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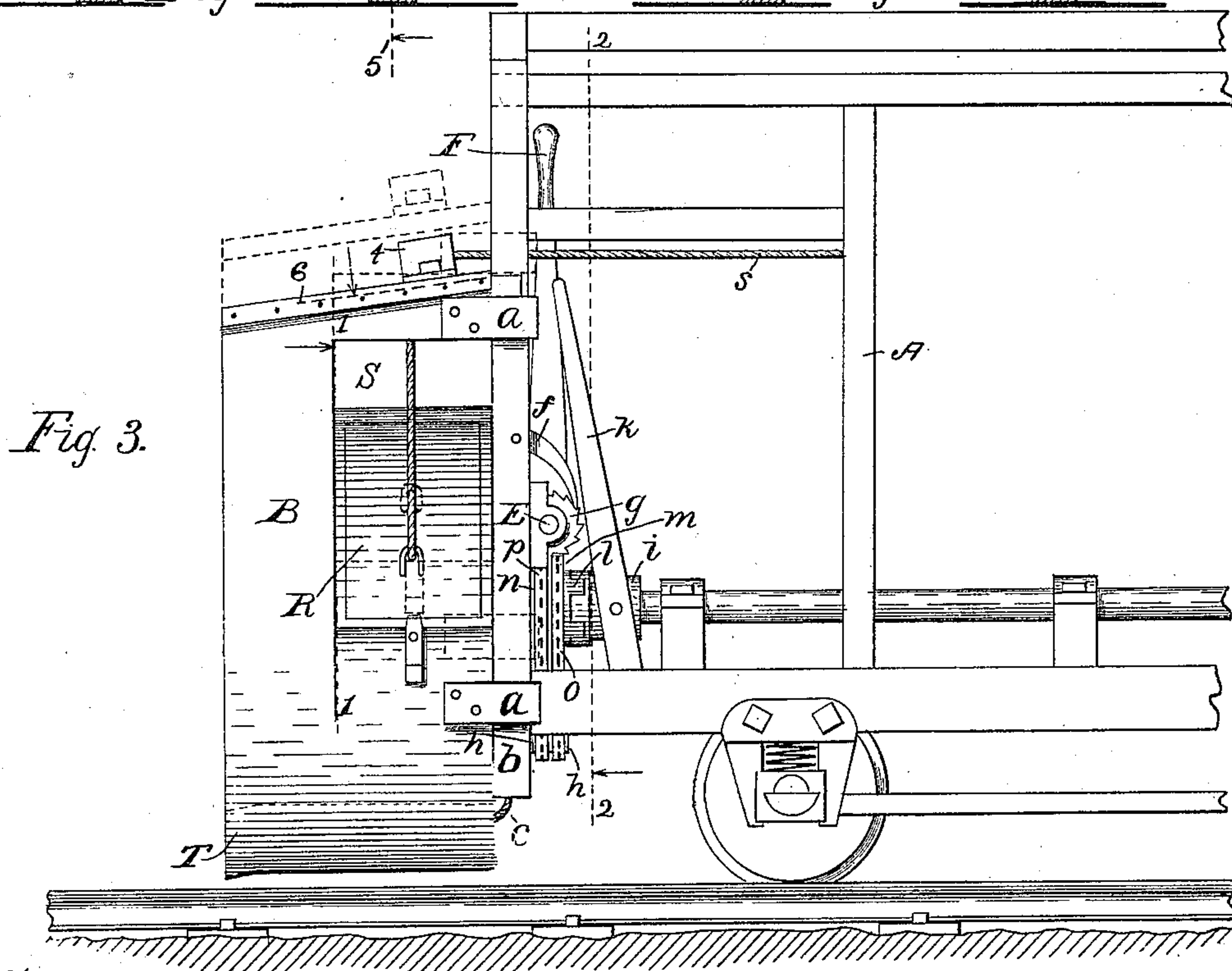
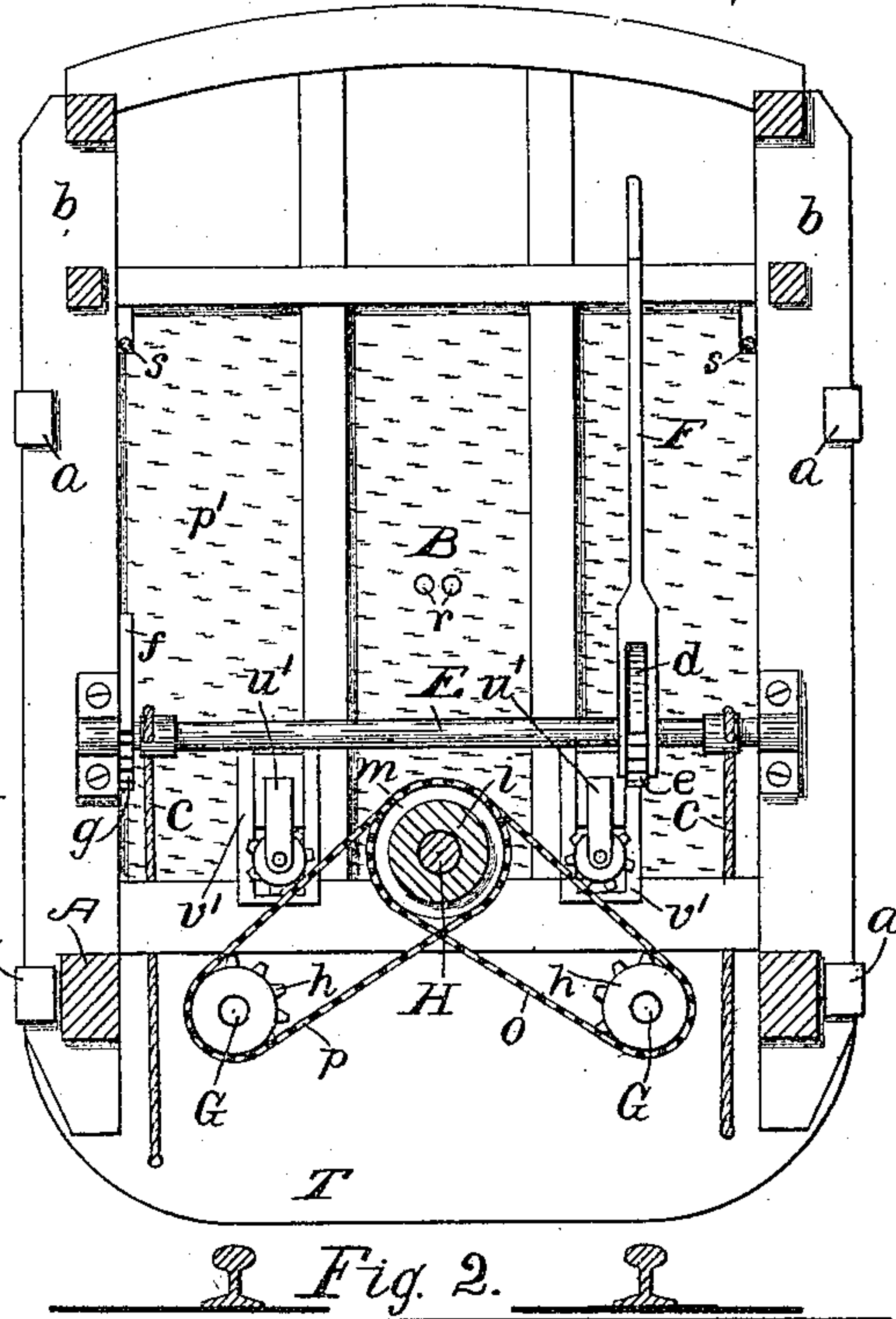
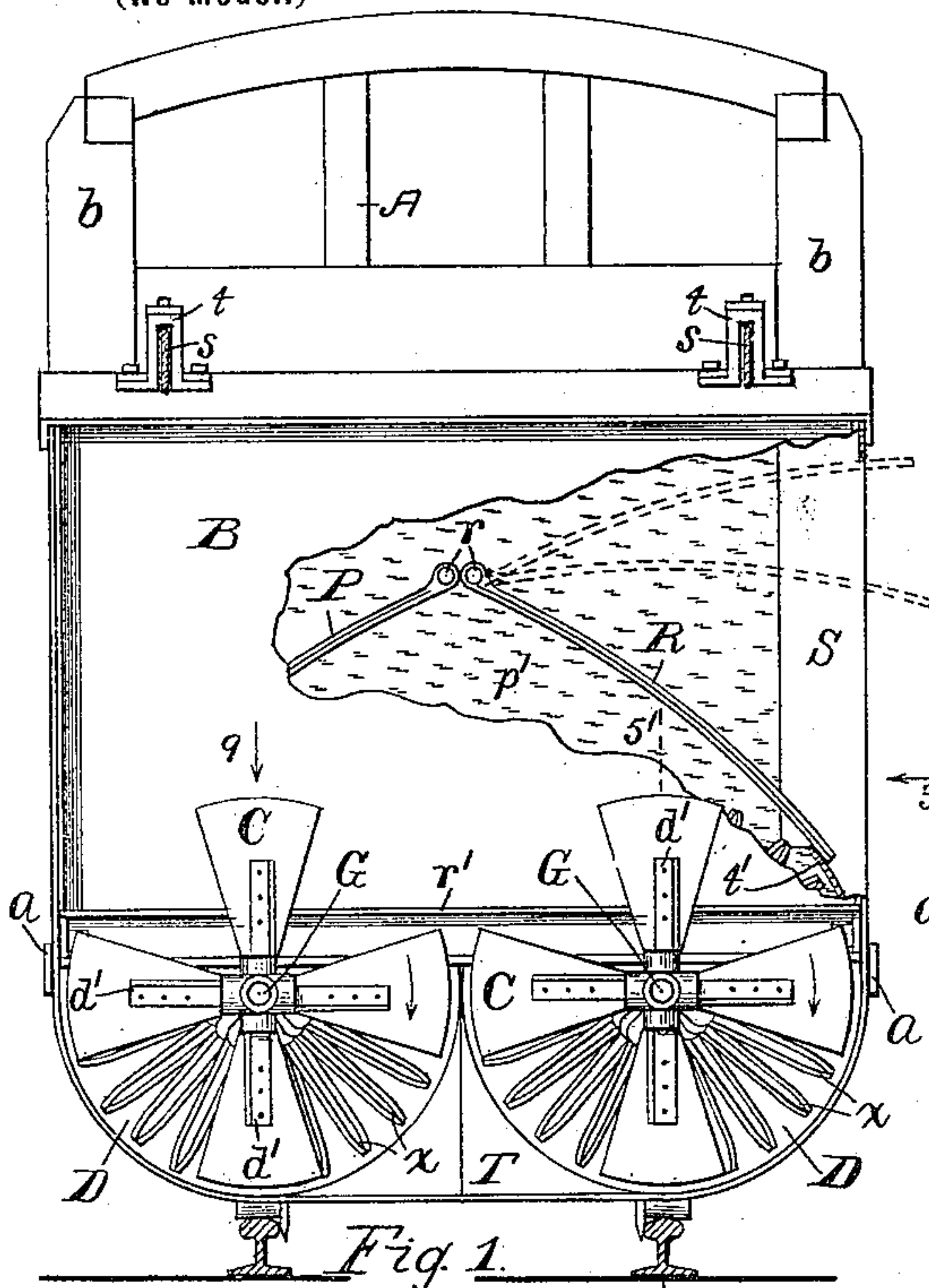
Patented Jan. 9, 1900.

G. W. RUGGLES:
TRACK CLEANER.

(Application filed Sept. 2, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witness:
W. S. Winston.
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Inventor:
Geo. W. Ruggles,
By E. B. Whitmore, Atty.

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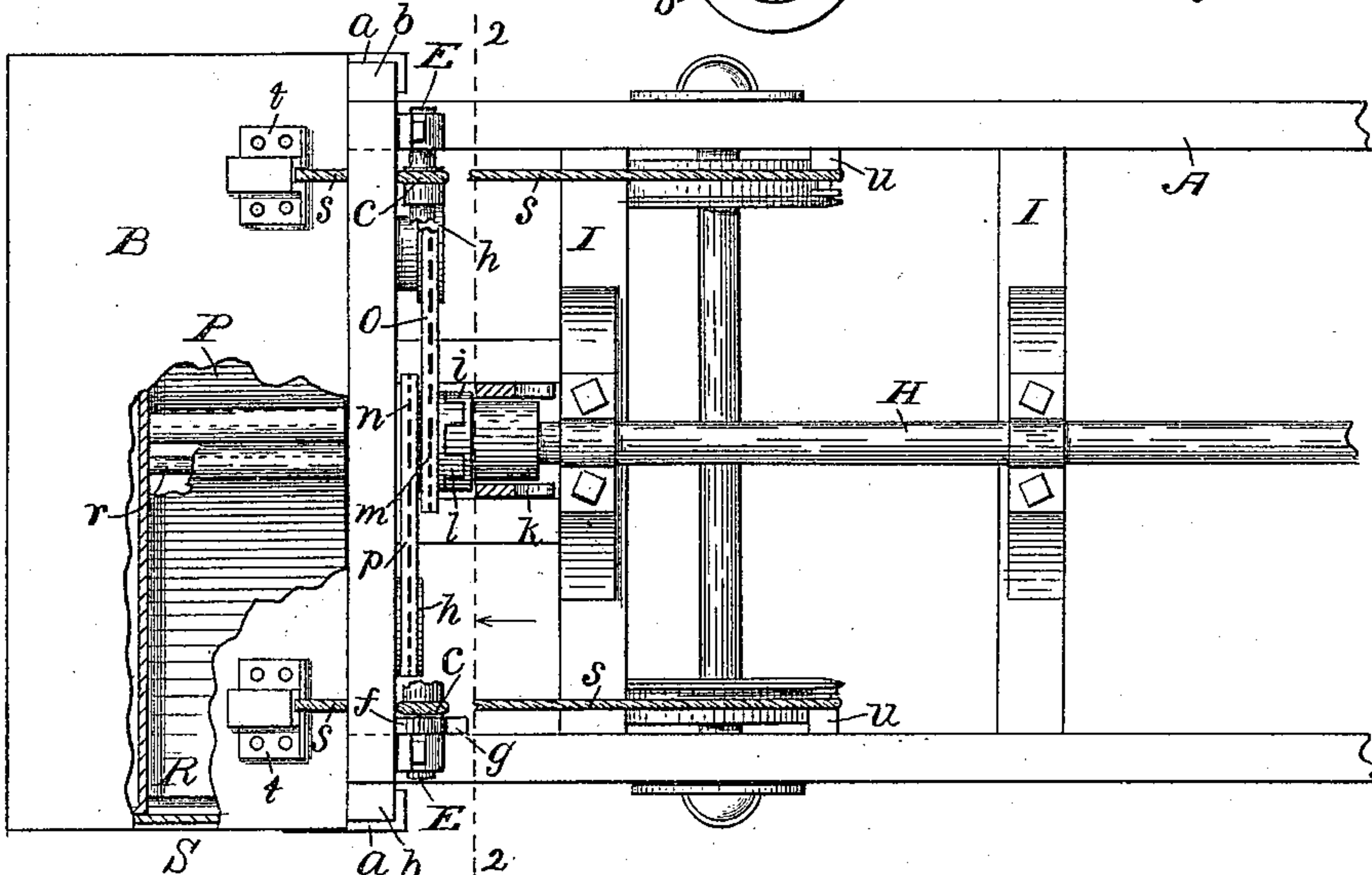
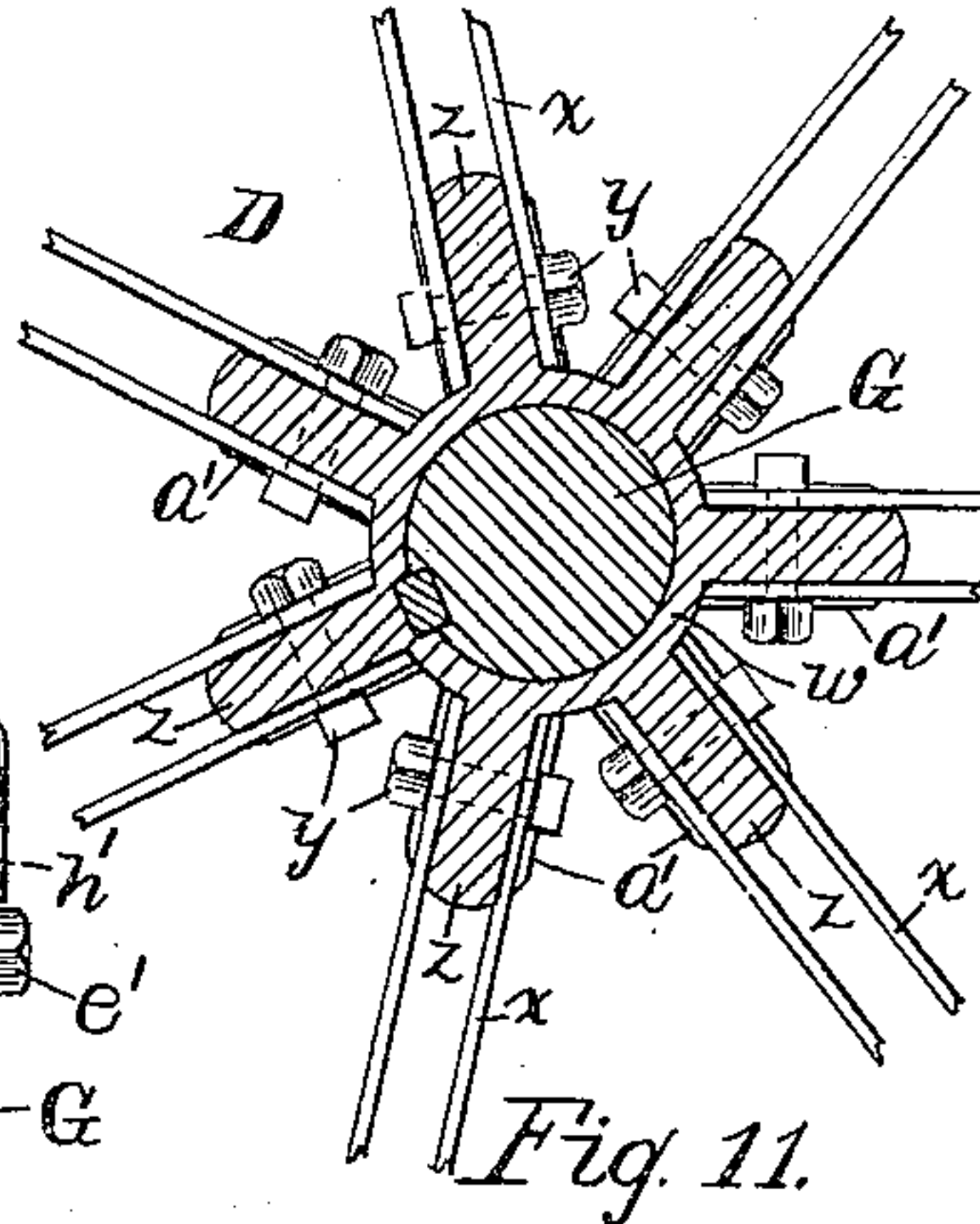
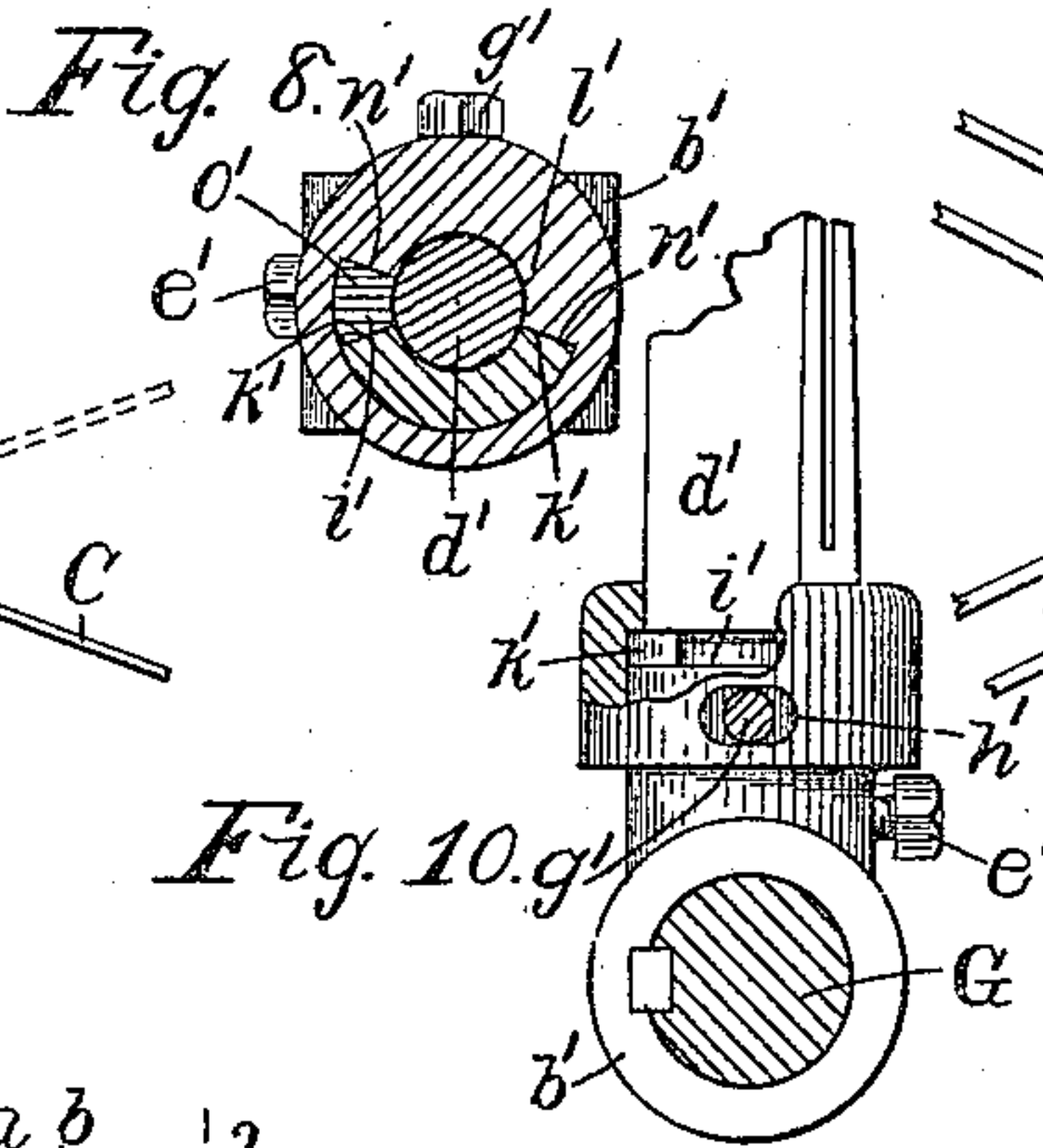
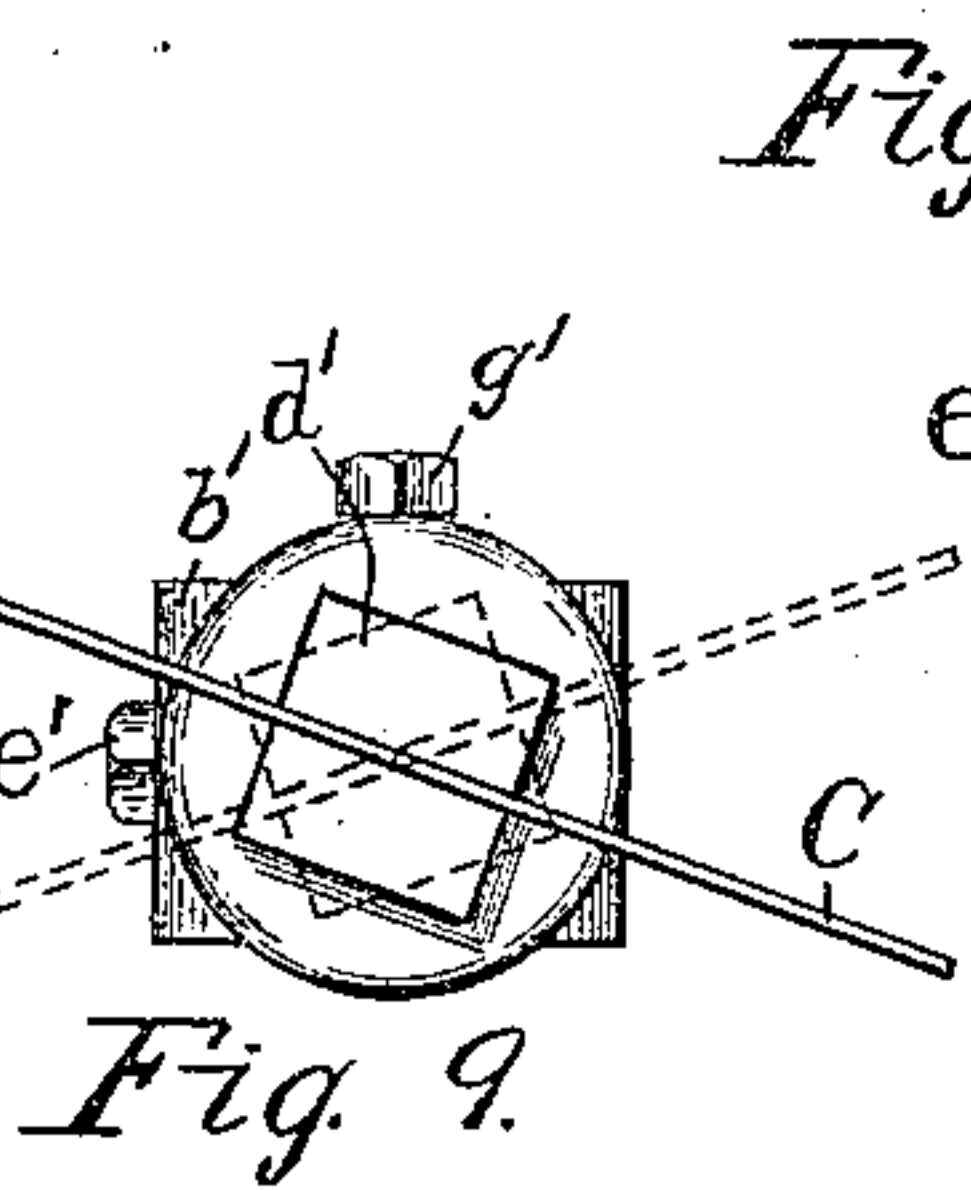
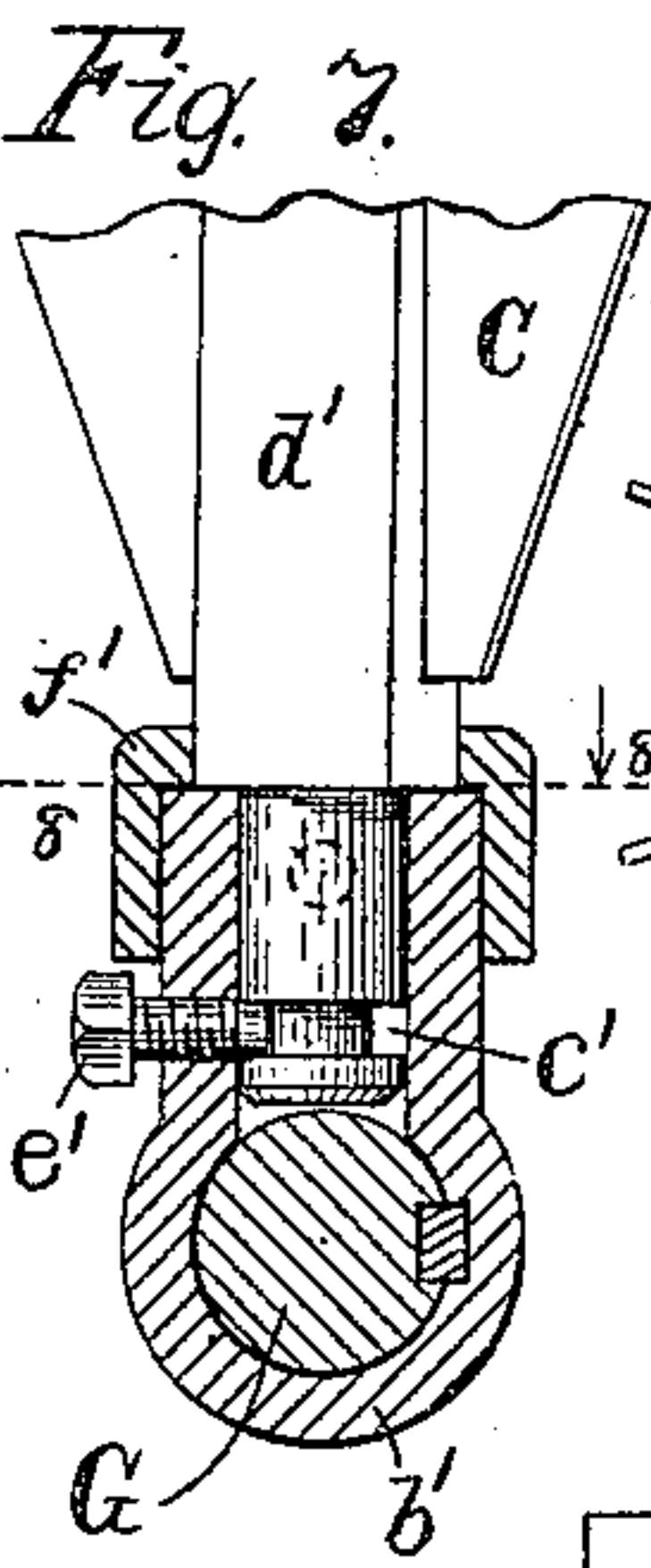
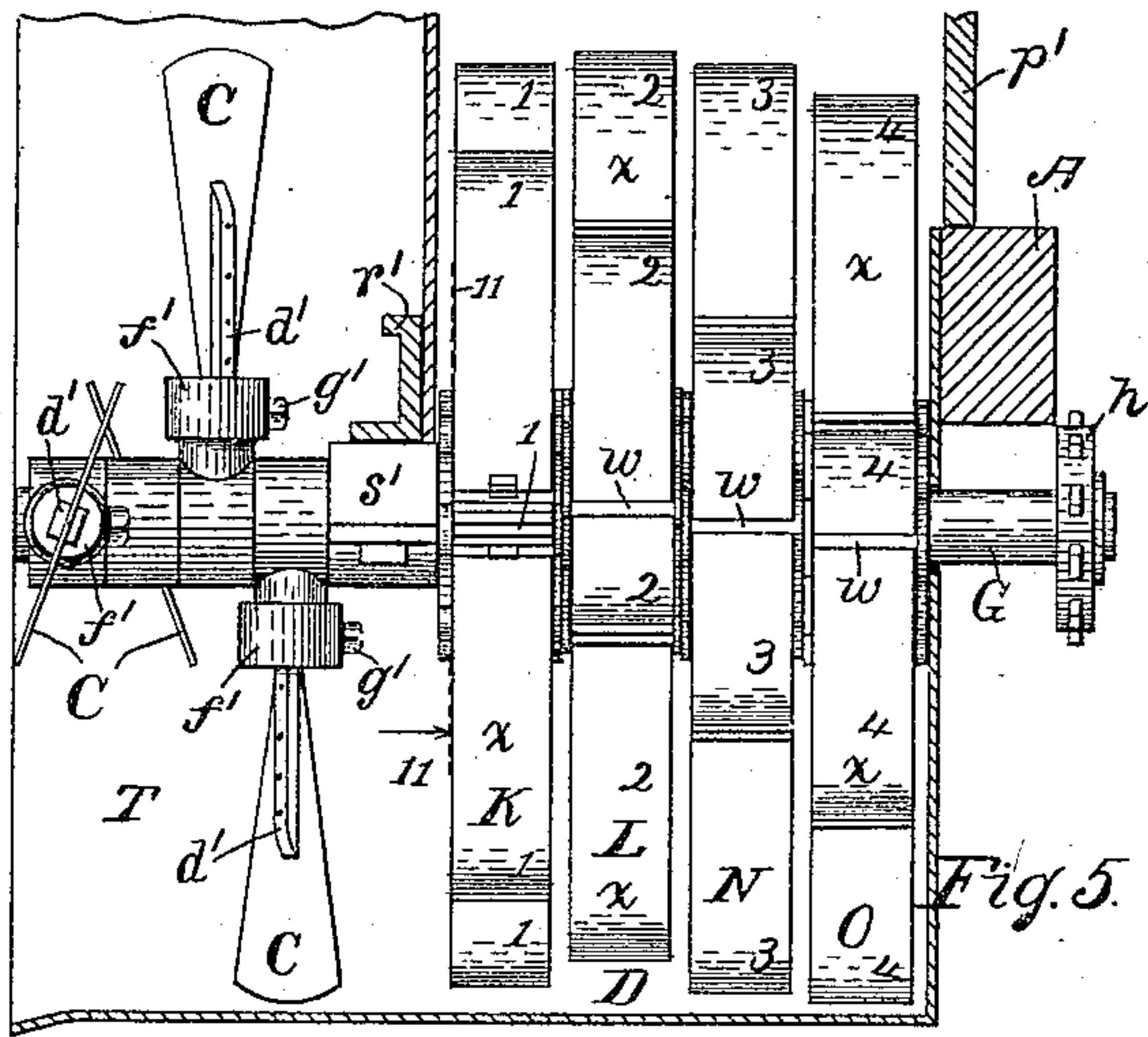
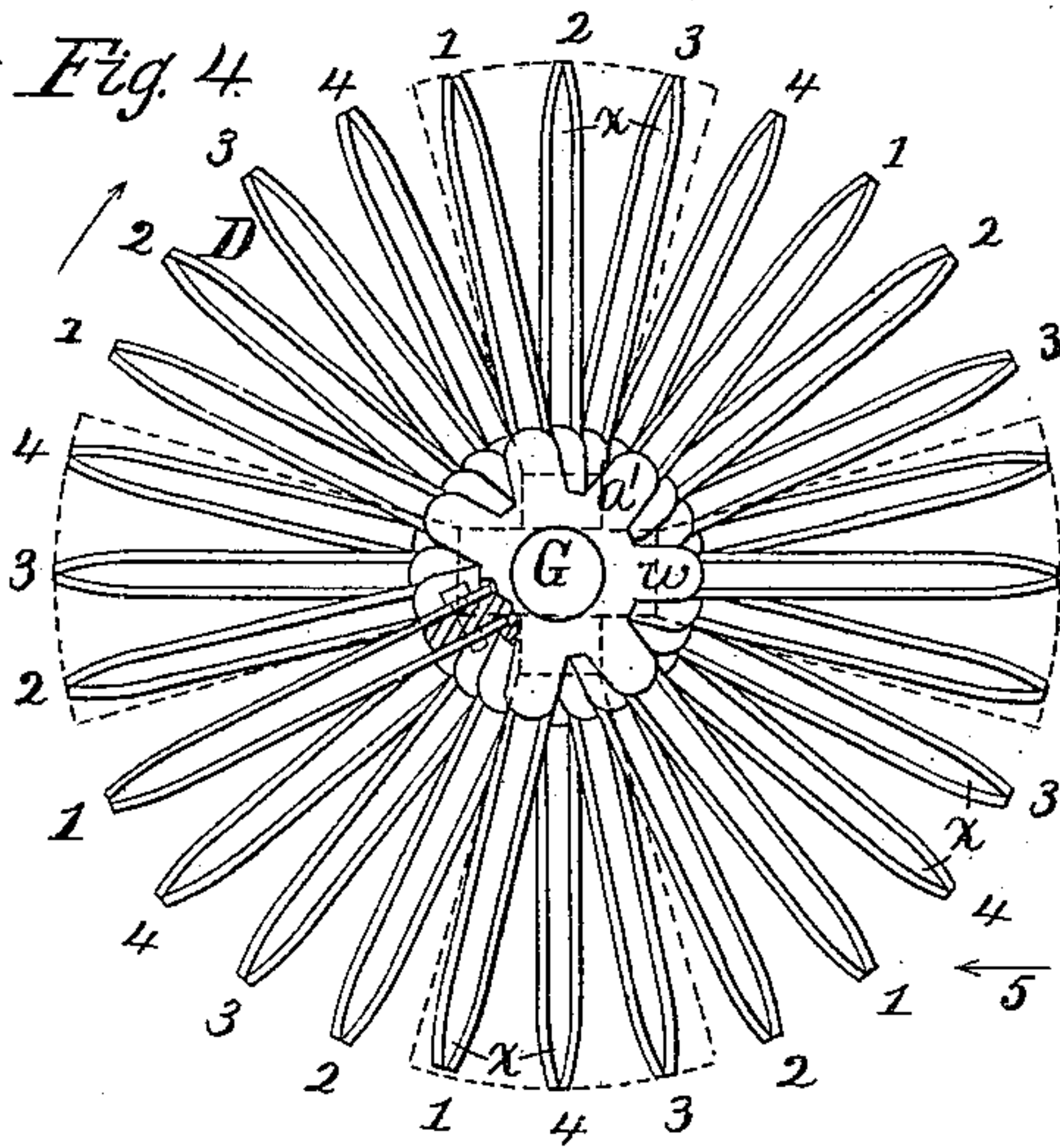
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G. W. RUGGLES.
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Attest:
m. Winston.
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Fig. 6.

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UNITED STATES PATENT OFFICE.

GEORGE W. RUGGLES, OF CHARLOTTE, NEW YORK.

TRACK-CLEANER.

SPECIFICATION forming part of Letters Patent No. 641,235, dated January 9, 1900.

Application filed September 2, 1899. Serial No. 729,322. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. RUGGLES, a citizen of the United States, residing at Charlotte, in the county of Monroe and State of New York, have invented a new and useful Improvement in Track-Cleaners, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention is a track-cleaner adapted more particularly for removing snow, the same being an improvement on Letters Patent Nos. 501,028 and 580,004, granted to me of dates, respectively, July 4, 1893, and April 6, 1897.

My present improvement relates more especially to the form and construction of the scoop and the construction of the bucket-wheels for throwing away the snow. It relates also to improvements in various other parts of the device, all hereinafter fully described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a front elevation of the track-cleaner with parts broken away and other parts shown in various positions by full and dotted lines, the section being on the vertical dotted line 1 1 in Fig. 3. Fig. 2 is an inner view of the end of the car or device viewed in a direction opposite that in which Fig. 1 is seen, the car-body and other parts being vertically and transversely sectioned, as on the dotted line 2 2 in Figs. 3 and 6. Fig. 3 is a side elevation at one end of the car seen as indicated by arrow 3 in Fig. 1, parts being shown in two positions by full and dotted lines. Fig. 4 is a front view of a bucket-wheel detached, a part of one hub being broken away. Fig. 5 is a side elevation of a bucket-wheel and associated parts seen as indicated by arrow 5 in Fig. 4, the scoop and other parts being longitudinally sectioned, as on the dotted line 5' 5' in Fig. 1. Fig. 6 is a plan of one end of the car with a part broken away and other parts sectioned, as on the dotted line 6 in Fig. 3. Fig. 7 is a cross-section of a wheel-shaft and associated parts on the axis of a blade. Fig. 8 is a transverse section of the blade-holders on the dotted line 8 8 in Fig. 7. Fig. 9 is a view at the outer end of a blade seen as indicated by arrow 9 in Fig. 1. Fig. 10 is a cross-section of the wheel-shaft

adjacent to a hub, a part of the holding-cap being broken away, the view being opposite that of Fig. 7. Fig. 11 is a cross-section of a hub of a bucket-wheel on the dotted line 11 11 in Fig. 5. Figs. 1, 2, 3, and 6 are drawn to a scale smaller and Figs. 7 to 11 to a scale larger than that of Figs. 4 and 5.

In the drawings, A is the frame of the car-body, the covering, which may be of any common kind, being omitted.

B is a combined wheel-house and scoop attached to the outer end of the frame A, made of sheet metal, within which are placed the blades C C and bucket-wheels D D. The house B is provided with clips *a* to secure it to the frame A, engaging laterally-projecting timbers *b b*, said house, with the scoop and inclosed wheels, being adapted to be moved vertically along the frame, as indicated in Fig. 3. This house with its contained parts may be shifted vertically by any convenient means, as a cross-shaft E, Figs. 2 and 3, connected with the lower part of the house or scoop by cables *c*, the shaft being operated by a lever F. This lever is provided with a pawl *d*, adapted to engage a ratchet *e*, rigid with the shaft, the latter being further controlled by means of a detent-pawl *f* near its end engaging a ratchet *g* on the shaft. In this device there are two similar blade-wheels, formed of series of blades C, to first act upon the snow and two equal bucket-wheels D D to dispose of the snow. These various wheels are placed in pairs upon parallel horizontal-shafts G G—a bucket-wheel coacting with a blade-wheel—at the inner ends of the shafts there being sprocket-wheels *h h*, Figs. 2, 3, and 6.

A main longitudinal driving-shaft H for the snow-controlling mechanism is held in bearings on cross-timbers I I of the frame A and provided at its end with a sliding clutch *i*, operated by a simple forked lever *k*. A coacting clutch *l*, journaled in the frame A, is provided with sprockets *m n*, which carry chains *o p*, engaging the sprockets *h h* to drive the wheel-shafts G G. By sliding the clutch *i* into or out of gear with the clutch *l* the blade-wheels and bucket-wheels may be caused to operate or idle, as desired.

The two bucket-wheels are made in sections and arranged upon the shafts so that the buckets act progressively against the snow in

throwing the latter away from the track, the snow being thrown out through one or the other of the openings S S in the sides of the wheel-house B. As shown in Fig. 5, each wheel consists of four sections K L N O, each section having seven equally-spaced buckets. The buckets of the forward section K are designated by 1, those of the next section L by 2, and 3 and 4 designate the buckets of the remaining sections N and O, respectively. The buckets are each formed of two similar metal plates or leaves $x x$, facing each other, Figs. 4 and 11, secured to hubs w by bolts y , these leaves being curved, as shown. The hubs are formed with flanged radial projections z , on the opposite sides of each of which are placed the leaves $x x$, as shown, the leaves being inserted between the flanges a' , which prevent edgewise movements of the leaves.

In placing the sections upon the shaft to form a complete wheel they are so arranged that the buckets of each section from forward to rear are in advance of (or in rear of, according to the direction in which the wheel is turning) the blades of the next adjacent section, so that when viewed from in front twenty-eight buckets appear equally spaced around the shaft, as shown in Fig. 4. Now if the wheel be turning in the direction indicated by the arrow (also indicated by the arrows on the blades in Fig. 1) the buckets of the several sections will engage the snow in the order 4 3 2 1—that is to say, blade 4 will deliver its charge of snow first, being followed by blades 3 2 1 in succession, blade 1 being itself followed by the next blade 4, which regular actions upon the snow will continue while the wheel rotates, there being no break in the regular intervals at which masses of snow are thrown out of the wheel-house. This dividing up of the snow, forced back into the scoop by the inclined blades C, is found to be advantageous, as the bucket-wheels work more freely and evenly than when the buckets are each formed continuous from front to rear, as shown in the Letters Patent above mentioned, and there is less liability of sudden stresses being thrown upon the parts.

The blades C are adapted to be turned in their seats in the hubs b' to either of two previously-arranged inclined positions, as shown, according to the direction in which it is wished to revolve the wheels and deliver the snow. The parts of the jaws d' , holding the blades proper, entering the hubs are made cylindrical, as shown in Figs. 7 and 8, and formed with transverse recesses c' , in which to receive the ends of screws e' . These screws, while not interfering with the shifting of the blades to their different positions, prevent the blades from being thrown out by centrifugal action. Cylindrical caps f' are provided for the projecting ends of the hubs b' , being joined rigidly to the hubs by clamp-screws g' , occupying transverse slots h' in the caps. The jaws d' are square in cross-section where they pass through the caps, as shown in Fig. 9,

each cap and its blade turning together. The outer projecting end of each hub b' is formed with a sectoral depression i' , Figs. 8 and 10, having shoulders $k' k'$, and the cap is formed with a part l' , projecting into said depression. The part l' has shoulders n' , adapted to meet the shoulders k' of the hub, there being free space o' between, so that when the blade is shifted either way two shoulders meet and determine its position.

The scoop T is made straight and without flare at its corners, the latter being circular or cylindrical and concentric with the respective wheel-shafts G G, all horizontal lines of the scoop being parallel. This form of scoop I regard as being important, as when thus constructed it meets with very much less resistance than those shown in my patents above mentioned when forced against solid bodies of snow. I am enabled to form the scoop in the manner here shown by employing twin blade and bucket wheels arranged side by side, as shown, instead of a single central wheel, as shown in said patents. The scoop and the wheel-house constitute a single structure, the metal sheet forming the scoop proper extending upward at its ends to form sides of the wheel-house, though I do not confine myself to this exact manner of constructing the parts. The rear side of the wheel-house is formed by wood or metal sheeting p' , secured to the frame, in which the rear ends of the shafts r have bearings.

By employing two sets of wheels abreast and two shafts the latter may be set farther apart and the scoop built wider if it is wished for any purpose to cut a wider way through banks of snow. On account of this construction the machine may be adapted to clear a wide way through the snow without adding to the height of the car, for the wheels acting on the snow do not need to be increased in diameter. This feature of the invention is desirable, for on account of bridges under which the car is liable to pass and for other reasons it is desirable to keep the car-body low, though cutting a wide channel through the snow.

In constructing the scoop there is usually employed a horizontal cross-tree r' , Figs. 1 and 5, to which to secure the front bearings s' of the shafts G G, the rear bearings being secured conveniently to a timber of the frame A.

Deflectors P and R are employed over the bucket-wheels to control the delivery of the snow out of the wheel-house. These deflectors are held to turn upon horizontal shafts r , Figs. 1 and 6, so as to occupy higher or lower positions, as indicated, depending upon where it is wished to deliver the snow relative to the track. These deflectors may be operated by any convenient means—as, for example, cords $s s$, connected with the deflectors and extending upward over pulleys in frames or brackets $t t$ on top of the wheel-house, thence extending within the car, and secured to some simple fasteners $u u$. At their lower ends the de-

flectors normally rest against inturned parts t' of the wheel-house, Fig. 1, to close the space above the bucket-wheels. Either one of the deflectors is raised, as above stated, when it is wished to throw out snow.

Some simple form of tighteners $u' u'$, Fig. 2, are employed for the chains $o p$, to act when the scoop is raised, as above described. The raising of the wheel-house and scoop tends to cause the chains to become slack, and to keep them in reasonable tension the tighteners are provided. These tighteners act by gravity, they being adapted to slide vertically in ways v' , secured to the wall p' of the car.

This track-cleaning car is designed to be a "double-ender," there being snow-clearing apparatus at both ends, only one end of which is shown, and the car is designed to be a motor, propelled by some ordinary means, as an electric current. The driving-shaft H is also turned by means common to such devices.

What I claim as my invention is—

1. In a track-cleaner, a pair of equal blade-wheels placed side by side, on parallel shafts, means for turning said shafts, bucket-wheels on the shafts back of the blade-wheels, and a scoop within which said wheels and shafts are disposed, said scoop having cylindrical corners each concentric with the periphery of one set of blade and bucket wheels and its shaft, substantially as specified.

2. In combination with the scoop of a track-cleaner, a pair of blade-wheels, and a pair of bucket-wheels coacting with the blade-wheels, and an inclosure for the bucket-wheels, with means for moving the parts in vertical directions, substantially as shown and described.

3. The bucket-wheel of a track-cleaner, having a hub provided with projections, and radially-disposed leaves secured to said projections in pairs, said leaves being alike and each pair constituting a bucket, substantially as set forth.

4. The bucket-wheel of a track-cleaner, having a hub provided with flanged radial projections equally spaced around the axis, and a series of similar leaves or plates secured to said projections in pairs, the leaves of each pair facing each other and curved together at their outer ends, substantially as and for the purpose specified.

5. The bucket-wheel of a track-cleaner, formed of a series of similar hubs each having flanged radial projections equally spaced, and a series of similar leaves or plates secured

to said projections in pairs forming buckets, the buckets of each hub being offset from or in advance of the buckets of the adjacent hub, substantially as and for the purpose specified.

6. A scoop for a track-cleaner composed of a single piece and made straight without flare at the corners which latter are cylindrical with three straight parts two of which extend upward from the said corners and the other connecting said corners, combined with two parallel shafts journaled lengthwise of the scoop each with its blades of its wheels mounted to revolve concentric with and adjacent to one of said corners, substantially as and for the purpose specified.

7. A device of the kind described, having a pair of snow-controlling shafts and sprocket-wheels thereon, in combination with a driving-shaft with sliding clutch a coacting non-sliding clutch formed with sprockets, and chains for said sprockets, substantially as shown and set forth.

8. The bucket-wheel of a track-cleaner, having a hub, and radially-disposed leaves or plates secured to the hub in pairs, the leaves of each pair together constituting a bucket.

9. The bucket-wheel of a track-cleaner, having a series of hubs, and leaves secured in pairs to the peripheries of said hubs, each pair constituting a bucket, the buckets of one hub being in advance of the buckets of the adjacent hub.

10. The bucket-wheel of a track-cleaner, having a hub formed with equally-spaced peripheral projections and a series of similar leaves secured to said projections in pairs, the leaves of each pair being parallel next the hub and curved together at their ends, each pair of leaves constituting a bucket, substantially as shown.

11. A combined scoop and wheel-house for a track-cleaner, composed of a single piece and made straight without flare at the corners which latter are cylindrical with three straight parts two of which extend upward from the corners to form the sides of the scoop and portions of the wheel-house and the other connecting said corners, all substantially as shown and described.

In witness whereof I have hereunto set my hand, this 30th day of August, 1899, in the presence of two subscribing witnesses.

GEO. W. RUGGLES.

Witnesses:

ENOS B. WHITMORE,
M. L. WINSTON.