(No Model.) 2 Sheets—Sheet 1.

# C. LA DOW.

## SPRING TOOTH HARROW.

No. 246,154. Patented Aug. 23, 1881.

*Fig. 1.*

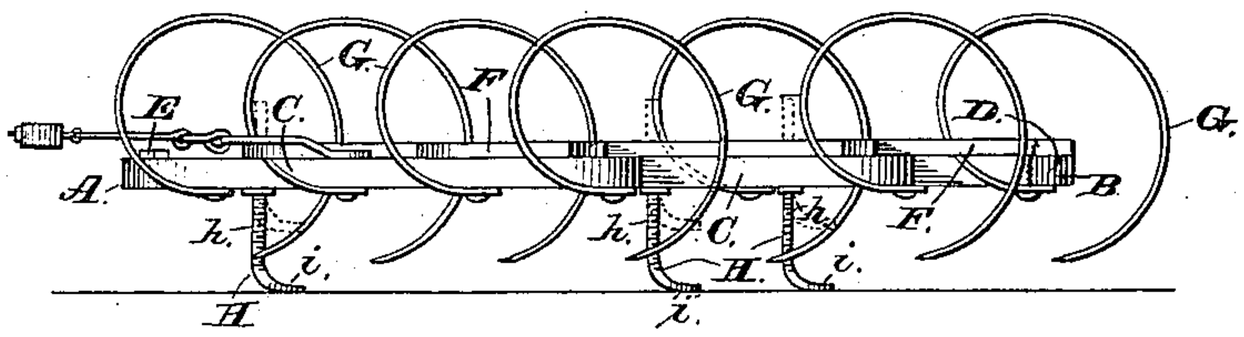



*Fig. 2.*

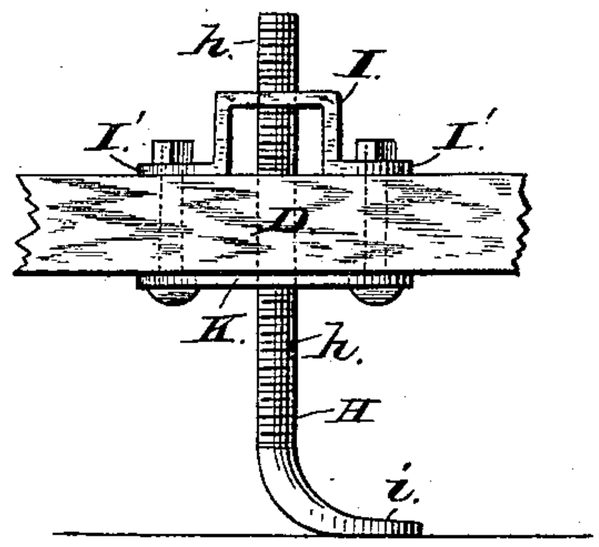
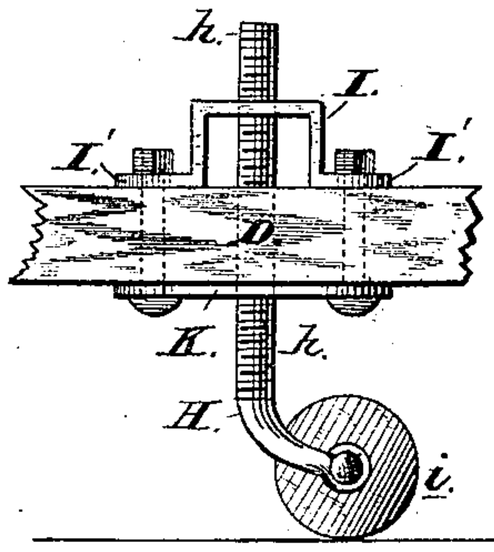



*Fig. 3.*




*Attest.*

Jas. E. Hutchinson.

Albert H. Norris.

*Inventor:*

Chas. La Dow,

By James L. Norris.

Atty

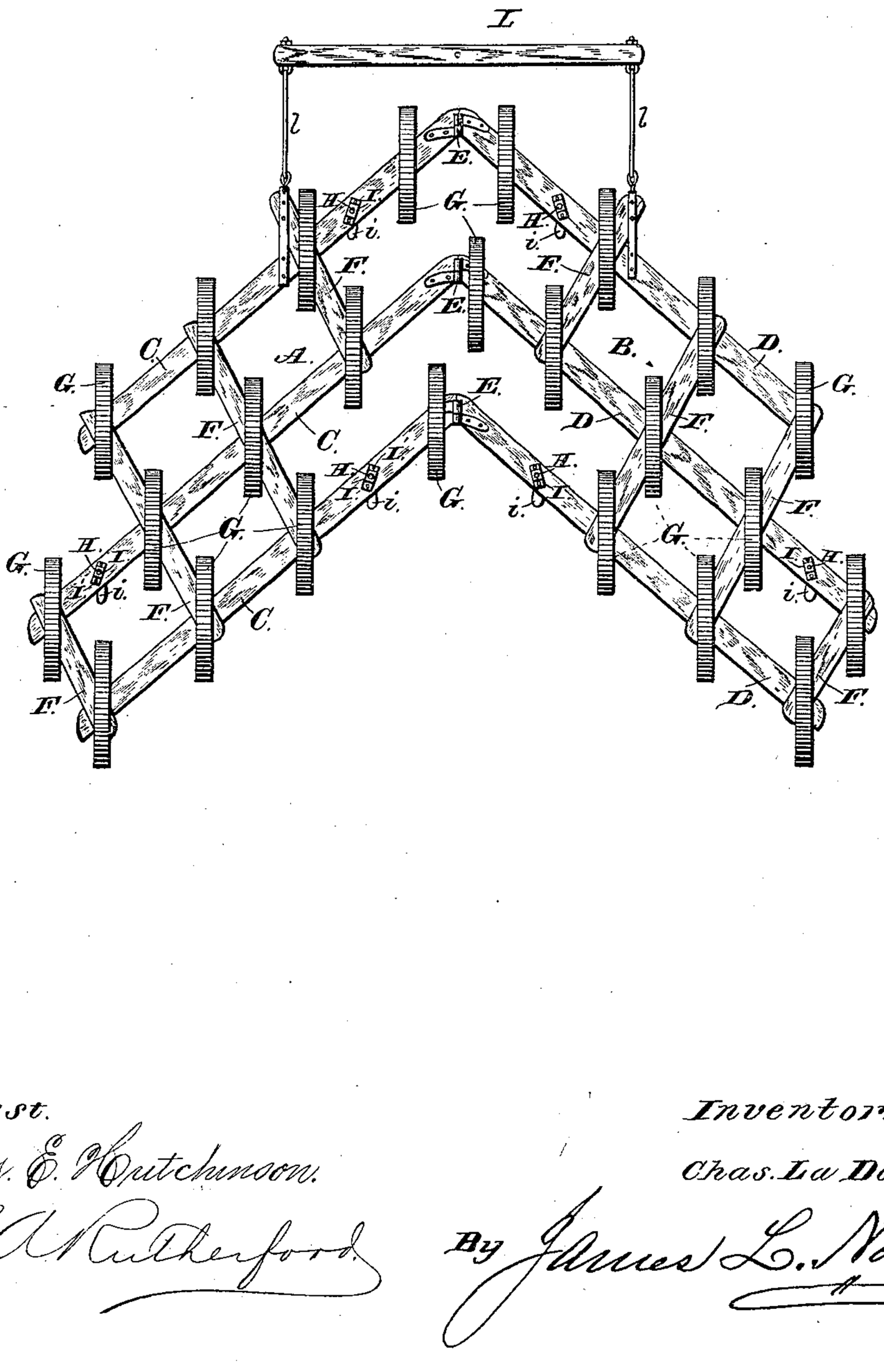
(No Model.) 2 Sheets—Sheet 2.

# C. LA DOW.

## SPRING TOOTH HARROW.

No. 246,154. Patented Aug. 23, 1881.

*Fig. 4.*




Attest.

Jas. E. Hutchinson.

J. A. Rutherford.

Inventor.

Chas. La Dow,

By James L. Norris.

Atty.

# UNITED STATES PATENT OFFICE.

CHARLES LA DOW, OF ALBANY, NEW YORK.

## SPRING-TOOTH HARROW.

SPECIFICATION forming part of Letters Patent No. 246,154, dated August 23, 1881.

Application filed December 23, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES LA DOW, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Spring-Tooth Harrows, of which the following is a specification.

The object of my invention is to improve that class of harrows which are composed of two frames or sections hinged together, and thereby forming one jointed double frame, each single frame being composed of a series of tooth-carrying bars rigidly connected together by suitable cross-bars, the said tooth-carrying bars being provided with vibrating spring-teeth, which are arranged at the points where the tooth-bars and cross-bars intersect each other.

Heretofore in this class of spring-tooth harrows it has been exceedingly difficult to adjust the spring-teeth deep or shallow with reference to their penetration in the earth, such being only possible by adjusting two nuts for each tooth, which results in great inconvenience and endless amount of trouble; and, further, this class of spring-tooth harrows being without supporting-runners, the harrow-frames slide on the ground, thereby making the draft exceedingly heavy.

These serious objections are entirely overcome by my invention; and to this end my invention consists, essentially, in the combination of two frames hinged together, vibratory spring-teeth permanently attached to each frame, and mechanism for supporting the frames, adjusting the penetration of the teeth, and balancing each section of the jointed frame in its line of travel.

The invention embraces other features of construction and combination, which will be fully hereinafter described in detail, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of a spring-tooth harrow embodying my invention, the spring-teeth being elevated from the ground. Figs. 2 and 3 represent detached views of the mechanism employed by me for supporting and balancing the harrow-frames and adjusting the penetration of the teeth, and Fig. 4 represents a plan view of a spring-tooth harrow embodying my invention.

Referring to the drawings, the harrow-frame is composed of two frames or sections, A and B, hinged together by suitable joints, E, thereby forming one jointed double frame. The single frames A and B are each composed of tooth-carrying bars C and D, connected rigidly together by cross-bars F, and at each point where the tooth-bars and cross-bars intersect each other is permanently attached the curved vibratory spring-tooth G, which are preferably made of steel.

The letters H indicate runners, which are provided with screw-threaded shanks, as at *h*, which are connected with the tooth-carrying bars C D at suitable points, in the manner I will now specifically describe. To the upper side of each tooth-carrying bar is firmly secured the runner-support I, which is composed of an angular strap or bracket having flanges I′, bolted to the tooth-carrying bars. The runner-support is provided with a screw-threaded aperture arranged in coincidence with a passage formed through the tooth-carrying bars, through which passes the upper portion of the runner, which, by its screw-threaded shank *h*, engages the screw-threaded aperture in the runner-support I, and thereby the runner-support constitutes an adjusting-nut, and as it is rigidly secured in place, it will be seen that by simply turning the runner H on its axis the stationary nut causes the runner to move up or down in accordance with the direction in which it is rotated, and thereby adjust the foot or base of the runner in relation to the tooth-carrying bars. The foot or base of the runner is either composed of a rigid portion, *i*, or of a rotary wheel, *i′*. It should here be observed that the portion or shoe *i* or *i′* subserves the function of a rudder or caster-wheel to the harrow-frame, the draft contact with the ground preventing the runner from making a complete revolution on its axis, but permitting it to slightly swing laterally and change its line of travel in a manner similar to the ordinary caster-wheel.

In order to provide additional bearings for the runner-shanks, I attach to the under side of the tooth-carrying bars the metallic plates K, which are provided with screw-threaded openings like those in the runner-supports.

The runners herein described are connected

with the tooth-carrying bars at such points as will insure the support of the entire jointed narrow-frame and permit the entire clearance of the spring-teeth from the ground when the runners are properly adjusted for such purpose.

It will be seen that the mechanism for supporting and balancing the harrow-frame and adjusting the penetration of the teeth is entirely independent of the fastenings which attach the spring-teeth in position, and, of course, such adjusting mechanism may be arranged either on the tooth-bars or cross-bars, as desired, without departing from the principle of my invention. The vertical adjustment of the runners H produces several different results. For instance, if the teeth penetrate too deeply into the ground, by simply turning the runners on their axes they can be adjusted to lower their shoes to such an extent as will cause the jointed harrow-frame to be elevated, and thereby lessen the degree of penetration of the spring-teeth. Then, again, by the proper downward adjustment of the runners the spring-teeth can be caused to entirely clear the ground, and thus permit the harrow to be transported on its runners. The draw-bar L of the harrow is so attached by jointed rods *l* to both sections of the jointed frame that such draw-bar coacts with the runners in balancing the sections of the frame and causing it to travel in a steady and level manner.

By my invention I provide a harrow having vibratory spring-teeth attached to a jointed or sectional frame which is capable of being supported at various distances above the ground by means of the described adjusting mechanism, the jointed frame permitting each section and its vibratory spring-teeth to conform to uneven surfaces; and the adjusting mechanism further subserves the function of regulating the depth of penetration of the teeth, and consequently regulating the extent of their vibration, because the deeper the penetration of the teeth the greater will be the vibration.

What I claim is—

In a spring-tooth harrow, the combination of the jointed frames, the vibratory spring-teeth secured to the tooth-bars of the frames, and adjustable runners arranged to support and balance the harrow-frames when in operation and adjust the penetration of the spring-teeth into the earth, the combination being and acting substantially in the manner and for the purposes set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES LA DOW.

Witnesses:
JAMES H. MELICK,
JNO. WOLFF.