

G. ESTERLY.

Harvester.

No. 3,803.

Patented Oct. 22, 1844.

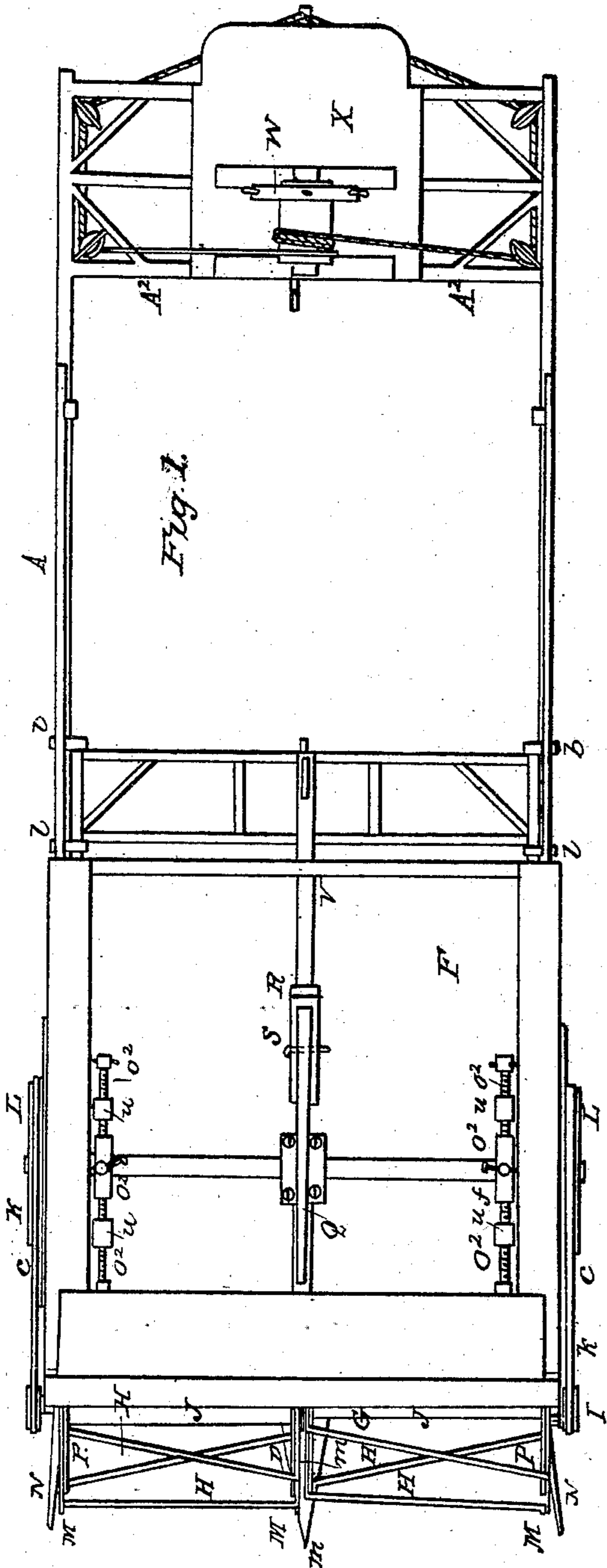


Fig. 3

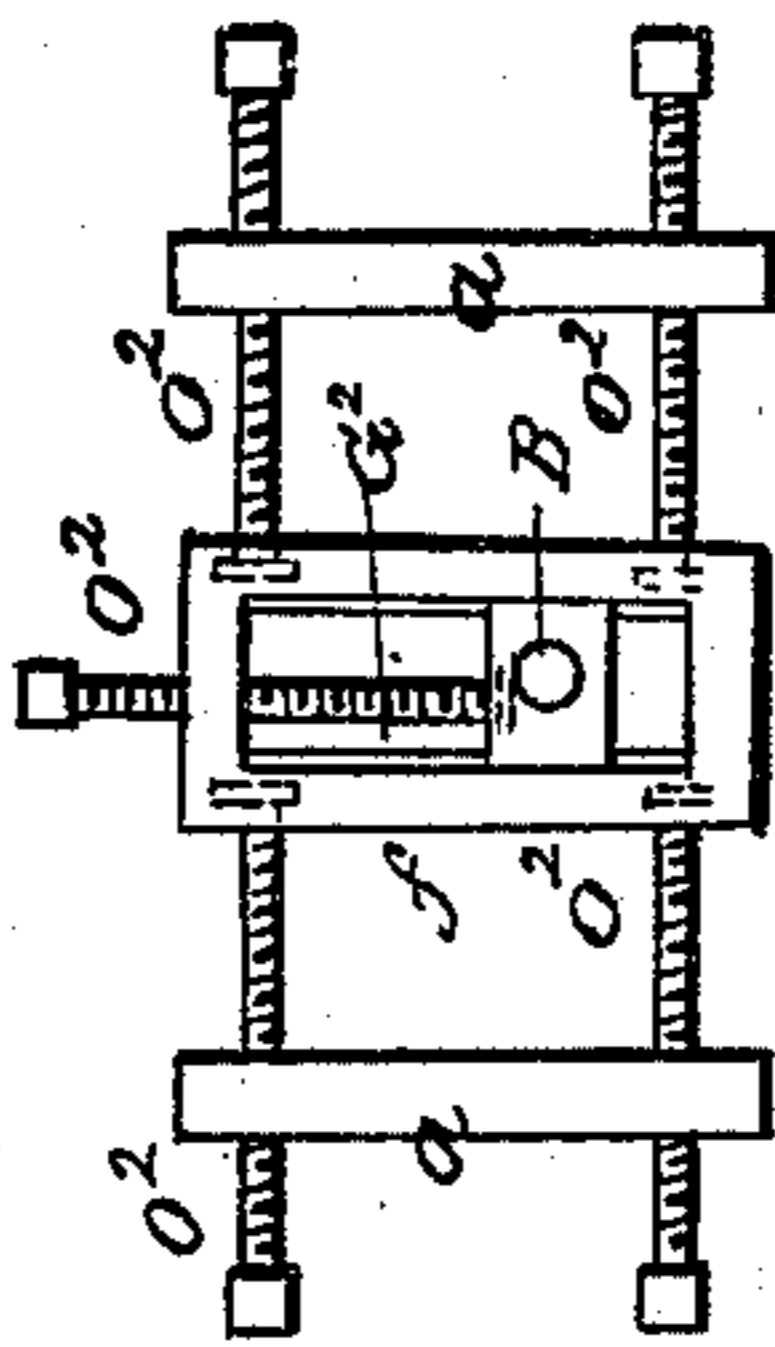
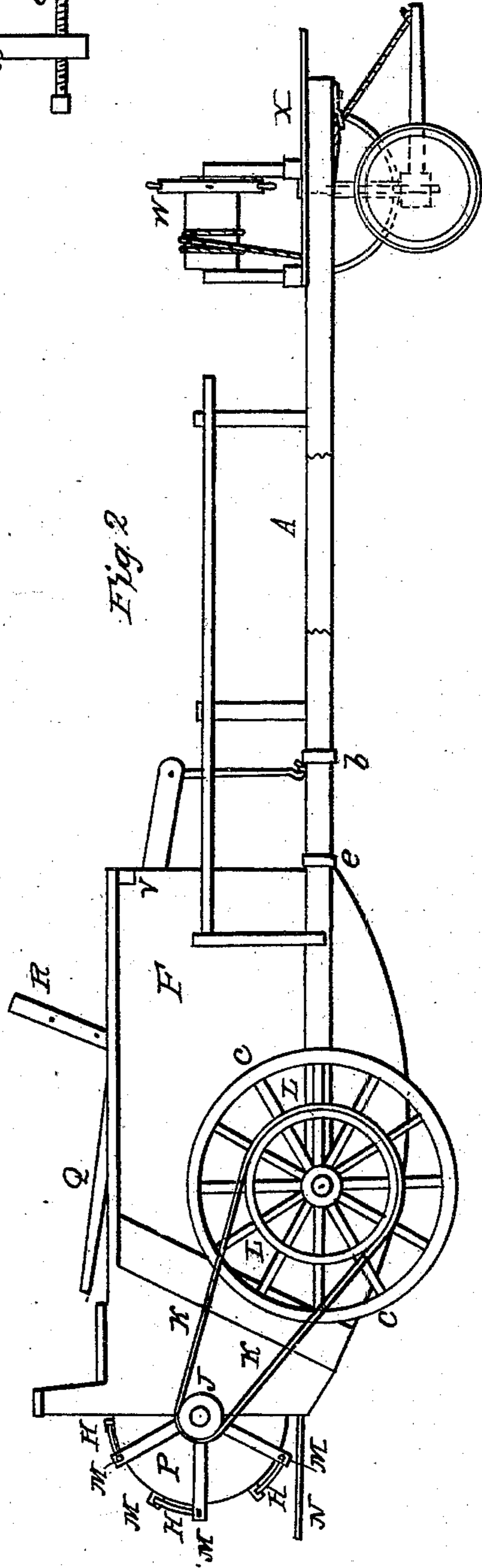


Fig. 2



# UNITED STATES PATENT OFFICE.

GEORGE ESTERLY, OF HEART PRAIRIE, WISCONSIN TERRITORY.

## IMPROVEMENT IN HARVESTING-MACHINES.

Specification forming part of Letters Patent No. 3,803, dated October 22, 1844.

*To all whom it may concern:*

Be it known that I, GEORGE ESTERLY, of Heart Prairie, in the county of Walworth and Territory of Wisconsin, have invented a new and useful Machine for Harvesting Wheat and all Kinds of Small Grain, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a top view of the machine in the position for harvesting; Fig. 2, side elevation; Fig. 3, section.

This machine consists of a rectangular frame, A, made of suitable size, strength, and material, for the purpose of containing and supporting the parts hereinafter described, its front end resting on a horizontal transverse axle, B, fixed in the center of two large wheels, C, turning upon the ground, and which constitute the main or propelling wheels, one of which is fixed to and turns with the axle, and the other turns on the said axle, the other end of the frame being supported by the two guide or steering wheels, whose axle is perforated in the middle for the insertion of a round bolt projecting down from the aforesaid frame, and on which bolt the axle turns horizontally.

In the front part of the aforesaid frame is arranged a grain receiver or chest, F, for receiving and holding the heads of grain as they are cut down from the standing straw. This receiver F is of a rectangular form, except its bottom, which may be made concave or of any suitable size. It is closed with thin boards on three of its sides and on its bottom, and is open at top and in front. It is connected to the axle of the large wheels, and is made to turn or vibrate vertically thereon, so as to elevate or depress the front of said receiver containing the cutters, at pleasure, to the height of the grain. Over and against the front cutting-edge or corner of said steel plate is arranged a revolving reel, made in two parts, of oblique spiral cutting-bars H, of steel, whose edges and corners are brought to a fine cutting-edge and made elastic or yielding to revolve in succession against the aforesaid horizontal steel plate, by giving to the said divided reel (which is placed or formed on two horizontal revolving shafts, one, J<sup>2</sup>, hollow, and the other, J, solid, placed parallel with the shaft or axle of the driving-wheels aforesaid) a revolving motion by means of a cog or band wheel, I, on

the outer end of the solid shaft J of one half of the reel, over which an endless band or chain, K, is passed, leading around a larger cog or band wheel, L, on the outer extremity of the axle B of the large propelling-wheels, and by means of a similar cog or band wheel on the outer extremity of the tubular shaft of the other half of the reel. The shaft of the first-named section of the reel passes through the tubular shaft J<sup>2</sup> of the second section J<sup>2</sup>.

The aforesaid reel, or, as it might be termed, "double skeleton wheel," is composed of a series of radial arms, M, of equal length, to whose outer extremities the aforesaid elastic oblique spiral shear-bars H are fastened in any convenient way, and to whose sides thin circular plates P are fastened for preventing the grain getting among the aforesaid radial arms, which circular plates have all their vertical planes parallel. At the two front corners of the horizontal transverse knife are arranged two flaring hands, N, for gathering the grain together and directing it toward the middle of the cutters. The dividing-spear *m*<sup>2</sup> between the two reels is for the purpose of parting the grain. The tubular shaft of course must be bored at each end for the cylindrical shaft to turn steadily therein. The raising and lowering of the aforesaid reel and horizontal cutter and flaring fingers are effected by causing the receiver, to which the cutters and fingers are attached, to vibrate vertically on the axle B of the wheels C by means of a lever, Q, attached to the rear side of the receiver F and to the frame A, secured at any angle desired by means of a sword, R, and pins S, or other suitable contrivances, and also by means of a combination of vertical screws Q<sup>2</sup> for raising or lowering the receiver over the boxes of the main axle, and a set of horizontal screws, O<sup>2</sup>, for moving the receiver horizontally.

The machine is steered by means of the aforesaid pair of small wheels and axle, turned by a lever or tiller by hand or by a combination of cords, chains, or straps and pulleys, and windlass W, operated in the manner of a windlass of a vessel, the steersman standing upon the rear platform, X, of the machine.

The frame of the receiver, cutters, and driving-wheels is made independent of the frame of the drawing and steering apparatus, but is united to the latter (after the horses are geared to it) by means of strong staples and other

suitable fastenings. When the horses are to be disengaged from the machine, these frames are to be drawn asunder.

The animals that propel forward this machine, when placed within the frame A, are geared to the cross-timber A<sup>2</sup> of the frame of the steering apparatus, with their heads toward the frame of the grain-receiver, to which their breast-straps are hitched for drawing back by, and as they travel forward they propel the cutters and receiving part of the machine in advance of themselves, the fingers N gathering the grain inward from the tracks of the large wheels, and the revolving oblique spiral cutters of the double revolving reel catching the straw just below the heads of grain and bringing it gradually against the cutting-edge of the horizontal cutter G, between the edges of which and said revolving spring-cutters of the double reel the heads of the grain are separated from the stalks or straw and carried back and discharged into the receiver F, behind the cutters, until the receiver be filled, the straw being left standing to enrich the land. A large wagon is then brought alongside of the harvesting-machine, into which the cut grain from the receiver is discharged by the use of a scoop and fork made for the purpose, managed by the attendant, who is stationed in the receiver. This attendant attends to the raising and lowering of the cutters to correspond with the different heights of grain to be cut in the field, which he accomplishes by means of the aforesaid lever Q, turning on a bolt, V, in the side of the receiver about one-fourth its length from its outer end, which is affixed to the frame A, and by means of the horizontal and vertical screws. The grain is prevented from being lost or wasted by means of an apron placed over the sides of the receiver and wagon while unloading the one into the other.

The cutters are all self-sharpened by reason of their peculiar form and elasticity and manner of contact with the lower or straight bar-cutter.

The rear end of the machine may be supported by one or more steering-wheels, instead of a pair, as above described.

The frame may be raised in any suitable manner to suit the views of the constructor,

and the horses may be geared to a pair of shafts or tongue.

The horizontal knife may be placed at an angle of ten, fifteen, or twenty or more degrees with the axis of the main shaft B; or it may be bent at the center, so as to form an obtuse angle.

The front uprights of the frames of the receiver and cutters are extended above the plates and united by a cap and breast-plate directly over the reel for the purpose of strengthening the frame of the receiver and cutters.

There are two sets of horizontal screws, O<sup>2</sup>, combined with the aforesaid frame, for the purpose of moving the box of the main axle to correspond with the various changes in position of the cutters in adapting the machine for cutting various heights of grain. These screws pass horizontally through uprights u, framed into the sides of the frame of the receiver or box, the ends of said screws turning against the sliding metallic frames in which the boxes of the main axle are placed, and in which they are made to rise and fall vertically by means of a set of vertical screws, Q<sup>2</sup>.

Instead of the solid shaft being made to pass through the tubular shaft, there might be placed a vertical standard between the two wheels, and these caused to revolve independently of each other.

What I claim as my invention, and which I desire to secure by Letters Patent, is—

1. The mode of adapting the machine to different and varying heights of grain by the combination of the adjustable boxes which connect the axle of the wheels with the receiver, to which the cutters and reel are attached, in combination with the lever that connects the receiver with the horse-frame, as described.

2. Making the reel in two independent parts, the shaft of one passing through the shaft of the other, so that they can turn with velocities corresponding with the velocities of the main wheels in turning curves of various degrees, as described, and removing the strain from the axle of the reel, cutters, and propelling-gear, as herein set forth.

GEO. ESTERLY.

Witnesses:

WM. P. ELLIOT,

ALBERT E. JOHNSON.