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C. WHEELER, Jr.

Harvester.

No. 165,460. Patented July 13, 1875.

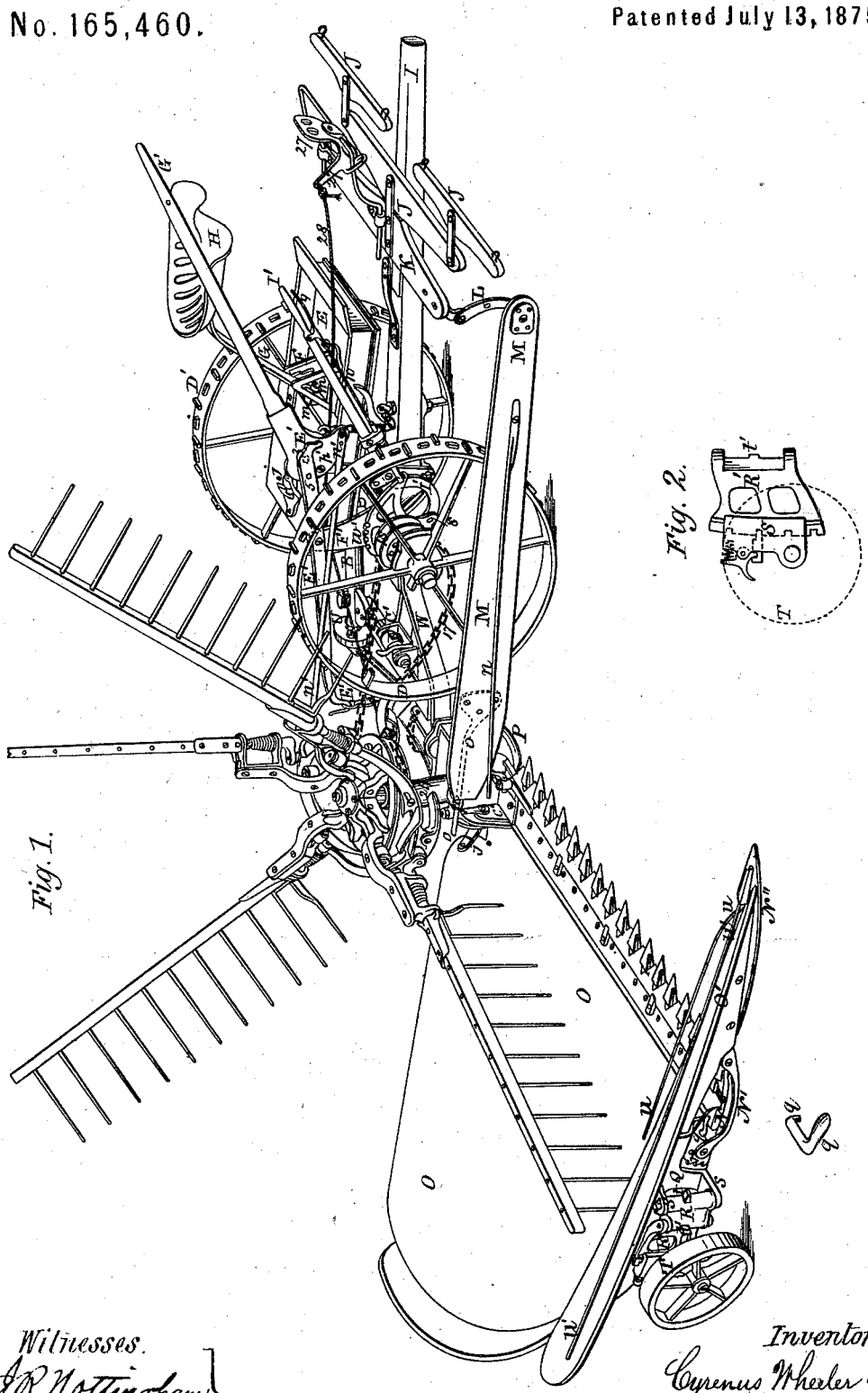

Fig. 1.

Fig. 2.

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4 Sheets--Sheet 2.

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Fig. 3.

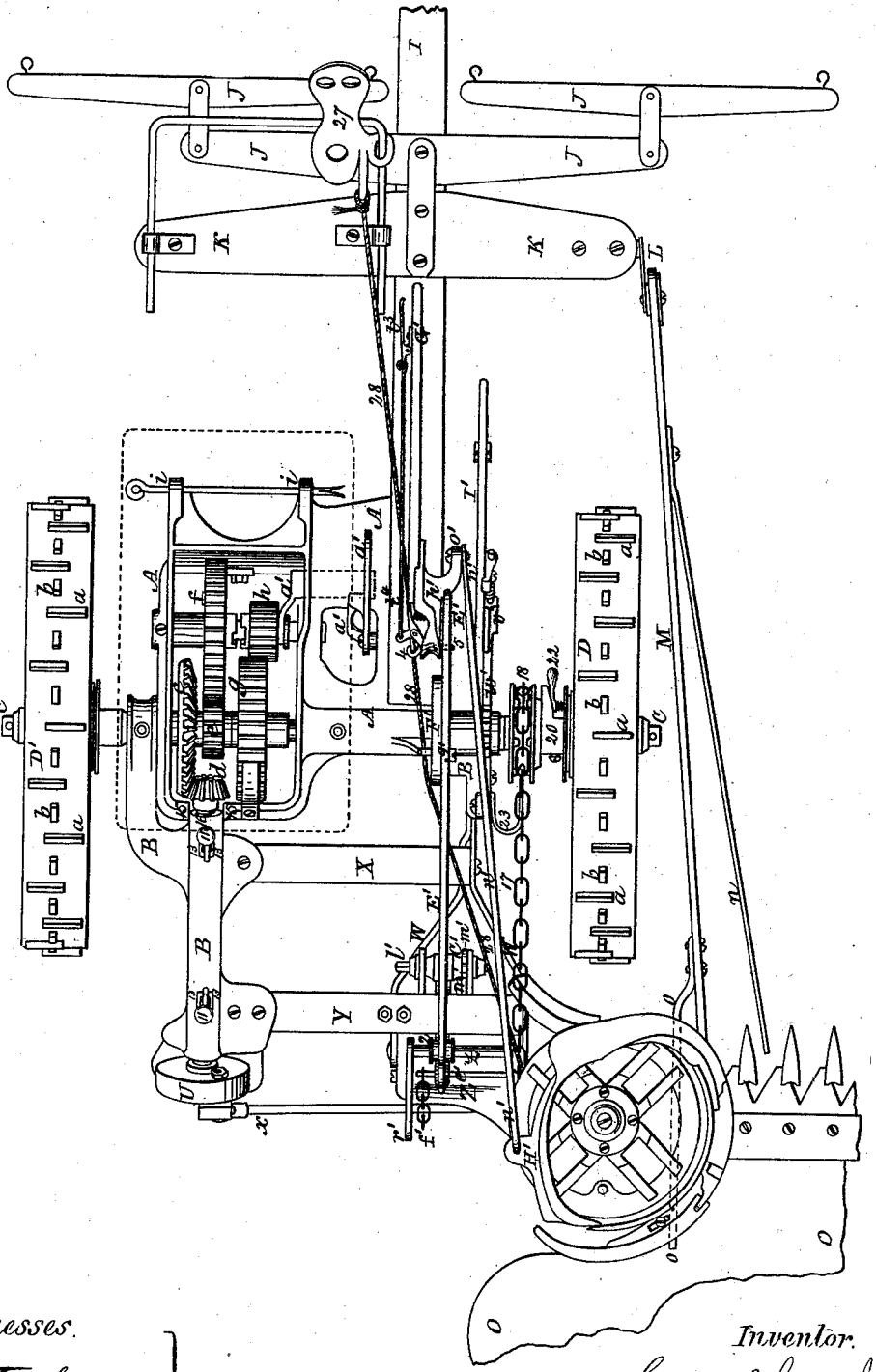

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Fig. 4.

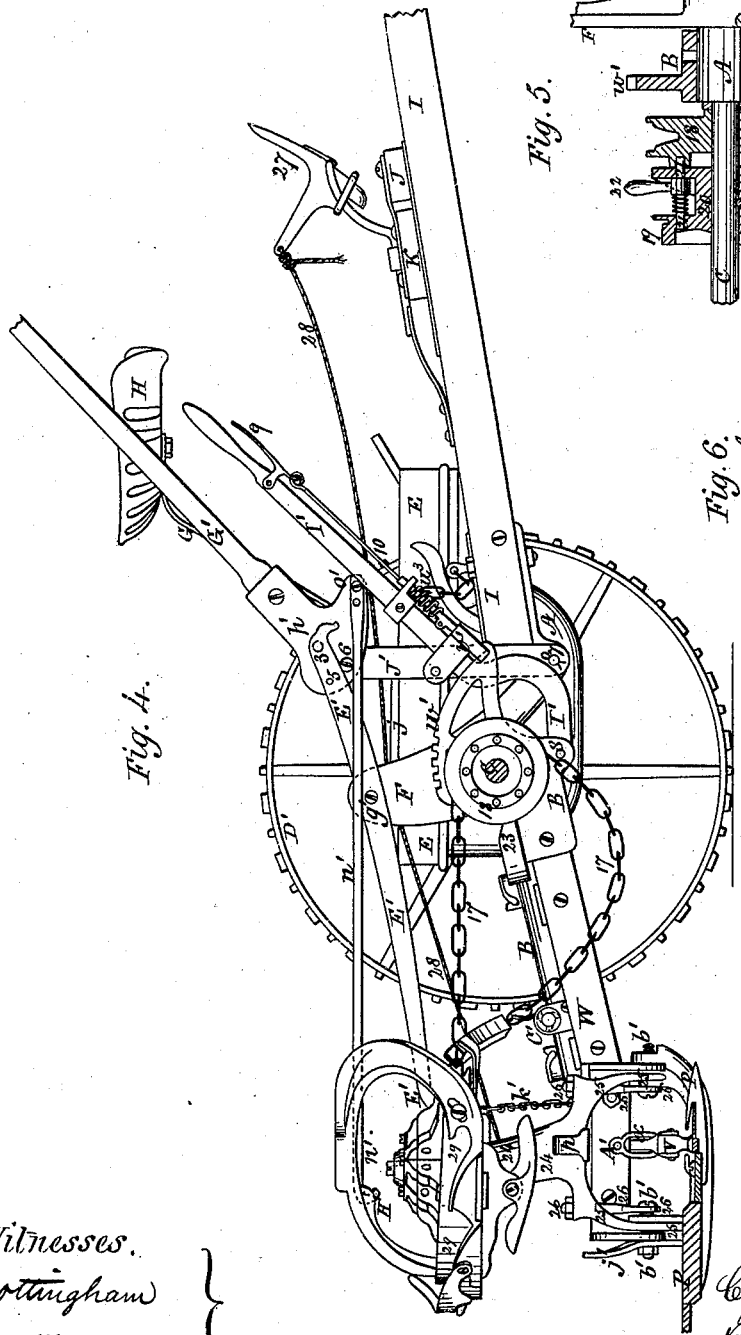

Fig. 5.

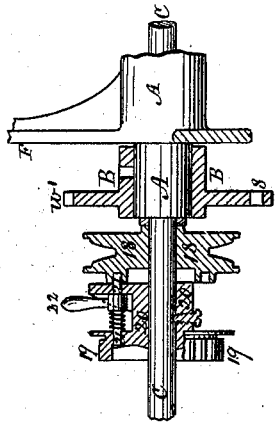

Fig. 6.

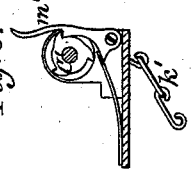

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Fig. 8.

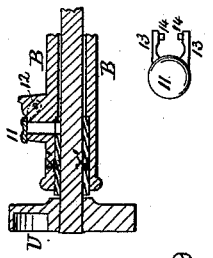


Fig. 10.

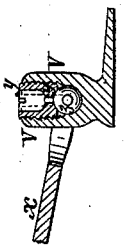


Fig. 9

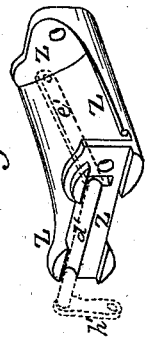
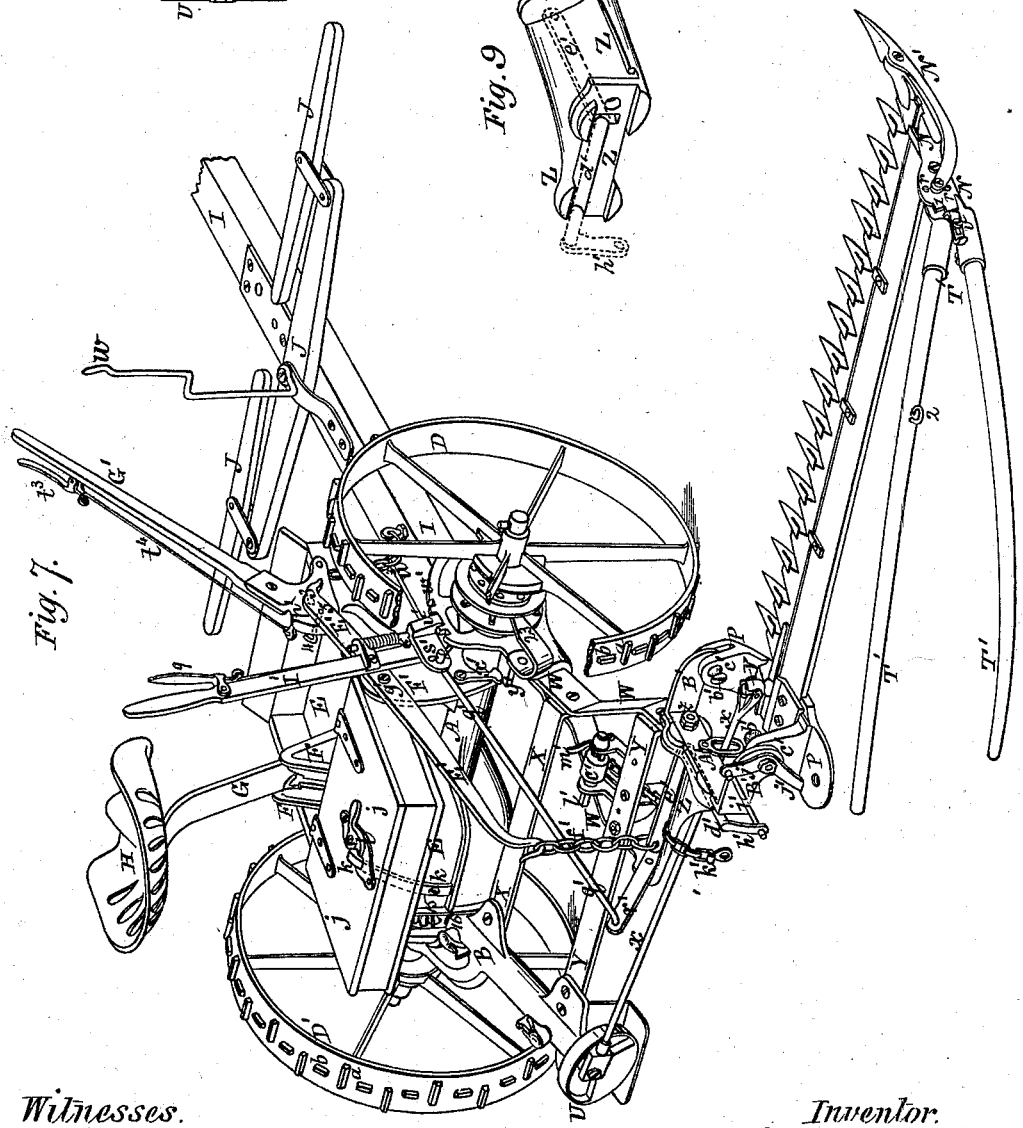


Fig. 7.



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UNITED STATES PATENT OFFICE.

CYRENUS WHEELER, JR., OF AUBURN, NEW YORK.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **165,460**, dated July 13, 1875; application filed June 4, 1874.

CASE A.

To all whom it may concern:

Be it known that I, CYRENUS WHEELER, Jr., of Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Combined or Interchangeable Reaping and Mowing Machines; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents in perspective the machine as it appears when arranged for cutting and raking off grain. Fig. 2 represents, as detached, and on a larger scale, the mechanism for adjusting the height of the outside supporting-wheel. Fig. 3 represents a top plan of the machine as arranged for reaping, but with the rakes and beaters omitted, to better show the parts otherwise concealed by them. Fig. 4 represents a sectional elevation of the reaper, with the rakes and beaters removed, but showing their operating mechanism. Figs. 5 and 6 represent details of the machine that will be hereinafter more particularly referred to. Fig. 7 represents in perspective the machine as it appears when arranged for cutting grass; which, however, constitutes the subject-matter of a separate application for Letters Patent. Figs. 8, 9, and 10 represent details of the machine that will be more particularly mentioned hereinafter.

My invention relates to a harvesting-machine easily convertible from a mowing to a reaping machine, and vice versa; and this part of my invention consists in the construction and adaptation of the several mechanisms for making the machine adaptable to cutting and delivering grain onto the ground in gavels, a separate application being made for the machine as adapted to cutting grass, as also to facilitate the changes necessary to make the machine equally applicable to either of the purposes for which it is designed and constructed.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

In the construction of my machine I use two frames—viz., a front or gear frame, A, and a rear or cutter frame, B. The main axle C passes through a sleeve or boss on the gear-frame A, and the cutter-frame B is hinged to bosses or bearings on the sleeve of the gear-frame, so that both frames may move, one independent of the other, but always about the main axle C as a center of motion. The main axle C is supported and carried in the main driving and supporting wheels D D′, the perimeters of said wheels being furnished with two sets of lugs, *a* and *b*—the former to give the wheels a firmer hold upon the ground, the latter to prevent the machine from moving downward when working on inclining ground. The driving-gear, as at *c d e f g h*, is inclosed in a box cast on or with the front or gear-frame A, and said box and gears are covered by a second box or platform, E, hinged to the gear-frame at *i*, so as to be readily raised or lowered, to get at the inclosed gears for oiling, &c. In or on the rear portion of the cover or platform E are tool boxes or compartments, also protected by a hinged cover, *j*, and a catch or hasp, *k*, fastened to the gear-frame, passes up through the platform E, through the tool-box, and through the lid or cover *j*, where it is caught by a hook or keeper, *l*, so that one fastening holds the cover *j* to the platform E, and the platform to or over the inclosed gears, as above mentioned. Upon the platform E is fastened an angular-shaped abutment, F, in, on, or against which the support G of the seat H rests, and is made reversible, so as to adapt the seat for the driver in reaping, as in Fig. 1, or for mowing, as in Fig. 7. To admit of this ready change of position of the driver's seat, the top or apex of the abutment F is cut away, so that both the head and shank of a screw-bolt, *m*, can readily pass through said cut-away portion. On or in the inclined sides of the abutment are slots which take the shank only of the screw-bolt *m*; and at the lower ends of the inclined sides are pockets, into which the lower end of the seat-support G will enter, as it is slid downward between guiding and sustaining flanges at the sides of the inclines,

and, when thus slipped into either of its seats or supports, by giving the nut of the screw-bolt a turn, the seat will be firmly held.

The pole I is fastened to a tongue-seat cast on the gear-frame A, and the draft-bars J are bolted thereto in a forward location, as shown in Fig. 1, when the machine is arranged for reaping, and in a position in rear of that as shown in Fig. 7, when the machine is arranged for mowing. When arranged for reaping there is a cross-bar, K, rigidly attached to the pole I, on the grain-side end of which is pivoted a swinging arm, L, to the lower end of which is pivoted a shield-board, M, having an elastic arm, *n*, attached to it, and projecting therefrom toward the standing grain, so as to crowd the grain away from the inside shoe and its adjacent or connected parts, and prevent tangling, winding, or clogging. At the rear of the shield-board M there is a rod or shank, *o*, moving through a guide, *p*, to steady said shield-board as it swings backward and forward. This shield-board and its connected parts are removed when the machine is converted into a mower.

The finger-bar, guards, and cutters are shown in the drawings, and need no special description, as they are well known and understood.

The outside divider N′ is made adjustable, so as to be adaptable to the machine in either of its changes for reaping or mowing. When arranged for reaping the platform O is attached to the outside and inside dividers or shoes N P, and to the finger-bar, at a central point thereon. The elongation or auxiliary shoe N″, which is fastened to the grain-board or divider O′, and is a permanent part of the platform O, is set over or upon the point of the sub-shoe N′, it having a recess to take in said point, and a lever latch-pin, *q*, is passed through the rear of the shoe N, and into a hole or recess in a plate fastened to the platform, for locking and unlocking the outer end of said platform, as the case may be. The sub or ground shoe N′, which is attached to the front of the real shoe N, and underlying the real shoe N, is connected to rear portion of the latter by any one of the adjustable holes *r*. To ears or lugs *s* on the platform-plate Q there is pivoted an arm, R, having three projecting stops, *t t′ t″*, thereon, and to this arm is pivoted a second arm, R′, on the extreme outer end of which a plate, S, that carries the journal of the outside supporting-wheel T, can be adjusted and fastened, to regulate the height of the outer end of the platform and its several attachments. The stop *t* defines the distance that the arm R can swing upon its pivot, and the stops *t′* and *t″* define the distance in both directions that the arm R′ can swing upon its pivot. At *u u′* are shown spring-fingers clamped to the forward end of the elongated shoe N″, and extending far rearward to turn the grain onto the platform or within the sweep of the rake or reels.

When the machine is arranged for mowing, as shown in Fig. 7, the platform, and everything attached to it, is removed, and the track-clearer T′ is pivoted to the shoe N at the hole where the lever-latch *q* was placed.

The pinion *h* in the gear frame or box A can be moved in and out of gear with its driver *g* and the driven gear *f* by being moved upon its shaft through a lever and cam, *u′*, outside of the gear-box, and within reach of the driver in his seat, and so stop or start the cutters at any time. The shaft of the crank-wheel U passes through a sleeve, which is a part of what I term the cutter-frame B, and to a wrist-pin in this crank-wheel is attached one end of the connecting-rod or pitman *x*, the other end being attached to a lug or projection, V, on the cutter-bar by a peculiarly-constructed ball-and-socket connection, as more distinctly seen at Fig. 10, which, constituting the subject-matter of a separate application, need not be further described here. To the rear or cutter frame B, which is of cast metal, and near to the inside wheel D, I bolt a Y-shaped wrought-iron piece, W, and, by means of wrought-iron cross-braces X and Y, firmly unite this piece W to the rear part of the main frame. As this piece W has mainly to support the cutting and raking mechanism, it is necessary that it should be of wrought-iron, and of very great strength, to endure the strains it is subjected to. Z is a coupling-piece, through which the cutting and raking mechanism and platform are united to the wrought-iron piece W; and as this coupling-piece Z serves other purposes—viz., as a shield and a support for a raising and lowering and for a gaging mechanism—it is made of cast-iron, owing to its shape and form. The coupling-piece Z is connected to the wrought-iron piece W by a bolt, *z*, which serves as a pivot about which the frame and the coupling-piece Z may move, as occasion may require. In a recess formed in the face of the coupling-piece, next to the cutting apparatus, is securely fastened a sustaining plate or yoke, A′, from which project two downwardly-bent arms, B′, one at each end thereof, and to the lower ends of these bent arms the inside shoe P is pivoted by bolts *b′* passing through the arms B′, and through lugs *c′ c′*, cast upon or with said shoe P. As the shoe P in reality supports and carries the rakes or beaters, and the mechanism for operating them, the finger-bar, cutting apparatus, platform, outside support and divider, and track-clearer, it may be said that all these parts can rise and fall about the pivotal points *b′* as a center, even to folding up the cutting apparatus thereon, so as to carry it on or against the main frame. In the coupling-piece Z, and behind the plate A′, there is supported, so as to turn freely, a shaft, *d′*, which has a crank-arm, *e′*, attached to one of its ends, and lying within the hollow portion of the coupling-piece Z. To the end of this crank-arm *e′* is attached a chain, *f′*, which,

when the machine is arranged for mowing, is connected to the vibrating beam E′, pivoted to a standard, F′, at the point g', said standard being cast with or upon the forward or gear frame A of the machine. On the opposite end of the shaft d', and at right angles to the arm e', is another crank-arm, h', which is linked by a link, i', to a gag-lever, j', pivoted by one of the bolts b', and so made as to take upon the heel of the inside shoe P when mowing, and gag up the finger-bar and cutting apparatus, this gagging mechanism being operated from the driver's seat through or by means of the lever G′ and the vibrating beam E′. When, however, the machine is arranged for reaping, the chain f' is unhooked, and another chain, k', is hooked to the end of the vibrating beam E′; and this accomplishes an entirely different object and purpose, though through or by means of the same lever G′ as will be explained. The chain k' is fastened to the end of the vibrating beam E′, and passes down under a loose pulley or friction sleeve or boss, 2, on the pivot rod or shaft z, thence up and is fastened to a windlass, c', which can be turned by a crank or key placed on its shank l', and which is held, when the chain is wound up on it to the desired point, by a spring and lever-dog, m'. By this mechanism the rear of the cutter-frame and its attached parts may be raised to pass any obstruction through the vibrating beam E′ and hand-lever G′, and when released they can only descend again as far as the chain k' will allow, or the motion of the vibrating beam admit of.

To raise or lower the points of the guards or fingers the rod n' is employed, (when the machine is arranged for reaping,) said rod being attached at its forward end to a projecting arm, o', on the hub or quadrant p' of the lever G′, and at its rear end to a lug on the rake-stand or its camway H′, thus crossing the hinged connection at z between the cutting apparatus, reel-rakes, and the cutter-frame B; but as the rake-stand, reel-rakes, &c., are all removed when the machine is converted into a mower, then this tipping of the points of the guards or fingers is accomplished by a connecting-rod, q', Fig. 7, connected to an arm, r', fast on the coupling-piece Z, and projecting rearward therefrom, at its rear, and at its forward end to a lug, s', on a lever, I′, which lever, though pivoted to the cutter or rear frame B, is forward of the main axle C, about which the two frames vibrate as a center. The hub or arc p' of the lever G′ is pivoted to the end of the vibrating beam E′ at 3, and there is a spring pin or stud, 4, attached to and passing through said arc p', and operated by means of the thumb-lever t^3 and rod t^4 on the lever G′, which pin or stud, when it shoots into the hole 5 in the vibrating beam, operates as a fulcrum behind the pivotal connection at 3, and actuates said beam from that point; and when the stud or pin 4 is withdrawn, then the lever and beam operate only on their pivotal connection at 3. The arc p' of the lever G′ is also pivoted at 6 to the top of a stirrup, J′, which in turn is pivoted to the gear-frame at 7, and a lifting-chain, w^3, is secured by one of its ends to the arc p' of the lever, and by its opposite end to the heel of the pole I for the usual lifting purposes.

The lever I′, above referred to, is arranged for tipping the points of the fingers when the machine is arranged for mowing. It is curved rearward, as shown in Fig. 4, and is pivoted to the cutter or rear frame B at 8, and has a spring-bolt, v', attached to it, and operated by a thumb-lever, 9, and a rod, 10, and said bolt swings over an arc-piece, w', also attached to the cutter-frame, but above the main axle, the lever pivotal connection being below it; and this bolt v', when dropped into any one of the notches in the arc-piece w', holds the finger-bar in the position into which it has been tipped by the lever I′, to elevate or depress the points of the fingers.

When the machine is arranged for mowing, and has the stirrup-strap J (shown in Fig. 4) removed, as shown in Fig. 7, the operator, through the lifting-lever G′, can raise up the cutter-frame until its projection y' comes against the stop x' on the gear-frame, which defines or limits the extent of the upward motion of said cutter-frame. When these two parts x' y' are brought together, and the raising motion of the lever G′ is continued, the outer end of the finger-bar is gagged up, and can be so held up or let down at pleasure by the mechanism as above described.

It will be observed, by reference to Fig. 7 more particularly, that the box portion of the gear-frame A extends some distance behind the vertical plane of the main axle, about which it, as well as the rear frame, swings. The rear of this box portion is slotted, as at 15, so that the forward part of the sleeve or rear frame B, that incloses the crank-shaft, and as seen at 16, may enter and play through, and at the same time be laterally supported by, the sides of said slot or opening. This gives the rear frame additional strength or ability to resist the very heavy strains that must be borne by the rear frame, and at a different point from that immediately at and around the main axle.

The endless chain 17, that drives the reel-rakes, runs over and is driven by a chain-pulley, 18, on the main axle, Fig. 5. On the main axle, and close to the chain-pulley, is the clutch-box 19, and its sleeve or hub 20, by which it is permanently fastened to the main axle C.

There is attached to the clutch or ratchet-box 19 20 a spring-bolt, 21, that has a handle, 22, connected to it, and the shooting of this spring-bolt into an opening in the chain-pulley 18 is what holds said pulley to, and causes it to turn with, the main axle, which is also the main driver; and the chain-pulley can be disconnected from the driving-power (the main

axle) at any time when necessary to do so. Behind the chain wheel or pulley 18, and where the strained or driving part of the chain leaves the groove of the chain-pulley, wherein it is sometimes so tightly drawn as to not readily leave the groove, there is a clearer, 23, which projects far enough into the groove of said pulley, and below the driving part of the chain, so that, if the chain should tend to cling to the groove when it comes to the clearer 23, the latter would force it out of the groove.

The manner of guiding the chain onto the rake-reel head and the operation of the rake-reels I do not particularly describe, as they constitute no part of this present invention; but the rake-reel stand 24, and its connection and attachment to, so as to be readily disconnected from, the lugs c' c' and the pivot-bolts b' b', when the machine is to be changed from a mower to a reaper, and vice versa, is quite important, and is as follows:

The lower end of the reel-stand is branched into two legs or supports, 25, which branches or legs are so formed as to take over and rest upon the lugs c' c', which are a part of the inside shoe P. The heads of the pivot-bolts b', as more distinctly seen in Fig. 7, have grooved bearings or wrists formed on them, and two eyebolts, 26 26—one to each of the pivot-bolts—are slipped, with their eye portion, over the heads of said bolts and into the grooved or recessed seats thereon, and, by nuts on the hips of the legs 25, are drawn up tightly, and so the rake-stand and all its connections are firmly secured to the shoe P.

When the reel-rakes are to be removed to arrange the machine for mowing, the rake-arms are gathered up into a vertical position, and so tied or lashed. The nuts of the eyebolts are slackened until the eyes of said bolts can be slipped off from the heads of the pivot-bolts b', and then the rake-reels and stand can all be lifted off together. An open link (one or more) in the driving-chain allows it to be detached, and the whole change can be made in a few minutes.

On the bar K, fastened to the pole I, there is arranged a foot-lever, 27, to which a cord, 28, is attached. The rear of this cord is connected to or with a tripping mechanism connected with the head that carries the reel-rakes, and by means of which the driver may at any time alter or change the arm that was about to clear the platform, and cause it to pass over without raking.

This tripping or changing mechanism constitutes the subject-matter of claim in other applications, and need not be more particularly described here.

The rail 29, Fig. 4, on the rake-stand is made adjustable by an ordinary slot and set-screw, one at each end thereof, so that the rake may be adjusted to the platform O, to just pass over without dragging upon the platform.

What I claim is—

1. The hinged supports R R′ for the outside supporting-wheel T, in combination with the adjustable slide S, for raising or lowering said wheel upon its supports, substantially as described.

2. The rake-stand 24, with its branched legs 25 25, in combination with the lugs c' c', wrist-studs b' b', and eyebolts 26 26, for the purpose of readily attaching and detaching said rake-stand and its connected parts to or from the inside shoe, as described.

3. The hinged and swinging shield-board M, with its spring-arm n, to crowd the grain toward the platform, and prevent it from clinging or clogging, as and for the purpose described.

4. The vertically-adjustable rail 29, in combination with the rake-reels, for the purpose of adapting said rake-reels to the platform, as described.

5. The windlass or drum C′, with its ratchet m', for adjusting the length of the chain k, by which the raising, lowering, and holding the rear of the cutter-frame at a regulated height above the ground is effected, as described and represented.

6. The vibrating beam E′, pivoted to a stand, F, on the gear-frame, in combination with the lever G′, links J′, and chain-connection k', as and for the purpose described.

7. The clearer 23, rigidly attached to the frame B, and projecting into the groove of the chain-wheel 18, for forcing the chain out of said groove, should it cling thereto, as described.

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Witnesses:
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HORACE T. COOK.