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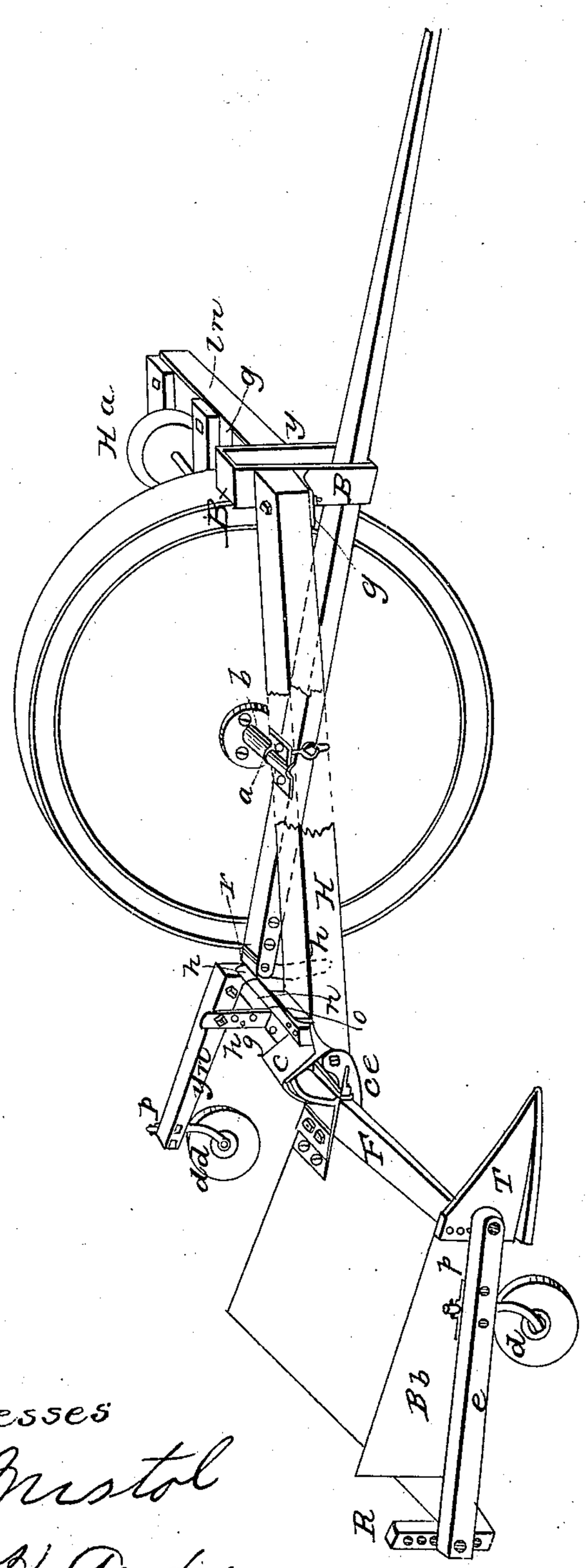
Harvester.

No. 14,448. Patented March 18, 1856.

Fig. 1



Witnesses
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Wm. H. Andrews

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2 Sheets—Sheet 2.

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Fig. 2.

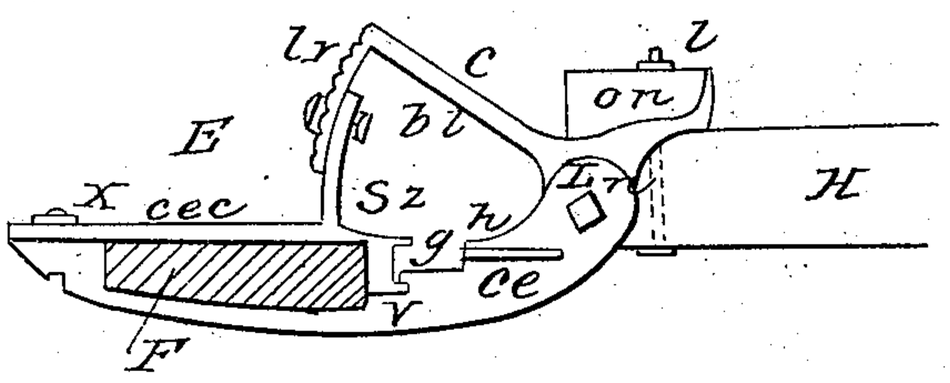


Fig. 3

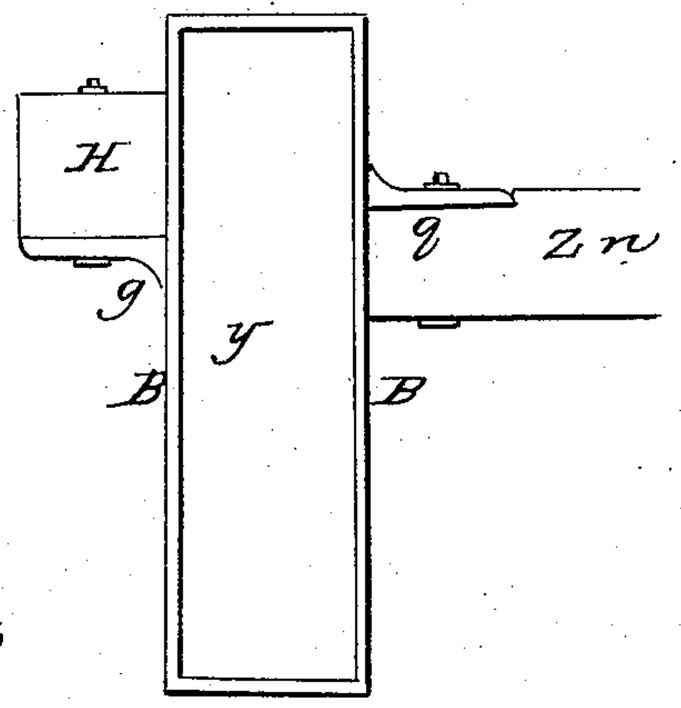


Fig. 4

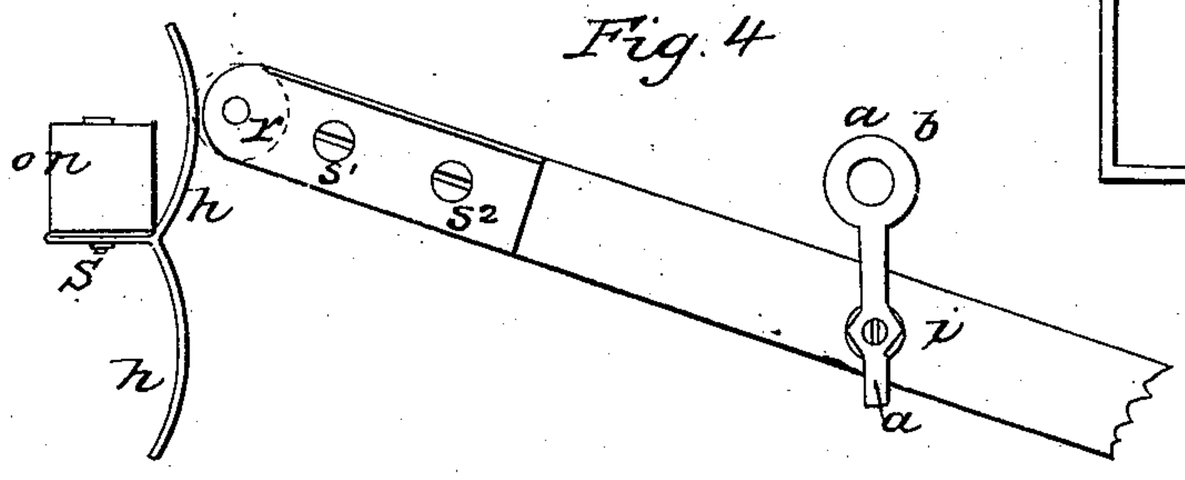
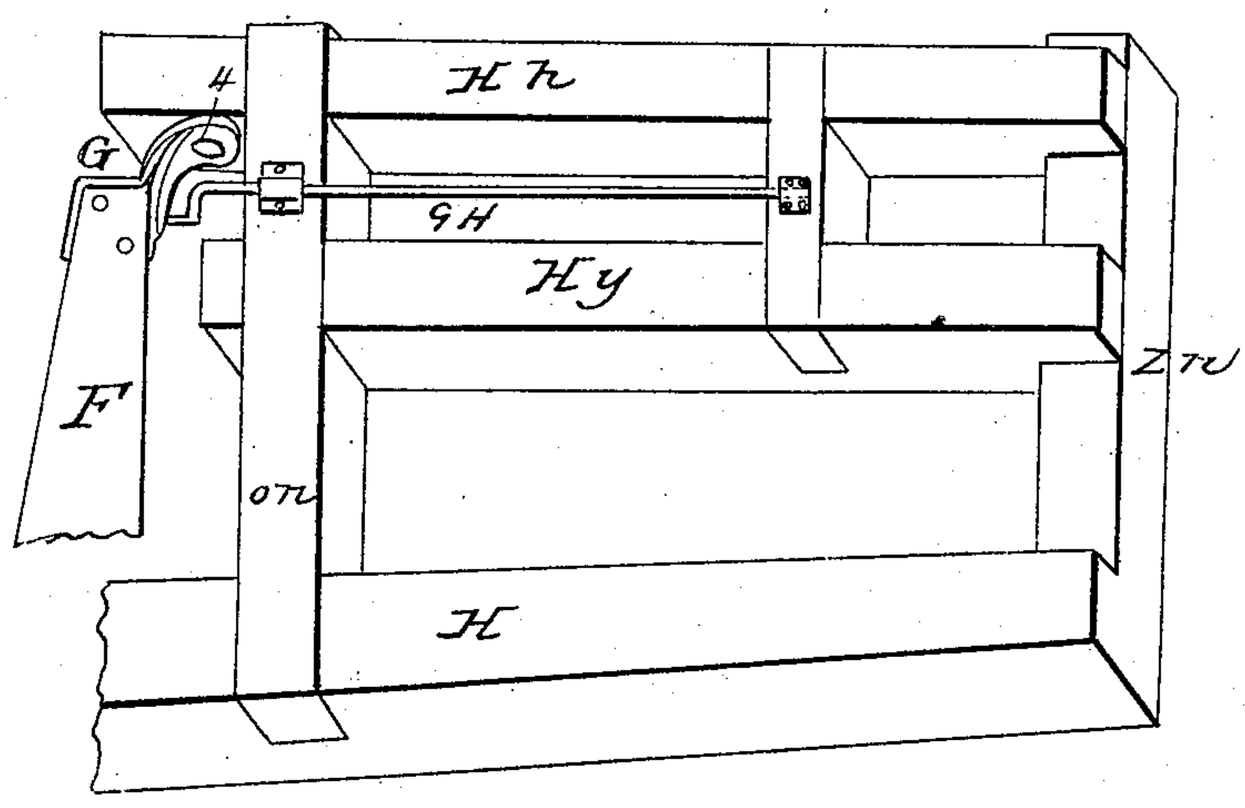


Fig. 5



Witnesses

C C Bristol

Wm A Andrews

UNITED STATES PATENT OFFICE.

ELIAKIM B. FORBUSH, OF BUFFALO, NEW YORK.

IMPROVEMENT IN GRAIN AND GRASS HARVESTERS.

Specification forming part of Letters Patent No. **14,448**, dated March 18, 1856.

To all whom it may concern:

Be it known that I, ELIAKIM B. FORBUSH, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Reaping and Mowing Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the figures and letters of reference marked thereon.

The nature of my invention consists, first, in attaching the draft-pole to the axle of the driving-wheel in order to allow the frame of the machine to balance freely on the axle of the driving-wheel independent of the pole or the draft of the horses; second, in making a jointed connection of the pole to the axle of the driving-wheel in such a manner as to allow the pole to swing under the axle and extend back far enough to meet the rear cross-timber of the frame, so that in backing the end of the pole will strike the frame (or the bumper fixed there for that purpose) and the power of the team be applied to the frame in rear of and below the axle of the driving-wheel, and when moving forward the draft will be directly upon the axle of the driving-wheel; third, in providing a guide-stirrup, which is fastened to the front part of the frame and binds it together, and through which the pole plays freely up and down, and at the same time giving the pole perfect control to guide the direction of the machine and the frame liberty to balance on the axle independent of the pole; fourth, in providing a hinged or jointed adjustable-shoe to hold the finger-bar so that the finger-bar and cutters may be maintained in a horizontal position, or placed in a slanting position at whatever height the cutters may be required for cutting grass or grain; fifth, in the combination of two caster-wheels with the finger-bar and platform when reaping, and one caster-wheel with the finger-bar when mowing, as hereinafter more fully set forth; sixth, in providing a goose-neck shoe or runner for the purpose of carrying the outer end of the finger-bar and the outer corner of the frame, the finger-bar being extended beyond the adjustable shoe and in rear of the driving-wheel.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I make a metallic journal-box to work upon the axle of the driving-wheel, and to which the draft-pole or tongue is attached. This journal-box should be about three inches in diameter and about six inches in its cylindrical length. Its bore is about two inches in diameter, and slips onto the axle of the driving-wheel and allows the axle to turn freely and smoothly within it. This journal-box is represented in its place on the axle of the driving-wheel at *a b*, Figure I. It has two arms dropping down about six inches, and leaving a space of four inches between them to receive the draft-pole. An end view of the journal-box and arm is given in Fig. IV, (*a b*, journal-box; *a*, arm.) The pole P is placed between the arm *a* and its opposite arm, the bolt *i* passing through the arms and pole, and allowing the pole to swing on the bolt. The arms are four inches apart. The pole also extends back sufficiently far to meet the rear cross-timber of the frame or the bumper *h h*, which is bolted to the cross-timber *o n*, as represented at *s*, Fig. IV. The main body of the bumper, which comes in contact with the timber, is four by three and one-half inches, and half an inch thick. Its two arms are four inches wide on their face, and half an inch thick. They are about six inches long, and branch off from their main body in opposite directions, and are circular in form, as represented at *h h*, Fig. IV. On the end of the pole is a roller two and one-half inches in diameter, and three and three-quarters inches in length, and is marked *r* in Fig. I and *r* in Fig. IV, and is connected with the pole by means of straps bolted to the pole, (represented at *s t s t*, Fig. IV.)

When it is required to back the machine the horses press backward in the harness, the pole swings upon the journal-box, the end of the pole or the roller *r* strikes against the bumper, so that the whole backing-power of the team is exerted upon the bumper, and through it upon the frame of the machine in rear of the driving-wheel and below the axle, and the machine thereby moved back with much greater ease. When the team moves forward, the pole swings forward, so as to bring the draft through the journal-box directly from the axle. Thus when backing the point of draft is from the frame in rear of the driving-wheel and below the axle, and when moving forward it is directly from the axle. When the draft-pole is attached in the common way permanently to

the frame, or by a hinge on the frame in front of the axle of the driving-wheel, the power exerted by the team in backing has a tendency to press the driving-wheel and the finger-bar closely to the ground, causing more resistance than the weight of the machine. With the arrangement of the draft-pole as herein described the power of the team has a lifting tendency on the driving-wheel and finger-bar when backing, and the machine is thereby moved back with much greater ease and facility. With this arrangement, also, the frame is left free to balance upon the axle of the driving-wheel, and the cutter-bar and cutters at liberty to follow the surface of the ground over which the machine passes, without being affected by the tread of the driving-wheel, the pole, or the draft of the team.

I make a guide-stirrup of cast-iron and connect with the frame in front. It has a flange or short arm upon either side, through which it is bolted to the frame, as represented at *g g*, Figs. I and III. This stirrup is represented at B B, Figs. I and III. It is about four inches wide, nineteen inches in height, and about five and one-half inches in breadth across its upper and lower ends, and has a space through which the draft-pole passes of four by eighteen inches, as seen at *y* in Figs. I and III. This allows the pole to move up and down in the stirrup, while it fills the space sidewise, so as to guide the direction of the machine, while it permits the frame to vibrate and balance on the axle, and the finger-bar and cutters to conform to the uneven surface of the ground without being affected by the pole or the draft of the team. This arrangement also relieves the horses' necks from undue pressure, such as is occasioned by the oscillations of the machine when the draft-pole is attached permanently to the frame. The stirrup extends above and below the front end of the frame, so as to allow the frame to balance its proper distance either way.

I make an adjustable or jointed shoe for the purpose of connecting the finger-bar and cutters to the frame and for holding the same in a horizontal or slanting position at whatever height it may be required to work the cutters for grass or grain. The adjustable shoe as combined and put together is referred to by the letter E and represented by Fig. II.

When the finger-bar and cutters are attached to the frame in rear of the driving-wheel, and raised and depressed by the frame in turning upon the axle of the driving-wheel as a center, the cutters and the platform are brought into a slanting position, insomuch so as to make it impracticable to work the machine without some arrangement by which the cutters and the platform may be placed in a horizontal position at any height it may be desired to work the cutters. This adjustable shoe is intended to remedy this difficulty. It is made in three parts—the upper or bonnet part, (marked *c* in Fig. II,) the shoe or inner part, (marked *c e*,) and the upper or compressing part, (marked *c e c*.) The upper or bonnet part is about five inches wide, and so constructed that it may be bolted to the side timber, H, of the frame with two or more bolts, so as to hold it firmly to the frame. These bolts pass through the cross-timber on the side timber, H, and the bonnet, one of which bolts is shown at L, Fig. II. It might properly be made longer, so as to receive another bolt through the timber H. It is made so as to form a joint or hinge with the under or runner part, as seen at L *n*, Fig. II. It extends about twelve inches from this joint on an angle upward of about thirty-five degrees, more or less, and then drops down about eight inches, more or less, as represented at *t r*. The under or runner part, *c e*, is about five inches wide on the bottom and connects with and forms a joint or hinge with the upper part, as shown at L *n*, Fig. II. The middle or compressing part, *c c c*, locks into the runner, as shown at V. A bolt passes through these two parts behind the finger-bar, as seen at *x*. An arm, *s z*, about five inches wide, rises from this to the height of about eight inches, to connect with the arm *t r* of the bonnet. These two arms are curved, making the segment of a circle such as would be described at their distance from the joint L *n* as a center. A slit is made in the arm *t r*, and a bolt, *b t*, passes through the slit and the arm *s z*. As the runner turns in the joint L *n* the runner is raised or lowered, as is also the finger-bar F, and by means of the bolt *b t*, passing through the arms *s z* and *t r*, may be held as desired in reference to a slanting or horizontal position. The arm *s z* could be cast and made permanent with the runner, and the part which compresses the finger-bar left off, in which case the finger-bar would be bolted to the runner. With this arrangement of the adjustable shoe or runner the finger-bar, cutters, and platform may be beveled and kept in a horizontal position, although they are elevated and depressed through the segment of a circle described from the axle of the driving-wheel as a center. They can also be set at any desired pitch or angle at the different heights it may be required to work the cutters. The finger-bar passes through this shoe and connects with a goose-neck runner at the outer corner of the frame, as hereinafter described. The slit in the arm *t r* is about five inches long. A slit is made in the runner part for the heel of the cutter-bar and cutters to work through, as represented at *g h*.

I have also made an improvement in the construction of the platform and in the combination of a caster-wheel therewith. The divider T, Fig. I, is made sufficiently strong to support one end of the cross-bar *e*, which carries the caster-wheel *d*. On the rear corner of the platform is a standard framed into the timbers of the platform and strengthened by a casting. This standard supports the other end of the cross-bar *e*, and is marked R. There are several bolt-holes through this standard, and also through the divider. The cross-bar

is bolted to this standard and to the divider, and by means of the bolts and the several bolt-holes may be raised and lowered at pleasure. This cross-bar is on a line with the point of the divider. The socket in which the swivel of the caster-wheel works is bolted to this cross-bar, so that the cutter-bar, cutters, and platform may be raised and lowered by varying the cross-bar into the different bolt-holes in the standard and divider. The wheel is twelve inches in diameter, and made sufficiently strong to carry the platform, and the swivel and socket correspond thereto in strength and size. The wheel, swivel, and socket are combined in the usual manner, and nothing new is claimed therein except their combination for the purposes herein. The inner dividing-board, B *b*, angles inward from the cross-bar, as does also the timber and end of the platform upon which it stands. This affords sufficient room for the wheel to turn to the right or left as much as may be required, in harvesting grain.

The finger-bar F, Figs. I and II, passes through the adjustable shoe E, and connects with a goose-neck runner near the outer corner of the frame, as represented at G, Fig. V. This runner is made rounding on the bottom, so that it will form a runner, whether the machine is progressing forward or turning at the corners. It is bolted to the end of the finger-bar, and connects with the outside timber of the frame H *h*. A slit is made in the neck of this runner through which a bolt passes to fasten it to the frame. This slit is represented at 4, Fig. V, and in shape corresponds to the segment of a circle such as the goose-neck describes when bolted to the finger-bar and moved by the adjustable shoe turning in its joint L *n*, Fig. II. It slides on the ground when mowing, and supports the end of the finger-bar and the corner of the frame. In reaping it will of course be elevated above the ground. When reaping the caster-wheel *d d* carries this part of the platform and frame. The wheel, swivel, and socket are the same in size and proportions of the other wheel. The wheel is attached to the end of the lever *y n* at a sufficient distance from the finger-bar to allow it to turn round without coming in contact with the finger-bar. The lever *y n* is connected to a small casting on the frame by means of a bolt, and also to a standard rising from the finger-bar, (represented at *h g*, Fig. I.) The standard *h g* is bolted to the finger-bar, and rises about eighteen inches, so that it may be bolted to the lever *y n* at whatever height the finger-bar may be placed. Several bolt-holes should be made through this standard, so as to receive the bolt from the lever at whatever height the finger-bar may be placed. With this arrangement the platform, finger-bar, and cutters can be carried at any desired height, as they are sustained and carried entirely by the arrangement of the two caster-wheels when reaping. These wheels should run as nearly on a line as may be. When mowing the platform and both wheels may be removed, so as to allow the finger-bar to slide on the ground. A pin, P, holds the swivel in its socket. This pin can be removed from the wheel *d d* and the wheel taken out, leaving the lever *y n* in its place when mowing.

The gearing and driving-shafts are supported upon the frame on the outside of the driving-wheel, in order more equally to balance the frame upon the axle of the driving-wheel. The driving-shaft is represented at G H, Fig. V, and the large bevel-wheel at H *a*, Fig. I.

Fig. V is a plan view of the frame. The front timber, *z n*, is represented as running across the frame; but when the guide-stirrup B B, Fig. I, is put in this timber stops short, and is bolted to the flange or short arm of the stirrup, as shown at *g*, Fig. I. The timbers H *h* and H *y* and *o n* may be three by three and one-half inches in size, the front timber, *z n*, three by five, and the side timber, H, three by five at the end where the adjustable shoe is bolted and taper to three inches. The proportions herein given may be varied as circumstances require without affecting the principle of the improvements herein described.

The dividing-board B *b*, Fig. 1, being set upon an angle inward, and the bar *e* being on a line with the point of the divider, several inches of space exist between them, affording room for the caster-wheel to turn as much as required. This bar *e* also affords a support for a reel-post in such a position as to bring the reel-post out of the way, so that the cut grain will not lodge against it.

I claim as my invention—

1. The adjustable shoe E for the purpose of leveling the platform, constructed and arranged substantially as herein described.

2. Suspending the pole to which the team is attached from a hinged journal upon the axle of the driving-wheel, in order that the draft of the team when moving forward may be directly from the axle of the driving-wheel, leaving the frame, finger-bar, and cutters free to oscillate, and independent of the pole and the draft or the team, and also when backing the power of the team may be exerted upon the frame in rear of and below the axle of the driving-wheel, substantially as herein described.

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Witnesses:

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WM. H. ANDREWS.