

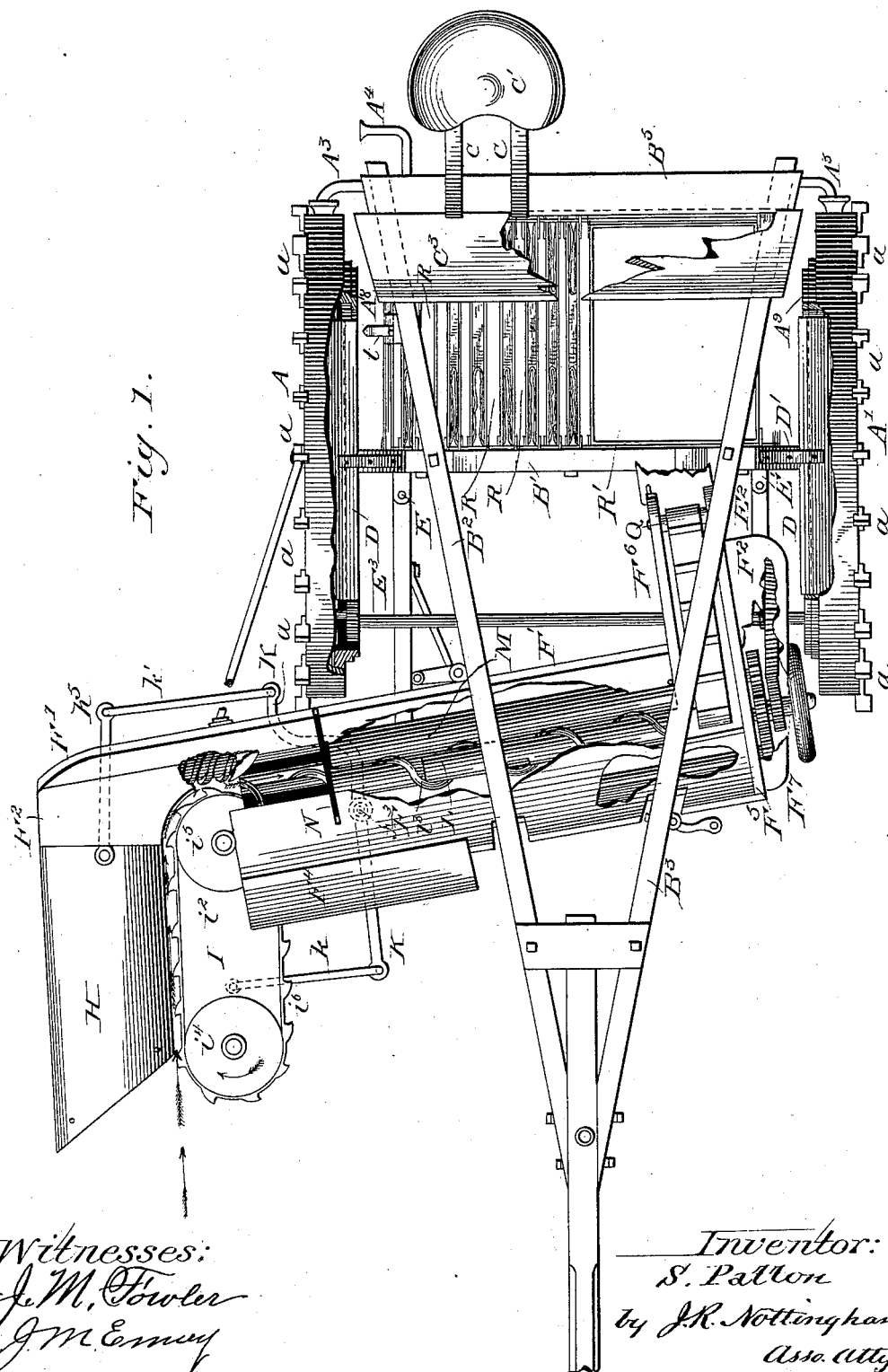
(No Model.)

5 Sheets—Sheet 1.

S. PATTON.
CORN HARVESTER.

No. 304,852.

Patented Sept. 9, 1884.



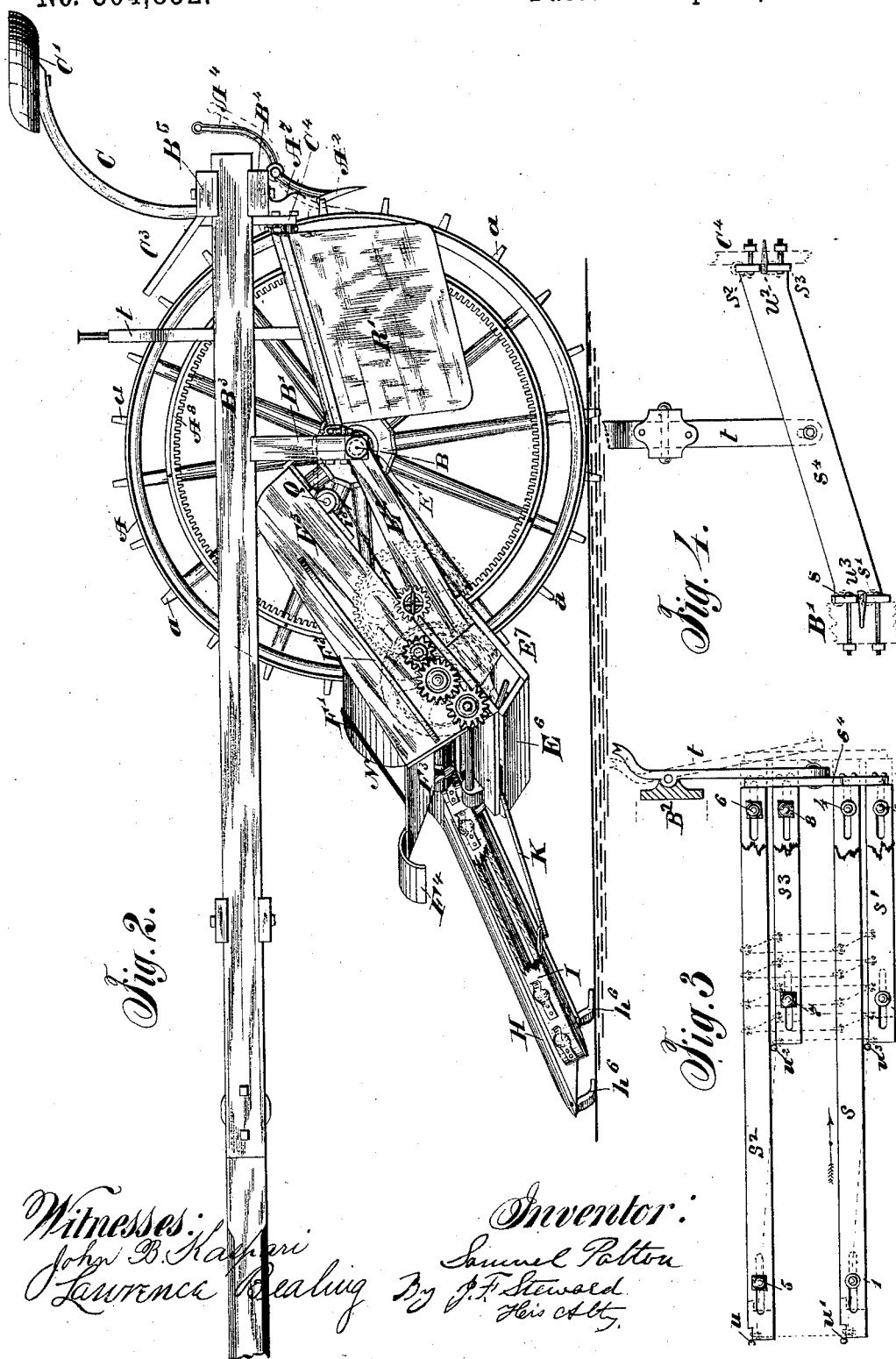
(No Model.)

5 Sheets—Sheet 2.

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CORN HARVESTER.

No. 304,852.

Patented Sept. 9, 1884.



Witnesses:
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Lawrence Reeling

Inventor:
Samuel Patton
By J. F. Steward
His atty.

(No Model.)

5 Sheets—Sheet 3.

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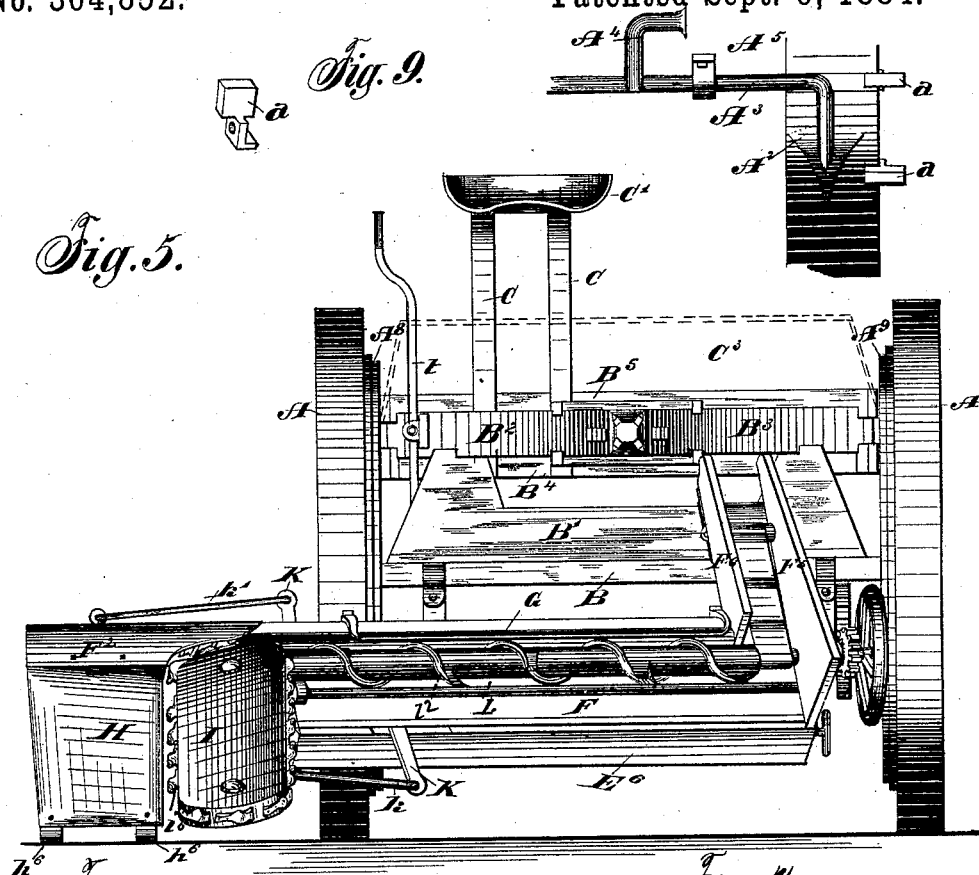
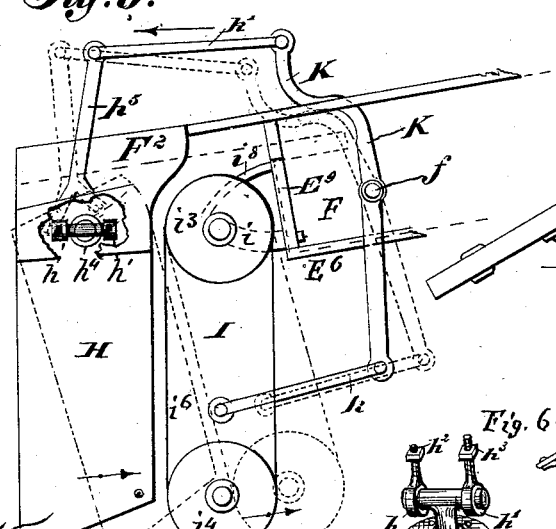


Fig. 5.



Witnesses:
John B. Haspary
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Fig. 6.

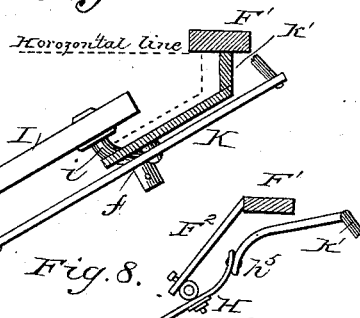


Fig. 7.

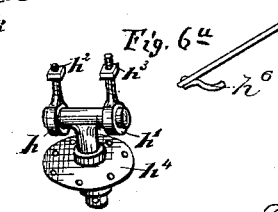


Fig. 8.

Inventor.
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(No Model.)

5 Sheets—Sheet 5.

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Fig. 20.

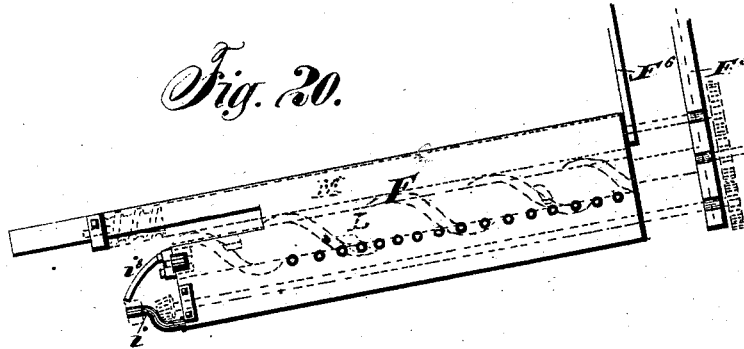


Fig. 21.

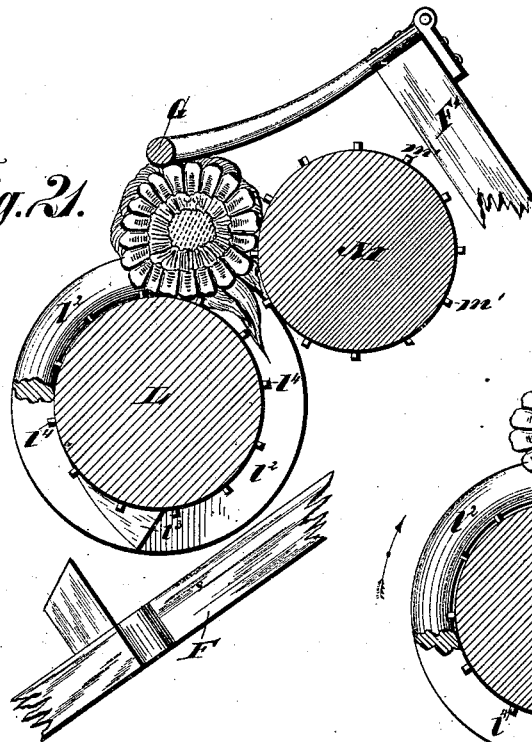
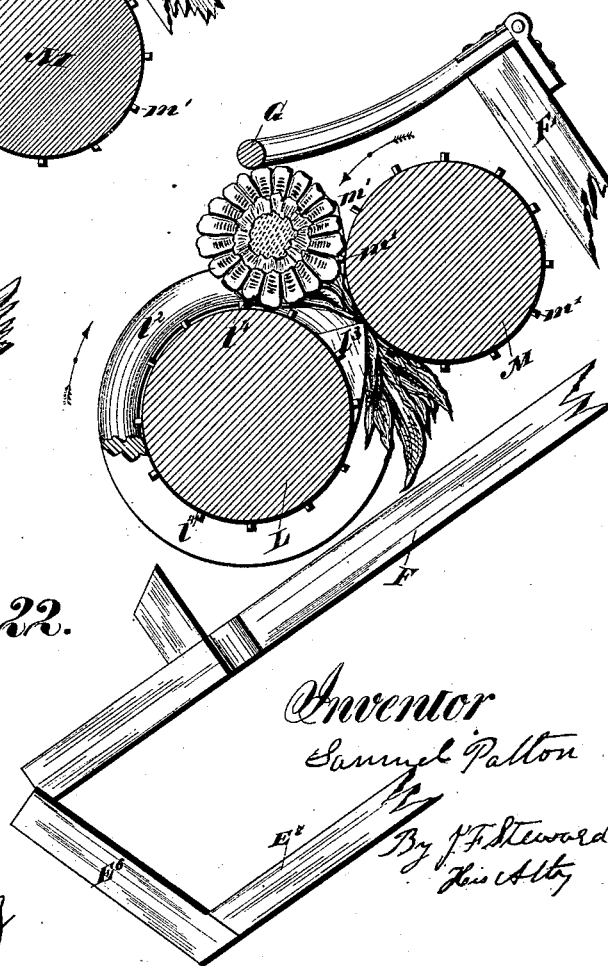


Fig. 22.



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By J. F. Steward
Att'y

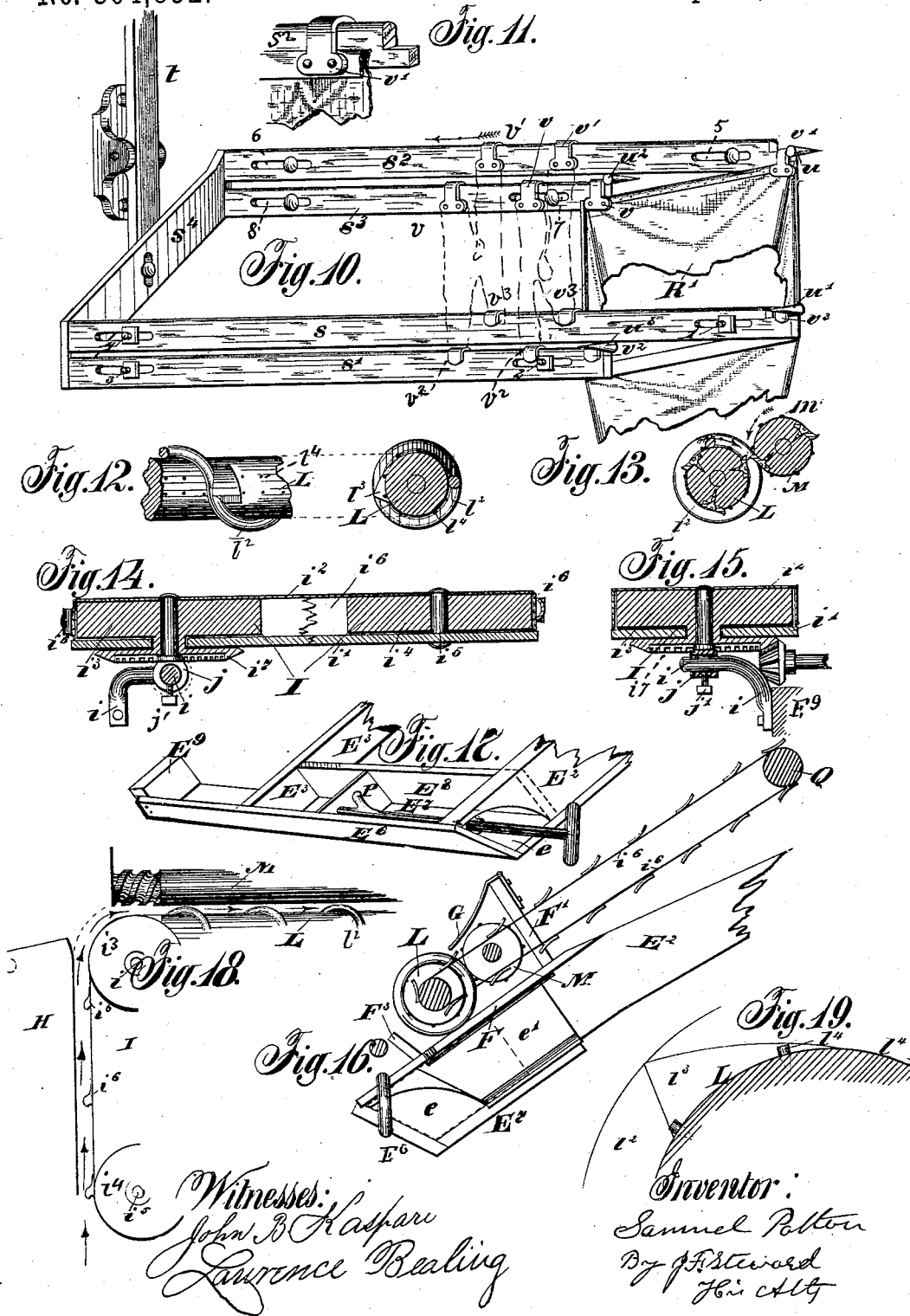
(No Model.)

5 Sheets—Sheet 4.

S. PATTON.
CORN HARVESTER.

No. 304,852.

Patented Sept. 9, 1884.



UNITED STATES PATENT OFFICE.

SAMUEL PATTON, OF CHICAGO, ILLINOIS, ASSIGNOR TO WILLIAM DEERING,
OF SAME PLACE.

CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 304,852, dated September 9, 1884.

Application filed April 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL PATTON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Corn-Harvesters, of which the following is a full description, reference being had to the accompanying drawings.

The improvements here shown may be applied to many forms of corn-harvesters wholly
10 or in part, but are designed more particularly to be applied to the machine heretofore patented to me, dated March 10, 1874, and numbered 148,492.

In the drawings, Figure 1 is a plan view
15 with parts broken away to expose certain details of construction. Fig. 2 is a side elevation of the machine with the left-hand traction-wheel removed. Fig. 3 is a rear elevation of the sack-holding bars, and Fig. 4 is a
20 fragmentary view of the cross-bar connecting them and the lever by which they are moved to disengage the sacks when filled. Fig. 5 is a front elevation of the machine with part of the boarding removed. Fig. 6 is a plan view
25 of the stalk-gathering mechanism. Fig. 6^a is a perspective view of the universal joint of the gatherer. Figs. 7 and 8 are side views of the parts shown in Fig. 6. Figs. 9 show the lugs on the wheels and the means for scraping the
30 faces of the wheels. Fig. 10 is a perspective view showing details of the sack holding and disengaging device. Fig. 11 is a perspective view of a sack-hook and its supporting-bar. Figs. 12 are detail views of that portion of the
35 roller designed to clean the husks and silk from the ears. Fig. 13 is a sectional end view of the picking-rollers. Fig. 14 is a sectional side view of the vibratable gathering-belt and its driving mechanism as seen from the right-
40 hand side of the machine. Fig. 15 is a cross-section showing the gathering-belt, driving-pulley, and its actuating-pinion. Fig. 16 is a side elevation showing the construction of the elevator-belt and an end view of the box for
45 receiving the shelled kernels, and Fig. 17 is a perspective view of said box. Fig. 18 is a plan view of a portion of the gathering and picking mechanism, showing the course of travel of the stalks into the machine. Fig.
50 19 is a sectional end view of a portion of one of the rollers, showing the teeth for loosening the husks from the ear, and one of the cams for jerking the husks off thus loosened and

cleaning the ear. The remaining figures are representations of details and of operations of
55 the parts.

The frame is supported upon two main wheels, A and A', which, as they are depended upon to give motion to the several working
60 parts, I provide with strong lugs. As a corn-harvester must, from the necessities of the case, work in soft mud as well as on frozen ground, I so construct my wheels as to provide for both conditions. This construction I find
absolutely necessary, or at least some other
65 construction than the ordinary traction-wheel, where lugs are secured to the face, and between which the mud is compacted, and the wheel thus deprived of its adhesion to the
70 ground. The presence of the lugs on the face of the wheel prevents the use of any scraping device. To avoid these difficulties I bolt my lugs *a* to the edge of the rim of the wheel at
proper distances apart, and let them project
75 nearly their whole width outside of the tire, and give them such lengths that they shall cut into the soil at one side of the track of the wheel. So
constructed and located, no mud is compacted
80 between them, as would be the case when the lugs are across the face; but it finds its way through, and, not being compacted, easily falls away. By this construction I am enabled to secure sufficient adhesion and yet leave the face
85 of the wheel smooth, which I find to be essential in order to clean it and prevent bits of weeds and the trash of the field generally from accumulating upon it and destroying its efficiency. In Figs. 1 and 9 the lugs are shown in their
proper relation, as well as the scraper A²,
90 mounted on a downward projecting arm of the shaft A³, which is supported in suitable bearings, A³, on the frame, and which crosses the machine, and carries a like scraper on a similar downwardly-projecting arm. Extending
95 backwardly and upwardly from this shaft is the arm A⁴, cranked, so as to be easily controlled by the foot of the attendant when in his seat. By pressing this arm downward the
100 scrapers are forced against the wheel and the points made to pass under and plow off any foul matter that may accumulate from time to time. The slight spring A⁵ shown in Fig. 2 serves to retract the scrapers to a position of rest out of contact with the wheel. In Fig. 2 the active position of the scraper is shown in
105 dotted lines. The wheels are provided with

the internally-toothed rims A⁸ and A⁹, for imparting motion to the operating parts of the machine.

B is the main axle, on journals of which are the traction-wheels A A'. A bolster, B', is provided to carry the frame well above the axle. Let into gains and bolted securely to the tops of the bolster are the hounds B² and B³, which are otherwise suitably braced to the axle. Between the approaching ends of these hounds is bolted the butt of the tongue, as shown in Figs. 1 and 2. Crossing and connecting the two hounds at their rearmost ends—that is, behind the axle—are the bars B⁴ and B⁵—one above and the other below. To these are bolted the seat-springs C, mounted upon which is the seat C'. C³ is a foot-rest, also secured to these bars.

D are boards of suitable width and of length nearly equal to the diameter of the internally-gearied rims A⁸ and A⁹, which boards are secured to the axle and to the bolsters by means of the irons D', and serve to prevent mud from falling from the wheels into the gearing. The axle, near its shoulders, is made in a cylindrical form for a short distance, and receives at those places the straps E and E', which, surrounding and vibrating on the same, form means for securing the vibratable bars E² and E³, bolted thereto, to the main frame. These bars in part form a supplemental frame vertically adjustable on the axle as a pivot, which frame supports the picking, husking, and elevating devices. They are tied together at their forward extremities by the boards E⁶, E⁷, and E⁸, which are gained therein and bolted. These parts combined form a till, as shown in Fig. 17.

F is a strong board (shown in plan view in Fig. 20) firmly secured to the tops of the bars E² and E³ across their front ends, and extending beyond the bar E³ so far as to form supports for the picking-roller, bearings, and other parts of the gathering and picking mechanism. The board F', rising from the rear of the board F, serves as a shield to prevent the ears of corn from flying out of the machine.

F² is a short board, secured by its edge to the board F', and which projects forward nearly horizontally, its use being to form a support for one part of the gathering mechanism, and to form in part the limit to the path of travel of the stalks of corn, as will be hereinafter pointed out.

F³ is a board forming the front wall of a trough, having the board F as a bottom and the board F' as a rear wall, in which trough the picking-rollers are located. The board F³ also serves to prevent severed ears from flying out of the machine.

F⁴ is a sheet of iron secured to and near the top of the board F³, and curved downward, so as to form a rounded surface, over which the ears may draw into the machine without being broken off.

F⁵ and F⁶ are side boards of the elevator, their lower edges being secured to the board

F. Between these boards is journaled the elevator-roller Q.

F⁷ is a shield, secured by its edge to the outside of the board F⁵, and which lies above the gearing that drives the picking-rollers and keeps the mud therefrom.

The supplemental frame just described may be adjusted on the axle, so that its front part shall be at any desired height from the ground, and there sustained by rods, as shown and described in my former patent above referred to. As also in the above patent, I locate my picking-rollers transverse to the line of travel.

To accommodate my machine to varying widths between the rows of corn, I provide a gathering device capable of automatic adjustment to the row being gathered, whether it be of uniform distance from that one forming the guide for the team or whether it be crooked or have outstanding hills. This gathering device is jointed to the board F² and to the board E⁹, and consists of the vibratable board H and gathering-frame I.

In Fig. 6^a is shown a peculiar universal joint, so constructed as to form a means for securing the board H to the board F², as shown in Figs. 6 and 8, and at the same time make the board H capable of automatic lateral vibration and of vertical adjustment at will. A T-shaped pivot is provided, having cylindrical stem and cross-bar, so that the latter will form journals which vibrate in the eyebolts h and h'. These bolts pass up through the board F², and by means of the nuts h² and h³ the cross-bar may be tightly drawn against the lower surface of the board F², and by the friction so produced the gathering-board will be held in any position of vertical adjustment. In case it is wished to have the gathering-board follow the undulations of the ground, the nuts may be loosened, so as to permit the cross-bar to vibrate. The stem of the T-shaped pivot is journaled in a sleeve, h⁴, provided with a wide flange, by means of which and rivets or bolts it is fastened to the board H. The board may thus easily vibrate horizontally on the stem, and being made with an inwardly-beveled end, as shown in Figs. 1 and 6, it is readily swung outward by any outstanding hills or stalks, and thus serves in part as means for conducting the stalks thus engaged to the picking mechanism, even though they be far outstanding in relation to the latter.

To and beneath the forward end of the gathering-board H are secured (preferably pivoted) the shoes h⁵, as shown in Figs. 2, 5, and 8. They serve as precautionary means for preventing the end of the board from dropping so low as to dig into the ground as it advances. Riveted to this board, and extending rearward beneath the board F², is the arm h⁶, forked at its forward end to better secure it, and provided with an eye at its rear end. Opposing this board, (that is, to act upon the opposite side of the row of corn,) and moving in unison therewith, is the gathering-frame I. It consists of the following parts:

Secured in the angle formed by the boards E⁶ and E⁷ is the piece E⁸, as shown in Figs. 6 and 17.

In Figs. 6, 7, 14, and 15 is shown a stout arm, *i*, projecting outward from the board E⁹, which arm at its extremity is cylindrical, and on which vibrates a T-shaped pivot, *j*, the cross-bar of which forms a sleeve. In other words, the stem of the T is a solid cylinder, while the cross-bar is a cylindrical sleeve. A set-screw, *j*, is provided, by means of which the T may be adjusted and set on the arm *i*, thus retaining in elevation the forward end of the gathering-frame I.

i' is a board with rounded ends, of width equal to the diameter of the pulleys *i*³ and *i*⁴, located at its ends. I make these pulleys about eight inches in diameter; but the size may be varied. Above this board, and parallel with it, is the thin board or iron *i'*, of the same size and shape as the board *i'*. Between these boards, at the rear end, is the pulley *i*³. Secured to or in one piece with the pulley *i*³ is the bevel-gear wheel *i*⁵, which, with the pulley, revolves on the stem of the T-shaped pivot *j*. The pulley *i*⁴ is similarly situated, but at the forward end of the gathering-frame, and it revolves on the pin *i*⁶. Drawn around these is the belt *i*⁷, provided with lugs curved backward in relation to their direction of movement so as not to engage the stocks so forcibly as to break them.

To the board F, at *f* on a stud, is pivoted the equalizing-lever K, projecting forwardly and rearwardly, as particularly shown in Fig. 6, curved to avoid the traction-wheel, near to which it reaches. The eyes at the ends take the connecting rods or links *k* and *k'*. The link *k* connects the forward extension of the equalizer to the frame I, and the link *k'* connects the rearward extension of said equalizer to the arm *h*⁵ on the gathering-board H.

By referring especially to Fig. 6 it will be seen that in case the front of the gathering-frame I is swung in the direction indicated by the arrow the board H will be made to move simultaneously in the same direction, and if the board is moved in the opposite direction the frame will conform to it. The gathering devices thus vibrate in unison and in the same direction. The two parts of the gathering mechanism, being at a little distance apart, form a passage-way for the stalks, as shown in Fig. 6. The direction of travel of the stalks is indicated by the arrows in Figs. 1 and 18.

By means of the described construction of the gathering device—that is, adapting, it as a whole, to be laterally adjusted, the board H being inwardly inclined and the pulley *i*⁴ carrying the belt, and adapted to be moved transversely—the two frames will be made to automatically swing to follow the row whenever, from inattention, the driver neglects to conform therewith.

To insure the release of the stalks from the lugs of the gathering-belt *i*⁷, I provide the stripper-arm *i*⁸, which serves to deflect them

away and guide them into the picking mechanism. The passage-way formed by the parts of the gathering mechanism, supplemented by the board F², leads to the throat between the picking-rollers, and the stalks engaged by the former are thus positively conducted to the latter. The means for permitting automatic adjustment may be almost indefinitely varied. The precise form shown is best adapted to my form of machine.

The principles involved for picking the ears from the stalks are the same as in the patent referred to; but in my present machine I dispense with one pair of rollers and make the other pair perform the office of the two pairs. I have therefore transferred the spiral flange there shown to one of the picking-rollers.

L and M are the rollers, driven by gearing which receives motion from the internal gears on the traction-wheels.

Spirally around the roller L for its whole length is wound the flange *l'*. I provide the rollers L and M with longitudinal rows of teeth *l'* and *m'*. The rollers lie parallel to and near each other, and the ears, after being severed from the stalks, pass along in the partial groove thus formed. The teeth *l'* and *m'* are so placed in longitudinal rows that those upon one roller shall engage the husks upon its side of the ear a little earlier than the teeth of the other roller, as shown in Fig. 22, where the teeth of the row *m'* are about leaving contact with the ear and the pins *l* just engaging the same. This arrangement is essential to loosen the husk without shelling, because if the pins of the two rows next to operate were so set relative to each other as to approach the ear at the same time they would bite into the rows and tear out the kernels; but if, as shown in Fig. 22, one row approaches the ear and the pins engage in the interstices between the rows of kernels, the ear, not yet being engaged by a row of teeth upon the other roller, may yield away by a slight rolling movement. By the action of the spiral flange the ears are driven along while the husk is being loosened and drawn through or into the gap between the rollers. The husks thus loosened would not always be severed from the ear; but I provide cams *l'*, their summits being as high as the spiral flange, and which thus come close to the face of the roller M at each revolution of each cam. These cams are along the advancing side of the spiral flange, and operate to grasp the loosened husks between their summits or crowns and the opposing roller, and thus give them (the husks) a sudden jerk and sever them from the ear. The rollers L and M also serve as the picking-rollers, the latter at its receiving end, or that nearest the gathering mechanism, being provided with screw-threads for so much of its length as is greater than its mate L. This screw is in position to receive and advance the stalks in their course until they are made to forcibly enter the throat between the said rollers, one

stalk at a time, the screw acting to separate them and prevent their entrance in bunches. The rollers, at their receiving ends, are provided with longitudinal picking-plates, well shown and described in my earlier patent above referred to. In Fig. 13 I have shown the rollers of sizes in the ratio of two to three—that is, when considering the spiral flange as a part of the diameter of the roller L. While the roller L has three plates, the roller M has but two, and they are relatively arranged so as to approach each other as shown.

Immediately above the rollers, or rather over the space between them, near the terminus of the picking-plates, I provide a rod, G, with ends turned toward and pivoted to the board F', and running along nearly the entire length of the rollers, as seen in Figs. 5, 16, 21, and 22. Immediately above the rollers, at right angles to their axes, is the bar N, secured to the upper edges of the boards F' and F". Against this the stalks strike should they fall over too far and are prevented from passing along the rollers. They are thus compelled to pass through only that part of the rollers provided with the picking-plates. The spiral flange tends to carry the stalks farther, but by the bar N they are compelled to "cross the thread," so to speak. The ears severed are run along in the space between the rollers and the rod G to the elevator at their extreme end. During this progress the pins t' pick at and loosen the husks. The whole effort to pull the husks from the ears tends to stand them upon their butt-ends, and so prevent the picking-pins from acting upon the husks not loosened; but the weight of the rod G lying upon the ears, as shown in Figs. 21 and 22, prevents any such erection. Notwithstanding all of these precautions, some kernels will be torn loose, and these fall upon the board F and find their way through the holes in it provided (shown particularly in Fig. 20) into the box or till formed by the boards E', E", and E". (See Fig. 17.)

A scraper, P, is provided with a rod and handle, by which the shelled corn can be drawn therefrom through the opening c . A slide-door, c' , moving in grooves, closes this opening at will.

I reduce the roller L at the extreme end, where the ears operated upon leave it, and make the said roller act as a driving-roller for the elevator-belt.

F' and F" are the sides of the elevator-trough, and between their ends, near the axle, is a roller, Q. (Best shown in Figs. 7 and 16.) The elevator-belt is armed with transverse strips of metal, having slightly-upturned edges, which engage the ears and carry them upward and into the receptacles.

I have heretofore delivered the ears of corn into a box in rear of the axle, from which I deposited it in piles upon the ground. This plan I have found objectionable, as the corn is too likely to become dirty. I now provide sacks to receive the ears, which, when filled,

I drop, replacing each so disposed of by one from a supply carried on the machine. In Fig. 1 may be seen properly arranged a number of sacks, R, drawn across a frame in rear of the axle, with one, R', outdrawn to receive the ears from the elevator.

In Fig. 10, s and s' are bars of wood, provided with slots numbered 1 2 3 4, and which slide on bolts passing through these slots and through the bolster B', as shown in Fig. 4. s^2 and s^3 are similar bars sliding on bolts passing through the board C', secured to the front edges of the bars B' and B". (Shown in Fig. 2.) The bars s , s' , s^2 , and s^3 abut at one end against and are secured to the plate s^4 , as shown in Figs. 3 and 10, where their relative length is seen.

To the hound B², in rear of the axle and over the sack-frame, is secured the pivot-block by which the lever t is connected to the main frame. The lever is loosely bolted at its lower end, so as to in effect be a pivot to the plate s^4 , and by this lever the whole sack-frame may be moved on the bolts passing through the slots 1, 2, 3, 4, 5, 6, 7, and 8. Pins are driven into the bolster and into the piece C', against which the ends of the bars forming the sack-frame abut. These pins are shown in their positions in relation to the bars, but with the pieces into which they are driven removed, in Figs. 3 and 10, lettered u , u' , u^2 , and u^3 .

I construct the sacks of any strong fabric, and make them of sufficient size to contain several bushels of ears, and bind the margins with a strong band, which at four points I provide with hooks v , v' , v^2 , and v^3 , which engage the bars of the sack-frame, so as to form a bag-holder.

In Fig. 10 the bag R' is shown in position, its hooks v' and v^3 hanging upon the notched ends of the longer bars s and s^2 , and the hooks v and v^2 hanging upon the ends of the shorter bars, s' and s^3 .

To prevent the sack from collapsing—that is, from sagging when partly filled, and thus tending to draw the hooks off from the ends of the bars s' and s^3 —the pins u^2 and u^3 are driven into the frame-work, so that when the bars s' and s^3 abut against them the hooks cannot be drawn off. The hooks v' and v^3 draw against the shoulders of the bars s and s^2 , and thus prevent collapse. The frame or sack-holding bars are at all times free to be slid by the operator by means of the lever t . If the frame is given a sudden jerk in the direction indicated by the arrow, the filled sack, by its inertia, will not follow, but be left without support, and will fall. The attendant now, seizing the hooks v' and v^3 of the next succeeding sack, draws them along on their bars until they drop into the notches at the ends. The hooks v and v^2 follow along on their supporting-bars until they reach the stop-pins, (the sack-frame having been returned to its place of rest, the bars all abutting against the pins.) Sack No. 2 is then in the position before occupied by the one dropped. The operation of dropping and

drawing the succeeding sack in place is repeated as each sack is filled until the last sack is dropped. The new supply of empty sacks is placed on the frame and the same operation is repeated.

What I claim is—

1. In a corn-harvester, the combination of the picking mechanism, the gathering mechanism, and means by which the latter is adapted to be automatically adjusted in a lateral direction, substantially as described.
2. In a corn-harvester, a main frame and draft-tongue constructed and arranged in such a manner that the team and main frame or gearing-carriage may straddle a row of corn, and thus be guided in the general line of travel, in combination with picking mechanism located in such relation to the main frame as to gather an adjoining row, and gathering mechanism in advance thereof adapted to be adjusted laterally to conform to the row being gathered, whereby the said picking mechanism is enabled to operate independently of any lack of conformation of the row forming a guide to that being gathered, substantially as described.
3. In a corn-harvester, picking mechanism combined with gathering mechanism adapted to engage the stalks and deliver them to the said picking mechanism, and means by which said gathering mechanism may be adjusted in relation to said picking mechanism, substantially as described.
4. In a corn-harvester, the combination of the picking mechanism, its supporting-frame, and the gathering mechanism pivoted to said frame, so as to be capable of lateral vibration, and provided with an open-ended slot having margins diverging toward the front, whereby the gathering mechanism is adapted to engage outstanding stalks or hills of corn and be swung by the same to conform thereto, substantially as described.
5. The vibratable gathering-board H, in combination with the relatively-fixed picking mechanism, substantially as described.
6. The vibratable gathering-frame I, in combination with the picking mechanism, substantially as described.
7. The combination, with the picking mechanism, of the laterally-adjustable board H and the laterally-adjustable frame I, substantially as described.
8. The combination, with the picking mechanism, of the laterally-vibrating gathering-belt and means, substantially as described, opposing said belt, for holding the stalks in contact therewith until delivered into the said picking mechanism, as set forth.
9. The combination, with the revolving gathering mechanism, of the board H and the board F², having an edge constructed and arranged in such a manner as to prevent the stalks from escaping from said gathering mechanism, substantially as described.
10. The combination, with the picking mechanism, of the revolving gathering device, the boards H and F², and the deflecting-arm A², all

constructed and arranged to engage the stalks, convey them to the picking mechanism, and there release them, substantially as described.

11. The gathering-board H and frame I, adapted to be laterally vibrated in relation to the picking-frame, in combination with connecting means whereby they are caused to vibrate in unison, substantially as described.

12. The combination of the board H and frame I with the equalizing-lever and suitable connecting-links, substantially as described.

13. The combination, with the picking mechanism, of the gathering mechanism, means whereby the latter is adapted to be vibrated laterally, and means for adjusting it vertically, both the lateral and vertical adjustments being independent of the adjustment of the picking mechanism and supporting-frame, substantially as described.

14. The combination, with the traction-wheel, of the lugs projecting laterally from the rim of said wheel, said lugs adapted to penetrate the ground, and having open spaces between them for the passage of the soil or bits of stalks or other trash, and thus prevent clogging, substantially as set forth.

15. The combination, with the smooth-faced traction-wheel provided with laterally-projecting lugs, of the scraper A², substantially as and for the purpose set forth.

16. The picking and husking rollers, provided with means for breaking the ears from the stalks and with pins for loosening the husks, and one of said rollers also provided with the spiral flange for advancing the ears, substantially as described.

17. The rollers provided with the picking devices, and one of said rollers provided also with the spiral flange for advancing the ears, and with the cams B², substantially as described.

18. The rollers provided with the picking devices and with pins for loosening the husks, and one of said rollers also provided with the spiral flange for advancing the ears, and with the cams for jerking the husks from the ears, substantially as described.

19. The husking-rollers provided with rows of pins for loosening the husks, constructed and arranged in such a manner that the rows upon one roller will operate upon the ears alternately with the rows upon the other roller, substantially as described.

20. The combination of the husking-rollers and the yielding-pressure bar G for preventing the ears from being erected by the action of said rollers on the husks, substantially as described.

21. In a corn-harvester, the combination, with the main frame, of the frame, substantially as described, for supporting the sacks, and means by which it may be withdrawn from the filled sacks to permit them to be dropped, substantially as described.

Witnesses: SAMUEL PATTON.

J. F. STEWARD,
JOHN B. KASPARI.