

(No Model.)

2 Sheets—Sheet 1.

J. REMERS.

MACHINE FOR CLEANING ICE, &c., FROM STREET RAILWAYS.

No. 349,122.

Patented Sept. 14, 1886.

Fig. 1.

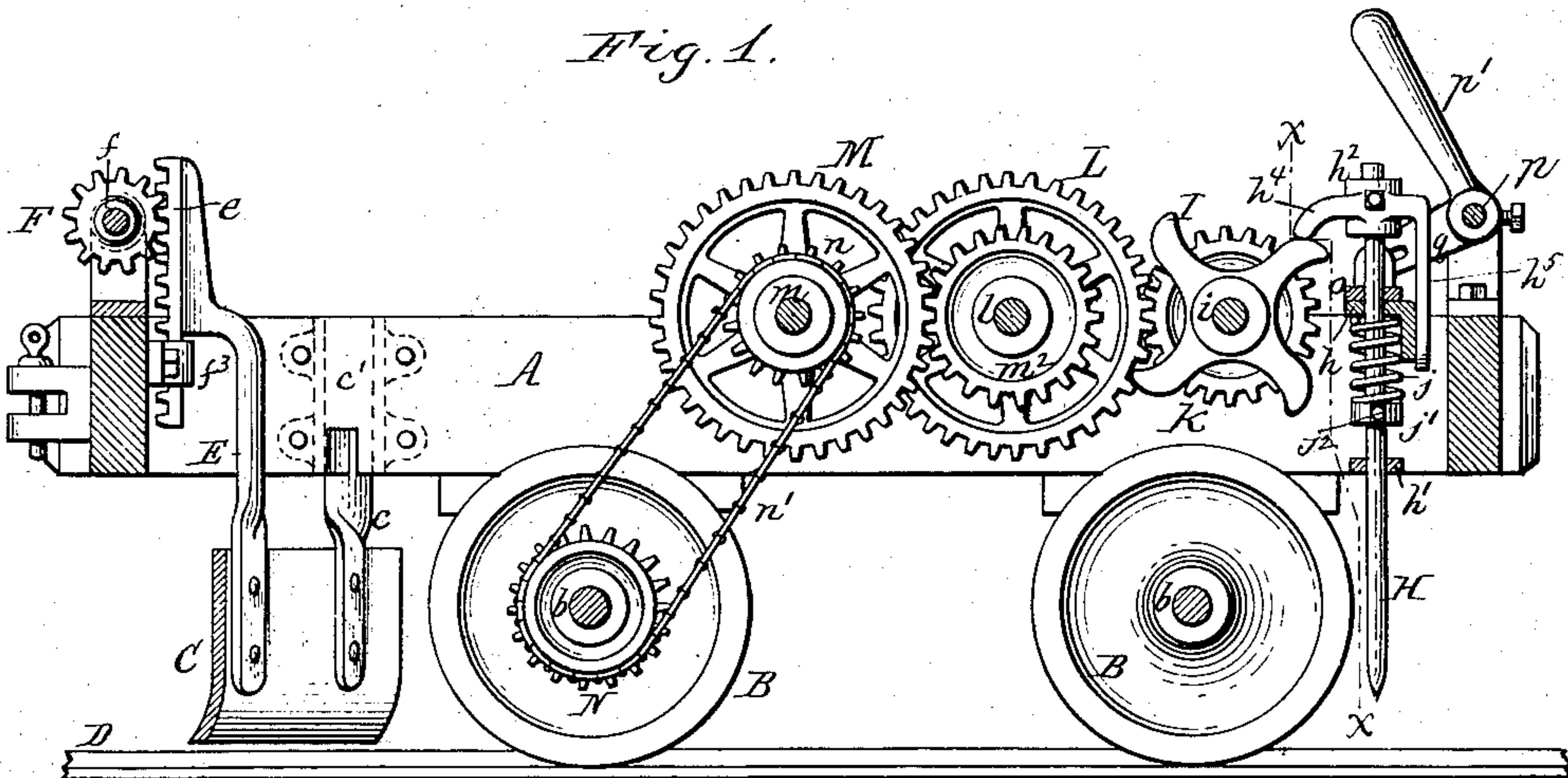
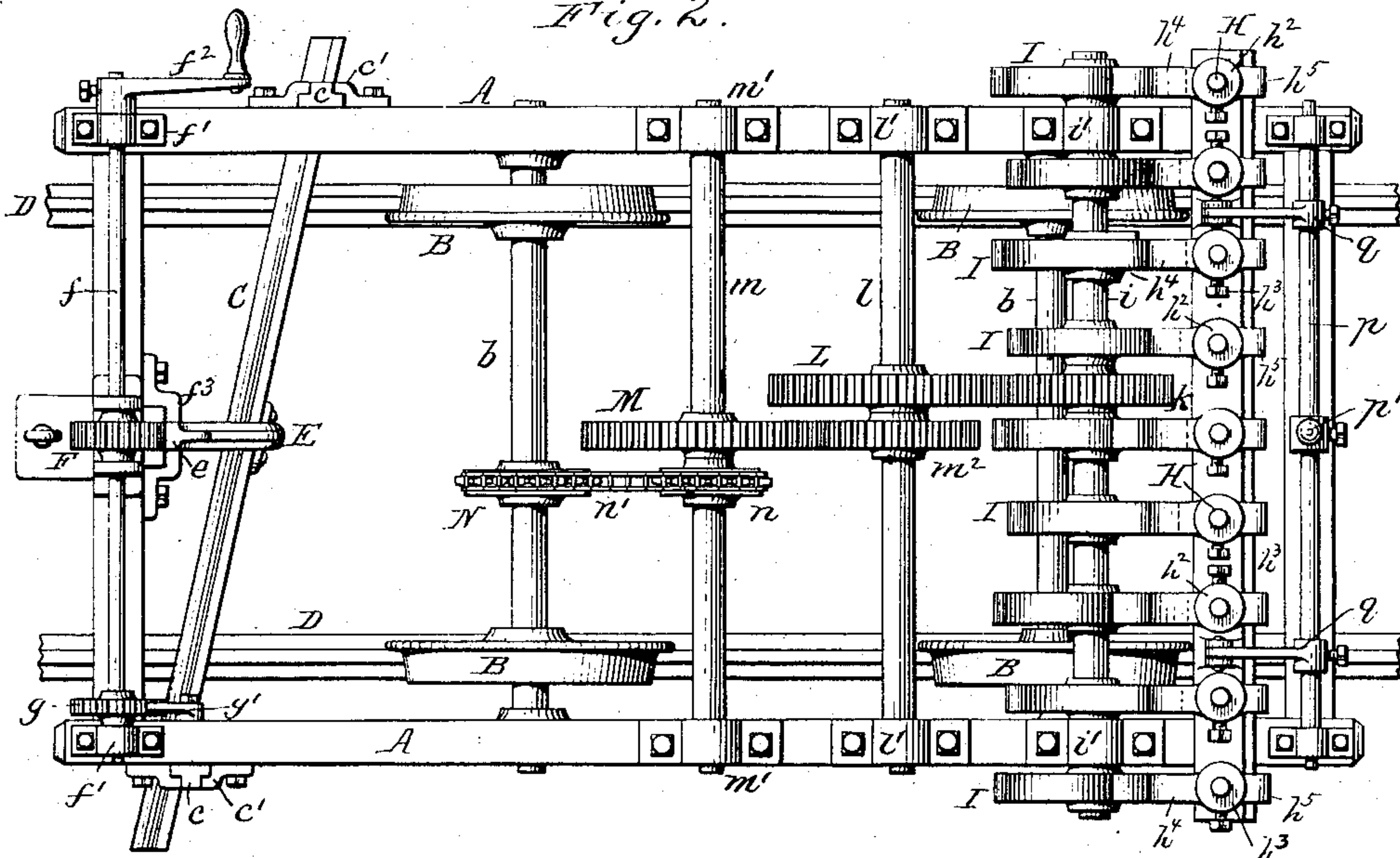


Fig. 2.



Witnesses.

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2 Sheets—Sheet 2.

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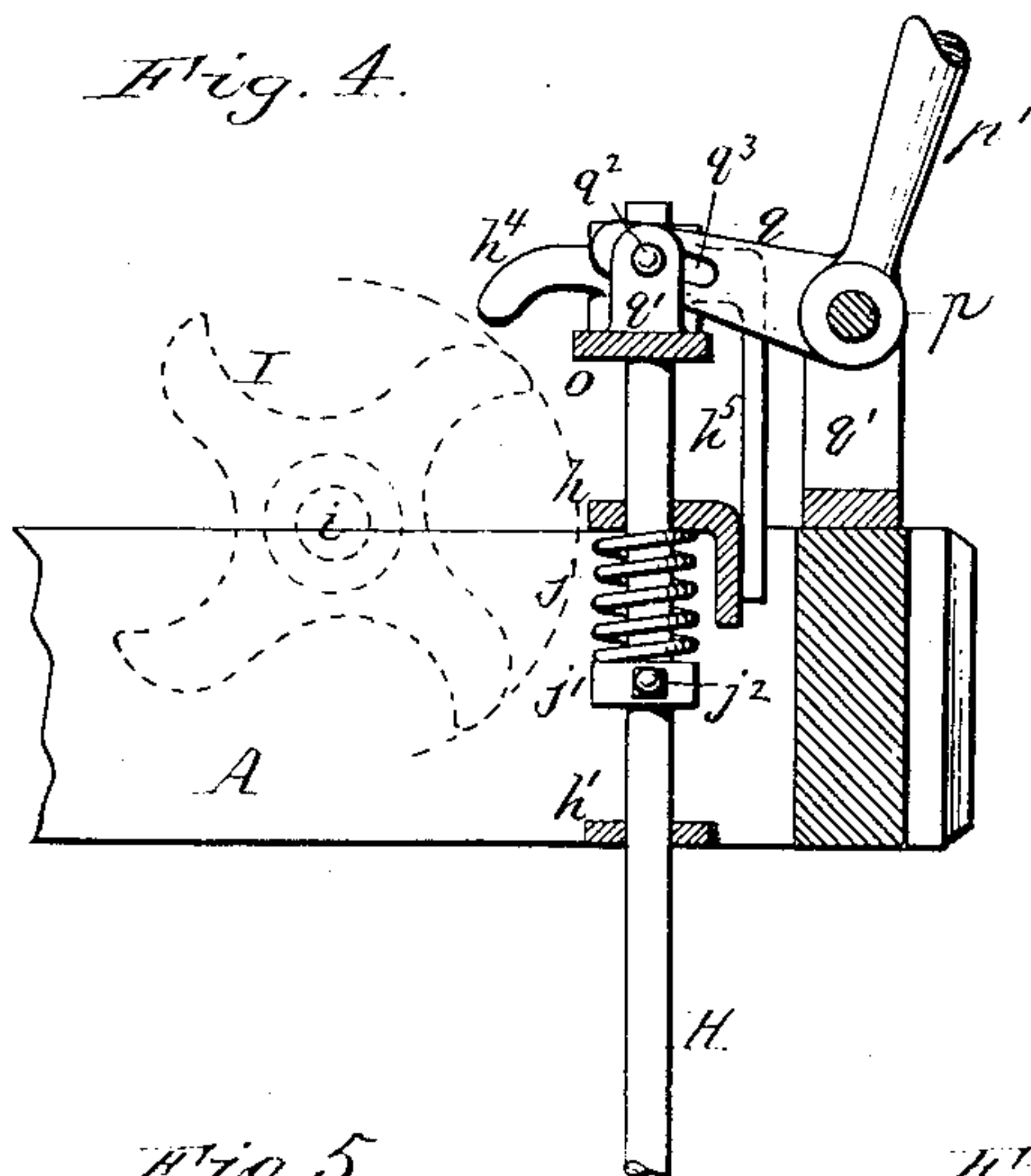
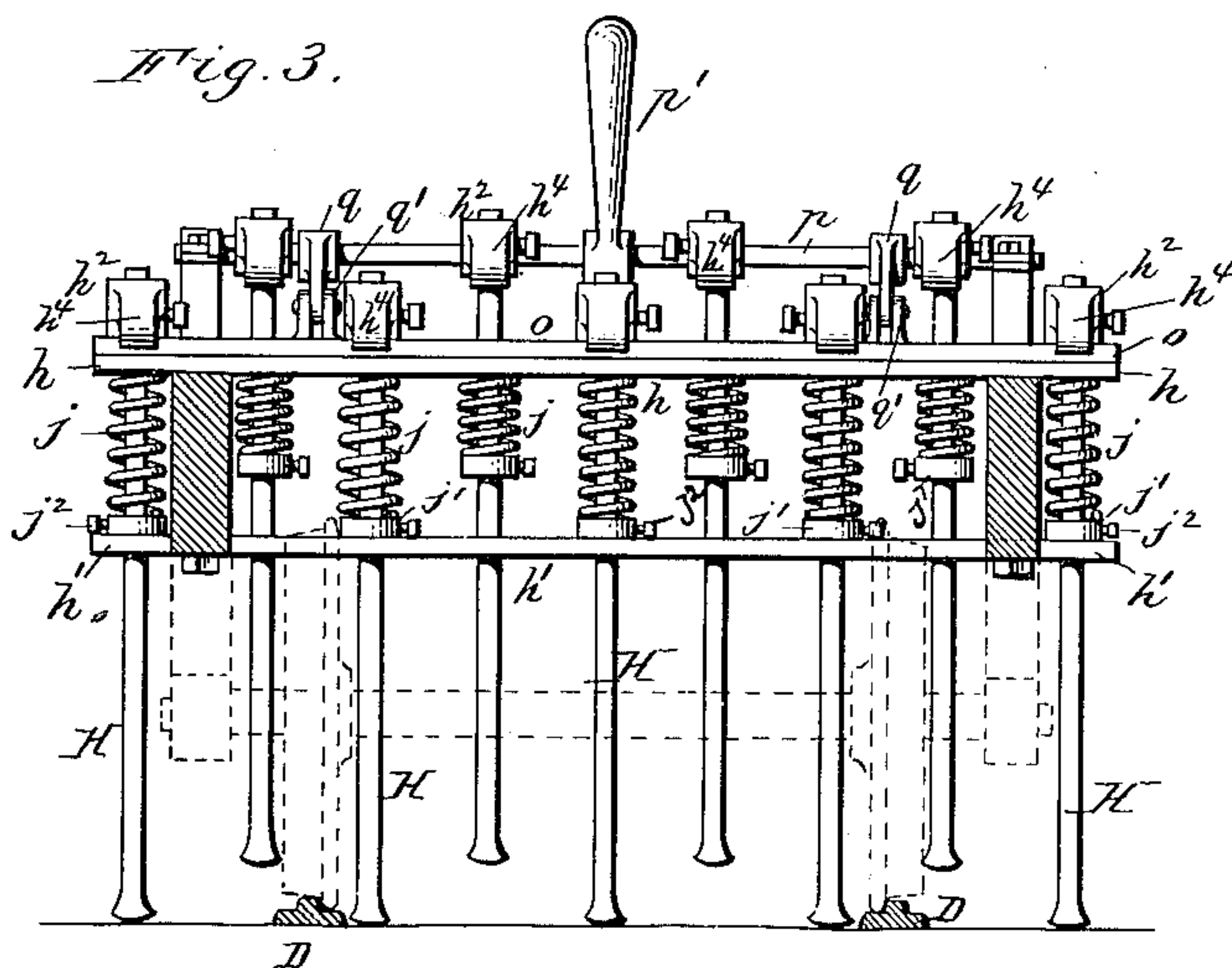


Fig. 5.

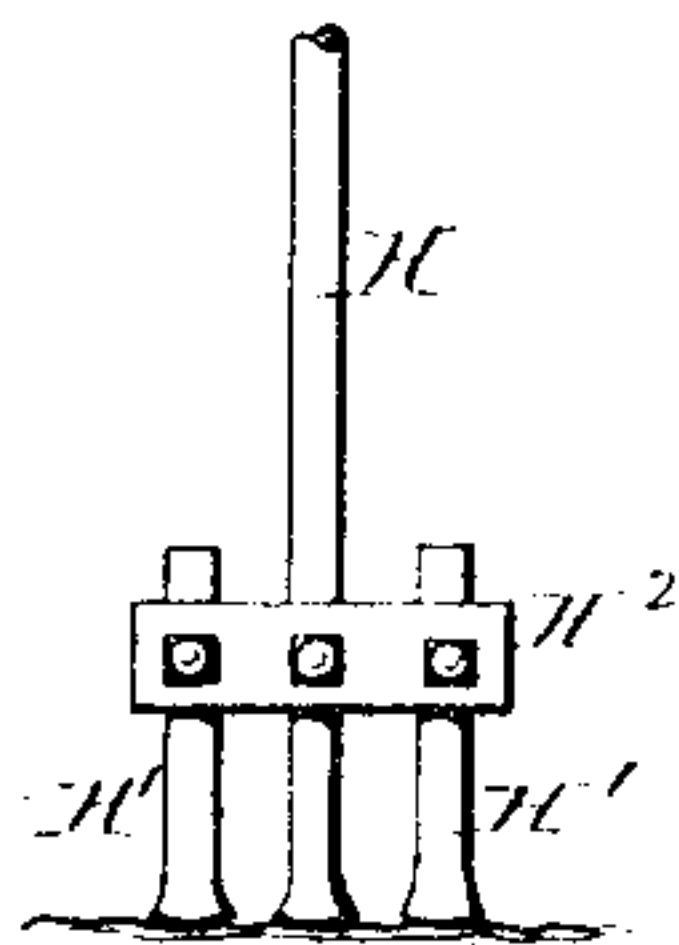
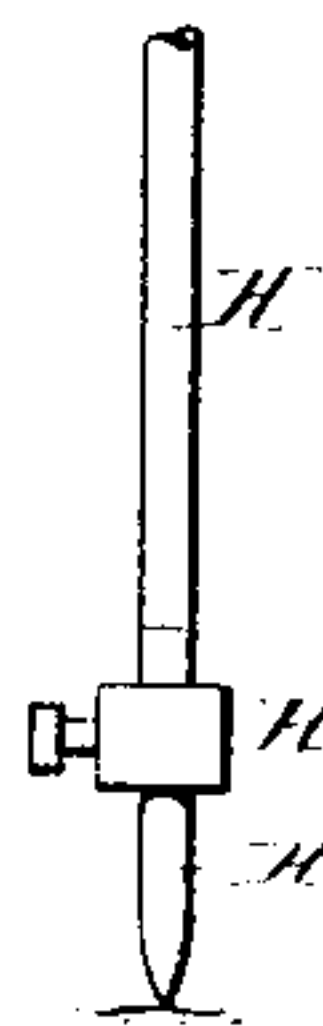


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN REMERS, OF BUFFALO, NEW YORK.

MACHINE FOR CLEANING ICE, &c., FROM STREET-RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 349,122, dated September 14, 1886.

Application filed December 22, 1885. Serial No. 186,480. (No model.)

To all whom it may concern:

Be it known that I, JOHN REMERS, of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Machines for Clearing Ice, &c., from Street-Railways, of which the following is a specification.

This invention relates to improvements in machines for clearing ice and snow from street-railways, and has for its object to construct a machine which will be strong and durable, and which will be more effective in its operation than machines now in use.

The invention consists of the improvements in the construction of the machine, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 represents a longitudinal sectional elevation of my improved machine. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical cross-section of the machine in line *x x*, Fig. 1. Fig. 4 is a longitudinal sectional elevation of the rear end of the machine, showing the picks elevated to clear the cams. Figs. 5 and 6 are fragmentary views of the picks slightly modified.

Like letters of reference refer to like parts in the several figures.

A represents the frame of the machine, which is mounted on wheels B B, secured to the axles *b b*, the latter being journaled in suitable bearings secured to the frame A.

C represents a scraper secured to the forward end of the machine and extending across the tracks D. The scraper C is arranged with one of its ends slightly forward of the other in the usual manner, so as to deposit the snow and ice which is removed by the scraper on one side of the track. The scraper C is secured to the frame A by vertical bars or supports *c c*, which are secured at the lower ends to the scraper C, and slide with their upper ends in guides or ways *c' c'*, secured to the sides of the frame A.

E is a vertical bar or plate, secured at its lower end to the center of the scraper C, and provided at its upper end with a rack-bar, *e*.

F is a pinion mounted on a horizontal shaft, *f*, and meshing with the rack-bar *e*. The shaft *f* is journaled in bearings *f'*, secured to the

frame A, and is provided at one end with a hand-crank, *f*², whereby the shaft can be readily turned. Upon turning the hand-crank *f*² in one or the other direction, the scraper is raised or lowered by the pinion F, engaging with the rack-bar *e*. The rack *e* is guided in its movements by a bracket, *f*³, secured to the frame A.

g is a ratchet-wheel secured to the opposite end of the shaft *f*, and *g'* a pawl secured to the frame A, and engaging with the teeth of the ratchet-wheel *g*, whereby the scraper is held in any desired position.

H H represent a series of pointed bars or picks, arranged, preferably, near the rear end of the frame in rear of the scraper, and extending across the track on opposite sides of both track-rails.

h is a cross-piece secured to the top of the frame A, and *h'* a similar cross-piece secured to the under side of the frame A, below the cross-piece *h*. The picks H are inserted through the openings formed in the cross-pieces *h h'* at suitable distances apart, and guided in their vertical movements by the cross-pieces *h h'*. Each of the picks or bars H is provided at its upper end with a collar or sleeve, *h*², which is secured to the pick by a set-screw, *h*³.

*h*⁴ is a nose or projection formed on each of the collars *h*², and *h*⁵ are downwardly-projecting arms formed on the collars *h*² and extending below the cross-piece *h*. The arms *h*⁵ rest against the rear edge of the cross-piece *h*, and prevent the picks from turning in the cross-pieces *h h'*.

i represents a horizontal shaft arranged in front of the picks H and journaled in bearings *i'*, secured to the frame A.

I represents a series of cams secured to the shaft *i* and arranged in line with the picks H, and adapted to engage under the projections or noses *h*⁴ of the picks. The number of cams I on the shaft *i* correspond with the number of picks H, so that each pick is operated by a separate cam, I. The cams I are arranged upon the shaft *i* in such manner that every alternate pick will be elevated when the adjacent pick is being released from the cam; or, if desired, the cams may be arranged so that the picks will be raised one after the other,

and be released so as to deliver their blows one after the other. The picks H are each provided with a coiled spring, *j*, which is arranged on the picks between the cross-piece *h* and the collar *j'*, which is secured to the picks below the cross-piece *h* by a set-screw, *j''*. As the picks are raised by the cams I the springs J are compressed between the cross-piece *h* and the collar *j'*, and upon being released from the cams the picks are forced downward by means of the springs, causing the pointed ends of the picks to penetrate the ice and break the same into loose lumps, which can be afterward easily removed. The picks H may be each provided with two or more short picks H', if desired. The picks H' are attached to a cross-head, H'', which is secured to the picks H by a set-screw or other suitable means, as shown in Figs. 5 and 6.

K represents a pinion mounted on the shaft *i* and meshing with a gear-wheel, L, mounted on a horizontal shaft, *l*, which is journaled in bearings *l'*, secured to the frame A. *m* represents a similar shaft journaled in bearings *m'*, secured to the frame A; and M is a gear-wheel mounted on the shaft *m* and meshing with a pinion, *m''*, mounted on the shaft *l*.

N is a sprocket-wheel secured to one of the axles, *b*, of the truck or frame, and *n* is a similar sprocket-wheel mounted on the shaft *m*, and *n'* is an endless chain running over the sprocket-wheels N *n*. As the truck is moved along the track, motion is imparted to the shaft *m* from the axle *b* by means of the chain *n'* and sprocket-wheels N *n*, and from the shaft *m* to the shaft *l* by the gear-wheel M and pinion *m''*, and to the cams I by means of the gear-wheel L and pinion *k*. By this means a rapid motion is imparted to the cams I as the truck or carriage is moved along the track.

o represents a cross-piece which rests upon the cross-piece *h*, and which is provided with suitable openings through which the picks move as they are raised and lowered. As the picks are released by the cams I disengaging from under the projections *h'*, their downward movement or stroke is limited by the sleeves *h''* coming in contact with the cross-piece *o*.

p is a rock-shaft journaled in suitable bearings secured to the rear end of the frame A, and *p'* is a hand-lever keyed to the shaft *p*.

q q are links keyed to the shaft *p* and connected to the cross-piece *o* by lugs *q'*, formed on the cross-piece *o* and bolts *q''*, which are inserted through the lug, and a slot, *q'''*, formed on the links *q*. By forcing down the lever *p'* the cross-piece *o* is raised, thereby enabling the picks to be elevated sufficiently to permit the cams I to clear the projections *h'* when it is desired that the picks should remain at rest while the truck or frame is being moved.

If desired, the sprocket-wheel N may be secured to the axle *b* by a suitable clutch-coupling, whereby the mechanism for operating the picks may be thrown in or out of gear as the truck or carriage is moved along the track.

I claim as my invention—

1. In a machine for clearing ice, &c., from street-railways, the combination, with a movable frame or truck, of a scraper extending across the track, a series of picks attached to the frame in rear of the scraper, and mechanism, substantially as described, whereby the picks are alternately operated by the movement of the truck, substantially as set forth.

2. In a machine for clearing ice, &c., from street-railways, the combination, with a movable frame, of a scraper extending across the track, a series of vertical picks, H, provided with projections *h'*, cams I, engaging under the projections *h'*, and secured to a horizontal shaft, *i*, a driving-shaft, *b*, arranged in rear of the scraper and provided with wheels running on the track, and connecting-gears, whereby the cam-shaft *i* is driven from the driving-shaft *b*, substantially as set forth.

3. The combination, with the frame A, provided with a cross-piece, *h*, of the rods or picks H, arranged in openings formed in the cross-piece *h*, and provided at their upper ends with collars *h''*, having downwardly-projecting arms *h'''*, substantially as set forth.

4. The combination, with the frame A, provided with the cross-piece *h*, of the rods or picks H, arranged in openings formed in the cross-piece *h*, collars *h''*, secured to the picks H, and provided with a projection, *h'*, and a downwardly-projecting arm, *h'''*, and cams I, secured to a shaft, *i*, and adapted to engage with the projections *h'*, substantially as set forth.

5. In a machine for cleaning ice, &c., from street-railways, the combination, with the movable frame or truck provided with a movable scraper, C, of a series of picks, H, arranged in rear of the scraper and provided with projections *h'*, cams I, secured to a shaft, *i*, and engaging with the projections *h'*, pinion *k*, shafts *l m*, provided with gear-wheels L M, and pinion *m''*, sprocket-wheel N, mounted on one of the axles of the truck and connected with the shafts *l m*, whereby motion is imparted to the cams I from the axle of the truck, substantially as set forth.

Witness my hand this 11th day of December, 1885.

JOHN REMERS.

Witnesses:

OSCAR SCHAUB,
CARL F. GEYER.