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No. 201,579. **Patented March 19, 1878.**

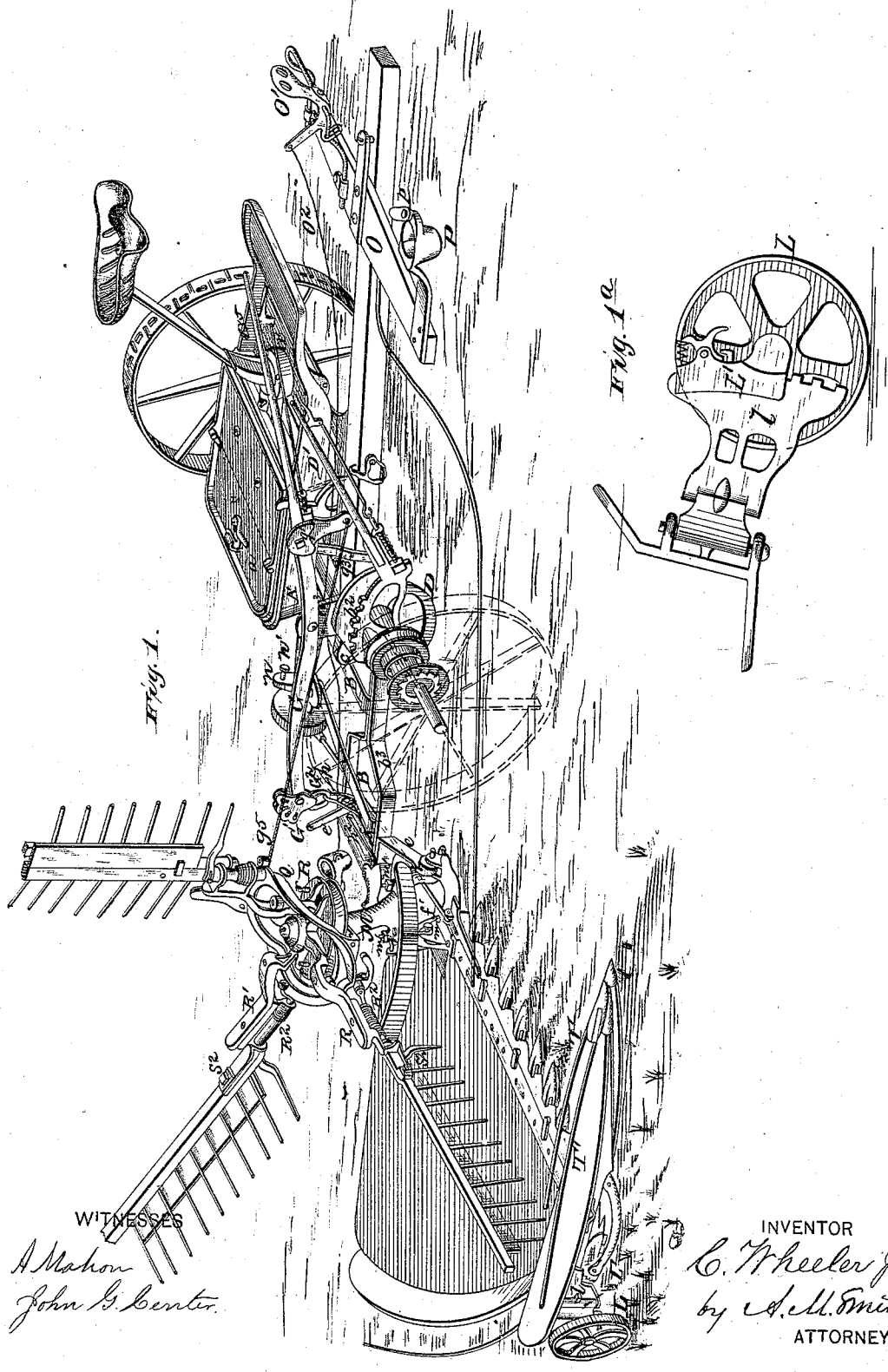

Fig. 1.

Fig. 1a.

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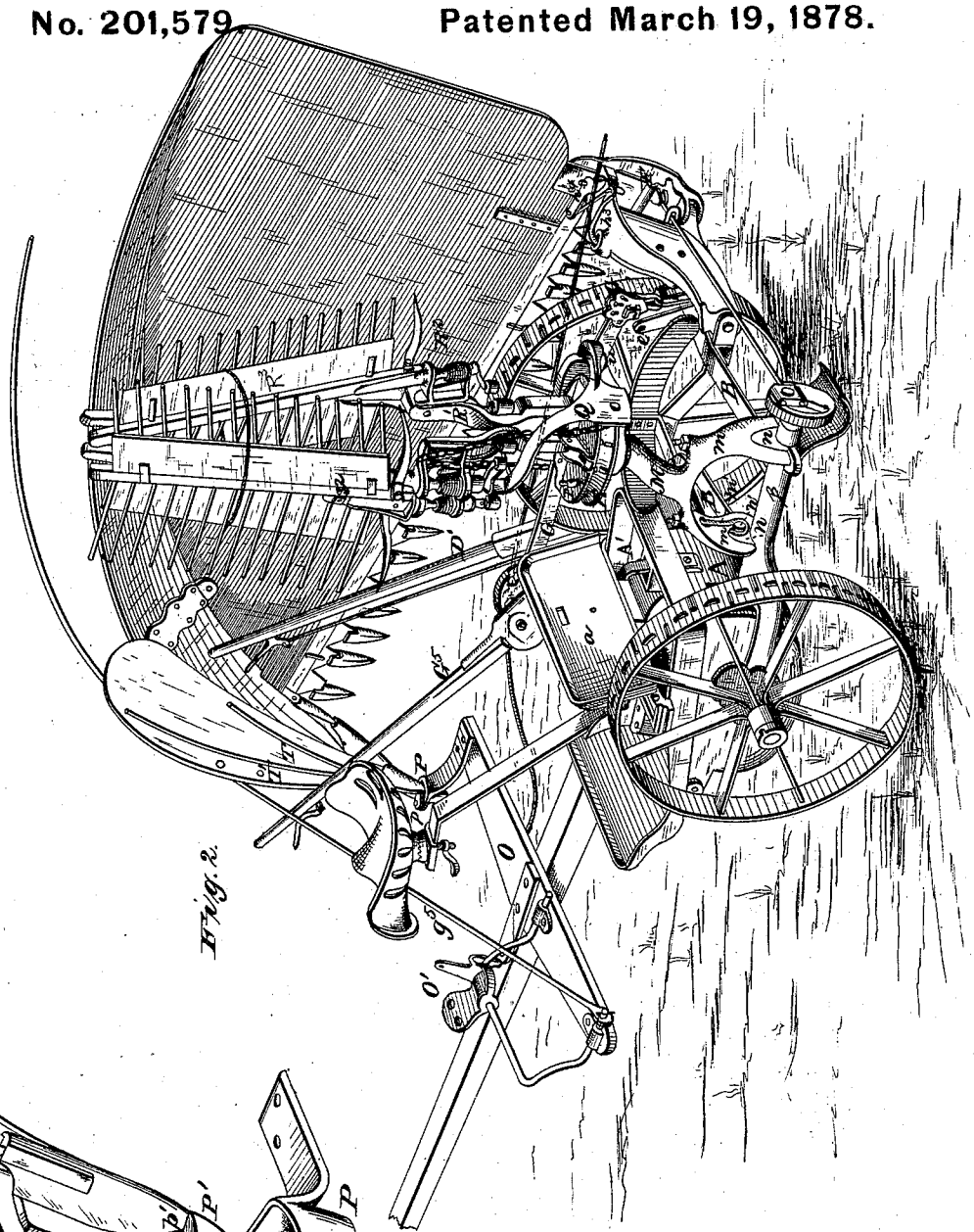

Fig. 2.

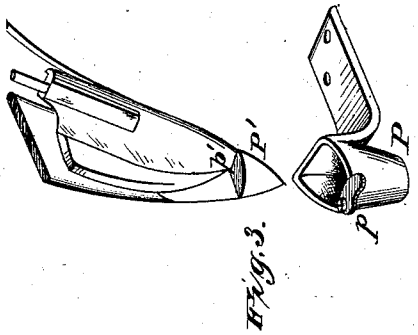

Fig. 3.

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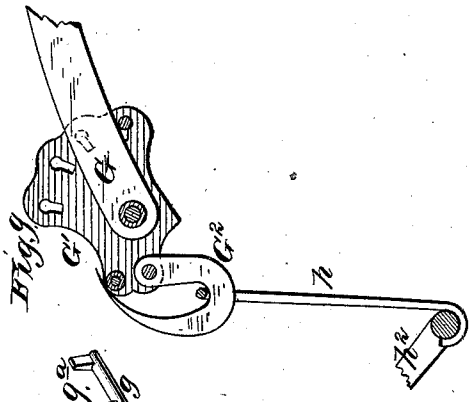

Fig. 9.

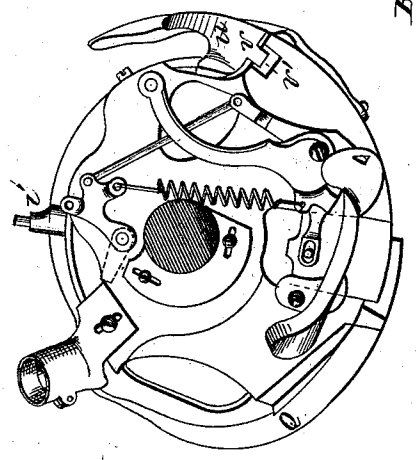

Fig. 5.

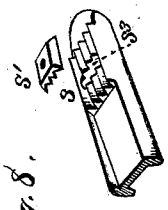

Fig. 8.

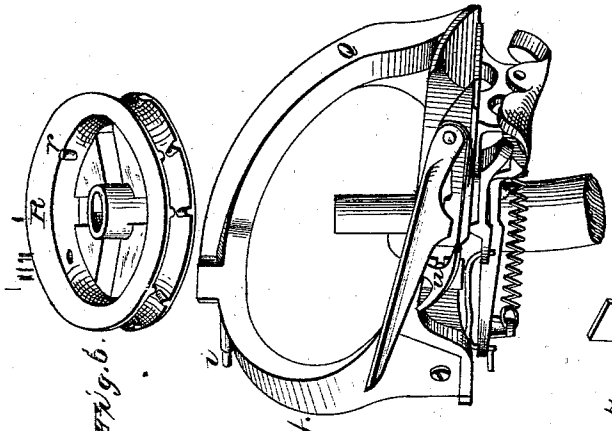

Fig. 6.

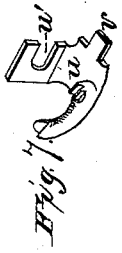

Fig. 7.

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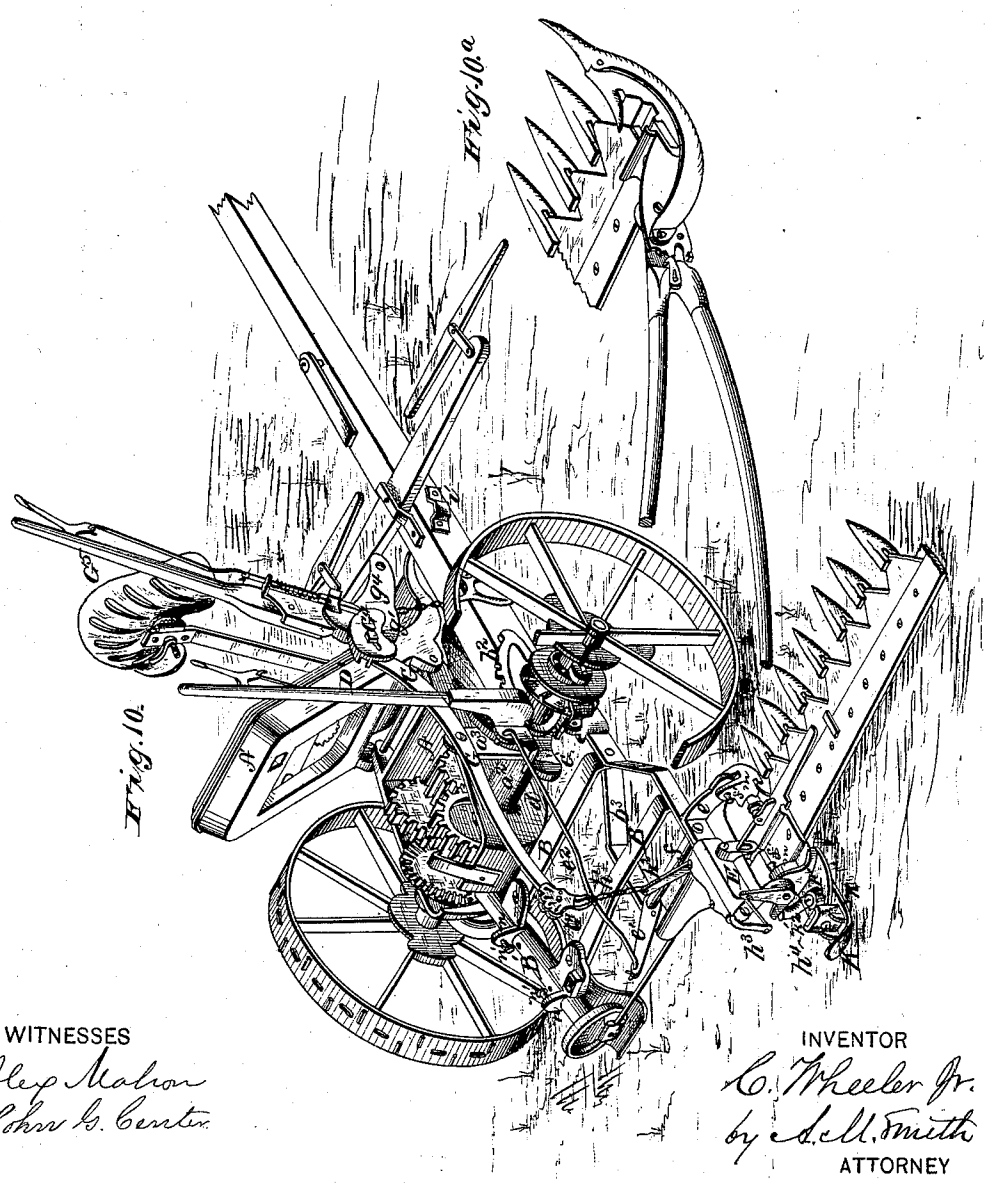

Fig. 10.

Fig. 10a.

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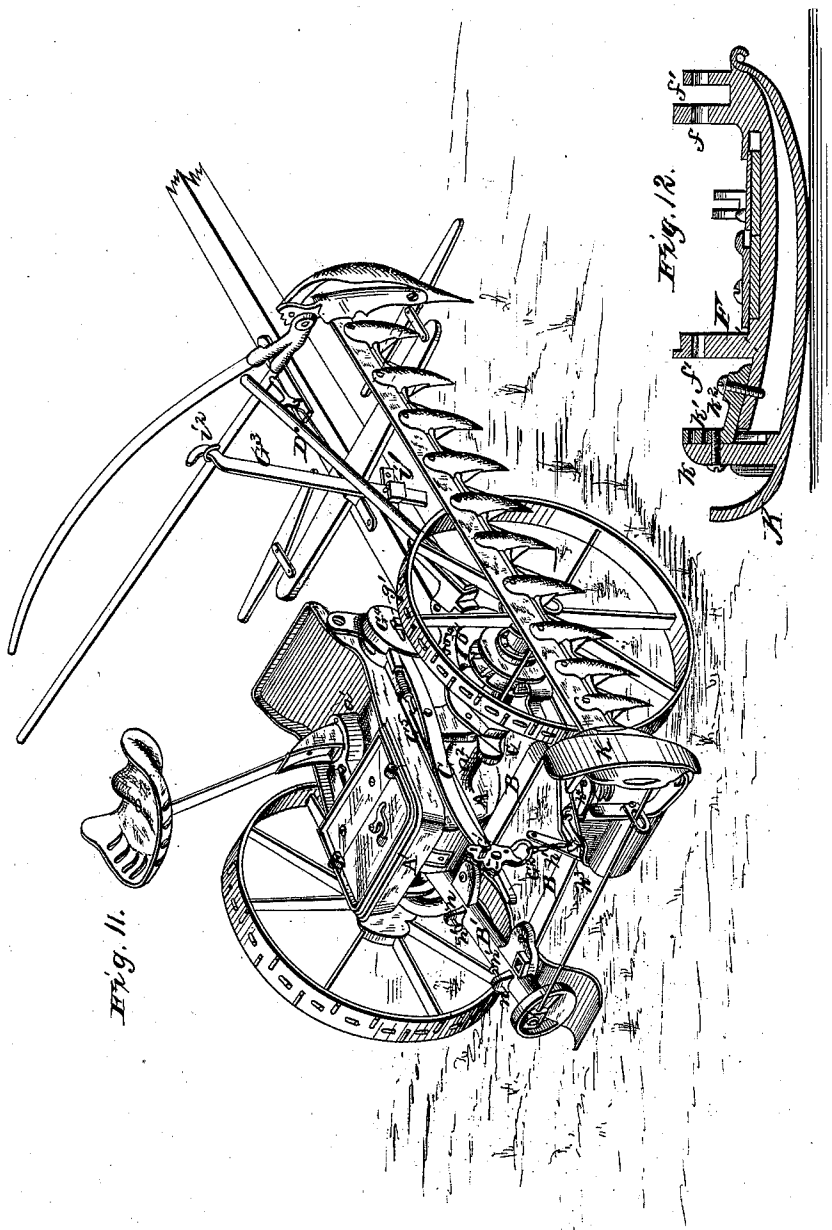

Fig. 11.

Fig. 12.

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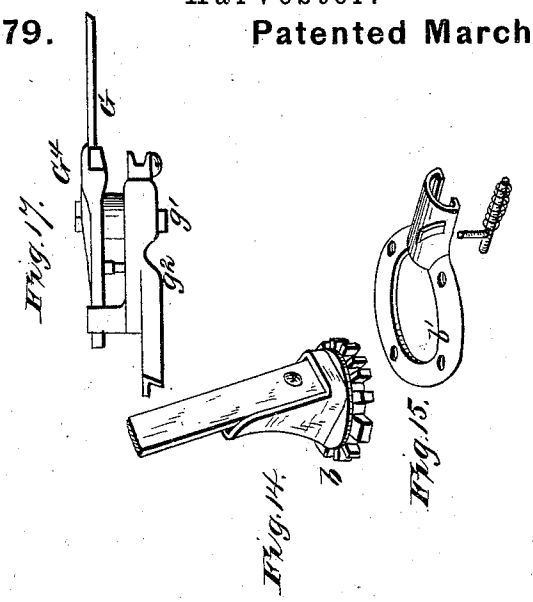

Fig. 17.

Fig. 14.

Fig. 15.

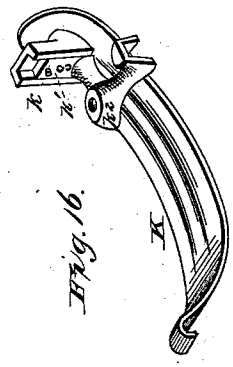

Fig. 16.

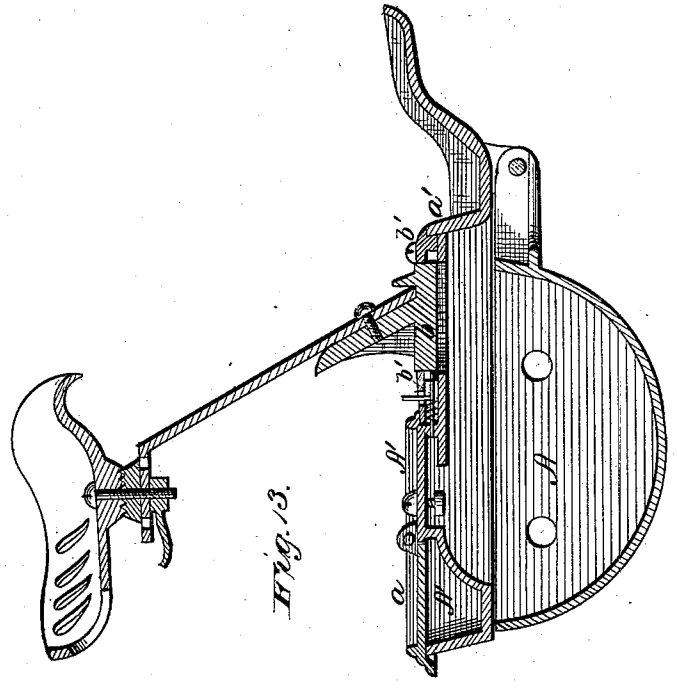

Fig. 13.

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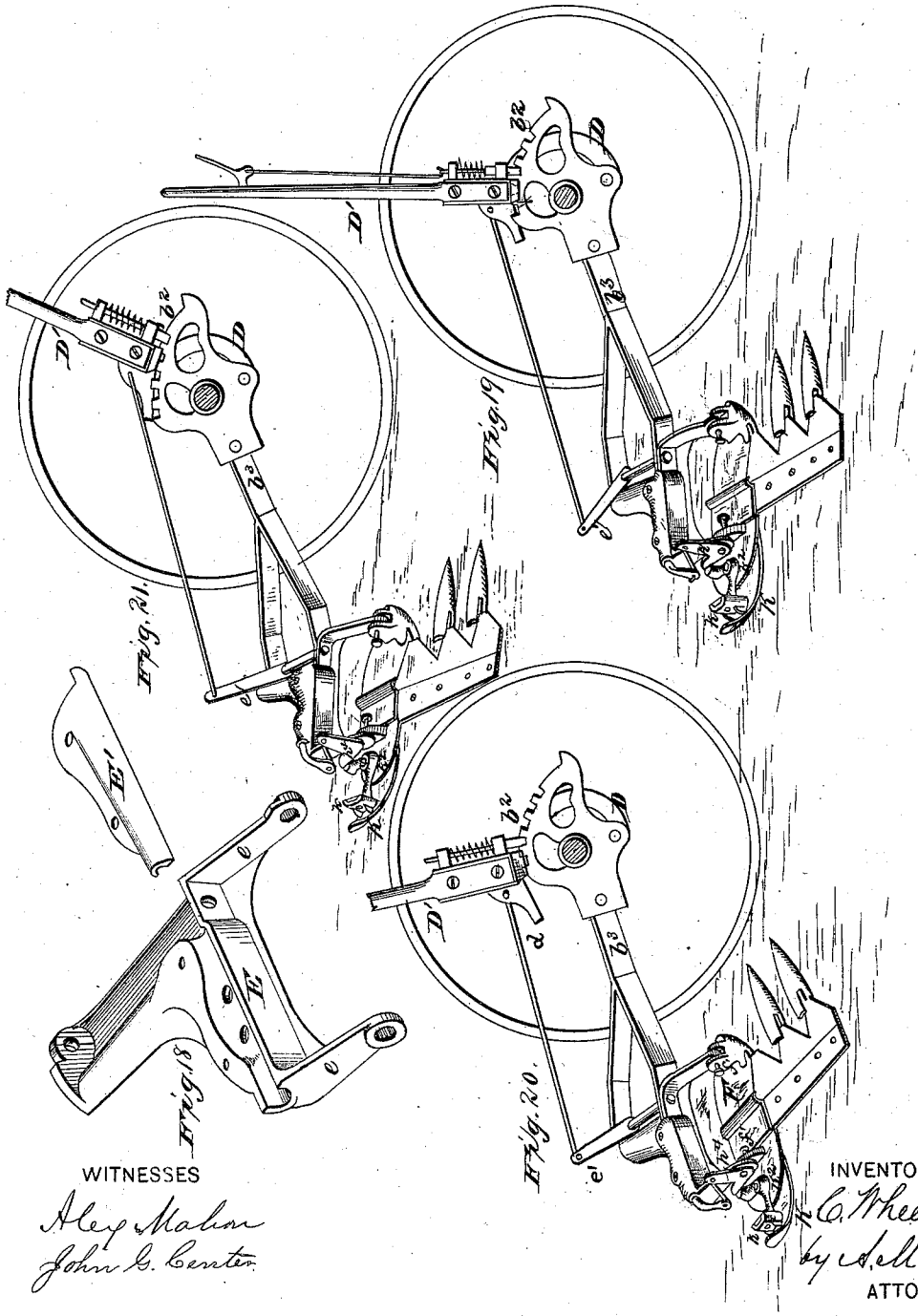

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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **201,579**, dated March 19, 1878; application filed February 9, 1878.

To all whom it may concern:

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

Figure 1 is a perspective view of my improved machine adapted for use as a reaper. Fig. 1ª represents an elevation of the adjustable grain-wheel. Fig. 2 is a perspective view of the same folded for transportation. Fig. 3 is a perspective view of the socket-piece for holding the divider-point when the platform is folded; also of the divider-point detached. Fig. 4 is a side elevation of the rake-cam, and of the devices connected therewith for controlling the path of the rake-arms, and Fig. 5 is a bottom view of the same. Fig. 6 is a perspective view of the revolving rake-head or wheel inverted. Figs. 7, 8, 9, and 9ª represent detached parts, hereinafter described. Figs. 10 and 10ª represent a perspective view of the machine when used as a mower; and Fig. 11 is a similar view, showing the mower folded for transportation. Fig. 12 is a vertical longitudinal section through the inner shoe, with its adjustable runner. Fig. 13 is a vertical longitudinal section through the gear and seat frames, &c. Figs. 14, 15, 16, and 17 represent details hereinafter described. Fig. 18 is a perspective view of the hinge and pivot-piece connecting the cutting apparatus with the main frame; and Figs. 19, 20, and 21 are perspective views, showing different adjustments of the cutting apparatus for changing the angle of cut.

Similar letters of reference denote corresponding parts wherever used.

The invention relates to a combination of parts or devices for mowing grass and for harvesting grain, &c., and constitutes what is known and distinguished by mowing and reaping machine builders as "a combined machine;" and while some of the devices are specially applicable to and are used only in mowing, and others are applicable to the process of and are used in reaping, other devices are applicable to, and the machine, as a whole, is adapted to and is used for, both purposes.

The nature and object of the improvements may be briefly stated as follows, viz: To produce a more convenient adjustment of the finger-bars for varying the height of cut; a light, strong, and convenient device for making the hinge-connection between the finger-bar and the frame of the machine; a simplification of the tilting and lifting levers and their locking mechanisms, and their peculiar arrangement, adapting them to be used both in reaping and in mowing; an arrangement of devices in connection with the tilting-lever for automatically controlling the gag dog or lever when folding the cutting apparatus for transportation on the road as a mower, and for holding said dog out of action in reaping; also, in a metal seat-frame and tool-box of peculiar construction, serving as a cover for the gear box or frame, and as a support for the seat, and having devices connected with it for changing the position of the seat and holding it in any desired position.

The invention further relates to the provision of supports on the crank-frame for holding and carrying the raking apparatus when the platform is folded for transportation; and to the means for securely supporting the platform when folded at the side of the machine, all as hereinafter fully explained.

The machine in its general arrangement and organization of parts is similar to that described in Letters Patent granted to me July 13, 1875, No. 165,460, and needs, therefore, to be described in detail only so far as is necessary to an understanding of my present improvements.

In the accompanying drawings, A represents the gear box or frame, within which the driving and multiplying gears are located, as shown, under any convenient or desired arrangement, said box being provided with projecting sleeves, in which the main drive-wheel axle rotates and has its bearings. This frame is further provided at its inner side with a socket for the reception of a tongue, which is firmly bolted therein, making frame A the draft-frame of the machine. The frame A has forwardly-projecting lugs at its sides, and to these the metal seat-frame and tool-box A′ is pivoted near its forward end, said frame folding down upon and forming a cover to the gear

box or frame A, as shown in Fig. 13. This frame in form resembles the body of a buggy, the rear portion, including the hinged cover *a* to the tool-box, being raised, while in front of said raised part, and between said part and the foot board or piece, the flooring is depressed, and within this depressed portion is an elevation, a^1, nearly cylindrical in form, upon or within which is located a toothed disk, *b*, Fig. 14, to which the seat spring or standard is secured in the inclined position shown. This disk is held in place by a ring, b^1, Fig. 15, overlapping its outer edge or teeth, and held down upon the cylindrical socket a^1 by any convenient arrangement of bolts or screws. A spring-pawl engages with the teeth of the disk *b* for holding it at any desired point of adjustment, and, by withdrawing said pawl, the disk can be rotated for turning the standard from a position inclining to the rear in mowing to one inclining forward, moving the seat out of the way of the rakes in reaping, or to any intermediate position, as may be required, and in which it can be again locked and securely held by the spring-pawl. The seat-frame A′, thus provided with the tool-box, the socket for the seat-support and foot-board, and forming the cover to the gear box or frame, as described, is formed or cast in one piece.

The seat applied to the upper end of the inclined standard is adapted to be readily adjusted thereon to accommodate it to the adjustment of the seat-standard, as described.

The vibrating frame B, with which the cutting apparatus is connected, as hereinafter described, has sleeves on its forward end surrounding the axle-sleeves on the gear box or frame A, and vibrates around the main axle as a center. This frame B has upon it a sleeve, B′, which incloses and protects the crank-shaft mounted therein, the forward end of said sleeve moving in a slot in the rear wall of box A. Shown in Figs. 10 and 11.)

The inner end of the sleeve a^2 of box-frame A has a standard, a^3, formed upon it, to the vertical side of which is pivoted a weighted dog, *c*, which serves, when not thrown up out of the way, to limit the upward throw or vibration of the frame B when the machine is used as a mower. A rack-plate, b^2, attached to the inner arm b^3 of the frame B, and connecting said arm with the axle-sleeve, has a curved lever plate or arm, D, pivoted to it at a point below the axle, as shown in Figs. 19, 20, 21, said arm curving around in front of and above the axle, and having the lever D′ secured in a socket in its upper end. This arm D is provided on its side adjacent to the weighted dog *c* with a horizontal arm or spur, *d*, which overhangs the upper arm of said dog, and serves, when the lever is thrown forward, to depress said end, and thereby to release the frame B from the action of the dog, limiting its upward movement, and thus to permit the further upward vibration of said frame when required for transportation or other purpose.

E is a hinge-piece, forming the connection between the shoe or cutting apparatus and the frame B. This connecting-piece is shown detached in Fig. 18 as being in an irregular form, approximating a triangle, right angled at the junction of its forward and outer sides, with its forward side made concave on its upper face to receive a transverse shaft or pivot, *f*, connecting it with the forked rear end of frame-bar b^3, as shown, and upon which pivot said connecting-piece is rocked or vibrated for changing the angle of presentation of the cutters in a manner that will be readily understood.

The outer side of the piece E, lying in a plane about parallel with the path of the machine, has two arms, *e e*, projecting obliquely downward, and to these arms the shoe F is pivoted through suitable lugs or ears *f′*, formed thereon, as shown, and which, in the present instance, serve also as supports or points of attachment for the rake-stand, as hereinafter described. The upper face of plate E on the side adjacent to the cutting apparatus is grooved to receive a crank-shaft, through which the gag-lever, hereinafter described, is operated, and which, when in place, is secured by a cap-plate or cover, E′, bolted thereon.

The hinge-piece E, thus made in a single piece, serves both to pivot the finger-bar, which is bolted to the shoe in the usual manner, to the main frame, for allowing it to rock on its longitudinal axis, and also as the hinge-piece, to which said bar is connected, for allowing it to rise and fall at its outer end in following the surface of the ground. An arm, e^1, is pivoted on the shaft *f*, and connected with the hinge-piece E, as shown, and has its upper end connected by a rod or link, e^2, with the lever D′ or its arm D, in such manner that when the lever is vibrated it serves to rock the hinge-piece E on the pivot *f*, and with it the cutting apparatus, for raising or depressing the points of the cutters, as required.

Near the upper end of standard a^3 is pivoted a beam or lever, G, the rear end of which overhangs the pivot *f*, and has an adjustable block, G^1, pivoted to it, as shown in Fig. 9. This block is composed, preferably, of two parallel plates, clasping the end of beam G between them, open at their forward upper end, to allow them to vibrate or be adjusted upon the beam, and provided at their lower rear end with a hook, G^2, with which the lifting link or chain is connected, as shown. This block is provided with a series of perforations near its upper curved edge, made key-hole shaped; and a key, *g*, Fig. 9^a, passed through one of said perforations and under the bar, as shown in Fig. 9, serves to hold the block, and with it the frame B, at the required adjustment.

By changing the pin or key *g* from one hole to another, the block can be adjusted and the frame held at any required height, or by removing the key and inserting it above the beam the block G^1 will hang pendent, giving

the greatest depression to the frame and cutting apparatus. The form of the key g prevents its accidental displacement, as it has to be turned into proper relation to the key-seat before it can be withdrawn.

The block G^1 is provided upon one side with a socket for the reception of one end of a lever, G^3, by means of which the block, carrying, as it does, the weight of the frame B and its attachments, can be readily adjusted.

This lever G^3 performs also another function, hereinafter described.

The forward end of beam or lever G has upon it a catch-plate, G^4, made adjustable by being slotted, and fastened to the forward end of the beam by a through-bolt or set-screw, g^1, and by means of which adjustment this rack or catch-plate is adapted to lock the lifting-lever G^5, whether adjusted to the machine as a reaper or as a mower. The same through-bolt g^1 which secures the catch-plate to the beam G also serves to pivot a grooved quadrant or sheave, g^2, through which the lever G^5 is attached to the forward end of said beam, and a chain extending from said sheave down to the tongue or tongue-frame serves to limit the upward movement of the forward end of beam G, and thus to hold the frame B with the cutting apparatus at the required height at which it has been set for reaping.

The grooved segment g^2 in reaping has pivoted to it the upper end of a link, g^3, the lower end of which is pivoted to the tongue or tongue-frame A in such manner that as the lever is vibrated forward on the link g^3 as a fulcrum it will depress the forward end of beam G, and thus raise the rear end, and with it the frame B and the cutting apparatus connected therewith.

In mowing, the movement of this lever G^5 is reversed, the catch-plate G^4 being moved or set forward on the beam G. The notches on the rear portion of said plate are brought into proper position to engage with the thumb-latch for holding the lever, and, the link g^3 being detached, the lever is thrown back into convenient position to be operated by the driver in the seat arranged for the mower, as explained, and acts through the chain for drawing down the beam G when the lever is drawn backward.

The lifting-segment g^2 is provided with an arm, g^4, and when the machine is used for reaping a link, g^5, connects this arm with a stud or pin, i, on the outer or stubble side of the rake cam or stand, and acts through the rake-stand for rocking the cutting apparatus on the pivot f, in lieu of the arrangement described for rocking said bar in mowing. The rod or link g^5 serves the additional purpose of fastening or bracing the platform in the folded position shown in Fig. 2, the hooked end of said rod engaging with an eye or staple on the divider-board, the other end of said rod being connected with a pin on the driver's foot-board used in reaping, as shown.

The beam G is connected, through the adjustable block G^1 and hook G^2 by means of a hooked link, h, directly to the pivot f or other suitable point of attachment on frame B, for upholding and adjusting said frame in reaping; but in mowing this hooked link is replaced by a chain or cord, h^1, which connects the beam G with an arm, h^2, on the rock-shaft h^3, through which the bell-crank gag-lever h^4 is operated for gagging or locking the joint f' between the shoe and hinge-piece E, said chain acting to raise the frame until it is stopped by the weighted dog c, when the continued upward movement of the beam G acts through the gag-lever h^4 to raise the outer end of the cutting apparatus, either for passing over an obstruction or for first raising the bar and then folding it at the side of the machine for transportation, as shown in Fig. 11. When thus folded the bar or lever G^3, heretofore referred to for adjusting the block G^1, when not in use for that purpose, is carried in a socket, i^1, on the side of the tongue, in position for its hooked upper end to engage with an eye, i^2, on one of the rods of the track-clearer, and serves to hold the bar folded at the side of the machine, as shown.

In this operation of folding the mower-bar, the lever D′ is thrown forward, and acts on the dog c, as has been explained, permitting the frame B to be raised to the required height above the ground for convenient transportation.

In mowing, the inner shoe is provided with an adjustable sole or runner, K, (see Fig. 12,) having a hook or loop on its forward end or point, which engages with an eye in the point of the shoe, as shown. The rear end of this runner has a grooved standard, k, (see Fig. 16,) formed upon it, rising in close proximity with the heel of the shoe F, and is adjustably connected therewith by means of a set-screw or bolt passing through a perforation in said standard into any one of a series of holes in a standard, k^1, matching into the groove in the forward face of standard k, as shown.

The standard is formed on an arm of the gag-block k^2, made separate from the shoe, and bolted in place thereon when the runner K is applied, and the machine is used as a mower, in position to be acted upon by the gag-lever, as shown.

The outer end of the platform is supported by a caster-wheel, L, the shaft of which has a grooved standard, L′, applied to and sliding upon a toothed rack-standard, l, hinged by a swinging plate or arm to a bracket on the divider or fender board, arranged about in line with the finger-bar.

The standard L′ is held engaged with the rack-standard by means of a spring thumb-latch, adapting the wheel to be readily adjusted, and the teeth on the rack-standard are arranged at a distance apart conforming to the adjustment effected at the main-frame end by the perforations in block G′, so that when the

block is not held locked up by the key the standard L′ will be engaged with the upper tooth of the rack-standard, and when the block G′ is rocked forward, and the pin or key *g* placed under the beam G in the first hole, the outer end of the platform is to be raised until the thumb-latch engages with the second or next lower tooth of the rack-standard, and so on, for giving a uniform adjustment to both ends of the cutting apparatus. Under this arrangement the platform can be vibrated for raising or depressing the points of the cutters, as has been explained, without materially interfering with the parallel relation of the finger-bar to the ground.

The rake-standard M is bifurcated, or made in the form of an arched yoke at its lower end, striding the sickle and its connecting-rod, and the arms *m m* of this yoke are provided at their lower ends with notches in the form of an inverted V or U, matching the lugs or ears on the shoe, and through which the shoe is hinged to the arms of the hinge-piece E, as has been explained; and bolts *m′*, passing down through the horizontal portions of arms *m*, are provided with loops or eyes, which are slipped over the projecting ends of the pivots connecting the shoe and hinge-piece, when, by tightening the nuts on the upper ends of the bolts *m′*, the rake-standard is drawn down and held firmly in place upon the lugs or ears of the shoe in the position it occupies when in use.

When the platform is to be folded for transportation, the rake-standard is detached by loosing the bolts *m′* and releasing the eyes from the grooved or headed ends of the shoe-pivots, and is placed over lugs or ears *n*, formed on the crank-shaft sleeve B′, conforming in shape and distance apart to the ears on the shoe, and is there fastened in a similar manner by the eyebolts engaging with studs or pins *n′*, or with a rod or bolt passing through the lugs *n* and the eyes to bolts *m′*, as preferred.

When the seat is moved forward in reaping, as shown and described, a driver's foot-board, correspondingly advanced, is necessary, and this is provided for on a transverse bar, O, removably connected with the pole of the machine, and which is provided also with the rocking shoe piece or treadle O′, by means of which the driver controls the operation of the rake through the cord o^2, connecting said treadle with either the lever for tripping or for setting the rake, cam, switch, or gate, as the case may be.

The inner end of the transverse bar O projects beyond the plane of the inner driving-wheel of the machine, and has secured to it a socket-piece, P, (see Figs. 1, 2, and 3,) the vertical socket in which is made tapering in form, conforming in shape substantially to the form of the point P′ of the divider, which rests therein when the platform is folded, as shown in Fig. 1.

The socket-piece is provided at the upper end of the socket with a pivoted button, *p*, which, when the divider-point is in place in the socket, is turned over a shoulder, *p′*, on the divider, and serves effectually to prevent accidental displacement or withdrawal of the divider from the supporting socket-piece P.

When the platform is thus folded, the rod g^5 is applied thereto, as described, for bracing it from the foot-board O, and preventing the racking and strain to which it would otherwise be subjected.

For the purpose of facilitating the transfer of the raking apparatus from the shoe to the crank-sleeve or vibrating frame in folding the machine for transportation, and vice versa, the rake-cam and the rollers on the rake-arms hold said arms down upon the cam only when they assume a vertical, or nearly vertical, position, and between said position, in which they move by the main frame or inner drive-wheel in their forward or return movement, and the point at which the arms pass over the cutters after having delivered the grain thereto and deposited it on the platform, a distance about equal to, or less than, a quarter of a circle. The arrangement is such that when one arm has passed beyond the retaining-ledge Q the succeeding arm will still be in a vertical position, or nearly so, preparatory to beginning its operative movement, and the other arms, being free from the cam, or resting thereon only by their own gravity, can be readily folded up by the side of the vertical arm into the compact position shown in Fig. 2, where they can be tied together by means of the trip-cord o^2, or its equivalent, this arrangement greatly facilitating the handling or transfer of the rake.

R is the revolving head and sprocket-wheel, in sockets in the upper face of which the radial rake-arms are pivoted. An inverted view of this wheel, with one of the pins *r* applied for automatically actuating the switch or gate in the cam-track, is shown in Fig. 6. The manner of combining these parts has been described in a former patent.

A swiveling arm or socket-piece, R^2, is mounted in suitable bearing-brackets at the outer ends of rake-arms R^1, in a manner described in a former patent referred to, and the outer end of this (see Fig. 8) is provided with longitudinal ribs or a corrugated face, *s*, the ribs or teeth made, by preference, to radiate from the bolt which secures the inner end of the rake-head R^3 to the arm or socket-piece R^2 as a center. s^1 is a nut, having a corrugated face matching the teeth *s*, a bolt passing through a transverse slot, s^3, in the arm R^2, and through the rake-head, and engaging with the nut s^1, for holding said head to the socket-piece or arm R^2.

When the nut s^1 is backed off, the head can be vibrated on its inner pivotal bolt referred to, the bolt s^2 moving laterally in the slot, and permitting the head to be adjusted to a proper working relation to the platform, when the bolt is tightened, and the head is firmly held in the required position.

By this arrangement the heads can be set to cause the teeth to descend into and pick up lodged grain; and where this is done, to make the teeth rise over the cutters, and thereby prevent their being caught therein, the head is extended beyond the teeth at its outer end, so as to overhang the divider-point, and the latter is provided with a guard or guide-rod, T, extending backward over the outer end of the platform, and rising toward its rear end, said divider-point and rod serving to lift the outer overhanging end of the rake-head as the latter moves back over the cutters sufficiently high to carry the rake-teeth clear of said cutters. A second rod, T′, is attached to the divider-point, inclining outward from rod T, serving to bear outward the uncut grain, and materially assisting, in connection with the rod T and the overhanging end of the rake-head, in effecting a separation of the cut from the uncut grain.

In some conditions of the grain it is necessary to cause the discharging-rakes to sweep farther back over the platform than is ordinarily required. To provide for this necessity, the rear end *u* (see Fig. 7) of the cam-ledge, under which the rake-roller travels when the arm to which it is applied acts as a rake-arm, is made adjustable by means of a slot, *u′*, and a set-screw through which it is secured to the cam-ring, and can be moved backward or forward, as required, for increasing or diminishing the throw of the rake. At the junction of the part *u* with the stationary part of the rake-cam ledge said part *u* is provided with a tongue, *v*, which moves in and out in a socket, *v′*, in the stationary part of the cam-ledge, thus obviating any break in the retaining-ledge, and preventing the rake-roller from escaping therefrom when the part *u* is adjusted as described.

Parts of the machine not particularly described herein may be constructed as shown in the drawings, as described in my former patents referred to, or in any usual or preferred manner.

The operation of the several parts described will be readily understood by those skilled in the manufacture of such machines without further description.

Having now described my improvements, what I claim as new, and desire to secure by Letters Patent, is—

1. The one-piece cover to the gear-case, formed as a shell, sunken in front to form a foot-board, domed toward the center to bridge the gearing, and having a pocket at the rear to form a tool-box, and being suitably flanged to shut upon the gear-case, substantially as and for the purpose described.

2. The one-piece metal seat-frame and tool-box, formed with the elevated shell-socket for the adjustable seat-spring holder, in combination with the flanged connecting-ring for holding said seat-holder in place while permitting its adjustment, as described.

3. The combination, with the beam G, of the adjustable catch-plate G^4, adapted to hold the lifting-lever locked in a forward position for reaping and in a backward position for mowing.

4. The lifting-lever G^5, in combination with the adjustable catch-plate G^4, substantially as and for the purpose described.

5. The adjustable block G^1 on the rear end of beam G, for setting and holding the inner end of the cutting apparatus at different heights in reaping, and with which the chain for actuating the gag-crank is connected in mowing.

6. The combination, with the platform, of adjusting-block G^1 on the vibrating beam G, for adjusting and holding the inner end of the cutting apparatus at different heights, and the adjustable grain-wheel at the outer end of the platform, adapted to effect a corresponding adjustment of said outer end, as described.

7. The gag-dog *c*, for limiting the upward throw of the adjustable cutter-frame, in combination with the tilting lever D′, for releasing said dog, as described.

8. The hinge and pivot piece E, for connecting the finger-bar with the main frame, made in one piece, of the form and substantially as described.

9. The combination, with the inner shoe, of the adjustable sole or runner K, provided with the grooved standard, and united to the shoe by the gag-block, substantially as described.

10. The removable transverse bar O, applied to the tongue, and provided with the conical or tapering socket-piece P, for holding the divider-point when the platform is folded.

11. The socket-piece P, provided with the locking-button, in combination with the shoulder on the divider-point, for holding the divider securely when the platform is folded.

12. The transferable rake-stand, in combination with bearing lugs or supports on the crank-frame, for holding said stand when not in use, and when the platform is folded for transportation, as described.

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Witnesses:
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