

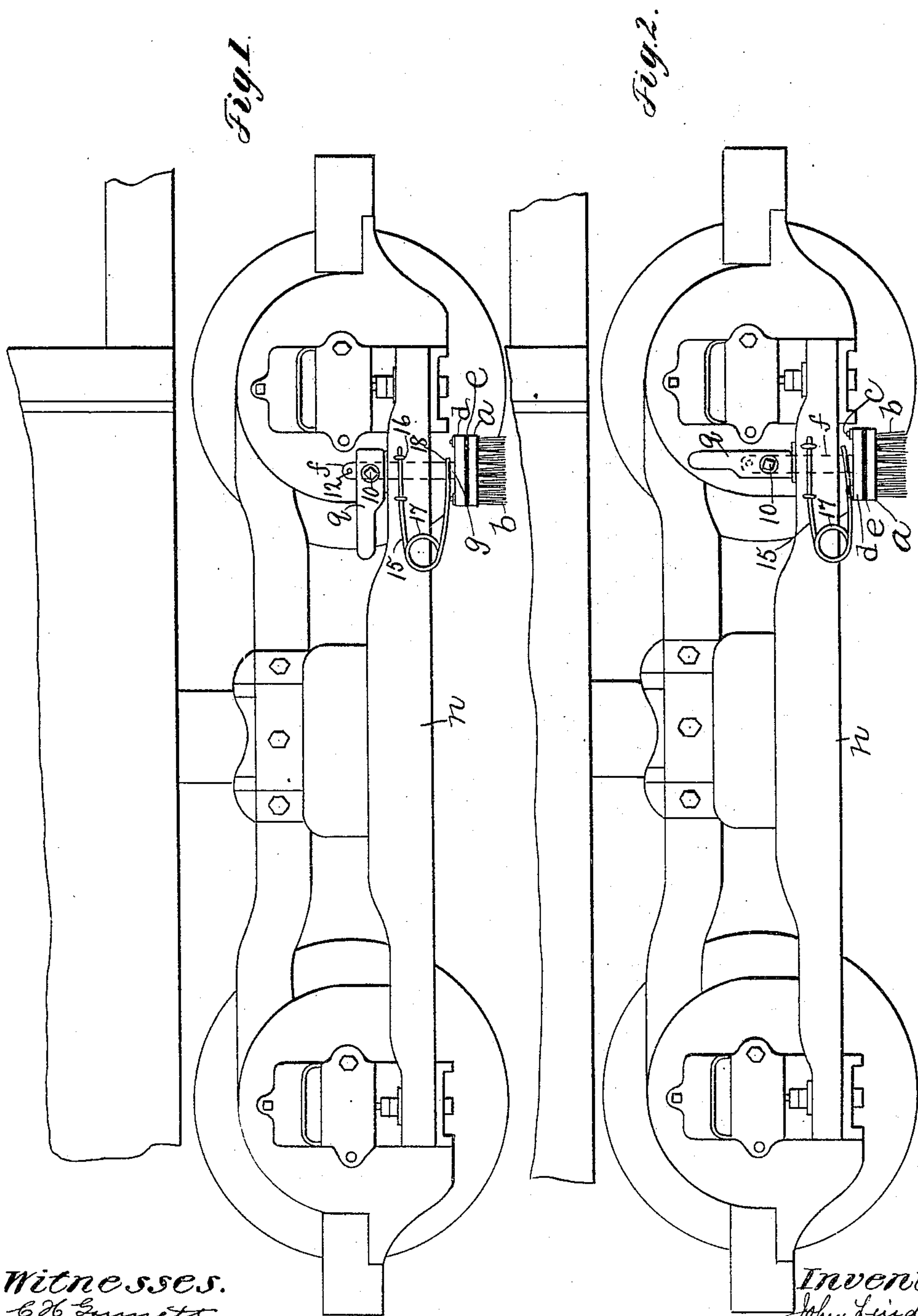
No. 816,485.

PATENTED MAR. 27, 1906.

J. LINDALL & P. WINSOR.
RAIL CLEANING APPARATUS.

APPLICATION FILED JAN. 23, 1904.

2 SHEETS—SHEET 1.



Witnesses.
C. H. Bennett
J. Murphy.

Inventors
John Lindall
Paul Winsor
by Jas. H. Churchill
att'y.

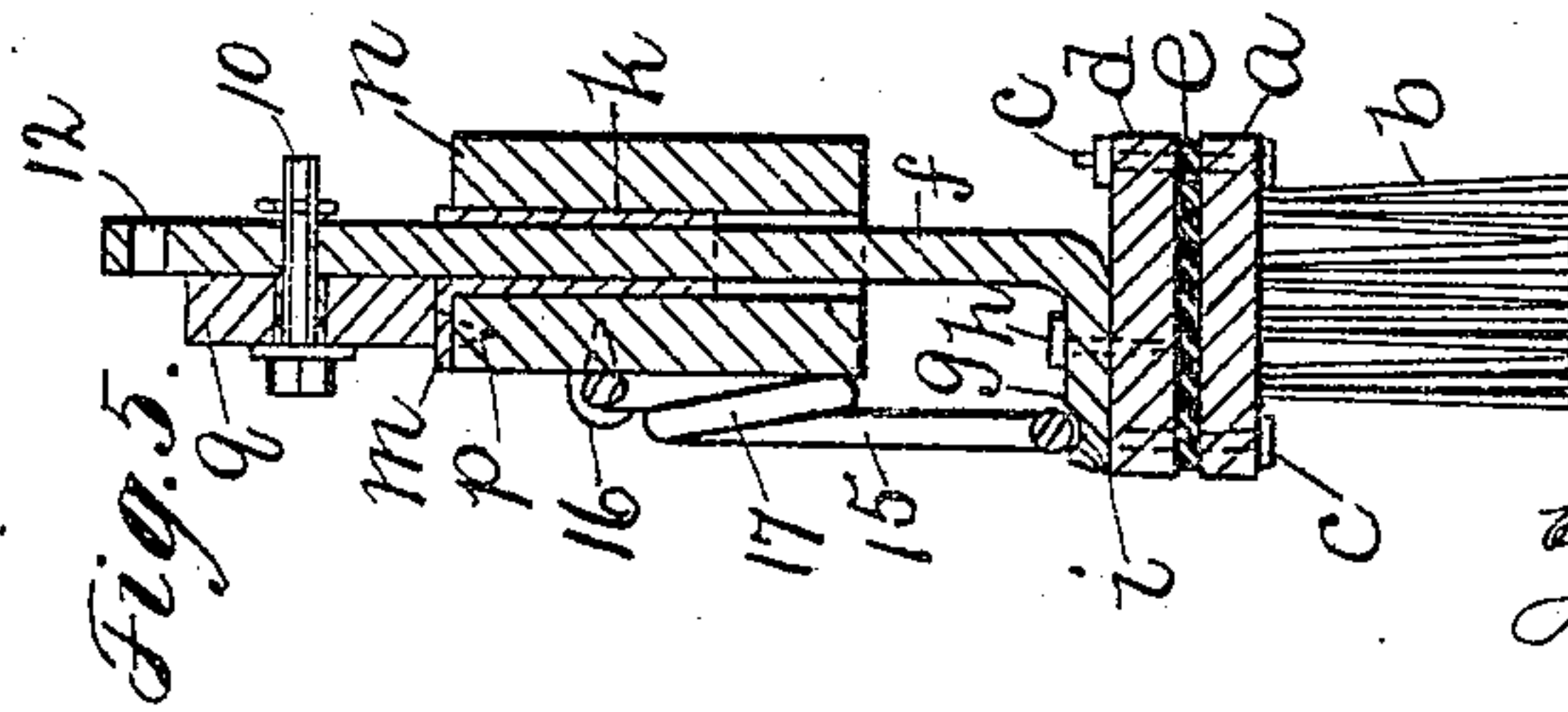
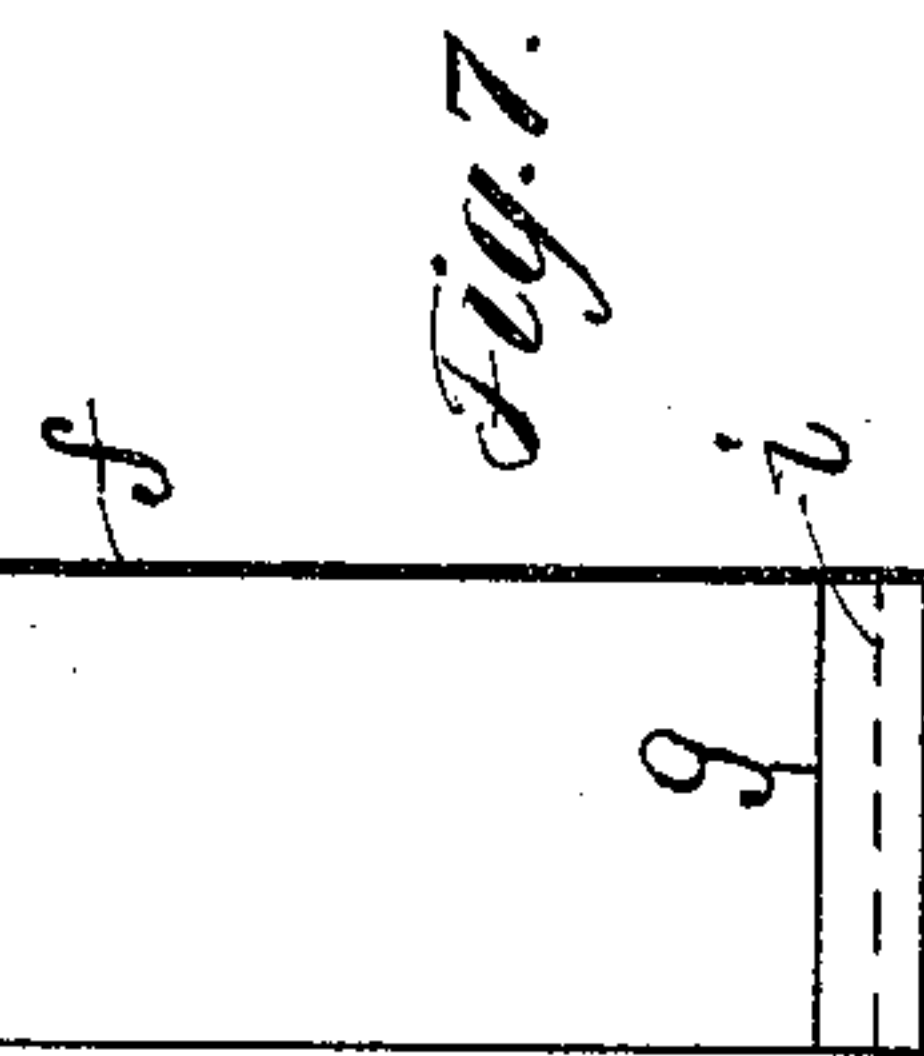
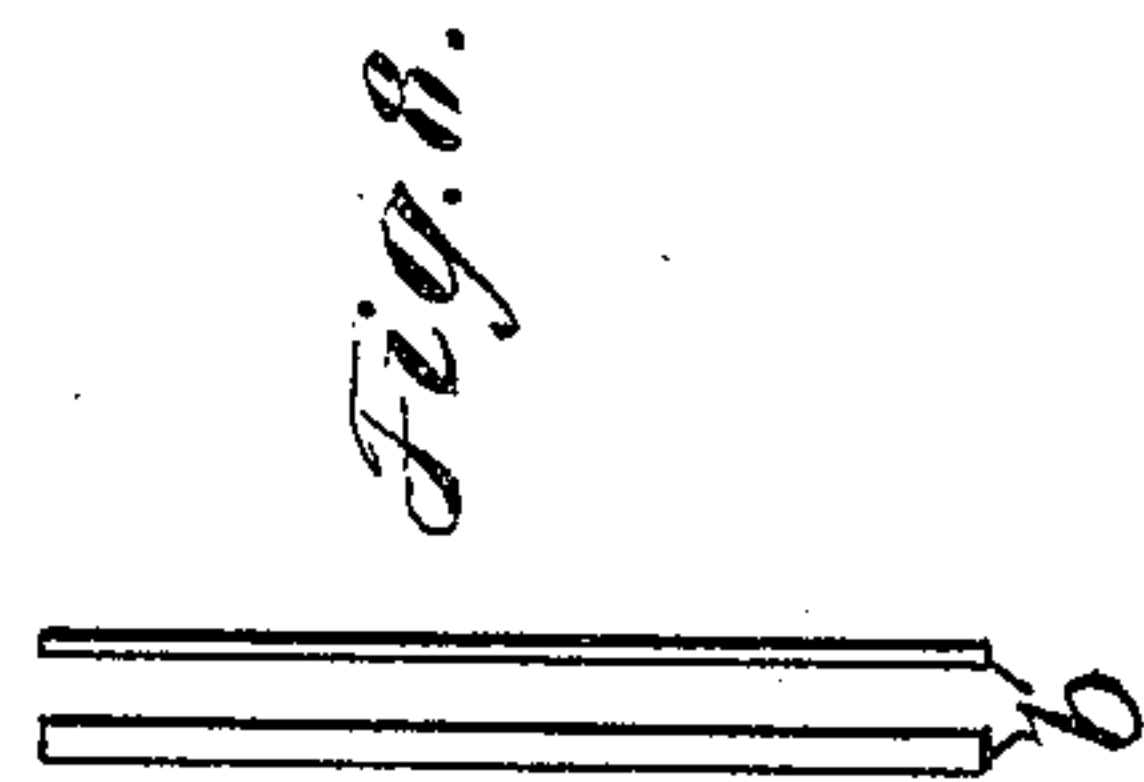
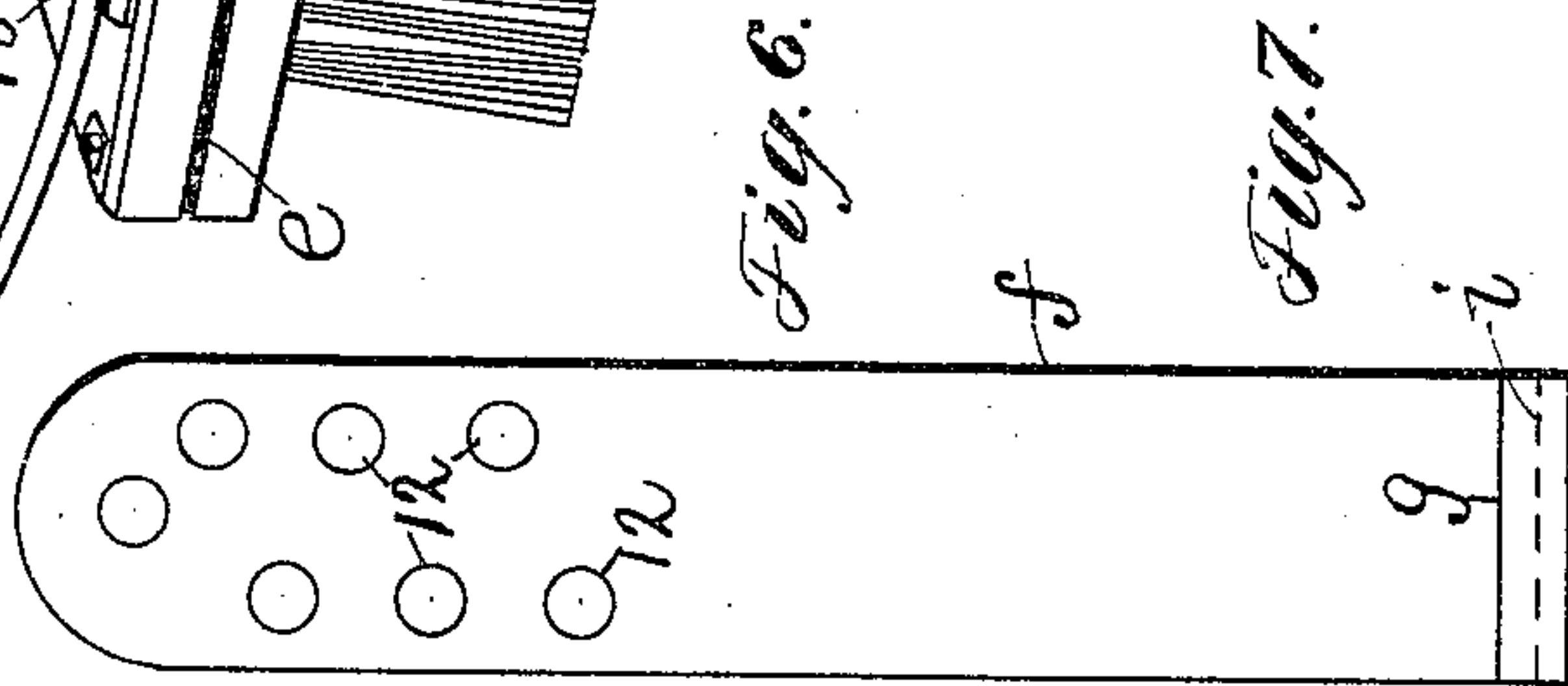
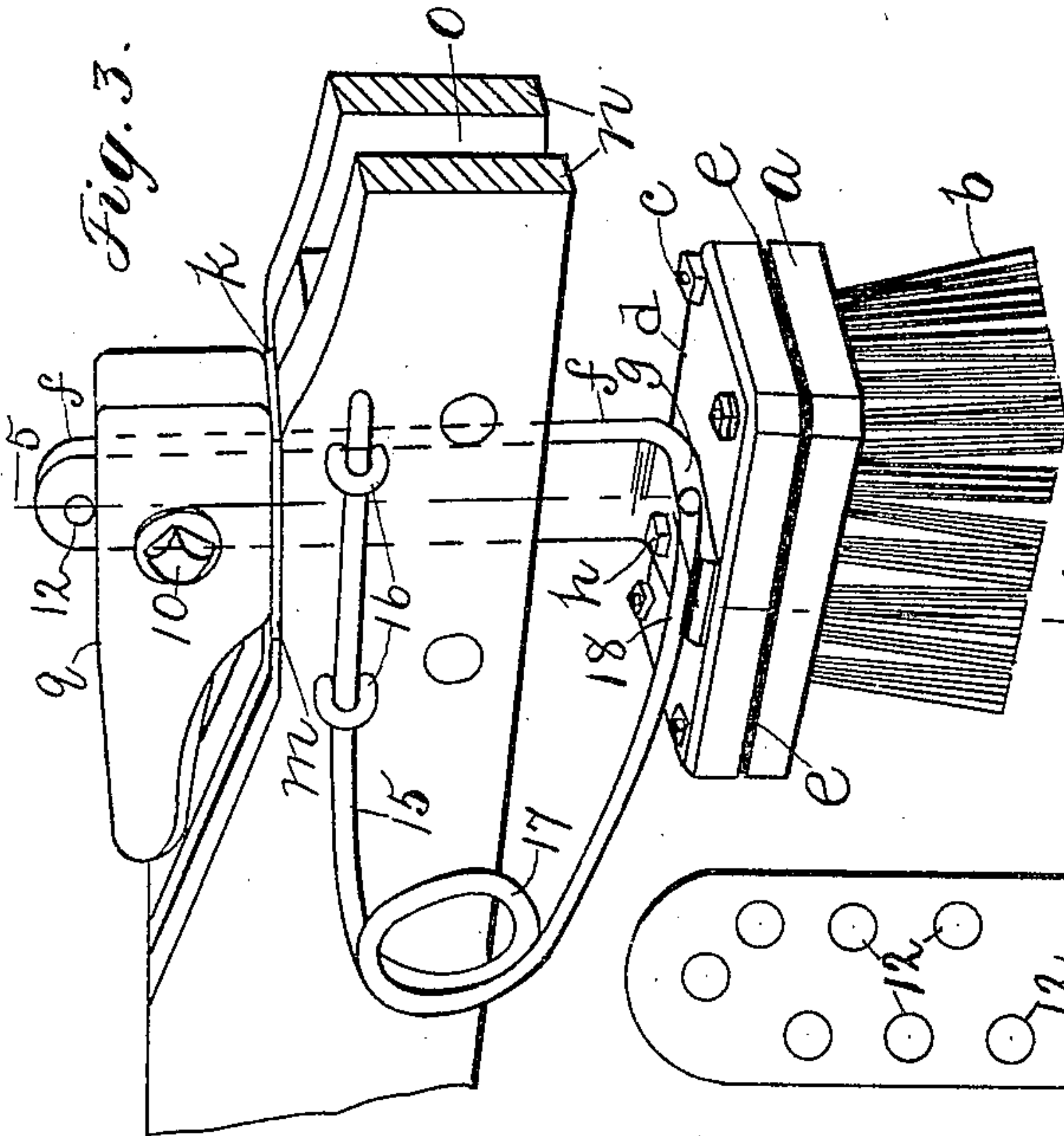
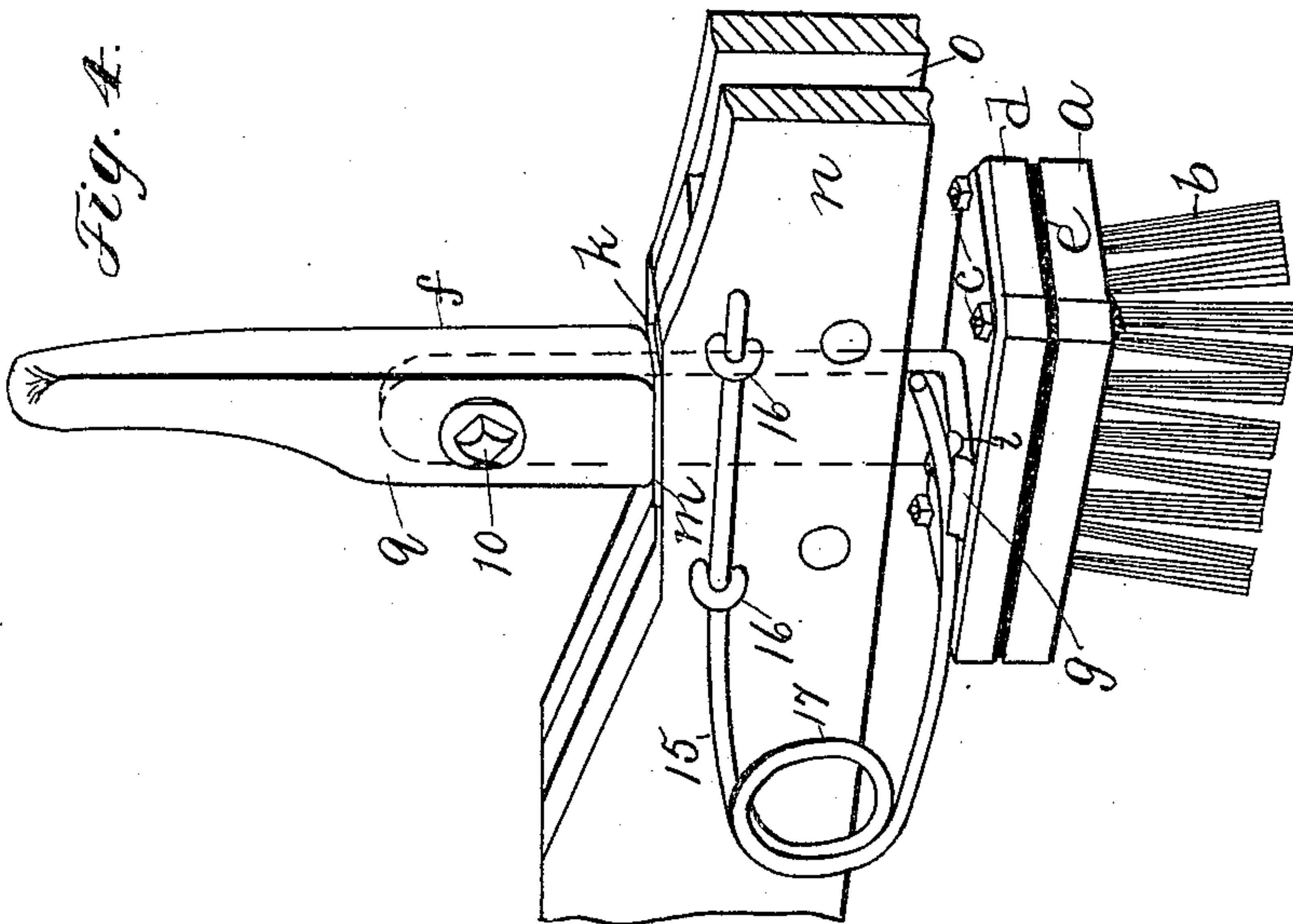
No. 816,485.

PATENTED MAR. 27, 1906.

J. LINDALL & P. WINSOR.
RAIL CLEANING APPARATUS.

APPLICATION FILED JAN. 23, 1904.

2 SHEETS—SHEET 2.



Witnesses.
C. E. Barnett
J. Murphy.

Inventors.
John Lindall
Paul Winsor
By Jas. H. Churchill
att'y.

UNITED STATES PATENT OFFICE.

JOHN LINDALL, OF BOSTON, AND PAUL WINSOR, OF WESTON,
MASSACHUSETTS.

RAIL-CLEANING APPARATUS.

No. 816,485.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed January 23, 1904. Serial No. 190,269.

To all whom it may concern:

Be it known that we, JOHN LINDALL, residing in Boston, county of Suffolk, and PAUL WINSOR, residing in Weston, in the county of Middlesex, State of Massachusetts, citizens of the United States, have invented an Improvement in Rail-Cleaning Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to an apparatus for cleaning the rails of railways, and has for its object to provide a simple, inexpensive, and efficient apparatus especially applicable for removing snow and ice from the rails of railways employing electricity as the motive power, and particularly from the third-rail conductor of elevated electric railways. For this purpose a device which is designed to engage the upper surface of the third rail is provided with a handle having coöperating with it means under the control of the operator for elevating the said handle, with which the lifting means may and preferably will be adjustably secured to permit the cleaning device which engages the third rail to be properly positioned with relation thereto. The device which engages the third rail may be held in yielding engagement therewith by suitable means, as will be described. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of a portion of a railway-car provided with an apparatus embodying this invention, the apparatus being shown in its operative position; Fig. 2, a like view with the apparatus in its raised or inoperative position; Fig. 3, an enlarged detail of the apparatus in its operative position; Fig. 4, an enlarged detail of the apparatus in its raised position; Fig. 5, a section on the line 5 5, Fig. 3; and Figs. 6, 7, and 8 details to be referred to.

In the present instance the invention is shown as embodied in an apparatus especially designed for removing ice and sleet from the upper or contact surface of the third rail of an electric railway. For this purpose provision is made for cutting the ice and sleet, and to this end we employ a device herein shown as a brush comprising a body

or back piece *a*, to which is secured a plurality of cutters or clearing members *b*, preferably thin pieces or bristles of spring-steel, (shown separately in Figs. 7 and 8,) which are of sufficient rigidity to effect a cutting action upon the ice and sleet and yet are sufficiently flexible to permit them to bend or spring under pressure, so as to enable the said cutters to conform to irregularities in the surface of the third rail or conductor.

The body or back piece *a* has secured to it, as by bolts *c*, a reinforcing-piece *d*, which is electrically separated from the cutters *b* by a layer *e* of rubber or other suitable insulating material.

The cleaning device or brush has secured to its back piece *d* a bar *f*, constituting a handle for the same. The bar *f* is provided at its lower end, as herein shown, with a flange *g*, which is fastened to the back piece of the brush, as by the bolt *h*, and the said flange is preferably provided with a groove *i* in its upper surface for a purpose as will be described.

The brush or cleaning device and its attached handle or bar *f* are bodily movable in a vertical direction toward and from the third rail or conductor, (not herein shown,) and the said bar or handle may be guided in its movement by a hollow casting *k* of substantially the same shape as the bar in cross-section and which is provided with a lip or flange *m* (see Fig. 5) at its upper end to rest upon a support, which may be the shoe-beam *n* now employed on the cars of elevated-railway systems for carrying the contact-shoe. (Not shown.)

In the present instance the hollow casting or guide *k* is shown as extended down into a suitable slot or opening *o*, formed in the shoe-beam, and the flange or lip *m* is secured to the upper surface of said beam, as by screws *p*, (see Fig. 5;) but it is evident other forms of support may be used and the casting or guide may be located at one side of said support. The bar or handle *f* is extended above the support *n* and has secured to it an operating device, herein shown as a lever *q*, which is pivotally connected to the bar or handle *f* of the brush. The operating device or lever *q* may be adjustably secured to the handle *f* by means of a bolt 10, extended through the operating device *q* and through one of a series of holes 12 in the handle *f*. The holes 12,

as shown in Fig. 6, are arranged in two substantially vertical rows, with the holes in one row staggered with relation to the holes of the other row, so that substantially close adjustments of the brush may be made as the bristles or cutting members of the same are worn away.

The operating device or lever may be made substantially oblong in shape, as herein shown, and the pivot 10 located at a greater distance from the bottom of the lever than from the sides of the same, so that said lever when turned into a substantially vertical position (shown in Fig. 4) acts as a cam to elevate the cleaning device against the action of a spring 15, which is employed to keep the cleaning device in firm yet yielding engagement with the third rail or conductor. The spring 15 may be made as herein shown and consists of a piece of steel-wire rod having one end secured to the support *n*, as by the staples 16, and preferably, also, by bending the end of the wire rod and driving the same into the support, as represented in Figs. 3 and 4. The wire rod 15 may be provided with one or more coils 17, and its free end 18 is designed to rest upon the flange *g* of the handle or bar *f* and to be guided by the groove *i* when the free end of said spring is moved toward or away from the support *n* under the influence of the brush.

In Figs. 1 and 3 the cleaning apparatus is shown in its lowered or operative position and in Figs. 2 and 4 in its raised or inoperative position.

In practice the brush is adjusted with relation to the third rail, so that the lower ends of the bristles will exert a cutting action upon the ice or sleet, and the said bristles are made substantially stiff to perform the cutting action desired, yet are of sufficient flexibility to permit them to bend under pressure, so that when the third rail is worn and uneven the bristles brought in contact with the high points of the rail may yield or bend sufficiently to enable other bristles to be brought in contact with the lower points of the contact-surface of the rail, thereby insuring effective cleaning of the contact-surface of the rail.

The cleaning device is herein shown as a brush provided with bristles or wires, and while this construction may be preferred we do not desire to limit ourselves to this particular construction of cleaning device, as the other parts of the apparatus may be used to advantage with other forms of cleaning devices.

In Fig. 3 the lever *q* is extended transversely of the handle *f* and its flat under face engages the upper surface of the shoe-beam or more properly the flange or lip *m*, thereby retaining the said lever in this position until positively moved.

In Fig. 4 the lever *q* extends longitudinally

of the handle *f*, and its flat end engages the lip or flange *m* and retains the said lever in this position until positively moved.

In both instances the lever *q* acts to limit the downward movement of the brush by the spring, yet permits the brush to be moved upward by elevations in the third rail. The lever *q* practically forms a cam having two substantially flat faces to engage the upper surface of the support, and in order to prevent the cam from being automatically turned from its horizontal position (shown in Fig. 3) into its vertical position (shown in Fig. 4) by the weight of the cam in case the brush should be elevated sufficiently to permit such movement by an elevation in the third rail a counterbalance or weight for said cam is provided, which counterweight is shown as the handle or prolongation of the lever *q*.

We claim—

1. The combination with a car-truck, of a rail-cleaning device, a support for said rail-cleaning device carried by said truck, a handle secured to said device, a guide attached to said support and through which the said handle is extended, an actuating device for said cleaning device pivoted to said handle and cooperating with said support to raise said cleaning device when moved into one position, and to permit said cleaning device to be lowered when moved into another position, said actuating device cooperating with said support to retain the cleaning device in its raised position until said actuating device is positively moved, and a spring to move said cleaning device downward when the actuating device is moved into another position, substantially as described.

2. The combination with a car-truck, of a brush for cleaning the upper surface of a third rail or conductor, comprising a plurality of metal bristles or wires, a back to which said bristles or wires are secured, a reinforcing-back, and a layer of insulating material interposed between said backs, means to secure said backs together, a bar or handle secured to said brush and extended upward, a guide for said bar or handle, an actuating device pivoted to said bar or handle above said guide and acting to elevate said brush when turned in one direction, and a spring to move said brush downward when said actuating device is moved into another position, substantially as described.

3. In a rail-cleaning apparatus, in combination, a cleaning device to engage the rail to be cleaned, a substantially vertical handle attached to said device, a support for said device above which said handle is extended, and means pivoted to said handle above said support to elevate said cleaning device when the said means is turned into one position and to permit said cleaning device to move downward when said means is turned into another position, said means cooperating

with said support to automatically retain the cleaning device in its raised position, until said means is positively turned, substantially as described.

5 4. In a rail-cleaning apparatus, in combination, a cleaning device to engage the rail to be cleaned, a substantially vertical handle attached to said device, a support for said device above which said handle is extended, 10 and means pivoted to said handle above said support to elevate said cleaning device when the said means is turned into one position and to permit said cleaning device to move downward when said means is turned into 15 another position, said means cooperating with said support to automatically retain the cleaning device in its raised position, until said means is positively turned, and a spring to move said cleaning device into its lowered 20 position, substantially as described.

5 5. In a rail-cleaning apparatus, in combination, a cleaning device to engage the rail to be cleaned, a substantially vertical handle attached to said device, a support for said 25 device, and a cam pivoted to said handle and having a substantially flat face to engage the said support to automatically retain said cleaning device in its elevated position, and having a second flat face to engage said support and limit the downward movement of 30 said cleaning device, substantially as described.

6. In a rail-cleaning device, in combination, a vertically-movable device adapted to 35 engage the rail to be cleaned, a handle attached to said cleaning device, a support for said cleaning device, and a device pivotally attached to said handle to elevate said cleaning device when turned into one position, and 40 to permit said cleaning device to move downward when turned into another position, said device cooperating with said support to automatically retain the cleaning device in its raised position until said device is positively 45 turned, substantially as described.

7. In a rail-cleaning device, in combination, a cleaning device adapted to engage the rail to be cleaned, a support for said cleaning device, a spring to keep said cleaning device 50 in engagement with said rail, comprising a bent wire rod having one end fastened to said support and its opposite end in sliding engagement with said cleaning device, and a lifting device acting in opposition to said 55 spring to elevate said cleaning device, substantially as described.

8. In a rail-cleaning device, in combination, a vertically-movable device provided with metal bristles or wires adapted to engage 60 the rail to be cleaned, a handle attached to said cleaning device, a support for said cleaning device, and an actuating device pivotally secured to said handle and cooperating with said support, said handle having provision

for adjustable connection with said actuating 65 device, substantially as described.

9. In a rail-cleaning device, in combination, a vertically-movable brush provided with metal bristles or wires adapted to engage the rail to be cleaned, a back piece to 70 which said bristles are secured, a reinforcing-back secured to said back piece, insulating material interposed between said back pieces, a metal bar having a flange secured to said reinforcing-back and provided with a groove, 75 a support for said brush, a hollow guide secured to said support and through which said bar extends, a lever pivoted to said bar above said support and cooperating with the latter to elevate the brush when turned into one 80 position, and a wire spring having one end secured to said support and its other or free end resting in the groove of the flange on said bar, substantially as described.

10. In a rail-cleaning device, in combination, a vertically-movable cleaning device 85 provided with a metallic member adapted to engage the rail to be cleaned, a metal handle attached to said device, means to insulate said metal handle from the metal member of 90 the cleaning device, a support for said cleaning device, and means movably connected with said handle to support said cleaning device in its elevated position, substantially as 95 described.

11. In a rail-cleaning device, in combination, a cleaning device provided with a plurality of cutting members capable of yielding under pressure, a handle attached to said device, a support for said device, a spring to 100 force said device downward, and means pivotally connected with said handle to move thereon in a vertical plane and to elevate the brush when moved into one position and automatically retain it in said position, and to 105 permit of the downward movement of said brush under the influence of the spring when moved into another position, substantially as described.

12. In a rail-cleaning device, in combination, a movable cleaning device adapted to 110 engage the rail to be cleaned and provided with a handle, a spring to keep said device in engagement with said rail, a support for said spring, and a cam pivoted to said handle 115 above said support and having substantially flat faces substantially at right angles to each other which cooperate with said support, substantially as described.

In testimony whereof we have signed our 120 names to this specification in the presence of two subscribing witnesses.

JOHN LINDALL.
PAUL WINSOR.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.