

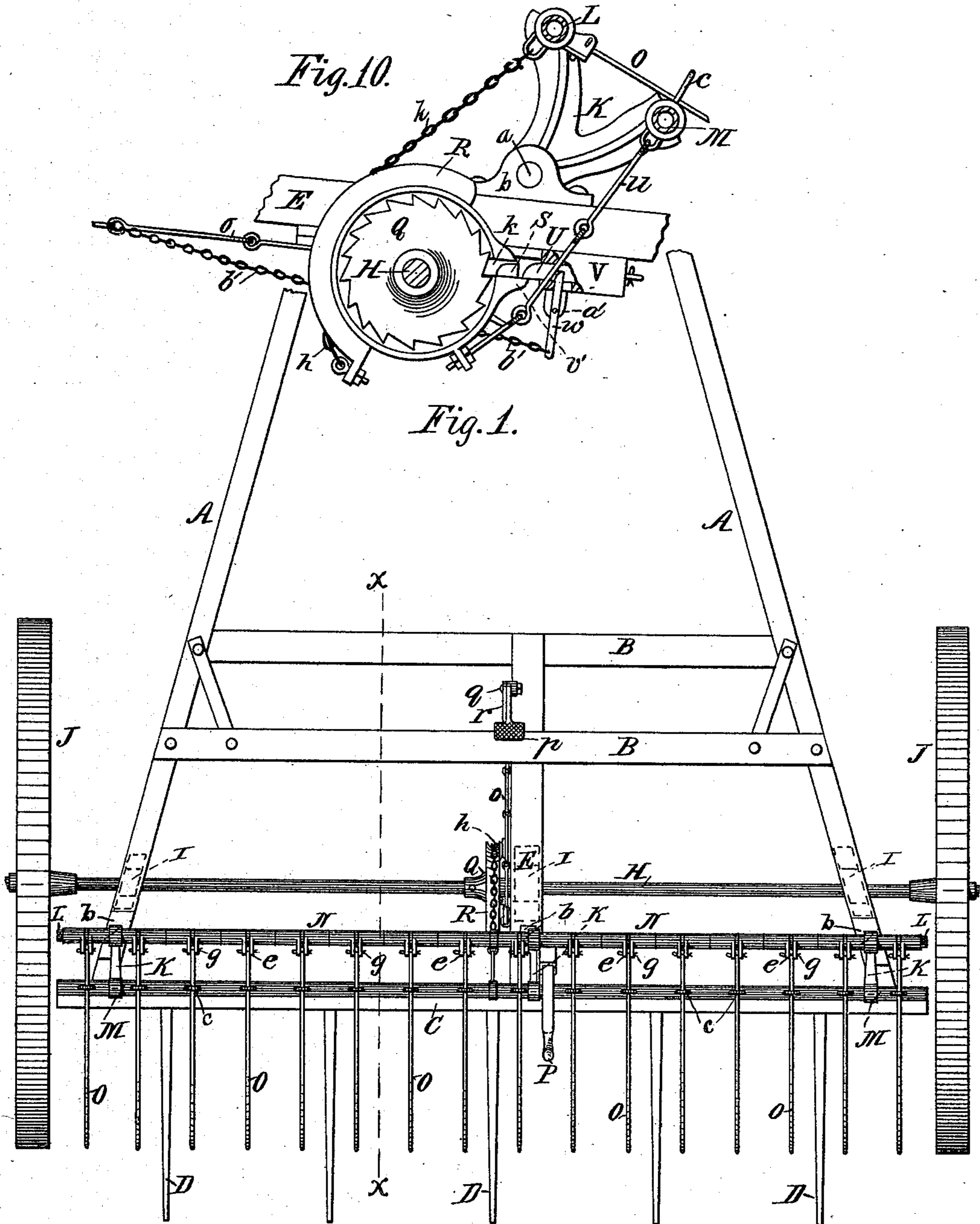
(No Model.)

3 Sheets—Sheet 1.

P. E. LITTLE.
HORSE HAY RAKE.

No. 413,726.

Patented Oct. 29, 1889.



Witnesses.
W. C. Firdinston.
Charles Billon.

Inventor:
Peter E. Little
by *Peter E. Little*
his Attorneys.

(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

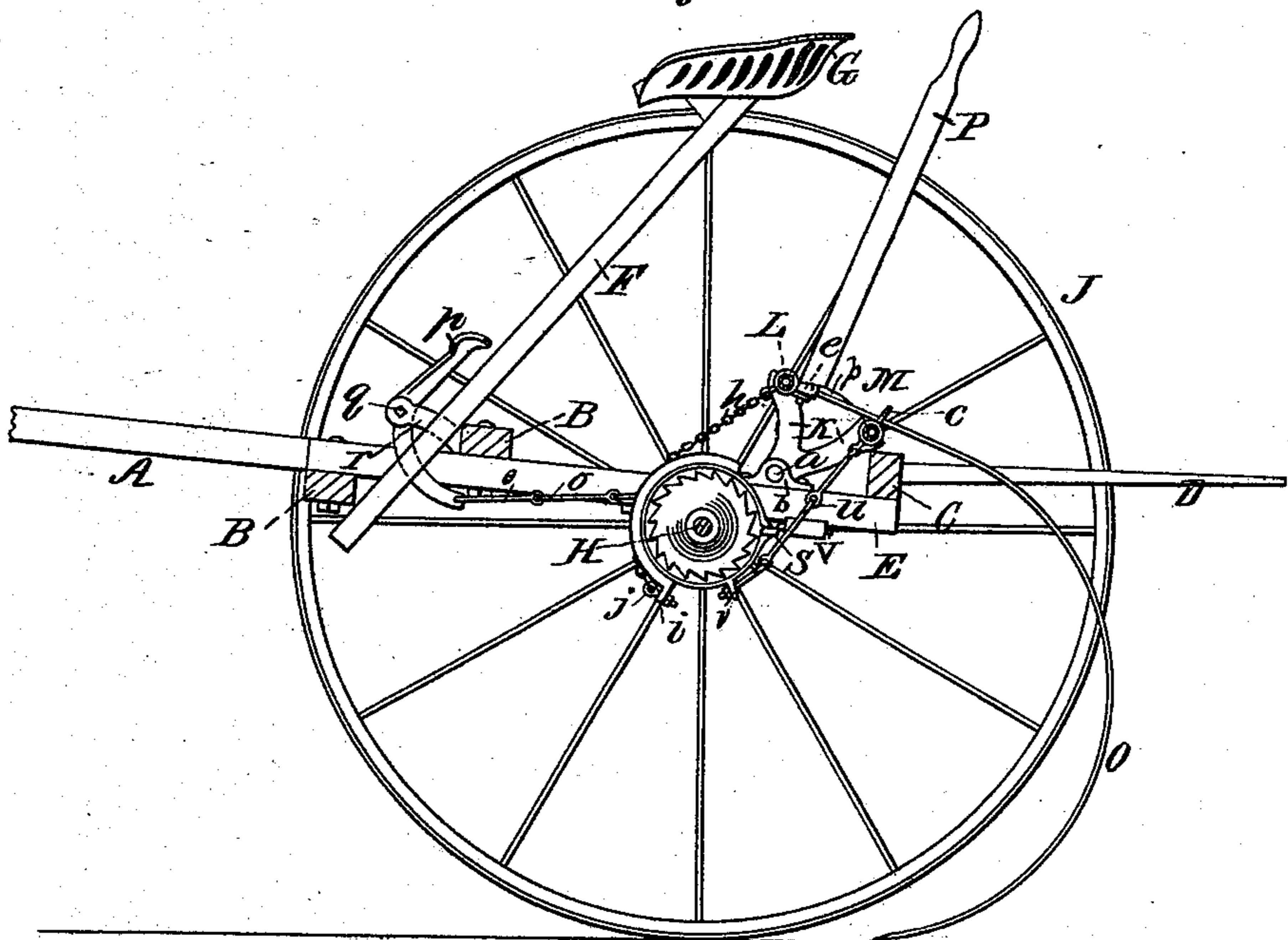
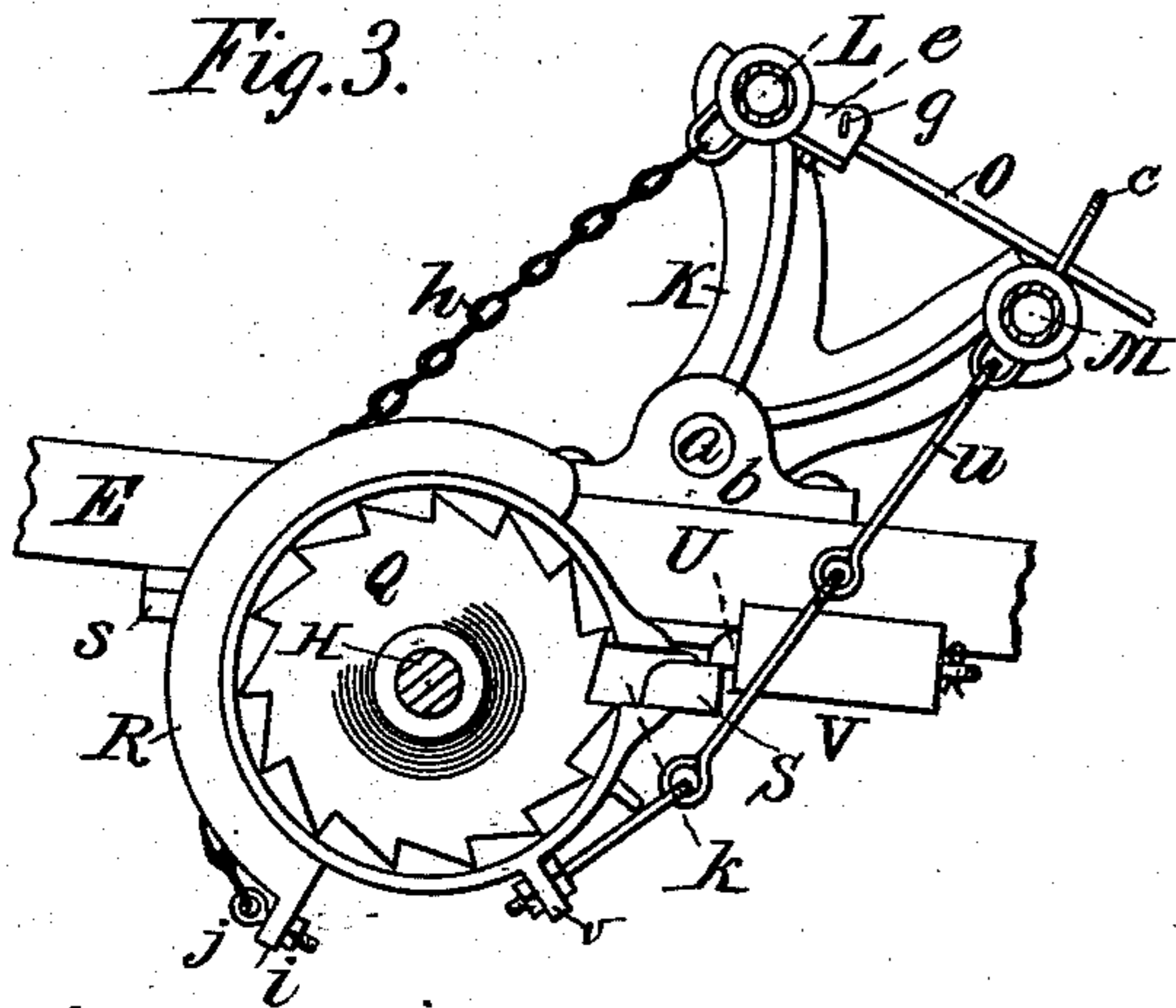


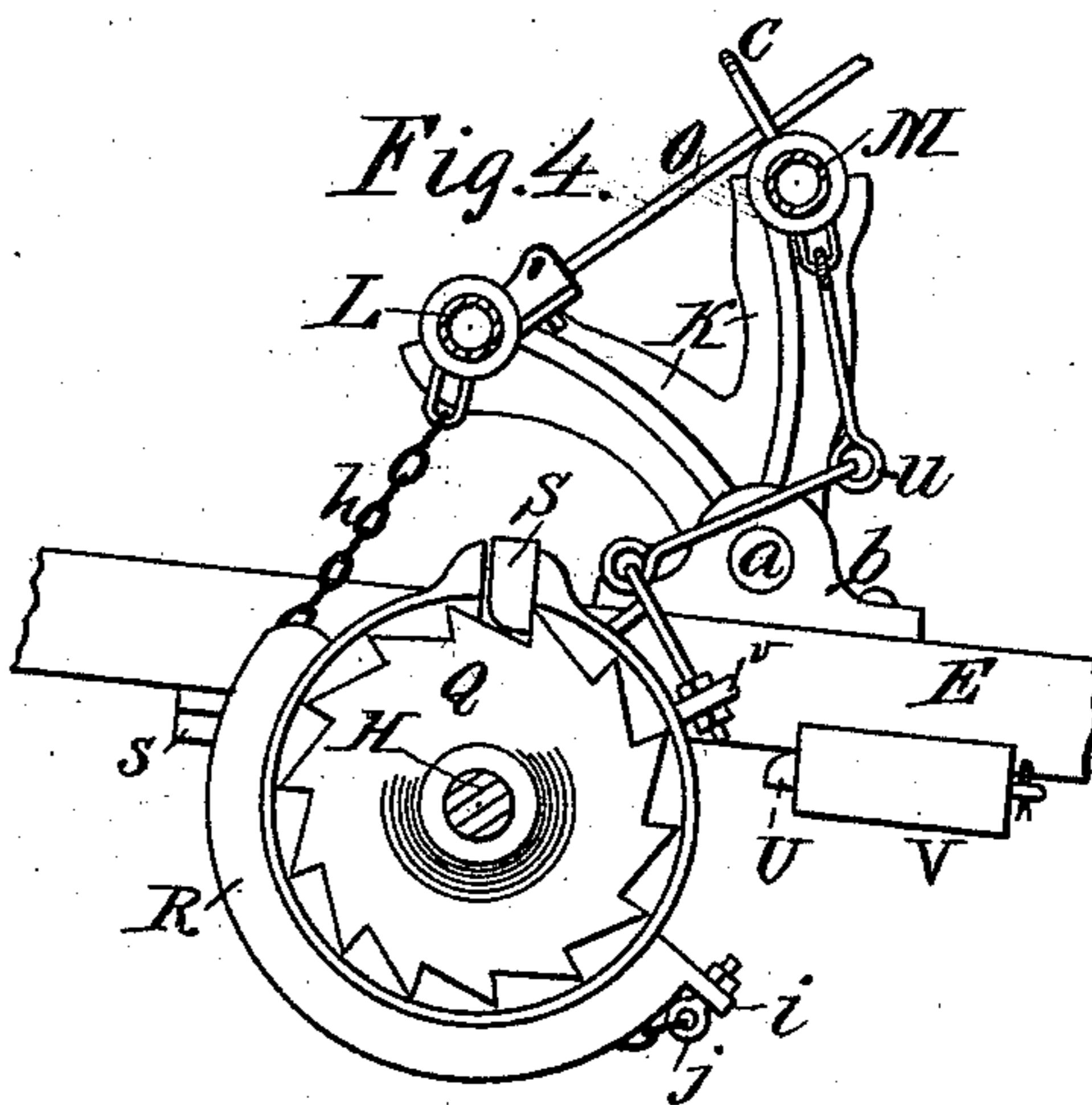
Fig. 3.



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Fig. 4.



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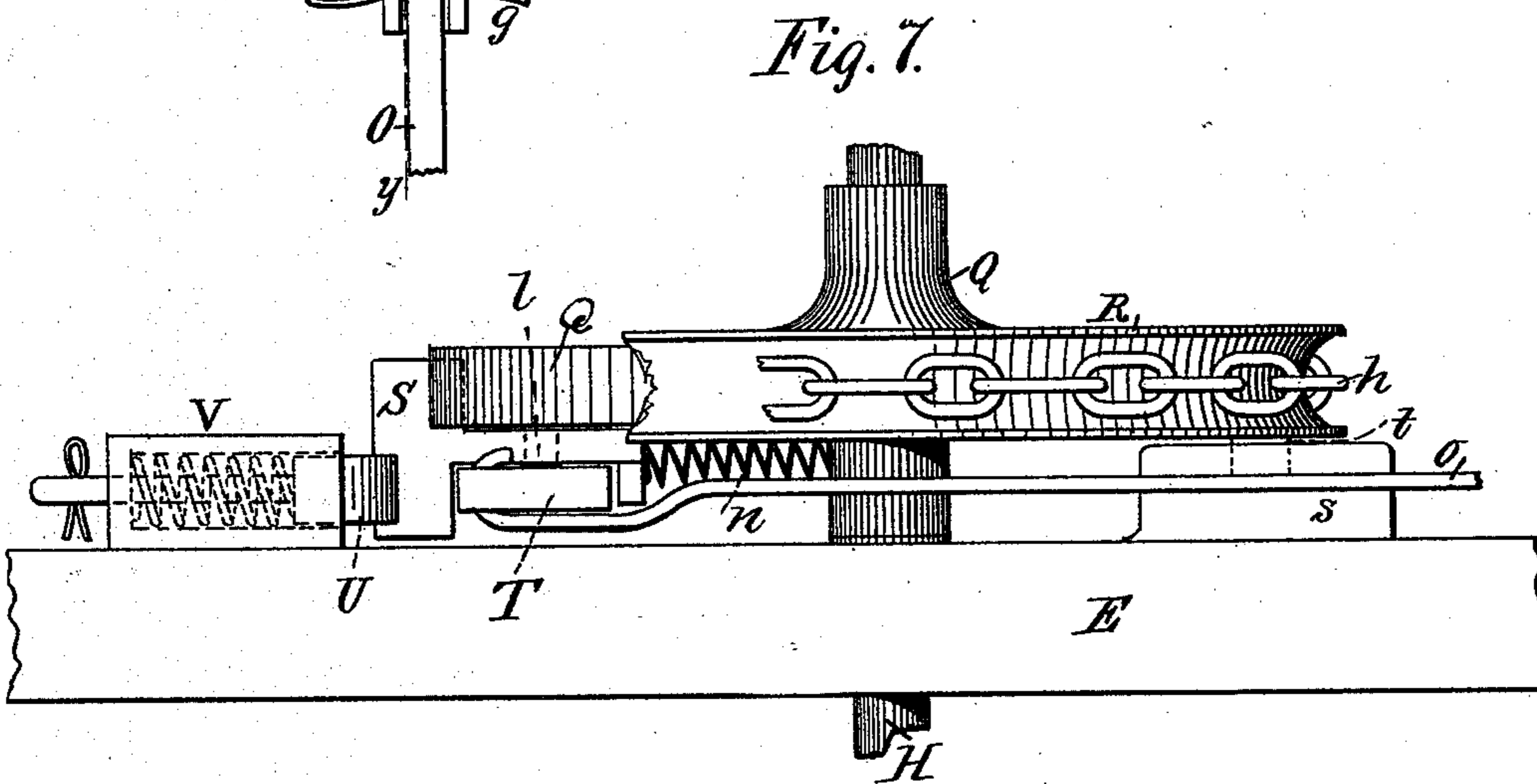
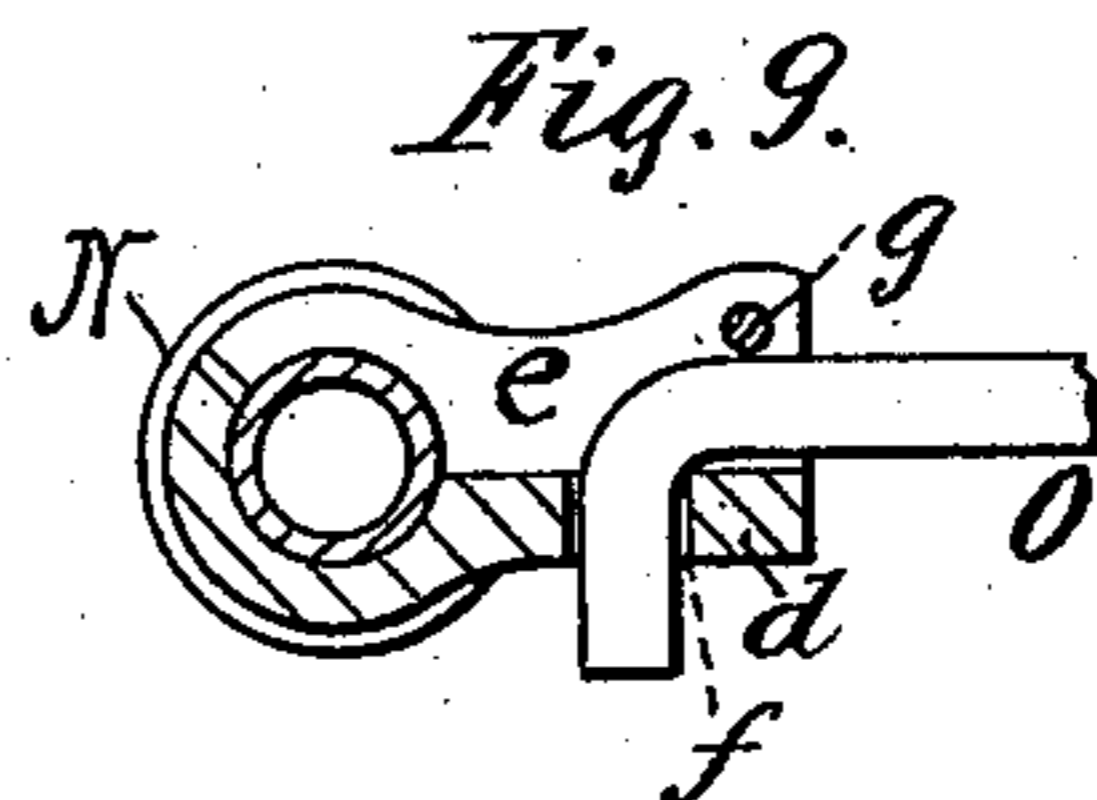
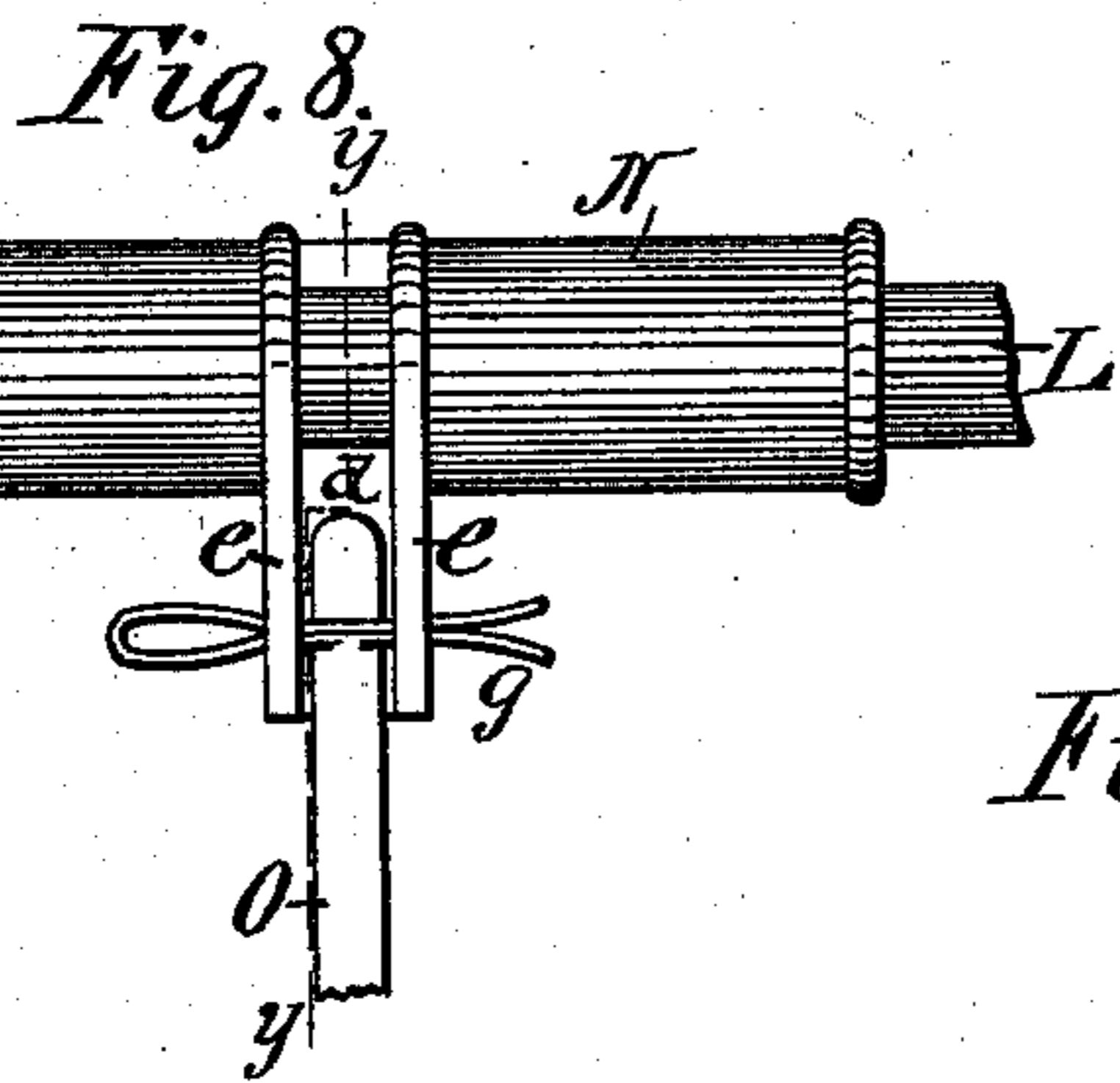
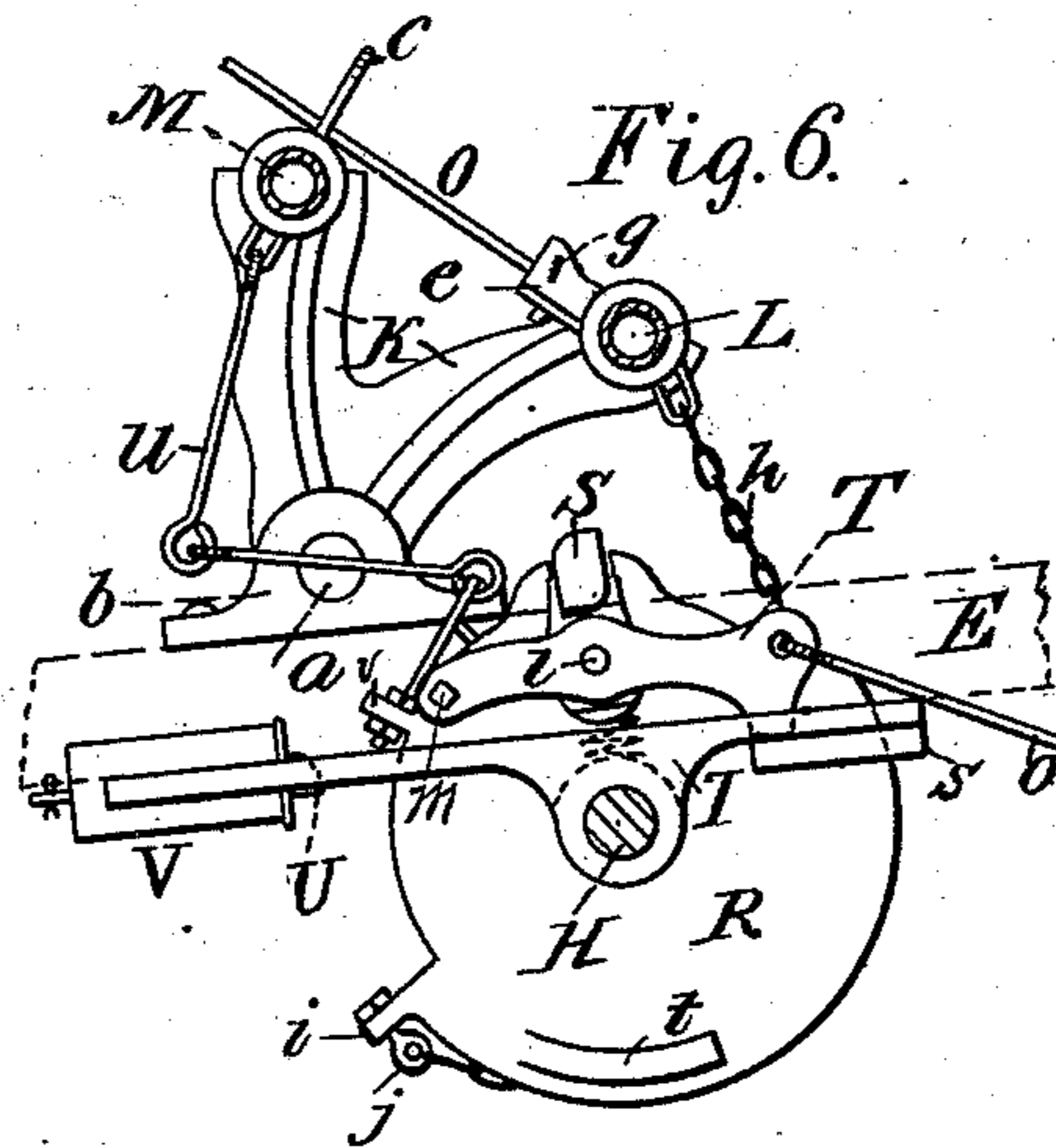
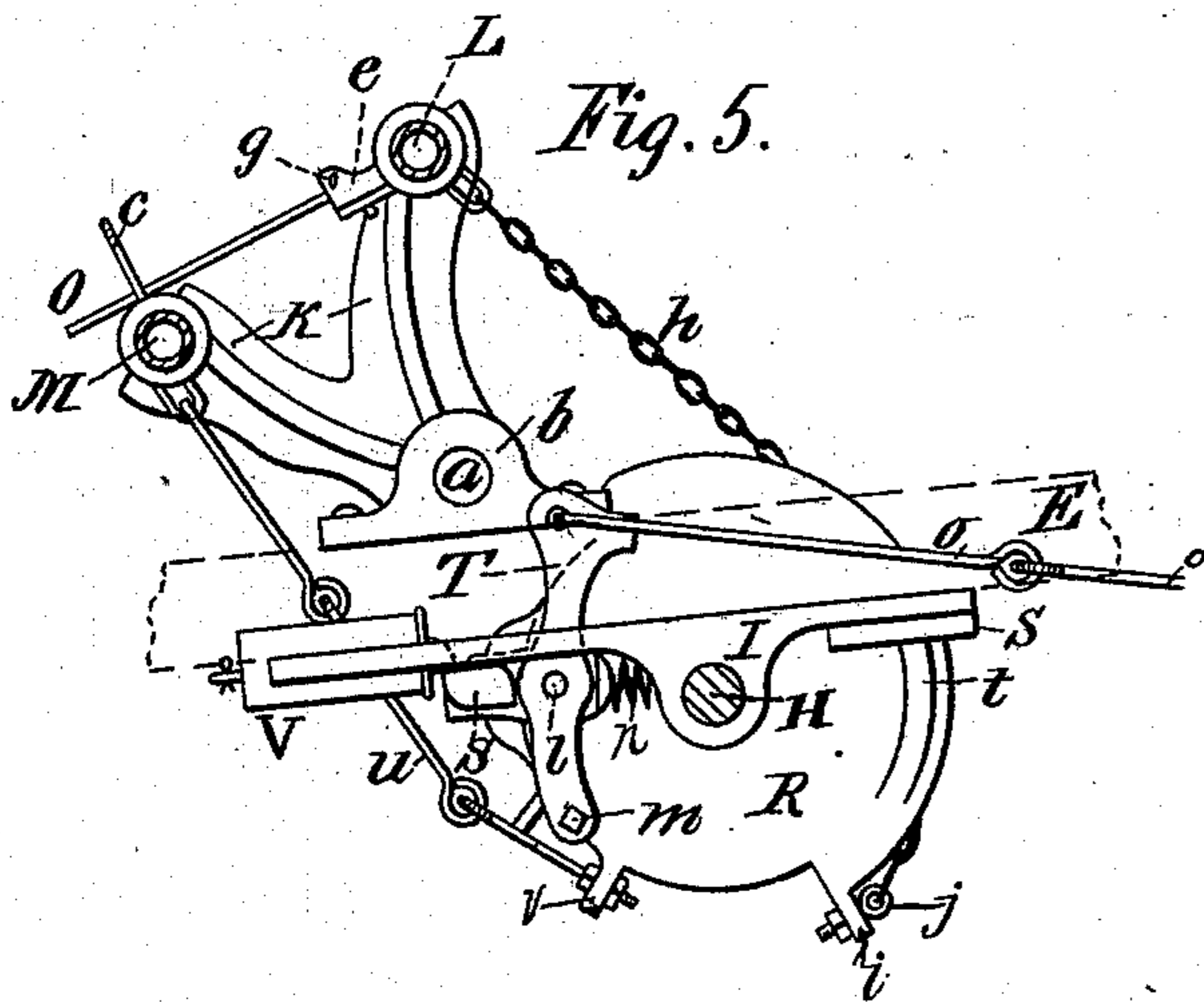
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UNITED STATES PATENT OFFICE.

PETER E. LITTLE, OF DAYTON, OHIO, ASSIGNOR TO THE STODDARD MANUFACTURING COMPANY, OF SAME PLACE.

HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 413,726, dated October 29, 1889.

Application filed November 2, 1888. Serial No. 289,798. (No model.)

To all whom it may concern:

Be it known that I, PETER E. LITTLE, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Horse Hay-Rakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improvement in that class of horse hay-rakes known as "self-dump rakes," in which the traction of the wheels is employed at the will of the operator to elevate the teeth and discharge the collected load; and it has for its object the improvement in the construction of this class of machines.

The novelty of my invention will be herein set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a rake embodying my invention, but with the driver's seat and seat-beam removed. Fig. 2 is a side elevation of the same through the dotted line *xx* of Fig. 1. Fig. 3 is an enlarged side elevation of the dumping mechanism in the position when the teeth are down and at work. Fig. 4 is a corresponding view with the teeth elevated. Figs. 5 and 6 are the reverse views of Figs. 3 and 4, respectively. Fig. 7 is a still further enlarged plan view of the dumping mechanism. Fig. 8 is an enlarged plan view of the tooth-holder. Fig. 9 is a sectional elevation through the dotted line *yy* of Fig. 8. Fig. 10 is an enlarged detail elevation representing a modification in the construction.

The same letters are used to indicate identical parts in all the figures.

The frame of the rake may be of the usual or any suitable construction, and is here represented as composed of the thills A, cross-girths B, rear clearer-bar C, having the cleaner-sticks D projecting rearwardly therefrom, center bar E, seat-beam F, and driver's seat G, all firmly united or bolted together. This frame is carried upon the round metal axle H, which is suitably journaled in boxes I, secured to the under side of the thills and bar E at points nearly half-way between the

clearer-bar and rear girth. One or both of the usual wheels J may be keyed to the axle to cause its revolution, or (and this is the preferred construction) both wheels are connected to the axle by ratchet-and-pawl connections to cause the revolution of the axle when the machine is advancing or turning in either direction and to permit the axle to remain stationary when the machine is backed, as is well known in this class of machines.

The rake-head may be of the usual or any suitable construction and pivoted or hinged upon the frame; but I prefer the construction shown, in which I employ three bell-crank arms K, the outer ones of which are pivoted, as at *a*, between ears *b*, secured upon the thills just in rear of the axle, and the middle one similarly pivoted upon the bar E, with all three pivotal points concentric and in a line parallel with the axle. Secured in the upper ends of the two diverging arms of the bell-cranks are rods L and M, upon the former of which the tooth-holders N, carrying the rake-teeth O, are secured, and the latter pass back over the bar M, which is provided with guide-staples *c*, extending upward and straddling the teeth. Any form of tooth-holder may be employed; but I have provided a simple one (shown in Figs. 8 and 9) consisting of a thimble N, having a rearward base-extension *d* and side walls *e*, just far enough apart to receive the end of the tooth, which is curved or bent downward and has the bent portion inserted through an aperture *f* in the base *d*, as seen in Fig. 9. The tooth thus inserted is secured by a pin or key *g*, inserted through the side walls *e* just over the straight part of the tooth in rear of the perforation *f*, and which serves to lock the tooth in place. The thimbles N are strung and free to turn within the limit of movement of the play of the teeth on the rod L and abut against each other.

P is an ordinary hand-lever secured to the middle bell-crank K, for dumping the rake by hand when so desired, and its lower end may be inserted in a socket formed upon a web connecting the two arms of the bell-crank, as indicated in Figs. 1 and 2.

Keyed or otherwise fastened to the axle H

at or near its middle is a ratchet Q, which revolves with said axle, and loose upon said axle by the side of said ratchet is a lifting wheel or drum R, whose periphery preferably extends over and incloses the ratchet. The front portion of the periphery of the drum is grooved to receive and retain a chain *h*, whose lower end is secured to the drum, as at the lug *i*, by an adjustable eyebolt *j*, and whose upper end is secured to the bar L in line with the periphery of the drum in any suitable manner. The rear side of the periphery of the drum has an opening or slot *k*, in which is confined the rear projecting end of a sliding dog S, which extends forward by the side of the drum and is loosely pivoted, as at *l*, Figs. 5, 6, and 7, to a lever T, whose lower end is pivoted, as at *m*, to the side of the drum. A spring *n* is interposed between the hub of the drum R and the end of the dog, as shown, and serves to hold the latter normally out of engagement with the ratchet Q. Links *o* connect the upper end of the lever T to any suitable treadle *p*, pivoted, as at *q*, to a lug *r* upon the rear girth B in such manner that when it is desired to dump the rake the driver presses with his foot upon the treadle, and thereby draws forward the lever T and dog S, whose projecting end enters the slot *k* and becomes engaged with the ratchet, as will be readily understood. In this way the drum becomes locked to the revolving axle and partakes of its motion, thereby drawing upon the chain *h* and tilting forward the rake-head and lifting the teeth, as seen in Fig. 4. When the teeth have been sufficiently elevated to discharge the collected load, a projection upon the lever T comes in contact with a plate *s* or any other suitable trip secured to the bar E, (see Fig. 6,) and is arrested until the slightly-farther forward revolution of the drum presses it upward and forces the dog S out of engagement with the ratchet Q, thereby breaking the lock between the drum and ratchet and permitting the teeth and rake-head to drop back and reset themselves. The tilting backward of the rake-head reverses the revolution of the drum and resets it, as will be readily understood. To prevent the drum from revolving too far backward under the impetus given it by the falling of the teeth, I provide two stops, either or both of which may be employed. The first is a lug *t* upon the side of the drum, which strikes the under side of the plate *s* and arrests the drum, and the second is a chain *u*, the upper end of which is secured to the bar M and the lower end to a lug *v* upon the periphery of the drum, but which also has another function, to be presently explained.

The remaining feature of my invention is an automatic lock for holding the teeth and rake-head locked when the former are down at work, and which lock is broken when the drum is to be locked to the ratchet. It consists of a spring-projected latch U, confined

in a housing V, secured to the bar E just in rear of the rear end of the dog S, in such position that when the drum is reset by the falling of the teeth the rear end of the dog S forces in and passes below the latch U, which latter is immediately projected by its spring over said dog, and through the medium of the chain *u* locks the teeth and rake-head, as will be readily understood. The drawing forward of the dog S, as before explained, to engage it with the ratchet frees it from the latch U, so that the rake-head is free to be tilted, as will be readily understood.

A modification in the construction by which the same advantages of the locking-bolt are obtained is shown in Fig. 10. Here the lower wall of the slot *k* in the lifting wheel or drum is extended back of the dog S, as at *v'*, so as to come under and be engaged by the bolt U when the teeth are down at work. The housing V has a lever *w*, pivoted, as at *a'*, and engaging at its upper end with the bolt U. A supplemental chain or cord *b'* extends from the lower end of the lever *w* forward to the treadle *p*, or to the links *o* near the treadle, so that pressing upon the treadle simultaneously retracts the bolt U and draws forward the dog S, the adjustment being such that the bolt U is fully retracted to release the lifting-wheel before the dog effects its engagement with the ratchet, as will be readily understood.

Having thus fully described my invention, I claim—

1. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head mounted on said frame, and revolving axle, of a ratchet fast upon said axle, a lifting-wheel loose upon said axle by the side of said ratchet and connected to the tilting rake-head, a locking-dog carried upon the lifting-wheel, with means for causing the engagement with and disengagement from the ratchet-wheel, and a locking-bolt mounted on the frame, arranged to engage with said locking-dog when the latter is disengaged from the ratchet-wheel and to be disengaged from the locking-dog upon the engagement of the latter with the ratchet-wheel, substantially as and for the purpose described.

2. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head, and revolving axle, of a ratchet fast upon said axle, a lifting-wheel loose upon said axle by the side of said ratchet, a locking-dog carried upon the lifting-wheel, means for causing its engagement with and disengagement from the ratchet-wheel, a locking-bolt mounted on the frame and adapted to lock the lifting-wheel when the latter is disengaged from the ratchet-wheel and to release the lifting-wheel when the latter is locked to the ratchet-wheel, and chains secured at one end to the lifting-wheel and connected at the other to the tilting rake-head on opposite sides of the pivotal point of said rake-head, substantially as and for the purpose described.

3. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head, and revolving axle, of a ratchet fast upon said axle, a lifting-wheel loose upon said axle by the side of said ratchet, a locking-dog carried upon the lifting-wheel, means for causing its engagement with and disengagement from the ratchet-wheel, a locking-bolt mounted on the frame and adapted to engage with said locking-dog when the latter is disengaged from the ratchet-wheel and to be disengaged from the locking-dog upon the engagement of the latter with the ratchet-wheel, and chains or links secured at one end to the lifting-wheel and connected at the other to the tilting rake-head on opposite sides of the pivotal point of said rake-head, substantially as and for the purpose described.

4. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head, and revolving axle, of the ratchet-wheel Q, fast upon the revolving axle, the lifting-

wheel R, loose upon said axle by the side of said ratchet-wheel, the locking-dog S, carried by the lever T on the wheel R, the chain *h*, connecting the lifting-wheel R to the rake-head, the chain or links *o*, for moving the dog S into engagement with the ratchet-wheel Q, and the plate *s*, mounted on the frame for disengaging the dog S from the ratchet-wheel Q, substantially as and for the purpose described.

5. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head, and revolving axle, of the ratchet-wheel Q, lifting-wheel R, locking-dog S, carried by the lever T on the wheel R, the links *o*, plate *s*, locking-bolt U, mounted on the frame, and chains *h* and links *u*, connecting the lifting-wheel R to the rake-head on opposite sides of its pivotal support, substantially as and for the purpose described.

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Witnesses:

ARTHUR F. BROWN,
T. S. JONES.