

No. 724,515.

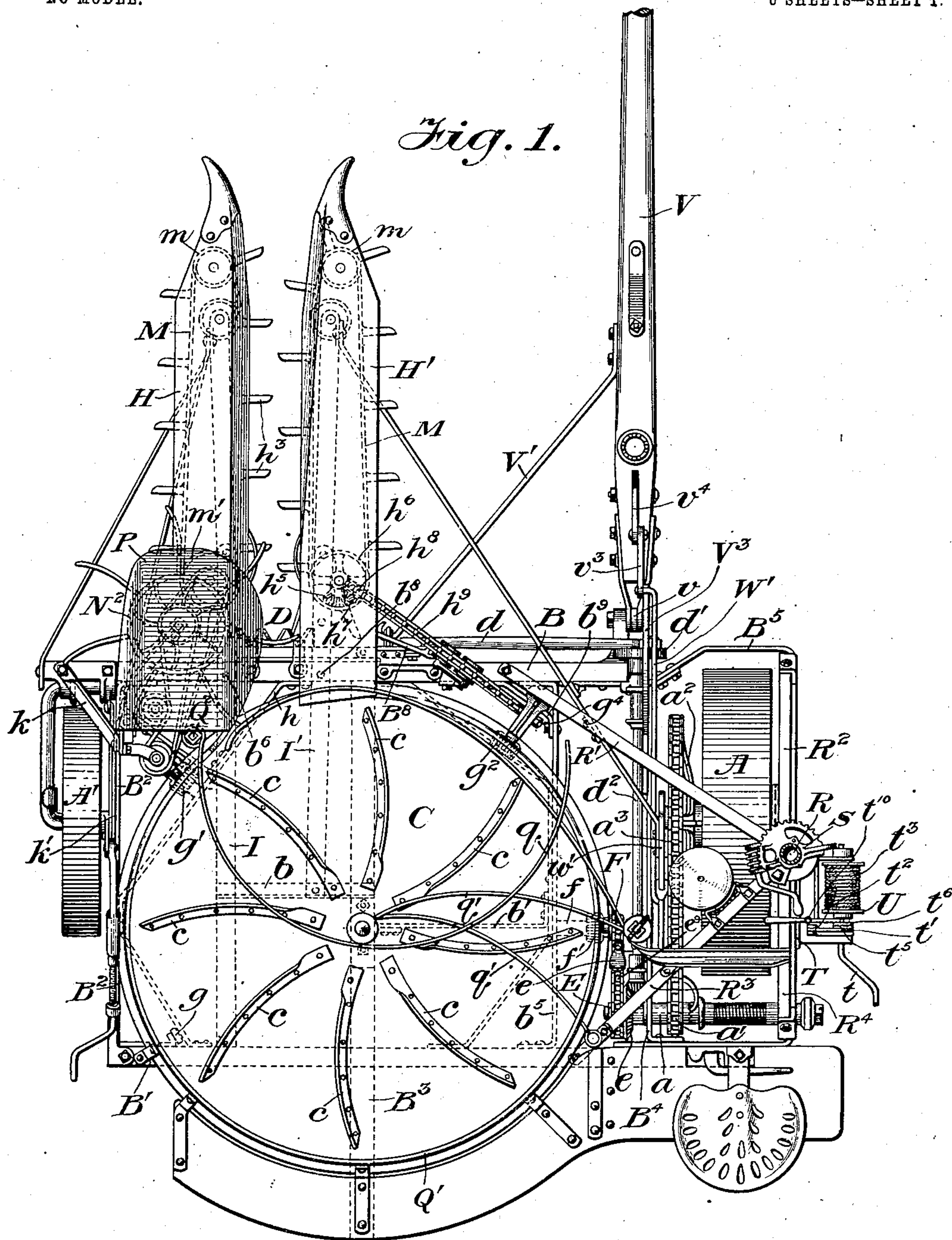
PATENTED APR. 7, 1903.

J. M. SHIVELY.
CORN SHOCKER.

APPLICATION FILED FEB. 20, 1902.

NO MODEL.

6 SHEETS—SHEET 1.



Witnesses:

C. W. Smith
Marvin Cranston

Inventor:

Joseph M Shively
By J. F. Steward
His atty.

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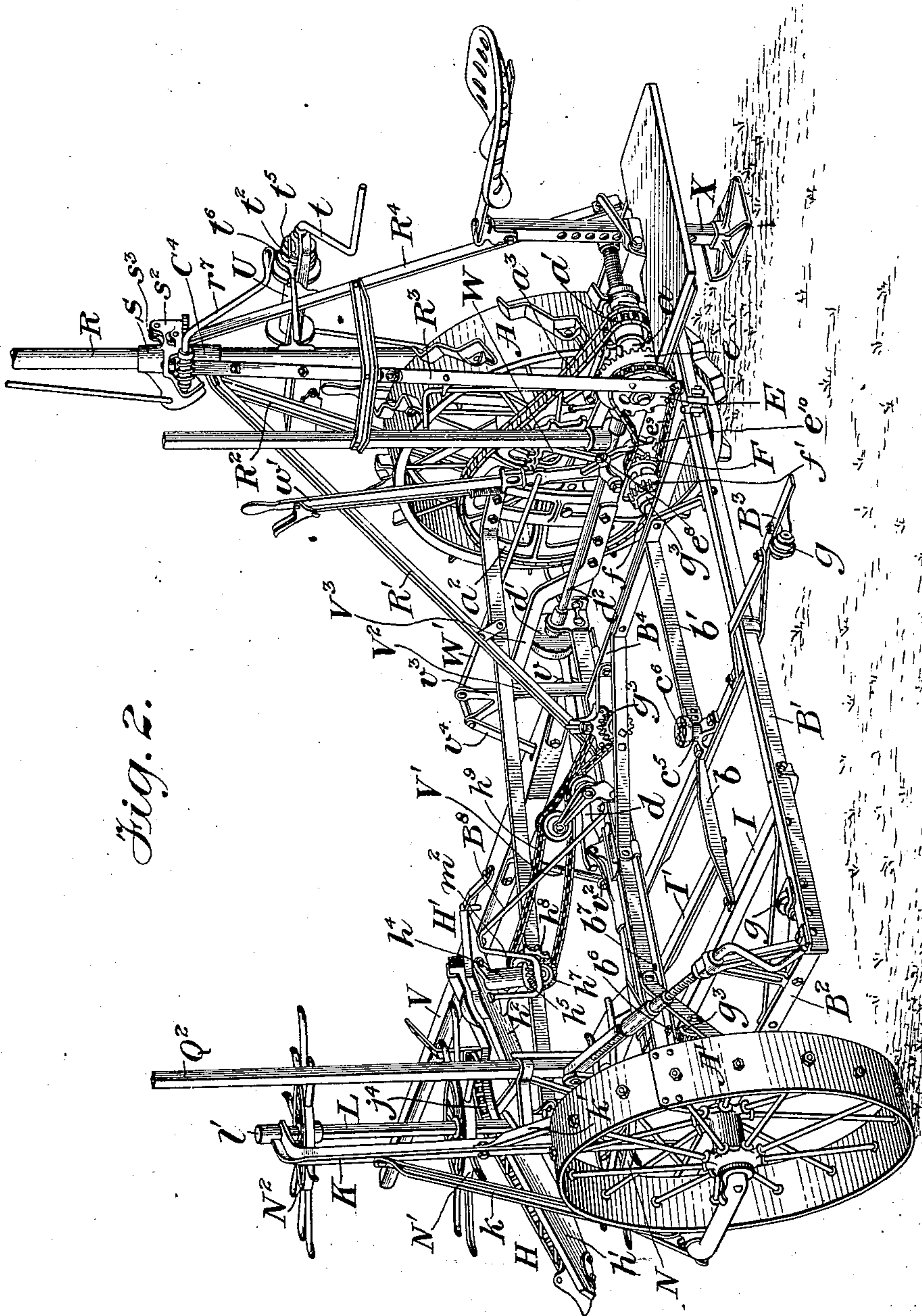
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6 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

C. W. Smith
Marvin Cameron

Inventor:

Joseph M. Shively,
By J. F. Steward,
His Atty.

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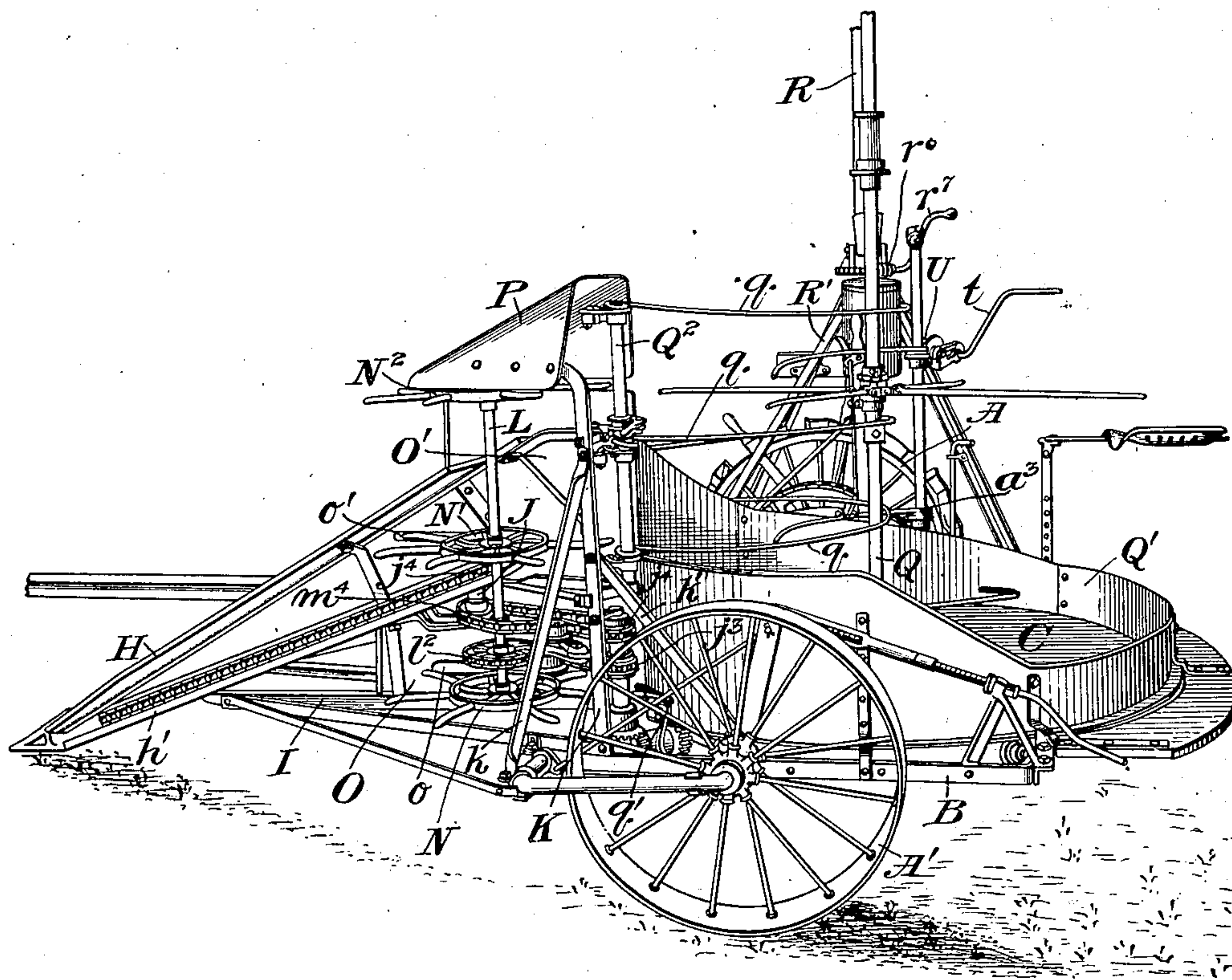
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6 SHEETS—SHEET 3.

Fig. 3.



Witnesses;
C. W. Smith
Marvin Cameron

Inventor
Joseph M. Shively
By J. F. Steward
Atty

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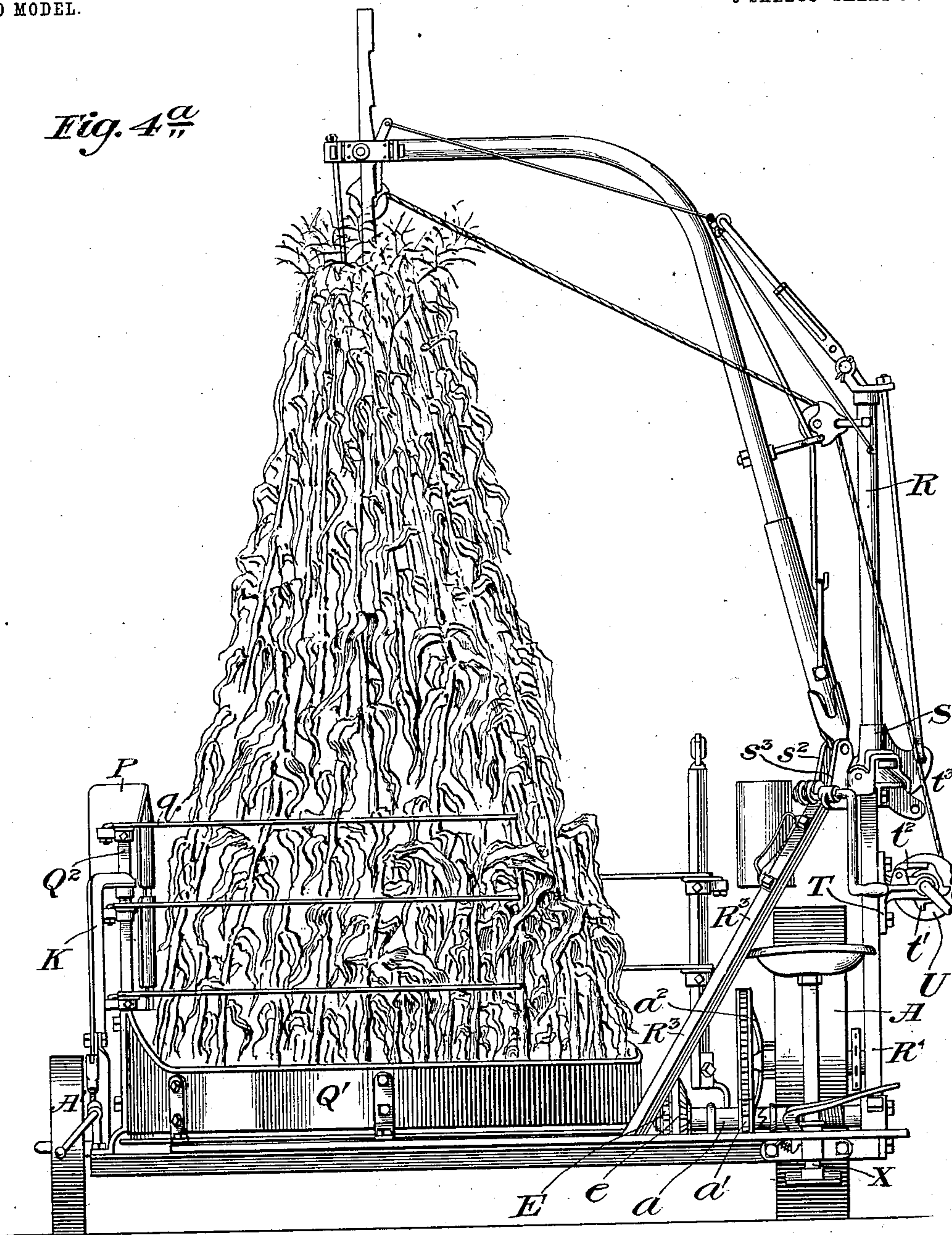
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6 SHEETS—SHEET 5.

NO MODEL.

Fig. 4^a



Witnesses
O. W. Smith
Marvin Cranes

Inventor
Joseph M. Shively
By J. F. Steward
Atty.

UNITED STATES PATENT OFFICE.

JOSEPH M. SHIVELY, OF ALFRED, KANSAS, ASSIGNOR TO DEERING HARVESTER COMPANY.

CORN-SHOCKER.

SPECIFICATION forming part of Letters Patent No. 724,515, dated April 7, 1903.

Application filed February 20, 1902. Serial No. 94,937. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. SHIVELY, of Alfred, in the county of Douglas and State of Kansas, have invented certain new and useful Improvements in Corn-Shockers, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of the improvements in the corn-shocker shown and described in the patent granted to me, No. 559,754, dated May 5, 1896. Fig. 2 is particularly intended to show the framework and gearing. Fig. 3 is a perspective view as seen from the stubble side. Fig. 4 is a bottom side view of the shock-forming table. Fig. 4^a shows a shock on the table and construction and arrangement of the crane for lifting the shock therefrom. Fig. 5 is a perspective view showing the arrangement of the gearing and sprocket-wheels for actuating the gathering devices. Fig. 6 is a detail of the crane and its support. Fig. 7 shows the means for securing the foot of the crane-post to the main frame. Figs. 8 and 9 are details of the turn-table of the lifting-crane. Fig. 10 is a sectional view showing the construction of the shock-lifting windlass. Fig. 11 is a section on the line 11 11 of Fig. 10. Fig. 12 is a detail of the pin c^4 , a portion of the table, and a portion of the shock-forming core.

This application is devoted mainly to details of construction embodied in the machine made subsequent to the making of that shown in the patent referred to; but some of the salient features of the machine are embodied in other applications for improvements in corn-shockers—namely, that executed by me January 13, 1902, and that executed by me January 16, 1902.

In the drawings, A is the stubble-side supporting-wheel, which serves as a prime mover for the various working parts of the machine. A' is the grain-side supporting-wheel. Upon these wheels the frame is suitably mounted. As the direct means for supporting the frame upon them is old, it need not be described here. Suffice it to say that the frame is adjustable in height thereon.

B is what may be termed the "finger-bar" of harvesting-machines generally.

B' is the rear sill of my machine.

B² is a bar connecting the finger-bar to the rear sill at the grain end. B³ is a sill connecting the same parts near the middle of the frame, and B⁴ a similar bar connecting the same parts at the stubble end of the platform. b and b' are bars for maintaining the position of the sill B³.

C is the shock-forming platform, provided upon its upper surface with the curved radial arms c . Any means that will give the upper side of the said shock-forming platform a surface that will act aggressively on the butts of the stalks resting thereon and move them as positively as possible may be used, the preferred form being that shown and described, which is such that the ribs shall have the double function of acting upon the stalks to compel them to rotate with the table and also because of their radially-curved form tend to move the butts toward the shock-forming standard. To the under surface of the said shock-forming table is secured the large bevel-gear c' . (See Fig. 4.) Upon the center of the table and beneath I place the plate c^2 , and concentric with the axis of the wheel I form in it the groove c^3 . In the eye of the table is inserted the pin c^4 . The said pin is adapted to enter an eye in the casting c^5 . Concentric with the said eye is formed a groove in this casting, in which I place balls c^6 for the purpose of reducing friction as much as possible.

Surrounding the main wheel A is the wheel-frame B⁵, suitably secured to the platform-frame. Behind the main wheel I place a transverse shaft a in suitable bearings and upon it place the usual clutch and sprocket-wheel a' . Connected to the main wheel in the usual manner is the large sprocket-wheel a^2 . Around this and the sprocket-wheel a' is thrown the chain a^3 .

D is the cutting apparatus for severing the heads. It is moved through a pitman d , that is moved by the crank d' upon the forward end of the shaft d^2 , supported in suitable bearings on the main frame. Upon the shaft a is the sprocket-wheel E, which is as one piece with the bevel-gear e , which through a

suitable pinion on the shaft d^2 gives motion to the cutting apparatus.

f is a stationary pin suitably supported by the bar b^4 and by the bar b^5 of the wheel-frame. Upon this revolves a sleeve, which consists of the sprocket-wheel F and the pinion f' . When the table C is in position, the large gear upon its under side meshes with the pinion f' , and it is thereby given rotation.

As means for supporting the table at its periphery I provide antifriction-rollers g g and g and the pinions f' , g' , and g^2 , all supported by suitable bearings. The pinions f' , g' , and g^2 are shrouded up to their pitch-circles, as shown at g^3 of the pinion g^2 in Fig. 5, and the teeth of the gear c' are provided with shrouding c^7 , as shown in Fig. 4. The surfaces of these shrouds, corresponding as they do with the pitch-circles of the gear and pinions, serve as antifriction-rollers over which the periphery of the table may move. The pinions serve another purpose, which will now be explained.

The devices for conducting the standing corn to the cutting apparatus and shocking mechanism consist of the gatherers H and H' . These are supported by the bars I and I' . The bar I is secured to the bar B' at its rear end and to the finger-bar B at b^6 and extends forward and supports the gatherer H . The bar I' is secured to the cross-brace b and to the finger-bar B at b^8 . It extends forward and supports the gathering-board H' . The boards H and H' may be supported at their rear ends in any suitable manner. To avoid confusion, the support is omitted. Suffice it to say that the brace k , secured to the finger-bar B , forms a part of said support. Under the board in the gatherer H is the board h' and upon it the chain having the teeth h^3 . This chain does not differ from the corresponding chain beneath the board in the gatherer H' , which will soon be described, and hence will be passed over for the present except to show the means for operating it. As one piece with the pinion g^2 , which is supported upon a pin passing through the braces b^9 of the main frame, is the sprocket-wheel g^4 . Upon the board h^2 by suitable lugs is secured the bearing h^4 , within which revolves the shaft, upon the lower end of which is mounted the bevel-pinion h^5 and upon the upper end the sprocket-wheel h^6 . (See Fig. 1.) At the lower end of the board h^2 is an idler, around which the chain passes. Intermeshing with the bevel-pinion h^5 is the bevel-pinion h^7 , having as one piece with it the sprocket-wheel h^8 , supported in the bearing h^4 . Around this sprocket-wheel and that g^4 is thrown the chain h^9 . As the table is rotated by the pinion f' it gives rotation to the pinion g^2 , and through the sprocket-wheel, chain, and bevel-gearing the stubble-side gathering-chain is actuated. The stubble-side gathering device is sustained laterally by the brace B^8 . The grain-side gathering devices are operated in a similar manner by gearing. (Shown in Fig. 5.) The pinion

g^2 and the bevel-pinion j revolve on a stationary pin suitably secured to the main frame. The pinion j meshes into that j' upon the shaft j^2 , which is supported in suitable bearings secured to the framework, which, so far as the essentials of its support are concerned, consists of the post K , (see Fig. 3,) which by the braces k and k' is properly stayed to the main frame.

Footed in a suitable bearing on the bar I is the shaft L , which at its upper end is sustained in the bearing l' , secured to a forward and stubbleward extension on the post K , as seen in Figs. 2 and 3. Upon the shaft j^2 are the sprocket-wheels j^3 and j^4 . Upon the shaft L is the sprocket-wheel l^2 . By means of the chain l^3 , passing around the sprocket-wheels j^3 and l^2 , the shaft L is given rotation. Upon the board h' is placed the chain M , thrown around the sprocket-wheel m at its lower end and its upper end around the sprocket-wheel m' . The sprocket-wheel j^4 at its upper end is provided with a knuckle-like termination; but as this construction is in common use it needs no further description. Suffice it to say that it may be treated as any ordinary knuckle-joint connection that will permit diagonal placement of the sprocket-wheel. Around the sprocket-wheel j^4 and that m^4 is the chain m^5 . The chains l^3 and m^5 are kept taut by suitable idlers, as shown in Fig. 5. Upon the shaft L are the gathering-reels N , N' , and N^2 . O and O' are shields provided with the slots o and o' , through which the fingers of the reels extend. P is a shield secured to the post K and adapted to lie over the reel N^2 , the fingers of said reel adapted to extend beyond at both sides and in front. The object of the shield is incidentally to prevent stalks from winding onto the arms of the reel, but mainly to swing hanging ears or broken stalks the tops of which hang grainward around into the passage-way formed between the two gathering devices.

Upon the table is the shock-forming standard Q , and surrounding the table is the wall Q' . Supported upon a post Q^2 are the springs q q and q , and suitably supported on the main frame and reaching through a slot in the wall Q' are the springs q' and q' . The table, wall, shock-forming standard, and springs forming the subject-matter of another application soon to be filed need not be here described.

R is the main post of the crane for lifting the shock from the shock-forming table. It consists of a strong pipe, which at its foot is halved to the sill B outside of and beside the main supporting-wheel. Suitably secured to the platform-frame and main wheel-frame at their lower ends are the braces R' , R^2 , R^3 , and R^4 . At their upper ends they unite and bolt to lugs, as r , formed on the casting r' . Thus practically united at their upper ends and their lower ends secured to the platform-frame at four places somewhat distant from each other they form what may be considered a

pyramid system of bracing the latter to resist torsion, for it will be readily understood that their lower ends being so distanced from each other and their upper ends united all stresses that would produce torsion of the platform, due to strains produced by a heavy shock or by the gathering devices striking the ground at their forward end, are resisted. This system of bracing, which so well serves to prevent any twisting out of proper position of the parts of the platform-frame, is also made to sustain the crane. The casting r' is provided with what may be considered the tracks r^2 and r^3 . Upon the pipe R and adapted to revolve therearound is placed the casting S. This is provided with the antifriction-rollers s , (shown in Fig. 6 and in dotted lines in Fig. 8,) adapted to roll on the track r^3 . Within this casting S are also the antifriction-rollers s' , adapted to roll on the track r^2 . The rollers s and s' may be considered merely as antifriction devices to render the turning of the crane upon its vertical axis easy. Upon the casting S are the lugs s^2 and s^3 , having pivoted at s^4 the boom of the lifting-crane. In the bearing r^4 (see Fig. 9) is the crank-shaft r^5 , having the screw r^6 and the crank r^7 . Upon the periphery of the casting S is formed the toothed segment S' , which when the parts are assembled, as shown in Fig. 6, meshes with the screw r^6 . It will be understood that by turning the crank R the casting S will be rotated relative to the post and the casting which supports it. By this means the crane is swung to the rear when the shock has been lifted from the table.

Upon the braces R^2 and R^4 is supported the bracket T, in which is journaled the crank-shaft t . R^5 is a brace connecting the casting S to the top of the post R, and R^6 is a brace extending from the casting C^4 to the foot of the post R. These braces perform no function other than giving strength to certain parts and need not be dwelt upon. Upon the shaft t the drum U is loosely placed, so that it may turn independent of the said shaft. Upon the shaft is secured the ratchet t' , and upon the bracket T is pivoted the pawl t^2 . Around the drum is wound the rope t^3 , which passes up along the crane, over the sheaves, and downward to the shock, to which it is secured indirectly through the instrumentality of the shock-forming post. By the arrangement shown and described the shock may be raised by turning the crank and held in suspension through the instrumentality of the pawl t^2 . The operator may then by turning the crank r^7 cause the crane to swing rearwardly and by then setting the drum free permit the shock to drop to the ground. In order that the drum may be easily set free and turn when the shock is dropped, I connect it with the crank-shaft t , as shown in detail in Fig. 11. Secured firmly to the shaft is the immovable member of a clutch t^5 . At one end of the spool, outside of the

flange, a sleeve t^6 is extended, having upon it the splines t^7 and t^8 . The eye of the movable part t^{11} of the clutch is adapted to be placed on this sleeve and is compelled to turn therewith by the splines t^7 and t^8 . In order to lock the movable part of the clutch to the fixed part, the spring t^9 is provided, which surrounds the sleeve at the end of the drum U. Upon the bracket T is pivoted the forked lever t^{10} . The operation of this device for raising the shock will be understood by reference to Figs. 1, 4^a, and 11. The crank is turned until the shock is of sufficient height. The pawl t^2 then sustains it. The shock is then swung to position for dropping, and the lever t^{10} , which is crotched to engage a groove in the clutch, is moved, which sets the spool free and permits it to revolve without carrying the crank with it, which it would do but for this clutch.

The novelty in the gathering devices consists in the use of the gathering-reels upon vertical axes, in combination with inclined gathering-boards, chains, cutting apparatus, and shock-forming table.

V is the tongue, pivoted at v to the main frame, and V' the tongue-brace, pivoted to the main frame at v^2 . Upon the forward portion of the main frame is erected a standard V^2 , braced to the frame by the bar V^3 . Upon this is pivoted the bell-crank v^3 . Connecting the said bell-crank to the tongue and pivoted thereto is the bar v^4 . Mounted upon the main frame is the quadrant W, and pivoted to the same is the lever w' , having a thumb-latch at its upper end and a spring-catch adapted to engage the quadrant W. W' is a rod connecting the said lever to the bell-crank. By the movement of the lever W the position of the frame of the machine relative to the tongue may be changed at will.

X is an additional support adapted to be permitted to fall to the ground and sustain the rear part of the machine when the shock is swung to the rear. As this forms the subject-matter of another application it need not be described here. The chain e^9 , which connects the sprocket-wheel E with that F, is provided with the shoe-tightener e^{10} , that may be adjustable and secured by the set-screw e^8 shown or by any other means.

The value of the clutch on the windlass lies to a large extent in setting the rope free without imparting motion to the crank, which would retard the dropping of the shock somewhat. By setting the rope free quickly the shock is permitted to strike the ground when moving rapidly, and thus the bottom of it conform to the ridged surfaces of the cornfield. Because of this the butts of all the stalks rest upon the ground and the shock is rendered much more stable.

Regardless of the tilt of the machine while cutting I find it desirable to have the platform level when lifting the shock off; otherwise the shock-forming post Q has a tendency

to bind on the pin c^4 , that sustains it in its erect position, and, furthermore, if the machine is not level the shock has a tendency to swing like a pendulum after set free from the pin, which is likely to continue until dropped to the ground, thus permitting the shock to stand a little inclined because of the fact that the stalks upon the side that strikes first will be driven upward relative to the others. I find it preferable to have the parts of the gathering devices which move the stalks onto the stock-forming table move on vertical axes, and thus pass the stalks backward without a tendency to lift them. I prefer to make the quadrangular frame that surrounds the wheel of two bars, or a single bar may be used instead sufficiently long to form the four sides.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a corn-shocker, a main frame, a rotary table supported thereon and given motion by suitable gearing, gathering devices suitably geared to said table so as to be rotated thereby, substantially as described.

2. In a corn-shocker, a main frame, a rotary shock-forming table supported thereon, gathering devices straddling the row and acting to gather and forward the corn to the table, gearing for operating said devices, and a gear secured to the under side of the table near its edge for driving said operating-gearing from the table.

3. In a corn-shocker, a main frame having supported thereon a rotary shock-forming table, gathering devices adapted to straddle the row of corn being operated upon, said gathering devices so geared to the rotary table as to receive motion therefrom, all combined substantially as described.

4. In a corn-shocker, a main frame having a geared table mounted thereon, the gear of said table shrouded to the pitch-line of its teeth, gathering devices, means connecting the said table with the said gathering devices, means for imparting motion from the supporting wheel, or wheels, of the machine, to the said geared table supported upon anti-friction-rollers, one or more of said rollers forming also a shrouded pinion adapted to impart rotation to the said table and another of said anti-friction-rollers forming shrouded pinions to serve as the said means for imparting motion to the said gathering devices from the table, all combined substantially as described.

5. In a corn-shocker, cutting apparatus, a rotary table connected with the supporting-wheel of the machine and adapted to be moved thereby, a gear upon said table, and grain-side and stubble-side gathering devices adapted to receive between them the row of corn being operated upon, the said stubble-side gathering device being geared to the said table, all combined substantially as described.

6. In a corn-shocker, cutting apparatus, a

rotary table connected with the supporting-wheel of the machine and adapted to be moved thereby, a gear upon said table, and grain-side and stubble-side gathering devices adapted to receive between them the row of corn being operated upon, the said grain-side gathering device being geared to the said table, all combined substantially as described.

7. In a corn-shocker, a wheel-frame and platform-frame suitably secured together, a brace system consisting of four bars, so connected at their upper ends as to be, in effect, as one piece, their lower ends secured to said wheel-frame and platform-frame, a main supporting-wheel, a crane resting on said wheel-frame and sustained in its vertical position by said system of braces, all combined substantially as described.

8. In a corn-shocker, a wheel-frame and platform-frame suitably secured together, a brace system consisting of four bars so connected at their upper ends as to be, in effect, as one piece, their lower ends secured to said wheel-frame and platform-frame, a main supporting-wheel, a crane standing on the stubble side of said wheel and supported by the said system of braces, all combined substantially as described.

9. In a corn-harvesting machine, a main wheel and derrick supporting frame, the same consisting of a quadrangle formed of bars secured together, braces secured to the said quadrangular frame substantially at the angles and converging to a point some distance above said quadrangular frame and there united, thus forming, as a whole, a quadrangular pyramid, the main supporting-wheel within said pyramid, a crane, its foot supported upon the said quadrangular frame and sustained above said wheel by the said braces, substantially as described.

10. In a corn-harvesting machine, a main wheel and derrick supporting frame, the same consisting of a quadrangle formed of bars secured together, braces secured to the said quadrangular frame substantially at the angles and converging to a point some distance above said quadrangular frame and there united, thus forming, as a whole, a quadrangular pyramid, the main supporting-wheel within said pyramid, a crane, its foot supported upon the said quadrangular frame and sustained above said wheel by the said braces, a worm-shaft supported upon the bars of said quadrangular frame near the apex of said pyramid, a turn-table having a segment thereon, a worm-wheel upon said turn-table, the boom of said crane secured to said worm-wheel, all combined substantially as described.

11. In a corn-shocker, the combination of forwardly and downwardly extending gathering-arms, gathering and forwarding chains on said arms traveling upward and rearward, and a rotary shock-forming table in rear of the forwarding-chains, the surface of said

table being provided with radial ribs that curve forwardly in the direction of the table's movement.

12. In a corn-shocker, the combination of
5 forwardly and downwardly extending gathering-arms, gathering-chains on said arms traveling upward and rearward, a rotary shock-forming table in rear of the forwarding-chains,
and a rotary stalk-transferring device located
10 between the table and forwarding-chains, the

surface of the table being provided with radial ribs that curve forwardly in the direction of the table's movement.

In witness whereof I have signed my name to this specification in the presence of two
15 subscribing witnesses.

JOSEPH M. SHIVELY.

Witnesses:

LEWIS S. STEELE,
JAS. W. SMITH.