

(No Model.)

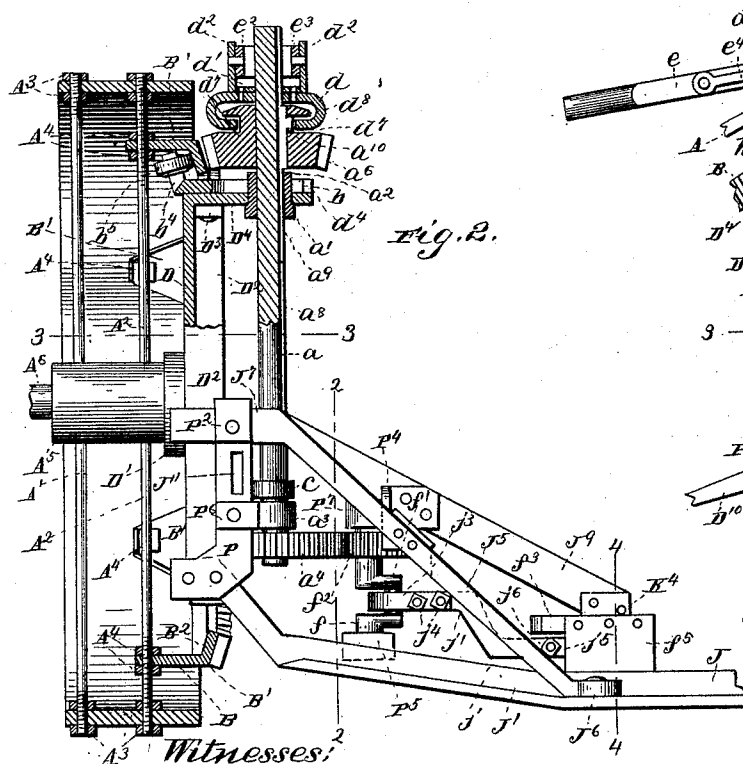
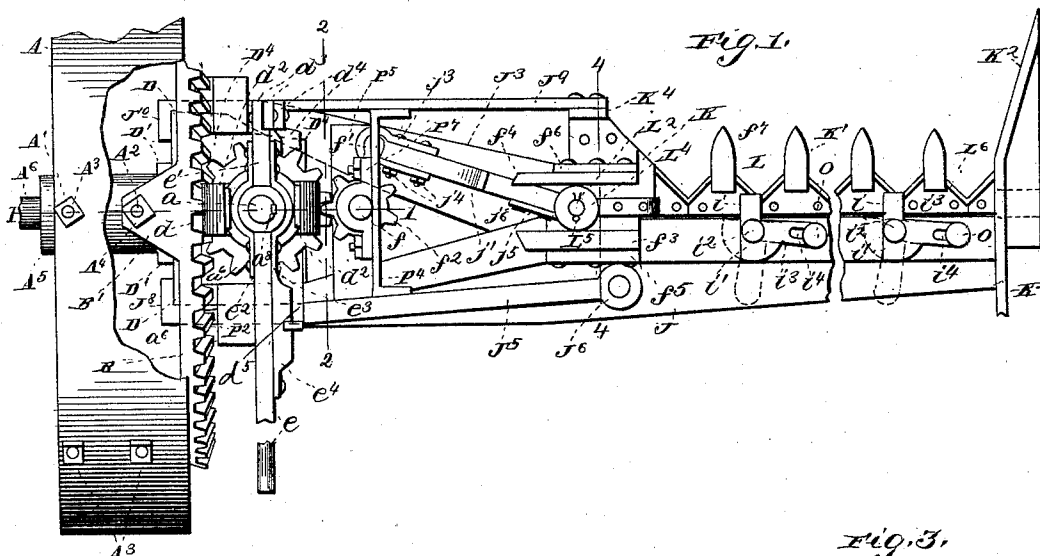
2 Sheets—Sheet 1.

G. SCHUBERT.

VERTICAL GEARING FOR HARVESTERS AND BINDERS.

No. 476,901.

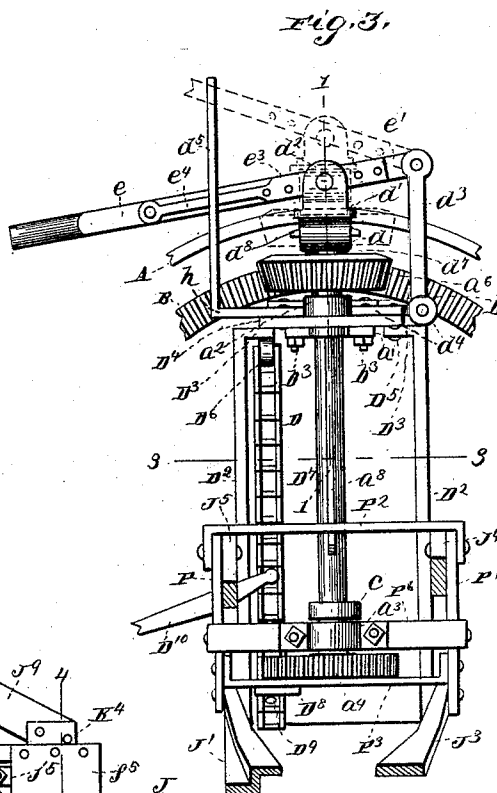
Patented June 14, 1892.



Witnesses:

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George Schubert.

(No Model.)

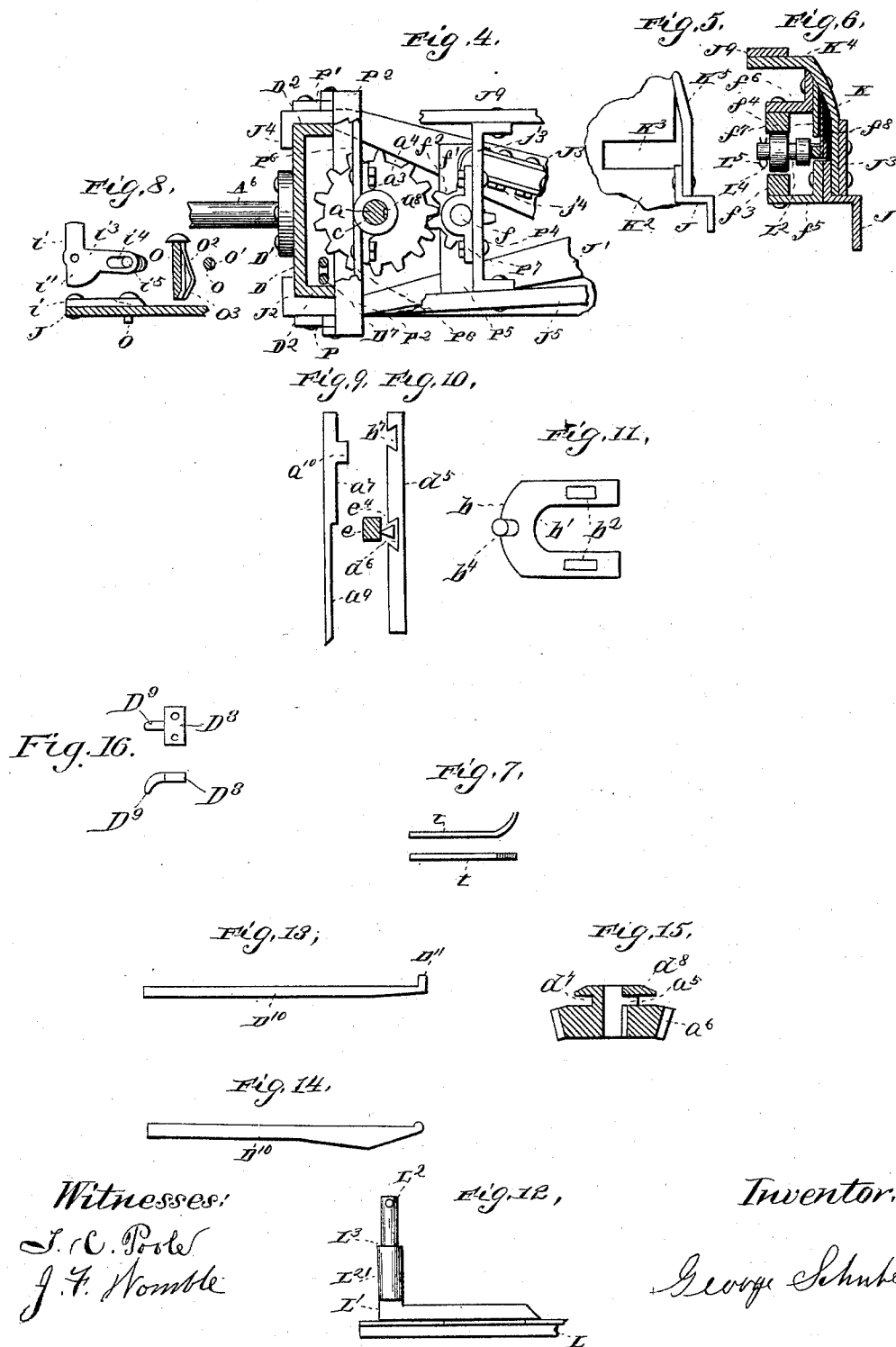
2 Sheets—Sheet 2.

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VERTICAL GEARING FOR HARVESTERS AND BINDERS.

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Patented June 14, 1892.



UNITED STATES PATENT OFFICE.

GEORGE SCHUBERT, OF WALNUT, TEXAS.

VERTICAL GEARING FOR HARVESTERS AND BINDERS.

SPECIFICATION forming part of Letters Patent No. 476,901, dated June 14, 1892.

Application filed April 23, 1891. Serial No. 390,212. (No model.)

To all whom it may concern:

Be it known that I, GEORGE SCHUBERT, a citizen of the United States, residing at Walnut, in the county of Bosque and State of Texas, have invented a new and useful Vertical Gearing for Harvesters and Binders, of which the following is a specification.

My present invention relates to improvements in vertical gearing for harvesters and binders in which the main operating-shaft is carried in a vertical position, thereby securing a larger range to elevate the machine and securing a perfect balance of the machine on the ground-wheels without extending parts of the machine to the front or rear; and the objects of my improvements are, first, to provide a plate (secured to the axle of the master-wheel and carried in a vertical position) with flanges on its vertical edges, thus preventing a light plate from springing, the upper ends of the flanges being cut from the body of the plate and turned inward to a horizontal position and the central portion of the upper end of the plate turned down over the ends of said horizontal flanges and secured thereto; second, to construct a lever and a shifter-clamp and a bevel-pinion, so that said pinion can be engaged with or disengaged from a driving-gear; third, to provide an idler to operate on the rear side of the toothed rim, so as to hold the toothed rim in proper mesh with its bevel-pinion without any side pressure on the axle of the master-wheel and to construct the bracket by which the idler is carried so as to be shiftable, so that the mesh with the toothed rim and bevel-pinion can be adjusted; fifth, to provide a simple and light raising and lowering device; sixth, to construct a sickle-head with a vertical stud to receive a pitman operated in a horizontal plane and an anti-friction roller thereon near its upper end and guides for said roller to operate on; seventh, to provide a shiftable or pivoted finger-bar clip, so that the passage of the sickle-bar can be cleared, so that the sickle-head can be removed grainward. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of the machine. Fig. 2 is a partial section on line 1 1, Figs. 1 and 3, with the lower parts shown in full lines from the rear. Fig. 3 is a section on line 2 2,

Figs. 1 and 2, with parts beyond shown in full lines and the master-wheel and the toothed rim partly broken away. Fig. 4 is a section on line 3 3, Figs. 2 and 3, with parts below shown in full lines. Fig. 5 is an end view of the grain-board, showing the opening through which the sickle-head is removed, the grain-board being partly broken away. Fig. 6 is a section on line 4 4, Figs. 1 and 2, showing the sickle-head and the stud provided with the pitman and anti-friction roller in full lines. Fig. 7 is a side and a plan view of the lever employed to remove the spring-pin from the finger-bar clip. Fig. 8 shows a plan and a side view of the finger-bar clip, with the finger-bar shown in section, and also a cross and an enlarged longitudinal section of the spring-pin by which the finger-bar clip is held in position. Fig. 9 is a side view of the key enlarged. Fig. 10 is a cross-section of the lever and a side view of the bracket by which the free end of the lever is retained in position. Fig. 11 is a plan view of the adjustable bracket with the anti-friction roller removed. Fig. 12 is a side view of the sickle-head attached to the sickle. Fig. 13 is a plan or edge view of the hand-lever to raise or lower the machine. Fig. 14 is a side view of same. Fig. 15 is a section of the bevel-pinion carrying the key a' , and Fig. 16 is a plan and side view of the bracket provided with the hook to engage with the chain.

Referring to the drawings, A designates the master-wheel, formed of a rim secured to the outer ends of the spokes A' and A^2 by the nuts A^3 . The outer ends of the spokes A' are threaded to receive the nuts A^3 , and the spokes A^2 are threaded farther down to also receive the nuts A^4 by which the toothed rim B is secured in position. The inner ends of the spokes A' and A^2 are secured in the hub A^5 in any well-known manner.

A^6 indicates the axle on which the master-wheel rotates. Said axle is rigidly secured to the plate D.

D' is a washer secured by rivets to the plate D to strengthen the plate D and to receive the axle A^6 and to secure the same more rigidly to the plate D. Said plate D is carried in a vertical position and provided with flanges D^2 D^2 on its vertical edges to prevent its springing. The upper ends of said flanges D^2

D² are cut from the body of the plate and turned inward to a horizontal position at D³ D³, as shown in Fig. 3, to receive the projection D⁴, which is an extension of the plate D, bent to a horizontal position over the ends D³ D³ and secured to the ends D³ D³ by the rivet D⁵ and lug D⁶, forming the rivet for the rear side. Said lug D⁶ is perforated to receive the chain D⁷. Said chain extends to the lower end of the plate D for the purpose hereinafter described.

J designates the finger-bar of the ordinary double-angle or Z form. Said finger-bar is provided with the usual inner shoe K and guard-fingers K' and a grain-board K², of ordinary construction, secured to the outer end of the finger-bar J in any suitable manner and provided with an opening K³, (see Fig. 5,) located on the line of the sickle-bar L, and through which the sickle-head L' is removed. K⁵ forms the outer guard or shoe, secured to the finger-bar J and to the grain-board K² in any suitable manner. The inner end of the finger-bar J is provided with an extension J', extending stubbleward toward the plate D and gradually reduced in width toward its end, and with its end turned forward at a right angle at J² on the rear of plate D to receive the plate D. The end of said extension J' is slightly elevated, as shown in Fig. 2, so as to clear the toothed rim B.

J³ indicates a bar secured to the shoe K and the finger-bar J and extending to the plate D and turned rearward at right angles at J⁴ on the rear of plate D to receive said plate D and elevated the same as the extension J'.

J⁵ designates a bar provided with an eye J⁶ at its lower end, by which it is secured to the rear flange of the finger-bar J opposite the shoe K. Said bar extends stubbleward at an elevation, with its upper end J⁷ bent to a horizontal position and its end J⁸ turned forward on the rear of the plate D to receive said plate D about ten or twelve inches above the end of the extension J'. The shoe K is secured to the finger-bar J near the inner end of the sickle-bar L, projecting forward, with its forward edge turned upward to a vertical position at K⁴. To said edge K⁴ is secured the bar J⁹. Said bar extends stubbleward at an elevation, with its upper end bent to a horizontal position the same as bar J⁵ and its end J¹⁰ bent rearward on the rear of plate D to receive said plate D at the same height as the bar J⁵.

P indicates a vertical bar extending from the bar J⁵ to the bar J' near the plate D and secured to said bars J' and J⁵. P' is a similar bar on the front side of the machine, secured to the bars J³ and J⁹ opposite the bar P. (See Figs. 3 and 4.)

P² indicates the upper cross-bar, extending over the bars J⁵ and J⁹, with its ends turned down and secured to the upper ends of the bars P and P' and the bars J³ and J⁹ adjacent the flanges D² D². (See Figs. 2 and 3.)

P³ is a cross-bar near the lower ends of the

bars P and P' and secured to said bars adjacent the flanges D² D².

D⁸ indicates a bracket provided with a hook or stud D⁹ and secured to the under side of the cross-bar P³, with the stud D⁹ projecting toward the plate D to receive the chain D⁷. Said stud projects slightly downward to prevent the chain D⁷ from slipping off as it receives the weight of the machine.

J¹¹ is an opening or slot made in the vertical bar P, between the bar J⁵ and the cross-bar P³. Said opening J¹¹ is of sufficient size to admit the hand-lever D¹⁰, provided with the stud D¹¹. Said lever is placed in the opening J¹¹, with the stud D¹¹ turned upward. After said stud D¹¹ has passed through the slot J¹¹ the lever is turned on edge, with the stud D¹¹ projecting toward the plate D and shifted in until said stud D¹¹ is opposite the chain D⁷. The opening J¹¹ is of suitable size to prevent the lever D¹⁰ from canting, but large enough so as to allow the lever D¹⁰ a slight lateral movement, so that the stud D¹¹ can be engaged with or disengaged from the chain D⁷. In elevating the machine the lever D¹⁰ is placed in position, as seen in Fig. 3, with the stud D¹¹ engaging the chain D⁷. Then the rear or free end of the said lever D¹⁰ is elevated, thereby elevating the machine on the vertical plate D, and the chain is disengaged from the stud D⁹ and another link engaged. The operation is repeated until the machine is elevated to the desired height, when the lever D¹⁰ is again removed. The machine is prevented from tilting forward by the usual draft-pole. (Not shown in the drawings.)

P⁶ designates a cross-bar turned on edge and placed between the shaft *a* and the bars P and P', with its ends projecting and turned at right angles on the said bars P and P' and secured thereto a suitable distance from their lower ends, as shown in Figs. 2 and 3.

P⁴ indicates a cross-bar extending from the bar J⁵ to the bar J⁹, passing on the grainward side of the crank-shaft *f*, and to it is secured the upper bearing P⁷ of the crank-shaft *f*, with its lower bearing in the cross-bar P⁵, secured to the extension J' and the bar J³. Said crank-shaft is provided with a crank *f'* and a pinion *f''* in engagement with the pinion *a*⁴.

B designates a toothed rim secured to the spokes A² of the master-wheel A with the lugs B' by the nuts A⁴. Said lugs B' project from the toothed rim in a lateral position and are of sufficient length so as to allow the toothed rim B to project beyond the plate D. The plate D is of proper length so as to allow the toothed rim B to rotate around said plate D. The rear surface of the toothed rim is worked to a smooth surface for the purpose hereinafter stated.

a designates a vertical shaft journaled near its upper end in a bearing *a'*, provided with an upward projection *a*², projecting through a perforation in the projection D⁴ and secured to said projection. The shaft *a* is also

journalled in a bearing a^3 and near its lower end secured to the cross-bar P^6 , and the shaft is provided with a pinion a^4 on its lower end in mesh with the pinion f^2 , and a collar c is secured to said shaft a above the bearing a^3 to prevent the downward movement of the said shaft a . Said shaft a is provided with a keyway a^8 , the larger part of its length extending to its upper end, (see Fig. 3,) and a bevel-pinion a^6 near its upper end in mesh with the toothed rim B. Said bevel-pinion a^6 is provided with a key a^7 , having the lug a^{10} and the extension a^9 . Said extension a^9 is of sufficient length so as to extend through the bearing a^1 and of proper size to fill the keyway a^8 in the bearing portion, with its outer surface rounded to conform with the shaft, so as to provide an unbroken bearing-surface on the shaft a in the bearing a^1 , thus preventing the cutting of the edges of the keyway in the bearing. The key a^7 is secured in the bevel-pinion a^6 by the stud a^{10} , projecting in a perforation a^5 , made in the neck of the said pinion a^6 , (see Figs. 2 and 15,) so that the shaft a can have a vertical movement through the bearing a^1 and the bevel-pinion a^6 without displacing the key a^7 . The bevel-pinion a^6 is provided with a groove d^7 , forming the flange d^8 .

d designates a clamp, with its ends turned inward to engage the groove d^7 and perforated to receive the shaft a .

d' designates a bracket secured to the upper surface of the clamp d and perforated to receive the shaft a . The ends of said bracket are turned up, forming the ears d^2 d^2 .

e indicates the rear end of a lever, preferably formed of pieces of wood e and e' , connected by the strips e^2 and e^3 . Said strips are curved outward near their centers and the ends of the wood are left about two inches apart, so as to provide ample room for the shaft a . Said lever is at the center of the strips e^2 and e^3 and on line with the shaft a pivotally secured to the ears d^2 d^2 , (see Figs. 1 and 3,) and its forward end e' is pivoted to the upright d^3 . The lower end of said upright is pivoted to the bracket d^4 , secured to the projection D^4 . The strip e^3 is provided with an extension e^4 , projecting from the lever-handle e in the form of a dovetail (see Fig. 10) to engage with the notches d^6 and d^7 on the bracket d^5 . Said bracket d^5 is bent at right angles at h at its lower end and is secured to the projection D^4 . The connections of the shorter end e' of the lever are sufficiently springy, so that the longer end of the lever can be drawn toward the master-wheel A, and the extension e^4 can be disengaged from the bracket d^5 and elevated and engaged with the upper notch d^7 , thereby disengaging the bevel-pinion a^6 from the toothed rim B. The notches d^6 and d^7 in the bracket d^5 are dovetailed to correspond with the extension e^4 , so as to prevent the lever e from disengaging the bracket d^5 when vertical pressure is applied to said lever. Said notches d^6 and d^7 are large enough so that the dovetail extension

can be readily engaged with or disengaged from said notch.

b indicates a bracket bifurcated at b' to project on each side of the bearing a^1 and secured with the bolts b^3 , engaging the slots b^2 , so as to be adjustable on the projection D^4 . Said bracket b is provided with a stud b^4 , carrying the anti-friction roller or idler b^5 to operate or travel on the rear surface of the toothed rim B, and by shifting the bracket on the bolts b^3 the mesh of the toothed rim B with the bevel-pinion a^6 can be adjusted, and all side pressure on the short axle A^6 of the master-wheel is overcome.

j designates the pitman, provided with the crooks j' , so as to elevate its stubbleward end slightly.

j^3 designates a strap by which the pitman is secured to the crank f' by the bolts j^4 , with its other end secured to the sickle-head stud L^2 by the strap j^5 , secured by the bolts j^6 . The sickle-head L' , is secured to the inner end of the sickle-bar L, with the stud L^2 projecting upward and rounded and its upper end reduced, forming the shoulder L^3 (see Fig. 12) to receive the pitman j on its larger portion L^2 , and the anti-friction roller L^4 on its upper reduced end secured by the spring-key L^5 . Said roller L^4 operates on the guides f^3 and f^4 , which are secured to the brackets f^5 and f^6 . The bracket f^5 is secured to the finger-bar J, and the bracket f^6 is secured to the shoe K.

f^7 is a strip secured between the shoe K and the bracket f^6 , forming the usual slot f^8 for the end or blank section to guide the sickle.

L designates the sickle-bar, provided with the usual sections L^6 to operate in the guard-fingers K' .

i designates a forward projection of a finger-bar clip, pivoted at i^2 to the finger-bar J, with the end i projecting over the sickle-bar L to prevent said sickle-bar L from rising out of the guard-fingers E' . Said clip is provided with the rearward projection i' resting on the finger-bar J, so as to prevent said clip from rocking, and thus prevent the end i from rising. i^3 is an arm of said clip extending along the bar J for three or four inches and provided with a groove i^4 , extending to the perforation i^5 , which receives the spring-pin o , extending through the arm i^3 and a corresponding perforation in the finger-bar by which the said clip is held in position.

t indicates a lever curved at one end and of size to fit in the groove i^4 , with its end projecting under the head of the spring-pin o , and is to be used to remove said spring-pin when so desired. The spring-pin o is provided with a groove o' to receive a spring o^2 . Said spring is secured in the upper end of the groove o' , with its downward-projecting end projecting laterally from said pin, as shown in Fig. 8, and its lower end o^3 curved back toward the pin, so as to readily enter a perforation. The lower end of the pin o is

grooved deeper, so as to receive the short crook o^3 of the spring o^2 . The said spring-pin o can be removed by the lever t , above described, or driven out as any ordinary pin.

5 Said spring-pin can be employed instead of the ordinary spring-key for different purposes. Said spring-pin o should be of sufficient length, so as to project through a proper length, and thus allow the spring o^2 to expand

10 and hold the pin in position.

To remove the sickle from this machine, the spring-key L^5 , the roller L^4 , and then the pitman are removed from the stud L^2 . Then the spring-pin o is removed with the lever t ,

15 as above described. Then the clips are moved in position, as seen in dotted lines in Fig. 1, thus allowing the sickle-head to pass out grainward, as heretofore stated.

Having thus described my invention, what

20 I claim, and desire to secure by Letters Patent, is—

1. In a harvester, a plate D , secured to the axle of the master-wheel and carried in a vertical position, with its vertical edges provided

25 with flanges D^2 D^3 and their upper ends extended and turned inward to a horizontal position at D^3 D^3 , in connection with the upper end of the plate D , extended and turned down over the ends D^3 D^3 to a horizontal position, forming the projection D^4 , as shown,

30 and for the purpose described.

2. In a harvester, the combination, with the finger-bar J , provided with an extension J' , of the bars J^3 , J^5 , and J^9 , bent around the rear

35 of the plate D , as shown, and for the purpose described, in connection with the bars P , P' , P^2 , and P^3 , and the plate D , provided with flanges D^2 D^2 and carried by the axle of the master-wheel, for the purpose described.

3. In a harvester, the combination, with the finger-bar J , provided with the extension J' , of the bars J^3 , J^5 , and J^9 , bent around the rear

40 of the plate D , as shown, and for the purpose described, in connection with the bars P , P' , P^2 , and P^3 , the plate D , supported by the axle of the master-wheel, and a chain D^7 or its equivalent secured to near the upper end of the plate D and extending downward to engage

45 with a hook D^9 , as and for the purpose described.

4. In a harvester, the combination, with the finger-bar J , provided with the extension J' , of the bars J^3 , J^5 , and J^9 , bent around the rear

50 of the plate D , as shown, and for the purpose described, in connection with the bars P , P' , P^2 , and P^3 , the plate D , supported by the axle of the master-wheel, a chain D^7 or its equivalent secured to near the upper end of the plate D and extending downward to engage

55 with a hook D^9 , as and for the purpose described, in connection with the bar P , provided with an opening J^{11} , and a lever D^{10} , provided with a stud D^{11} , as shown, and for the purpose described.

5. In a harvester, a bracket d , engaging with the groove d' and perforated and provided

with the bracket d' , having ears d^2 d^2 , in connection with a lever to engage with said ears, a bracket d^5 , a link d^3 , a bracket d^4 , and a bevel-pinion a^6 , as shown, and for the purpose

70 described.

6. In a harvester, a bracket d in engagement with the groove d' and perforated and provided with the bracket d' , having ears d^2 d^2 , in connection with a lever formed of the

75 ends e and e' , connected by the strips e^2 and e^3 , provided with the strips e^2 and e^3 , curved as shown, and pivoted to the ears d^2 d^2 , a bracket d^5 , provided with notches d^6 and b^7 , a link d^3 , a bracket d^4 , and a bevel-pinion a^6 , as

80 and for the purpose described.

7. In a harvester, a bracket d in engagement with the groove d' and perforated and provided with the perforated bracket d' , having ears d^2 d^2 , in connection with a lever provided with the strips e^2 and e^3 , curved as shown,

85 and pivoted to the ears d^2 d^2 , the strip e^3 , provided with the dovetail extension e^4 , a bracket d^5 , provided with notches d^6 and b^7 , in connection with the upright d^3 , a bracket d^4 , and a bevel-pinion a^6 , as and for the purpose described.

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8. In a harvester, the combination of a bracket b , secured to the projection D^4 and provided with a stud b^4 , and an anti-friction roller

95 or idler on said stud b^4 in position to operate on the rear surface of the toothed rim B , for the purpose described.

9. In a harvester, the combination of the bracket b , secured to the projection D^4 , with its body bifurcated and provided with slots

100 b^2 b^2 for the purpose described and provided with a stud b^4 , and an anti-friction roller on said stud, as shown, and for the purpose described.

105

10. In a harvester, the combination of a sickle-head secured to the sickle-bar and provided with a vertical stud L^2 to receive the pitman J , and an anti-friction roller L^4 near its upper end in connection with guides f^3

110 and f^4 , and brackets f^5 and f^6 , as shown, and for the purpose described.

11. In a harvester, the combination of a shiftable finger-bar clip pivoted to the finger-bar J and provided with the projection i' , and extension i and arm i^3 , secured in position by a spring-pin, as shown, and for the purpose

115 described.

12. In a harvester, the combination of a shiftable finger-bar clip having the projections i and i' and an arm or extension i^3 , said clip pivoted to the finger-bar, with the projection i extending over the sickle-bar, the arm or extension i^3 being provided with a groove i^4 , said clip secured in position by a

120 spring-pin having a projecting head, as shown, and for the purpose described.

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