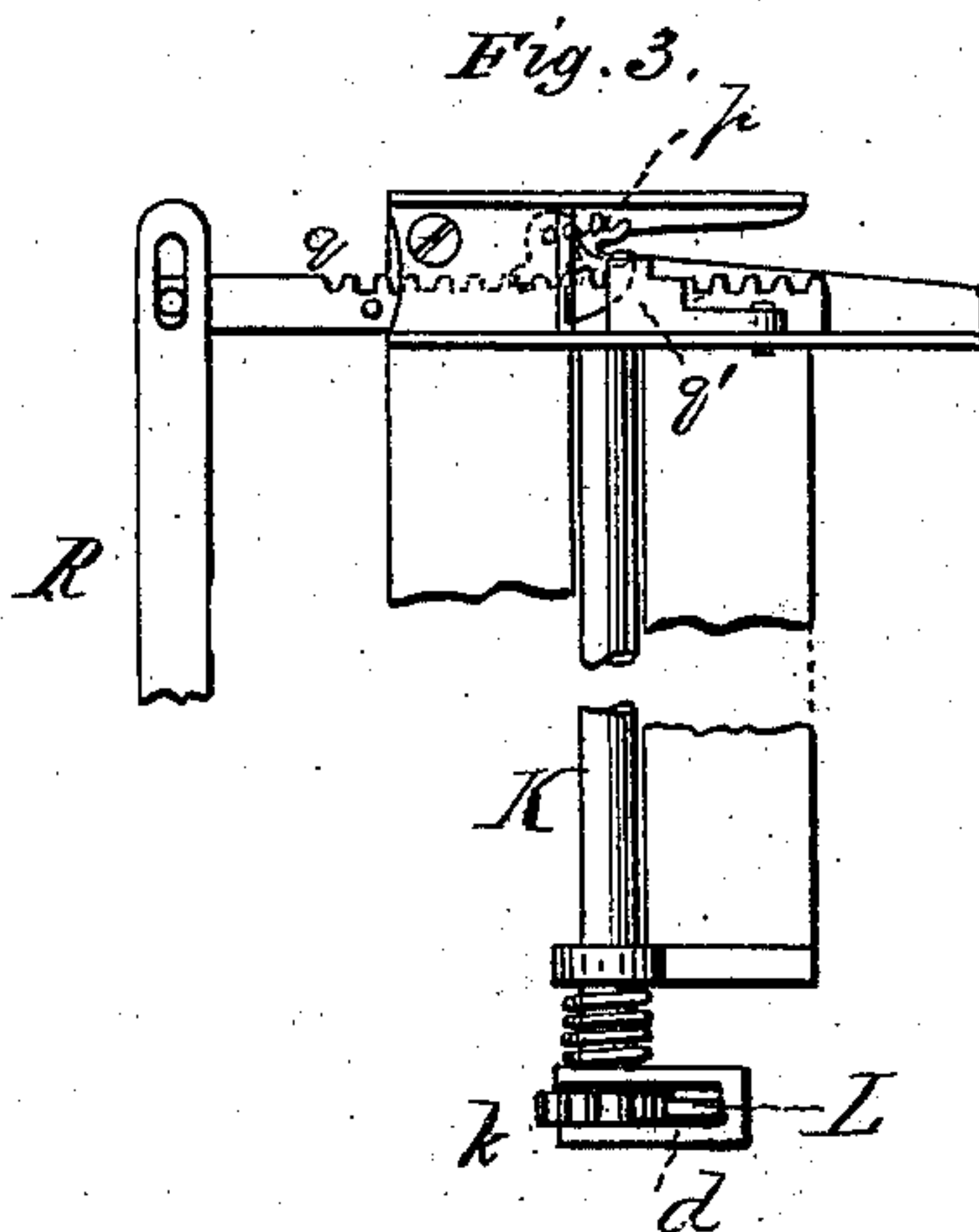
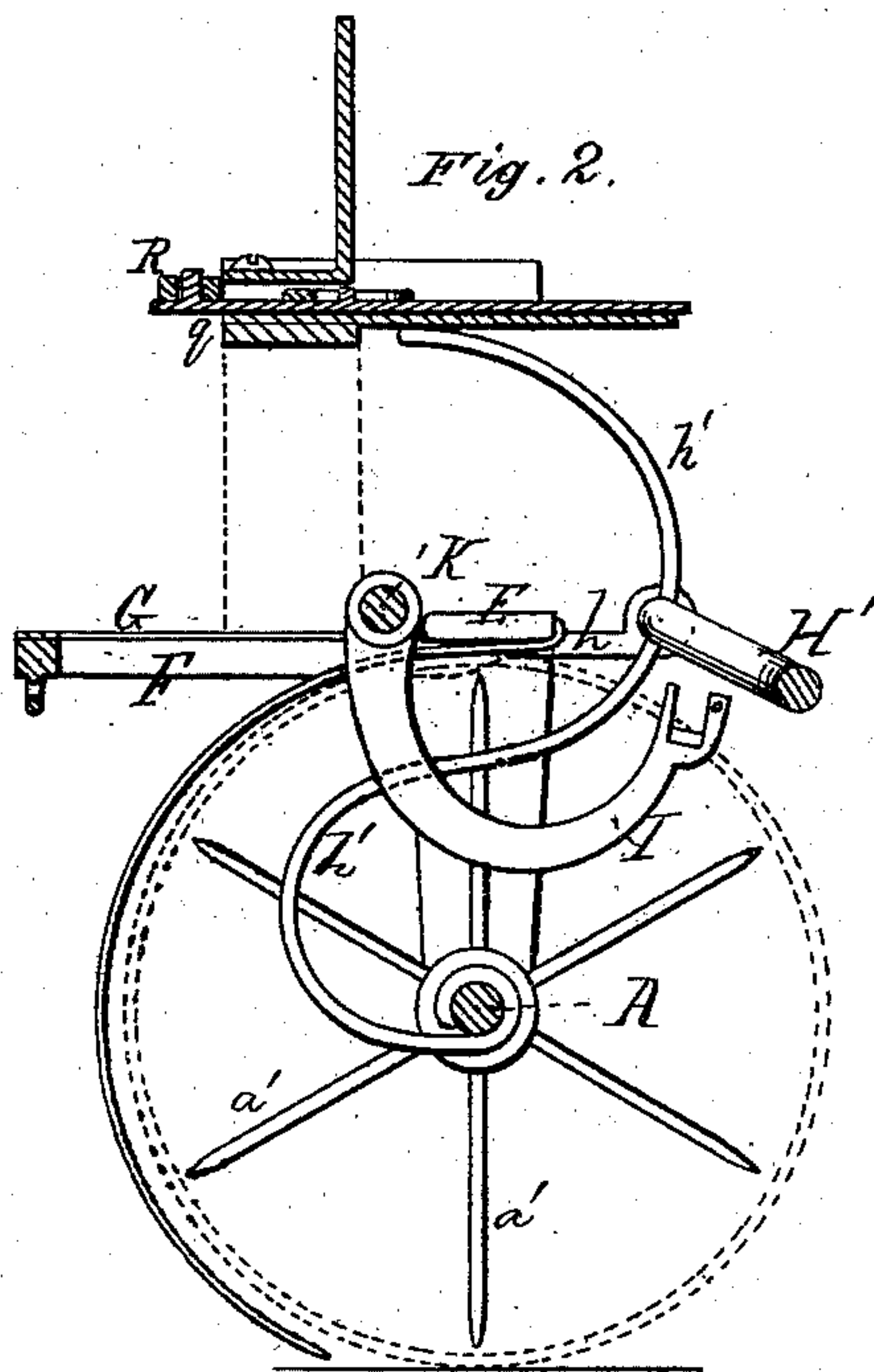
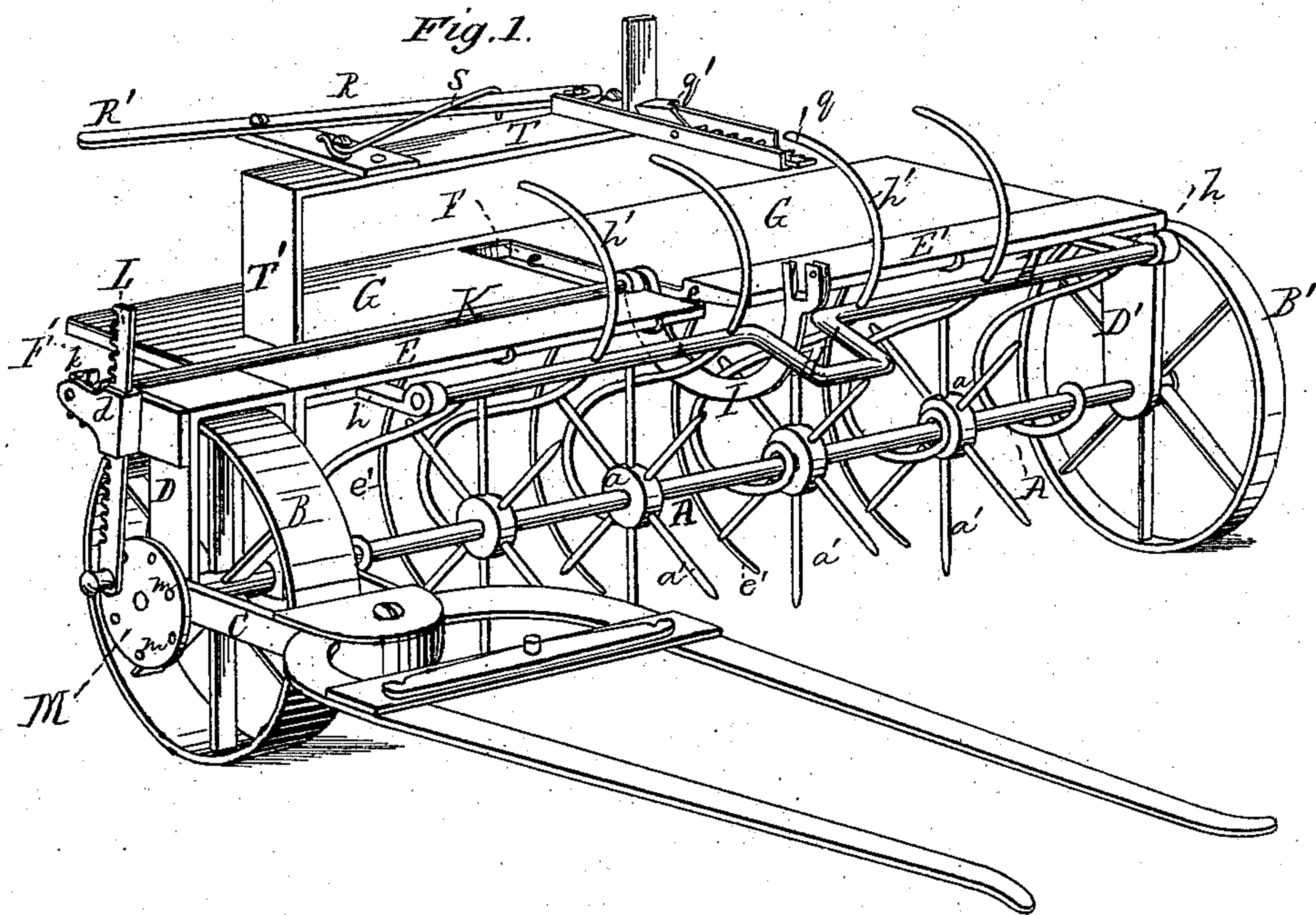


C. L. TRAVIS.  
Gleaner and Binder.

No. 228,003.

Patented May 25, 1880.



Witnesses:  
Alexander Mahon  
John G. Center.

Inventor:  
Charles L. Travis,  
by A. M. Smith, atty.



# UNITED STATES PATENT OFFICE.

CHARLES L. TRAVIS, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR, BY MESNE ASSIGNMENT, TO GRAIN BINDER ASSOCIATION, OF NORRISTOWN, PA.

## GLEANER AND BINDER.

SPECIFICATION forming part of Letters Patent No. 228,003, dated May 25, 1880.

Application filed November 18, 1876.

*To all whom it may concern:*

Be it known that I, CHARLES L. TRAVIS, of Minneapolis, county of Hennepin, State of Minnesota, have invented a new and useful Improvement in Gleaner and Binder, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved gleaner and binder, or so much thereof as is necessary to illustrate my invention. Fig. 2 is a vertical section through the same, taken at one side of the wire-carrying arm; and Fig. 3 is a plan view of the mechanism for actuating the wire-carrying arm and the twisting-pinion.

Similar letters of reference denote corresponding parts wherever used.

My invention has for its object the gathering of the grain from the ground, where it has been left in swaths by the harvesting-machine or otherwise deposited after it has been cut, and the binding of the grain so gathered into compact bundles; and it may be used to advantage and profit in gleaning fields from which the grain has been cut and bound in any usual manner, and hence the name applied to it of "gleaner and binder."

The first part of my invention relates to the means for gathering the grain off the surface of the ground and elevating it to the binding-table; and it consists in the combination, with a series of rake-teeth for gathering or raking up the grain and a series of curved elastic slats or rods, between which and the rake-teeth the grain is elevated, of a rotating shaft provided with lifting-fingers, by means of which the grain is carried up between the rake-teeth and the opposing slats or rods and deposited upon the elevated table in convenient shape and position to be acted upon by the binding devices, or to be bound by hand, as desired.

The invention further consists in a novel arrangement of the wire-carrying arm relative to the grain elevating and compressing devices, whereby it is made to separate the grain or bundle to be bound from the grain that is to form the succeeding bundle.

The invention further consists in a novel arrangement of the binding-table and mechanism relative to the carrying-wheels and grain-elevating devices of the machine, as hereinafter described.

The machine, in its general organization, and with the exception of differences which will be specifically pointed out, resembles an ordinary two-wheel wire-tooth horse-rake, A representing the axle, and B B' the two carrying-wheels, the former, B, being keyed to and rotating the axle with it, and constituting the driving-wheel. To the axle A is secured a draft-frame, C, made, by preference, of metal bent into U shape, with its open rear end embracing the drive-wheel B, and having the shafts or tongue attached to its forward closed end, as shown, thus placing the team at one side of the swath operated upon and avoiding all trampling of the grain.

D represents an upright angular frame striding the drive-wheel B, and secured upon the frame C or axle A, either or both, as preferred. To the upper end of this frame, and with its upper face about in the same horizontal plane with the upper horizontal portion of frame D, is secured a transverse bar, E E', divided or cut away at or near midway of its length, as shown at e, the outer portion, E', being supported at its outer end from the axle A by an upright, D'. The ends of the bar E E', where cut away or separated at e, as described, are connected each with a crank or U-shaped plate, F, extending horizontally to the rear of bar E E', said plate, in connection with rearwardly-projecting bars F' at the outer ends of bars E E', serving to support the grain-table G, which is slotted over the central U-shaped plate, F, to accommodate the movements of the wire-carrying arm, as hereinafter explained. The plate E E', constructed as described, is made also to constitute the rake-head, and has a number of curved spring wire teeth, e' e', for raking or gathering the grain; or, if preferred, a separate head or heads may be mounted in bearings secured to bars E E', and made adjustable for regulating the proximity of the points of the teeth to or their pressure upon the ground.

The plate or bar E E', near its ends, has



arms *h h* projected forward, to the forward ends of which a transverse rod or bar, *H*, is secured, said rod, at or near midway of its length and in the same vertical longitudinal plane with the wire-carrying arm, being bent forward in crank form at *H'*, as shown, to permit the movements of said wire-carrying arm, hereinafter described. To this rod or bar *H* a number of elastic rods or fingers, *h' h'*, are secured, bent in *S* form, substantially as shown, the lower ends reaching down to and being bent around the axle *A*, while the upper ends or arms extend above the rod or bar *H* to near the plane of the twisting devices hereinafter described, and, curving backward, overhang the bar *E E'* and grain-table *G*, as shown. By this arrangement the rods or fingers *h'* and bar *H* are placed in advance of the teeth *e'* and bar *E E'* sufficiently far removed to permit the passage upward between them of the grain, the upper backwardly-curved ends of the rods or fingers *h'* serving to turn or deflect the current of ascending grain backward, causing it to be deposited on the table *G*.

Instead of the teeth or bent rods *h'*, it will be obvious that curved slats or a slotted continuous plate may be employed.

For elevating the grain between the teeth *e'* and rods *h'*, arranged as described, the rotating axle *A* is provided with a series of hubs, *a*, each having a number of spokes or teeth, *a'*, which pass between the rods or fingers *h'*, and serve, in the forward movement of the machine, to press the grain back against the teeth *e'*, and then to lift it up between said teeth and the yielding compressing rods or fingers *h'*, the grain thus lifted being upheld and moved onward, after its lifting spokes or teeth escape, by the grain upon the succeeding teeth until it is forced up between the bars *E* and *H* and deposited upon the platform *G*.

The wire-carrying arm *I* is located about midway of the width of the raking and elevating devices and grain-platform described, and is rigidly secured at one end to a transverse rock-shaft, *K*, mounted in suitable bearings on the frame *D* and bars *E* and *F F'*, either or both, as may be most convenient. The outer end of this shaft *K*, or the end adjacent to the driving-wheel, is armed with a pinion, *k*, which engages with a reciprocating rack, *L*, passing through a guiding-loop, *d*, secured to frame *D*, and having its lower end connected by a wrist-pin with a crank-wheel, *M*, on the end of the axle *A*, as shown.

The wheel *M* has a series of perforations, *m m*, at varying distances from its center, through any one of which the rack *L* may be connected with the wheel for varying its throw and that of the wire-carrying arm, as may be required. By this arrangement a vibrating movement is given to the wire-carrying arm, and it is made to move downward and backward to the rear of the teeth *e*, and, returning, to penetrate the ascending mass of grain, and, seizing therefrom the amount necessary to form a bundle, to pass

the band around the same and lift it upon the table in proper relation to the twisting or tying devices.

The twisting devices shown are similar to those described in a former application, and they need not, therefore, be here described in detail, *p* representing the twisting-pinion, *q* the reciprocating rack for actuating the same, *q'* the retaining-dog, *R* the lever by means of which the rack is vibrated, and *S* the spring for giving said lever its throw in one direction when the slide-rack is released from the dog *q'*. These devices are mounted upon a horizontal bar, *T*, arranged above and overhanging the grain-table *G*, and suitably supported by one or more uprights, *T'*, at one or at both ends of said table, as may be required or preferred.

The end *R'* of the lever *R* may be connected by a sliding rod or link with a crank on the axle, or upon any other suitable shaft for operating it in the manner described in my former application referred to, or it may be operated by a cam adapted to act upon it either directly or through an intermediate lever, as may be found convenient. I prefer, however, to arrange the gears or mechanism for actuating both the wire-carrying arm and the twisting devices upon a shaft or shafts separate from the main axle and capable of being connected with or disconnected from said axle, in order that the intervals between the binding of the bundles may be varied at will by the attendant to conform to the condition of the crop, any usual or preferred arrangement for placing the binding devices thus under the control of the driver being employed.

The manner of releasing the slide-rack *q* by means of the wire-carrying arm, the placing of the wire around the bundle, and the take-up for holding the end of the wire and for taking up the preceding knots formed therein are intended to be the same as described in my former application, and need not, therefore, be further described. It will be apparent, however, that other material than wire may be used for bands in connection with the raking or gleaning and elevating mechanism described, and that the devices for applying and securing such bands may be varied to suit the material employed, without departing from my invention.

If desired, the binding devices may be dispensed with, and suitable stands or seats may be applied in rear of the elevated table *G*, upon which binders may stand or sit in convenient position for binding the grain by hand.

In some cases it may be found desirable to attach the machine directly to the rear of the harvester, in line with the swath discharged thereby; but ordinarily a separate draft or team will be employed, arranged at one side of the rake, as described, and by preference upon the grain side thereof, so that the team may follow the harvester, walking in the path cleared by the cutting apparatus and platform, the rake projecting laterally therefrom across the swath.



Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

5 1. In a gleaner and binder, the combination of the rake or gathering teeth and the guide scrolls or slats, forming a passage for the elevation of the grain, with the elevated grain-table, substantially as described.

10 2. The combination of the rake-teeth, the traction wheel or wheels, toothed shaft rotating therewith, guide-scrolls, and binder-arm moving across the throat of the vertical grain-passage.

15 3. In a grain gleaner and binder, the combination, with the gleaning and elevating cylinder and the ascending grain-passage, of a binding-arm arranged to gather the gavel from the throat of said passage and deliver it bound in rear of the machine.

4. The bars E, E', and H, with which the 20 rake-teeth and elastic slats or rods *h'* are connected, and between which the grain is elevated, provided with the crank portions F' and H', through which the binding-arm passes, substantially as and for the purpose set forth. 25

5. The arrangement of the grain-table G, wire-carrying arm I, and the tying or twisting mechanism in the described relation to each other and to the raking and elevating devices, for the purpose and substantially as described. 30

In testimony whereof I have hereunto set my hand this 25th day of September, A. D. 1876.

C. L. TRAVIS.

Witnesses:

EDWARD DIMOND,  
DAVID JAMESON.