

The belt h is protected by a guard-plate, h' , below it, and from the rear edge of the belt extends the grain-platform h^2 , hinged at its front edge, so that it may be set at any desired angle to throw the grain forward or permit its being thrown back to bring it in proper position for the band and elevator to operate thereon without moving the binder appliances. The elevation of the platform h^2 is effected by the operator by means of a bar, h^3 .

The guard e , being a little higher than the sprocket-chain, serves to protect the latter, as also to enable the reel to bend back the grain properly.

As the binder-frame, elevator, grain-platform, and frame B swing round a common center, b^3 , and as the pulley d' , from which the other movements are imparted, is on this center, the change in position of the frame B does not slacken or tighten the driving-belts, chains, or cables, and all driving parts are maintained in proper relative position.

C^2 , Figs. 2 and 9, is a butt-board secured to rods i^3 , connected and sliding in part of the frame, and provided with nuts, so that the divider may be set forward or back to any position required to guide the grain into proper relation to the elevators.

In order to maintain the rigidity of the frame, as well as take up any slack from loosening of the joints, I combine with the frame at any desired points a bent or double angle-brace, s , supported centrally by an upright or bearing—for instance, the box—and extended at the ends to the sides of the frame through eyes, and provided with tightening-nuts, as shown in Fig. 3.

By the combination of the rectangular main frame and the arched frames b^5 b^6 all in one structure I secure great strength and rigidity with comparative lightness.

I have shown and described levers for adjusting the different movable parts from the driver's seat. It will be apparent that other devices may be used for this purpose.

I claim—

1. The combination, in a harvester, of a main frame, A , supported on wheels c c' , and a frame, B , a bar, b^3 , supporting the cutters, platform, belt, and the connections with the driving-wheel, and adjustably connected to the main frame, substantially as set forth.

2. The combination of the main frame supported by the driving and supporting wheels, the adjustable frame B , bar b^3 , and the cutters connected to the bar b^3 , whereby the angle to the ground and elevation of the points of the cutters may be changed by adjusting said frame B with the bar, or by turning the bar in its bearings in said frame B , substantially as set forth.

3. The combination of the supporting-frame A and the bar b^3 , supporting the cutters and adjustable in its bearings in the frame A , as specified.

4. The combination, with the frame A , of the frame B , both hung to the bar b^3 , the frame B being adjustable thereon, as set forth, and carrying the belts, elevators, and platform for the grain-binding appliances, substantially as specified.

5. The combination of the main frame A , adjustable frame B , carrying the belts, shafts, and connections, and the pinion d' on the bar b^3 , geared to the driving-wheel and to the operating devices on the frame B , substantially as specified.

6. The main frame and front bar, b^3 , combined with an adjustable frame consisting of back bars and connecting-bars and arched frames b^5 b^6 , as specified.

7. The combination of the main and tilting frames and dividers attached to the tilting frame, as specified.

8. The combination, with the carrying-belt, of a sprocket-chain, j , and means whereby the chain may be driven faster or slower than the belt, for the purpose set forth.

9. The combination of the shafts f f' , carrying the belt h , the clutch-pulleys i i' , of different sizes, carrying the sprocket-chain j , and the clutch-lever s^4 , substantially as set forth.

10. The combination, with the bar b^3 and cutters, of a plate secured to the bar b^3 and bent to form the flanges e e' , substantially as set forth.

11. The combination, with the main frame, adjustable frame, and the knife-bar, of a rock-shaft having an arm, and studs upon the cutter-bar receiving the arm between them, substantially as set forth.

12. The combination of the cutter-bar, carried by the adjustable frame, and the rock-shaft, carried by the main frame, and provided with an arm fitting between fingers on the cutter-bar, substantially as specified.

13. The main frame, consisting of the bars a a' a^2 a^3 , with sockets to receive the bar b^3 , combined with the frame B, hung to the bar b^3 , and consisting of the bars b b' b^2 b^4 and arched bars b^5 b^6 , all substantially as set forth.

14. The combination of the main supporting-frame A, bar b^3 , supported at both ends in said frame and carrying the cutters, and appliances whereby to turn the bar in the frame from the driver's seat, for the purpose set forth.

15. The combination of the main frame, tilting frame B, arranged within the main frame and hung to the front bar, b^3 , and carrying the canvas h , and appliances for swinging the frame B on the front bar of the main frame from the driver's seat, as set forth.

16. The combination of the main frame, tilting frame B, and grain-divider C, connected to the latter frame to move therewith, as specified.

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

SAMUEL D. MADDIN.

Witnesses:

J. H. RANDALL,

E. A. JOHNSON, Jr.