

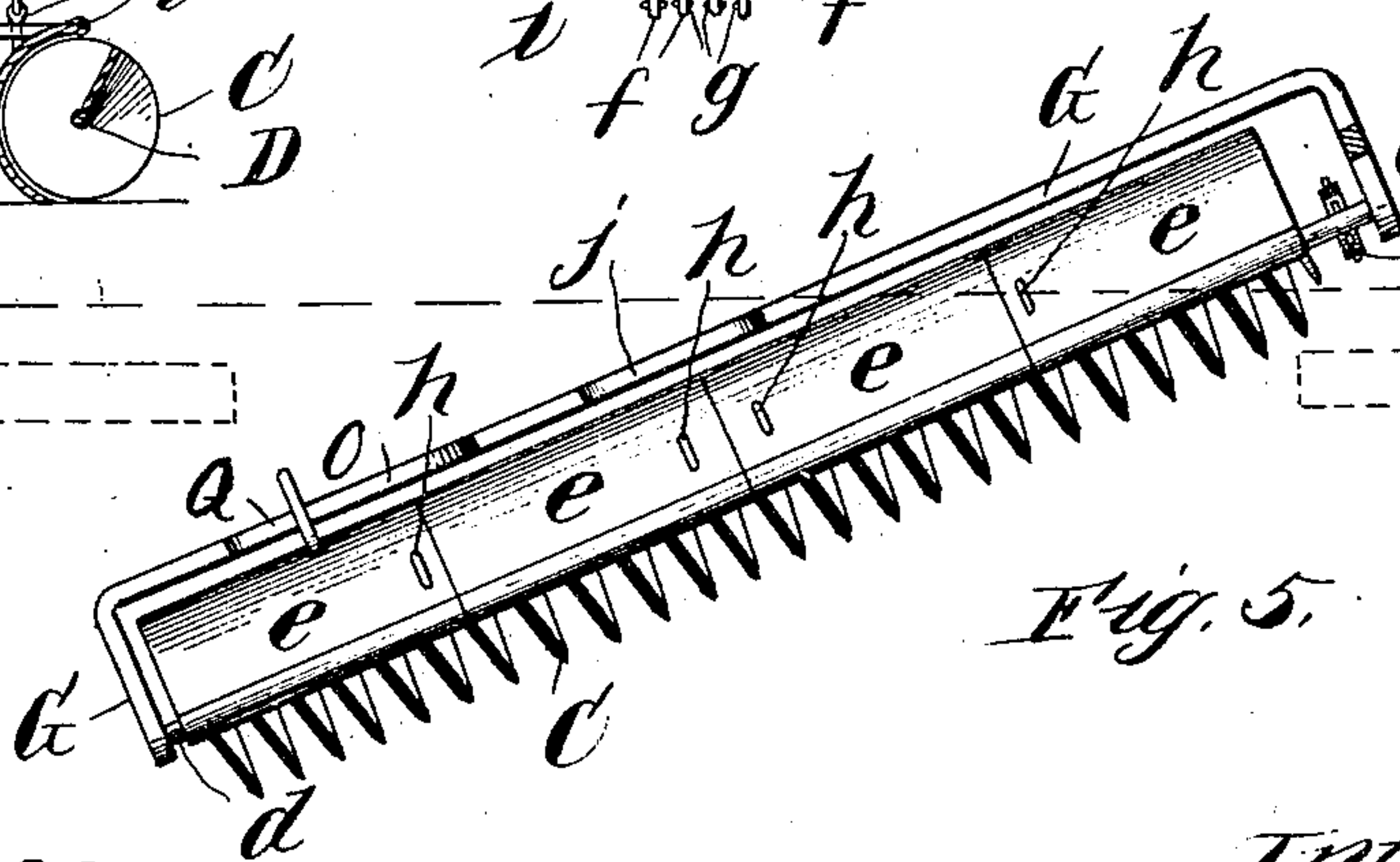
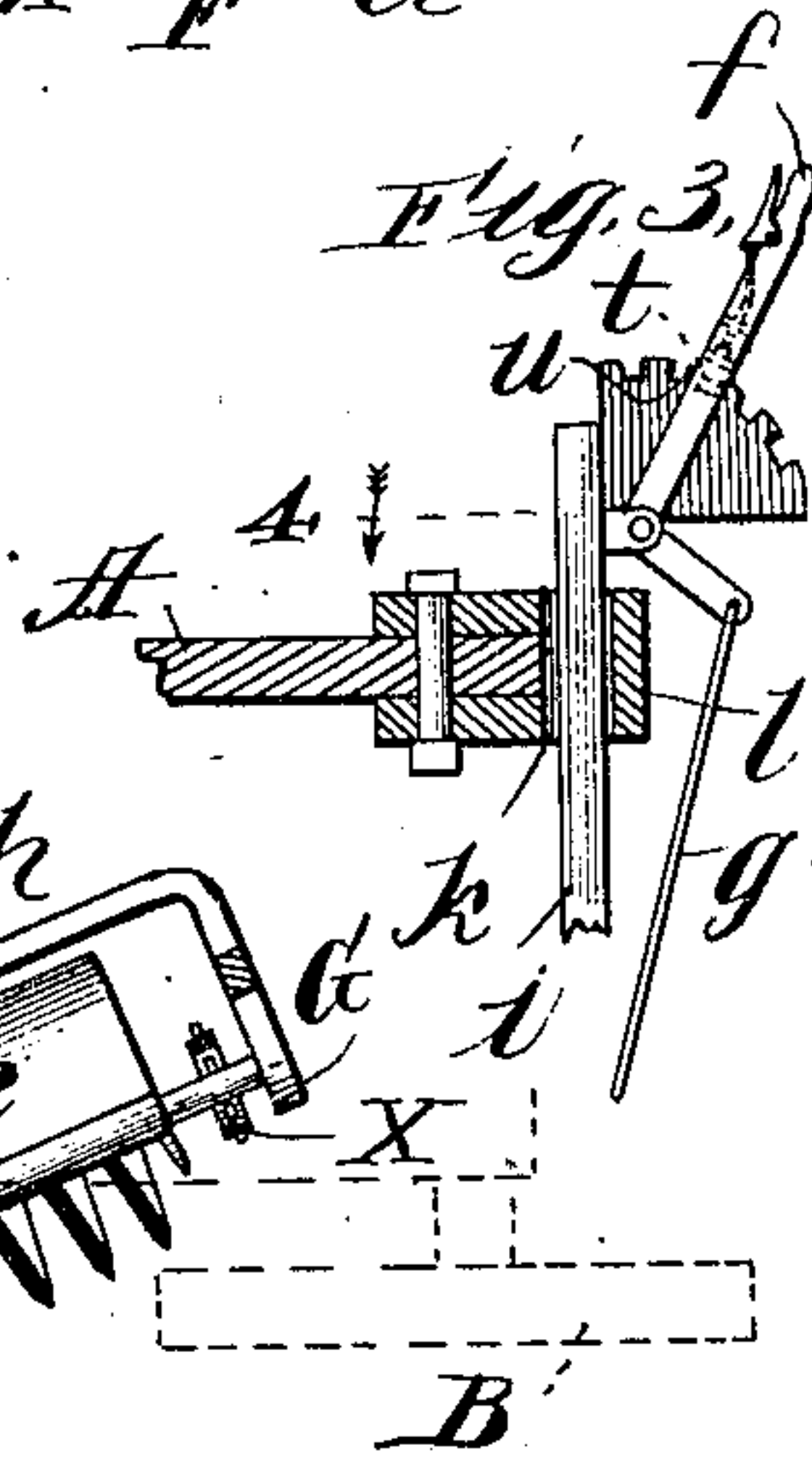
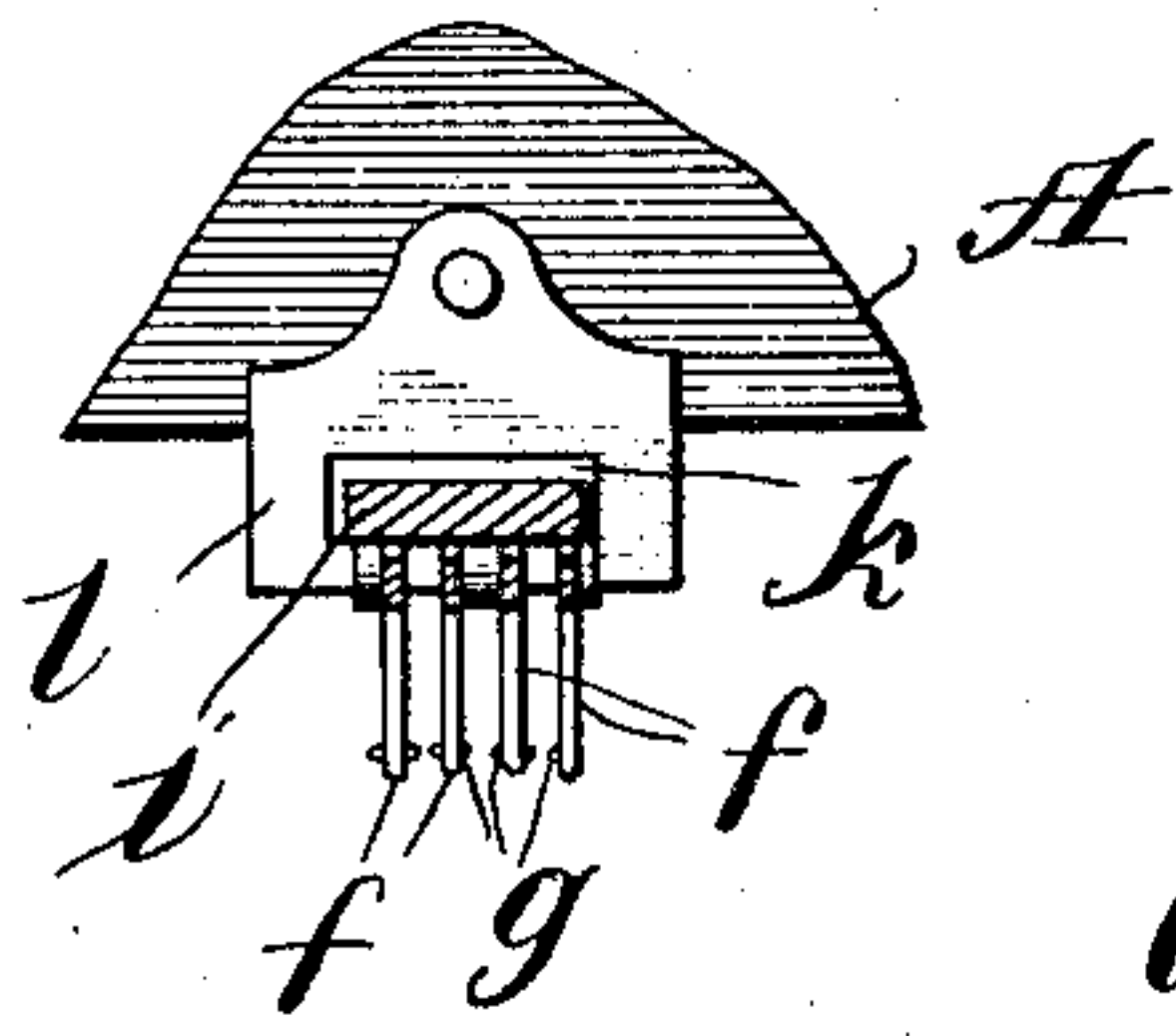
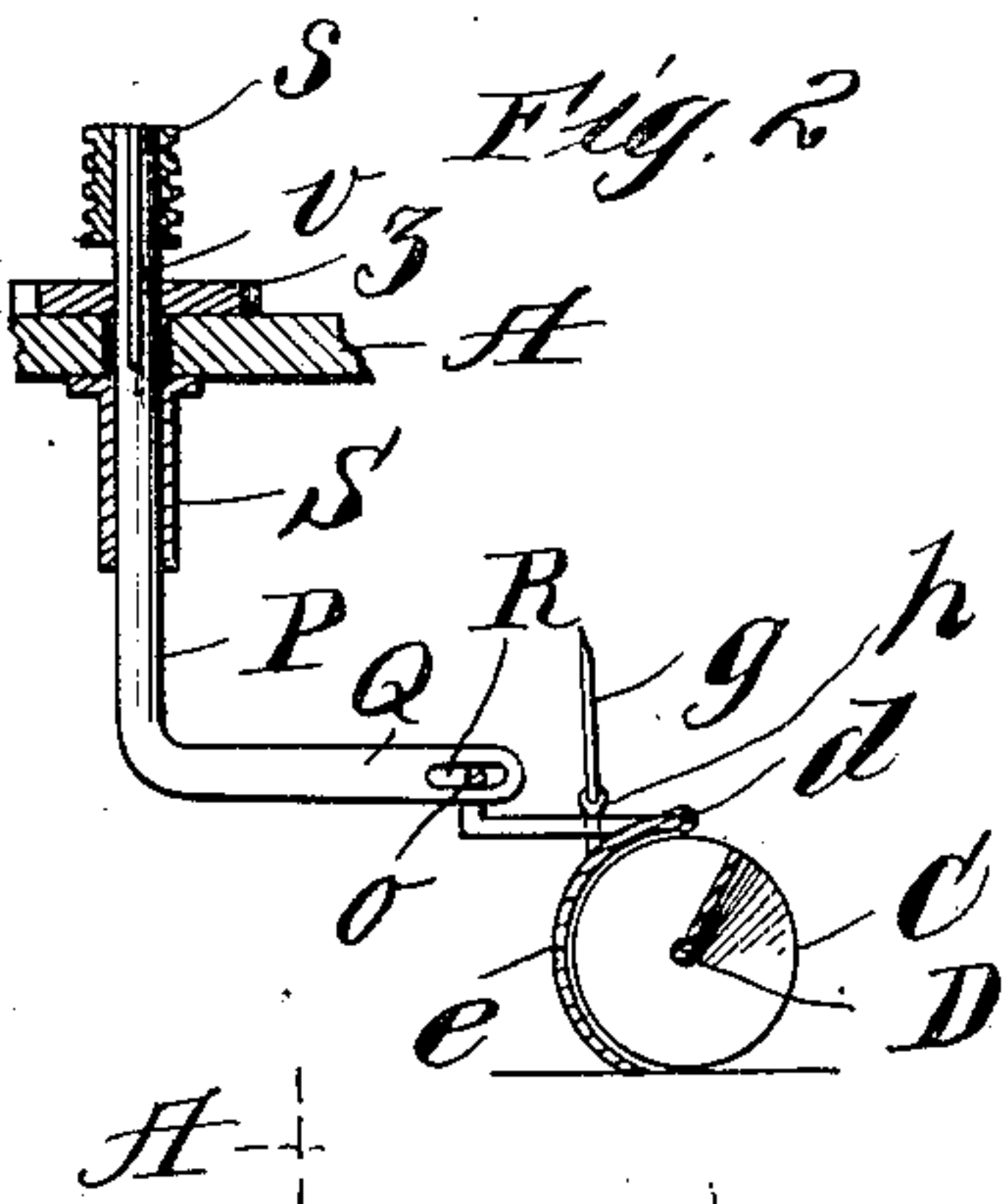
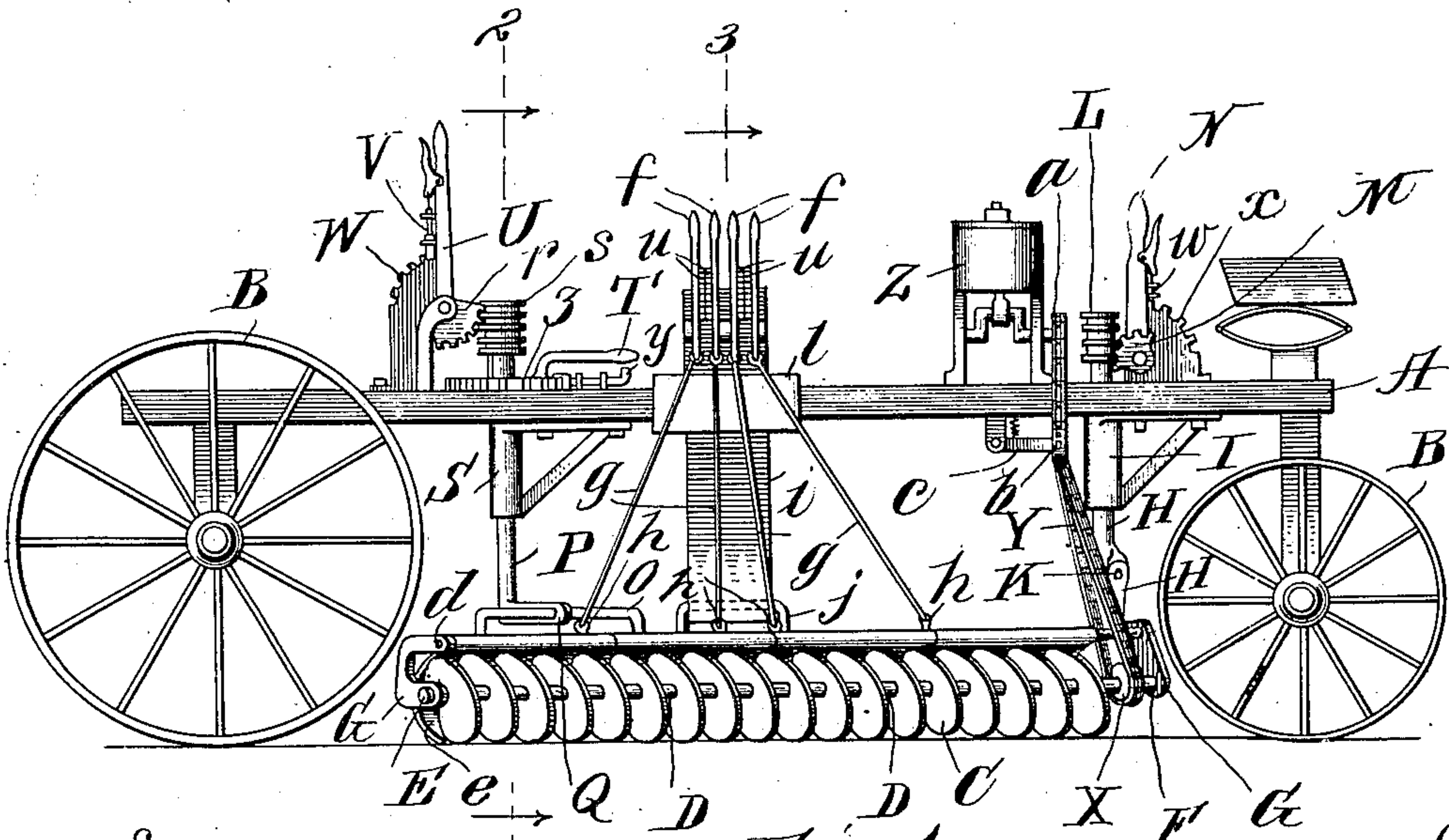
No. 837,753.

PATENTED DEC. 4, 1906.

R. V. SUTHERLAND.  
GRADING MACHINE.

APPLICATION FILED AUG. 30, 1906.

Fig. 1.



Witnesses

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# UNITED STATES PATENT OFFICE.

ROBERT V. SUTHERLAND, OF SWEA TOWNSHIP, KOSSUTH COUNTY, IOWA.

## GRADING-MACHINE.

No. 837,753.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed August 30, 1906. Serial No. 332,569.

*To all whom it may concern:*

Be it known that I, ROBERT V. SUTHERLAND, a citizen of the United States, residing in the township of Swea, in the county of Kossuth and State of Iowa, have invented certain new and useful Improvements in Grading-Machines, of which the following is a specification.

My invention relates to grading-machines; and its object is to provide such a machine that will be simple and economical in construction and easy and effective in operation.

My invention is embodied in the following-described mechanism, and is more particularly pointed out in the claims.

In the accompanying drawings, which form a part of this specification, and in which like parts are designated by the same reference characters in all the views, Figure 1 is a side view of a grading-machine embodying my invention. Fig. 2 is a detail sectional view of the rear support of the grading mechanism on line 2 of Fig. 1, showing the conveyer-hood in section, with connections therewith, &c. Fig. 3 is a detail sectional view on line 3 of Fig. 1, showing a part of the support of the levers which operate the conveyer-hood and adjacent parts. Fig. 4 is a detail plan and sectional view of the same on line 4 of Fig. 3; and Fig. 5 is a plan view of the grading mechanism, illustrating its conveyer-hood, &c.

A suitable vehicle body or frame A, traveling on wheels B, carries the grading mechanism. This comprises a spirally-formed earth-conveyer C, rotated on its axis or shaft D, journaled at E and F on the supporting member G, which is carried at its forward end by the shaft H, adapted to turn in a bearing I and having a hinge-joint K, the direction of whose pintle is transverse rather than longitudinal to the frame A. Suitable means for raising and lowering this shaft H are provided, preferably the rack L, in which engages the segmental rack M, operated by the lever-handle N, having a pawl w and pawl-rack x.

The supporting member G is provided with a bar O, by which the grading mechanism is carried toward its rear end by the shaft P, having a right-angled arm Q, provided with a slot R, sufficiently elongated that the bar O may travel therein to accommodate the forward and backward swing of the arm Q. This shaft P may be turned in its bearing S by the lever-handle T, (having suitable pawl

y and pawl-rack z,) whose operation is to throw the rear end of the grading mechanism in or out from the longitudinal line of the frame A. The shaft P, being splined at v to the pawl-rack z, may be raised and lowered by means of the lever-handle U, having a pawl V and pawl-rack W.

The spirally-formed conveyer C is rotated by suitable means, as by its sprocket-wheel X, operated by the chain Y, driven by any means, as by a suitable gasoline or other motor Z, having its driving sprocket-wheel a. To maintain the chain tight in all positions of the grading mechanism, a binding-wheel b, turning on the spring-pressed lever-arm c, is provided.

On the inner side of the grading mechanism a suitable conveyer-hood is provided to retain or confine the earth subject to the action of the spiral conveyer. This hood is preferably arranged to be operated so that the earth may escape when desired from the conveyer's action and to that end is preferably pivoted on the rod d, carried by the supporting member G. This hood is also preferably formed in a suitable number of sections e e e e (four in the construction shown) each pivoted as aforesaid, so that the rear one or more sections may be operated as stated to allow the escape of the earth. This hood and the sections thereof are operated to allow the escape of the earth preferably by the lever-handles f f f f, one for each section, (each having a pawl t and pawl-rack u,) and their connecting-rods g g g g, operating on the hood-sections by suitable pivotal connections h h h h. These lever-handles f have their fulcrums on a support i, which, to adapt it to the varying positions of the grading mechanism, is supported at its lower end by a pivotal connection to the rod j, carried by the supporting member G, and at its upper end is retained in sliding engagement in a slot k in the member l, pivoted at the side of the frame A.

My grading-machine is operated in the following manner: As the entire machine is drawn over the ground to be graded and the motor Z rotates the spiral conveyer, the several sections of the hood being closed down behind the spiral conveyer, the earth acted on by the grading mechanism is carried backward and conveyed to the end of the hood, where it escapes. The depth of the machine's operation may be increased or diminished by lowering or raising the levers N and



U. By turning the lever T the earth may be distributed nearer to or farther from the longitudinal line of the frame A, and by operating the levers f the sections of the hood as desired may be raised and the earth suffered to escape nearer to such longitudinal line.

Not confining myself to the details of construction shown, I claim—

1. In a grading-machine, a rotatable spiral conveyor and a conveyer-hood on the inner side thereof to confine the earth subject to the action of the conveyer.

2. In a grading-machine, a rotatable spiral conveyor and an adjustable conveyer-hood on the inner side of the conveyer to confine the earth subject to the conveyer's action and to release it therefrom as desired.

3. In a grading-machine, a rotatable spiral conveyor and a conveyer-hood formed in adjustable sections, on the inner side of the conveyer, to confine the earth subject to the conveyer's action and to release it therefrom as desired.

4. In a grading-machine, a vehicle-frame, a grading mechanism comprising a rotatable spiral conveyor and a conveyer-hood formed in adjustable sections, on the inner side of the conveyer, to confine the earth subject to the conveyer's action and to release it therefrom as desired, means for adjusting the conveyer-hood, and a support for such means pivoted on the grading mechanism and retained by a member pivoted to the vehicle-frame and having a slot within which said support may move.

5. In a grading-machine, a vehicle-frame, a grading mechanism comprising a rotatable spiral conveyor and a conveyer-hood formed in adjustable sections, on the inner side of the conveyer, to confine the earth subject to the conveyer's action and to release it therefrom as desired, means for lowering and raising the grading mechanism, means for adjusting the conveyer-hood to confine or release the earth, a support for such means pivoted on the grading mechanism and retained in a slot carried by the vehicle-frame.

6. In a grading-machine, a vehicle-frame, a rotatable spiral conveyor, a shaft supporting one end of the conveyer and pivoted on the vehicle-frame, and a second shaft pivoted

to the vehicle-frame and having an arm supporting the other end of the conveyer to control the angle of the conveyer with the line of the machine's travel.

7. In a grading-machine, a vehicle-frame, a rotatable spiral conveyor, a conveyer-hood on the inner side thereof to confine the earth subject to the conveyer's action, a shaft supporting one end of the conveyer and pivoted on the vehicle-frame, and a second shaft pivoted on the vehicle-frame and having an arm supporting the other end of the conveyer to control the angle of the conveyer with the line of the machine's travel.

8. In a grading-machine, a vehicle-frame, a rotatable spiral conveyor, a conveyer-hood formed in adjustable sections, on the inner side of the conveyer, to confine the earth subject to the conveyer's action and to release it therefrom as desired, a shaft supporting one end of the conveyer and pivoted on the vehicle-frame, and a second shaft pivoted on the vehicle-frame and having an arm supporting the other end of the conveyer to control the angle of the conveyer with the line of the machine's travel.

9. In a grading-machine, a vehicle-frame, a rotatable spiral conveyor, a conveyer-hood formed in adjustable sections, on the inner side of the conveyer, to confine the earth subject to the conveyer's action and to release it therefrom as desired, a shaft pivoted on the vehicle-frame and supporting one end of the conveyer, a second shaft pivoted on the vehicle-frame and having an arm supporting the other end of the conveyer to control the angle of the conveyer with the line of the machine's travel, means for adjusting the conveyer-hood, a support for such means pivoted on the grading mechanism and retained in a slot carried by the vehicle-frame, and means for raising and lowering the two shafts which support the conveyer.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses:

ROBERT V. SUTHERLAND.

Witnesses:

T. W. DOUGHTY,  
E. F. KNOWLES.