Sheet 1, 2 Sheets.

A. L. Taveau.

Combined Harrow and Seeder.

No. 89,812. Patented May 4, 1869.

Plate 1.

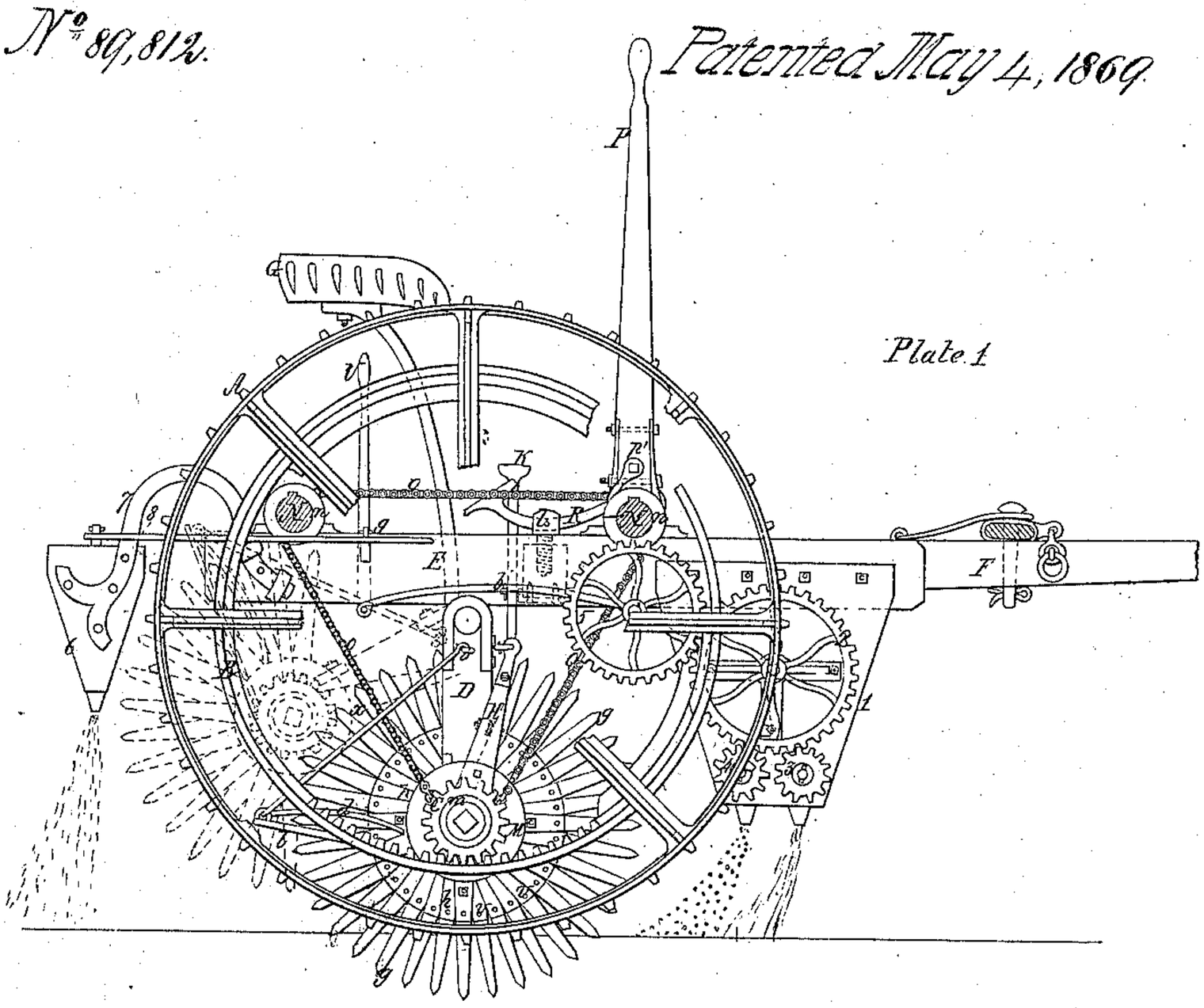
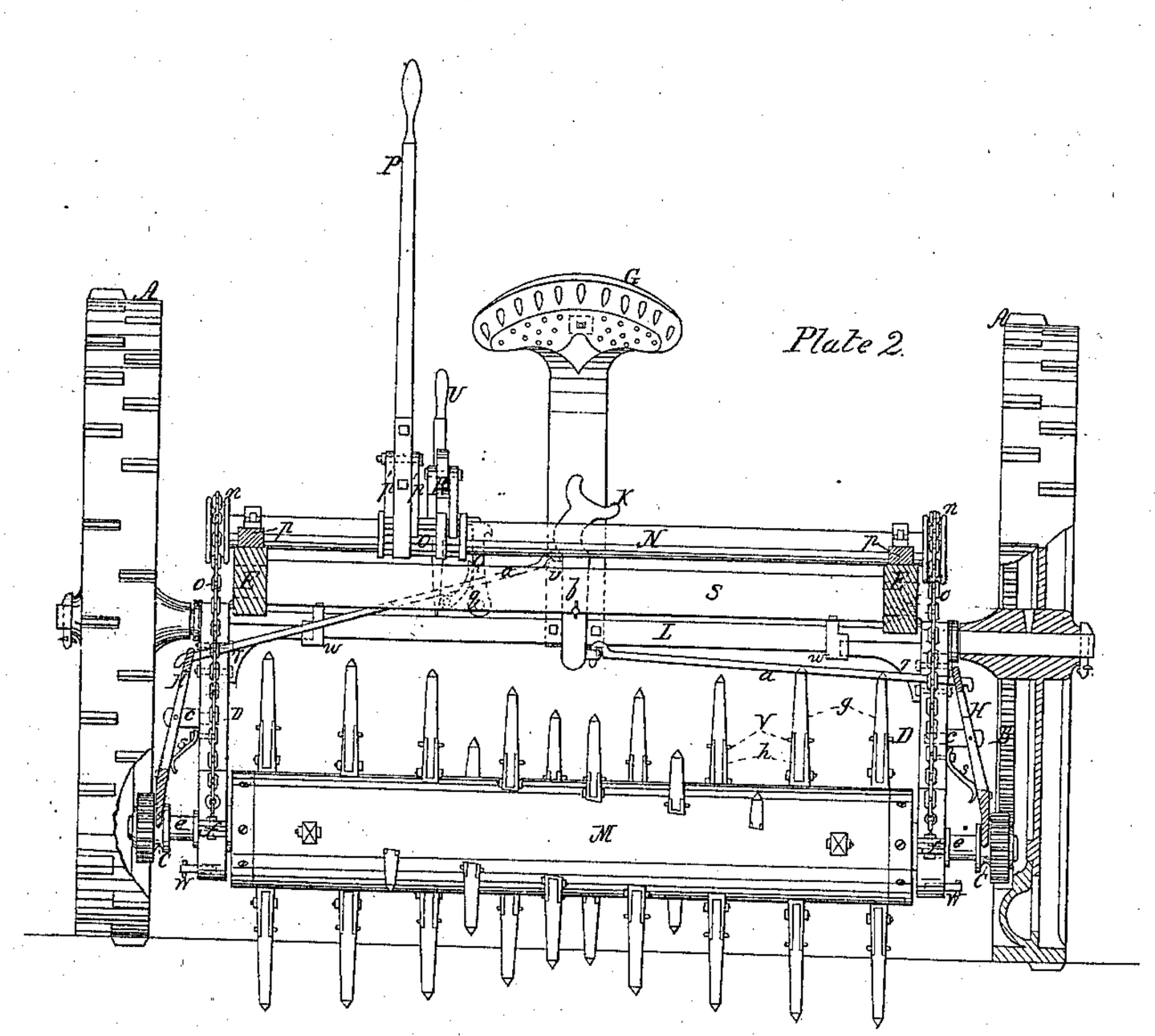


Plate 2.



Witnesses;
Edmund Quinn
Chas C. Wilson

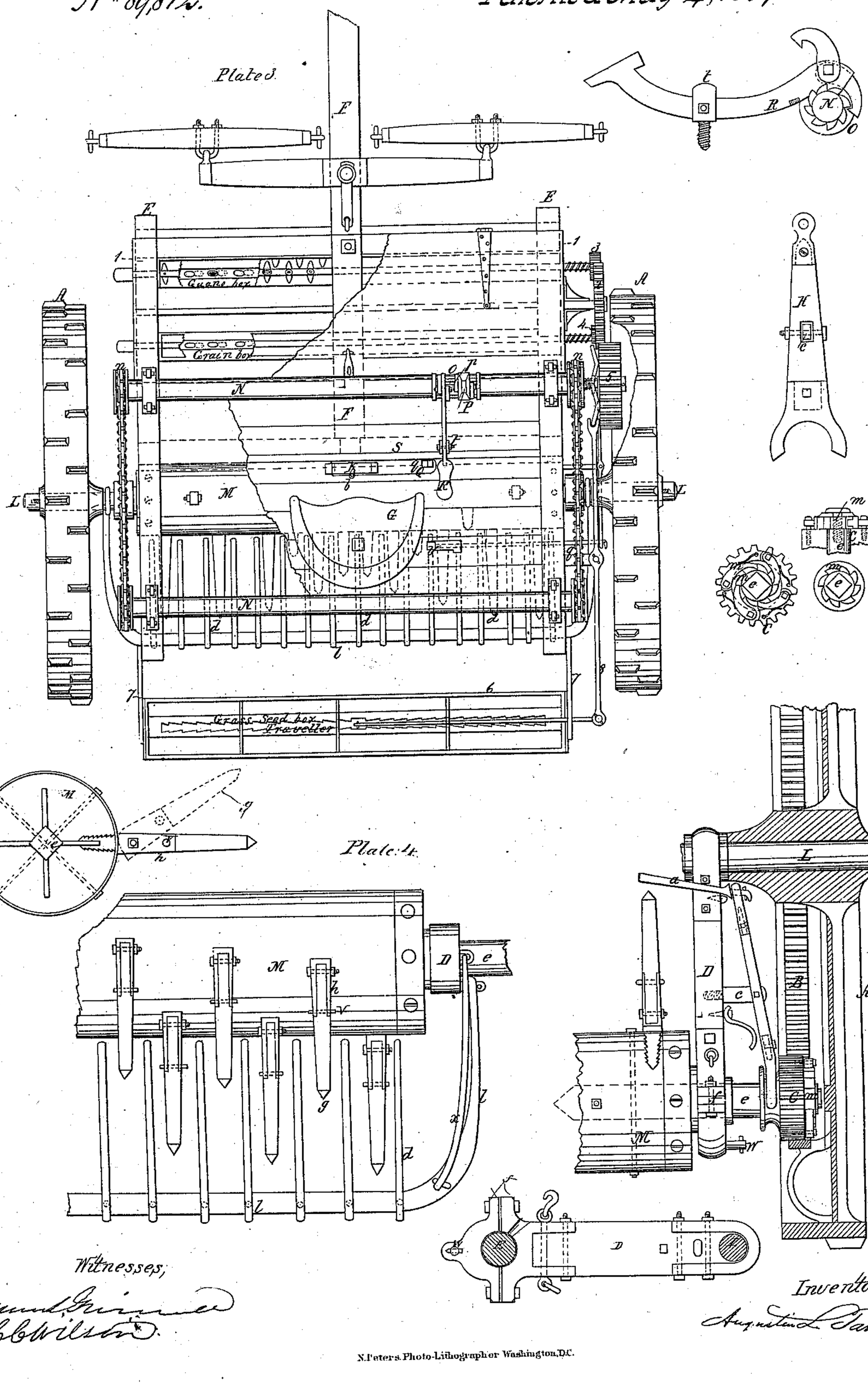
Inventor;
Augustin L. Taveau

Sheet 2, 2 Sheets.

A. L. Taveau.

Combined Harrow and Seeder.

No. 89,812. Patented May 4, 1869.



N. Peters. Photo-Lithographer Washington, D.C.

United States Patent Office.

AUGUSTIN L. TAVEAU, OF CHAPTICO, MARYLAND.

Letters Patent No. 89,812, *dated May* 4, 1869.

IMPROVEMENT IN REVOLVING SULKY-HARROW AND SEEDER COMBINED.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, AUGUSTIN L. TAVEAU, of Chaptico, in the county of St. Mary's, in the State of Maryland, have invented a new and useful machine for sowing fertilizers, grain and grass-seed, collectively or separately, and also harrowing in the same, at one operation, under the title of "The Revolving Sulky-Harrow and Seeder Combined;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Plate No. 1 is a side elevation;

Plate No. 2, a front sectional view;

Plate No. 3, a top view; and

Plate No. 4, a plan of details.

My invention is intended to perform the general functions of a harrow, either separately or in combination with the seeding-attachment.

It consists of a spiked cylinder-drum, M, suspended from the axle L by the arms D, which is held in position by the stay-chains *o*, and made to revolve by the gear-wheels B, operating the pinions C on the journals *e*.

A gear-wheel, No. 5, operated also by the gearing-wheel B, engages with No 2, which latter operates the two seeding-pinions, Nos. 3 and 4.

A worm on the inner side of No. 5 operates the grass-seed rod No. 8.

To enable others skilled in workmanship to make and use my invention, I will proceed to describe its construction and operation.

I construct my revolving sulky-harrow and seeder combined as follows:

I take two cast-iron wheels, with cleats on the outer surfaces of their rims, and bearing a flanged gear-wheel, B, on the spokes of the inner side of each wheel, all similar to reaper-wheels.

These are attached to the axle L, supporting the main frame E, and operate the pinions C, which are movable, and pass into gear with the clutches *m*, at the outer ends of the cylinder-journals *e*, by the pressure of the springs *s* against the levers H.

The cylinder M is of hard wood.

The spikes *g h* are jointed in two parts. The lower joints, *h*, receive the tenons of the upper joints, *g*, which are secured below by bolts, and above by the wooden pins *v*, that break upon encountering any unusual obstruction, and thus save the tooth so striking from damage.

A washer is placed between the drum and each arm D, to obviate the grinding of the one against the other.

These arms are suspended from the axle L by iron straps, bolted through.

Their lower ends are provided with metal boxes *f*, for supporting the cylinder-journals *e*, and a bearing-pin, *w*, to sustain the comb-rod *l*.

The braces *r* are bolted to the arms D, and revolve with them, impinging against the axle, and sustained at their extremities by the socket-rings *w*, which encircle the axle L, and are bolted thereon, having a semicircular flange for receiving the ends of the braces *r*.

The pinions C are movable, and are furnished with spring-pawls, for the purpose of engaging them with the clutches *m*, when pressed into gear by the spring-levers H.

The outer ends of the cylinder-journals *e* are squared to a shoulder, to receive the clutches *m*, which are secured by a washer and bolt screwed into the ends of the journals *e*.

The pinion-levers H fit around the collars of the pinions C, and have a mortise through their centres, to receive the pivots *c*.

Their upper ends are furnished with holes, for oscillating on the gearing-rods *a*, which hook on to the holes in the foot-lever K.

This foot-lever K oscillates on a pin-bolt, *b*, flattened at its end, and secured, by screws, to the under side of the cross-timber S.

It takes the pinions C out of gear by engaging with the spring-catch Q.

The main frame E is slightly let in upon and bolted to the axle L, and floored over crosswise between the rollers N, and has a spring-seat, G, whose standard passes down through the flooring, and is bolted against the rear of the axle L in its centre.

The rollers N are of hard wood, supported on the main frame E by wooden boxes *p*, and are confined by iron straps passing over them and keyed to the boxes *p*.

At each end of the rollers N are iron pin-drums *n*, for operating the stay-chains *o*.

The chains are attached to the lower ends of the arms D, in front, in a ring-bolt, pass around the pin-drums *n*, and are secured by the snap-hooks on the lower ends of the arms D, in the rear. Controlled by the lever P, ratchets O, and foot-pawl R, they raise the cylinder from the ground, or regulate the depth of its work.

This lever P is secured around the ratchets O by a hinged band, bolted through, and is provided with two inverse pawls P, for operating the inverse ratchets O.

The foot-pawl R is also furnished with two inverse pawls, which reciprocate with the lever-pawls P.

The under side of the foot-pawl bar has two slightly-projecting catches (on its under side) to lift the pawls off the ratchets.

This bar pivots on the supporter *t*, and is furnished with a sole for the operator's foot.

The comb *l* is an iron rod, bent around to such a form as will permit the spikes *g* to pass within it.

It is hung on the pin-bolts *w*, on the lower ends of the arms D, and is supported by the brace-rods *x*, that are attached to it by eye-bolts, and hook on to the upper ends of the arms D.

The rear of the comb is furnished with spring-teeth *d*, secured through holes in the comb-rod *l*, and then

bent over and around it, and brought to the front, passing between the spikes *g*, and almost touching the cylinder-drum M.

The seed and guano-box No. 1 is formed of two cast-iron head-plates, having grooved flanges on their outer and lower edges, and down their centres, for sustaining the side and bottom planks and division centre-board, and is suspended, at each end, on the main frame E.

A gear-wheel, No. 2, is operated by a gear-wheel, No. 5, which latter is double the width of the former in the cogs, for the purpose of gearing into the main gear-wheel B and gear-wheel No. 2 simultaneously, and is movable on its journal, and is furnished with a lever, U, for taking it in or out of gear with B.

The journal of gear-wheel No. 5 is sustained upon the lower edge of the main frame E by a box attached to the same, immediately against the seed-box No. 1, and its extreme end is supported in a box attached to that portion of the pole F beneath the flooring.

Upon the inner side of this wheel is a cam-worm, for operating the grass-seed rod No. 8.

The journal of gear-wheel No. 2 works through a brace, bolted to box No. 1.

This wheel No. 2 is stationary upon its journal, and when in gear with No. 5, operates the two seeding-pinions, Nos. 3 and 4.

These two pinions, 3 and 4, are also, like No. 5, movable on their journals, around which coil-springs are attached, for pressing their clutches into gear with a permanent pin on the outer ends af their journals.

An extra hole is pierced in each journal, for the purpose of allowing a pin to hold either back, out of gear, when desirable.

The journals of both these pinions, 3 and 4, pass entirely through No. 1, and are supported on its head-plates. That of No. 3 is armed with spikes, alternating, in its revolutions, between a stationary row of spikes attached to the side of the box No. 1, in front, for pulverizing and passing the guano through the orifices below.

The journal of No. 4 is mounted with flanges, for the purpose of agitating and distributing the grain into the orifices beneath.

The box No. 1 is divided, lengthwise, into two equal compartments, for separating the guano from the grain.

Each compartment has a stationary bottom, under which slides, in grooves, a narrow movable bottom, in a direction opposite to the pinions 3 and 4, with a hand-strip for operating it.

Both the stationary and sliding bottoms have lengthwise button-hole-shaped orifices, which overlap when the movable bottoms are closed.

Running the entire length, and attached to the bottom of box No. 1, are two V-shaped tin receivers, open above and below, against whose sides the grain and guano strike, in their descent, and thus perfect the broad-casting.

No. 6 is the grass-seed box, which is hung from the rear of the main frame E by curved, flat iron braces, No. 7, resting in flat hooks on the frame E.

These hooks are reversed, for the easier removal of the box 6, and the flat braces No. 7 are shouldered, to rest firmly in these hooks.

The bottom of this box is arranged like box No. 1, and has a wooden notched vibrating traveller, from the top centre of which an eye-bolted rod hooks into connection with rod No. 8, which, in turn, operated on its pivot-brace No. 9, by the worm on the inside edge of gear-wheel No. 5, puts the traveller in motion, lying on the bottom of box No. 6, which thus distributes the seed through the holes below.

Both the boxes No. 1 and No. 6 have hinged levers.

Claims.

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

1. A revolving sulky-harrow and seeder combined, or its equivalent, constructed and operating as herein set forth and described, to wit, the revolving spiked cylinder M, axle L, arms D, in combination with the gear-wheels B, movable pinions C, cylinder-journals *e*, clutches *m*, the spring-levers H, and spikes *g h*, in the manner specified; also, the combination of the gear-wheel B, wheel No. 5, wheel No. 2, and the entire seeding-apparatus, in conjunction with the harrow.

2. The construction and application of the jointed spikes *g h*, or their equivalent, held in position in the sockets by the iron bolt and wooden pin *v*, in the manner and for the purpose herein set forth and described.

3. The application of the rollers N, pin-drums *n*, and stay-chains *o*, in combination with the lever P, ratchets O, and construction of the foot-pawl R, in the manner and for the purpose herein set forth and described.

4. The application and combination of the double-acting spring-levers H, springs *s*, rods *a*, foot-lever K, and spring-catch Q, operating and for the purpose as herein set forth and described.

5. The cylinder-comb *l*, brace-rods *x*, and spring-teeth *d*, or their equivalent, in combination with the spikes *g h*, constructed and operating as herein set forth and described.

6. The construction, combination, and arrangement of the guano and seed-box to a revolving sulky-harrow and seeder combined, or their equivalent, and the application of a grass-seeder to the same, all constructed and operating as herein set forth and described.

AUGUSTIN L. TAVEAU.

Witnesses:

JAMES S. GRINNELL,

J. E. M. BOWEN.