

No. 706,286.

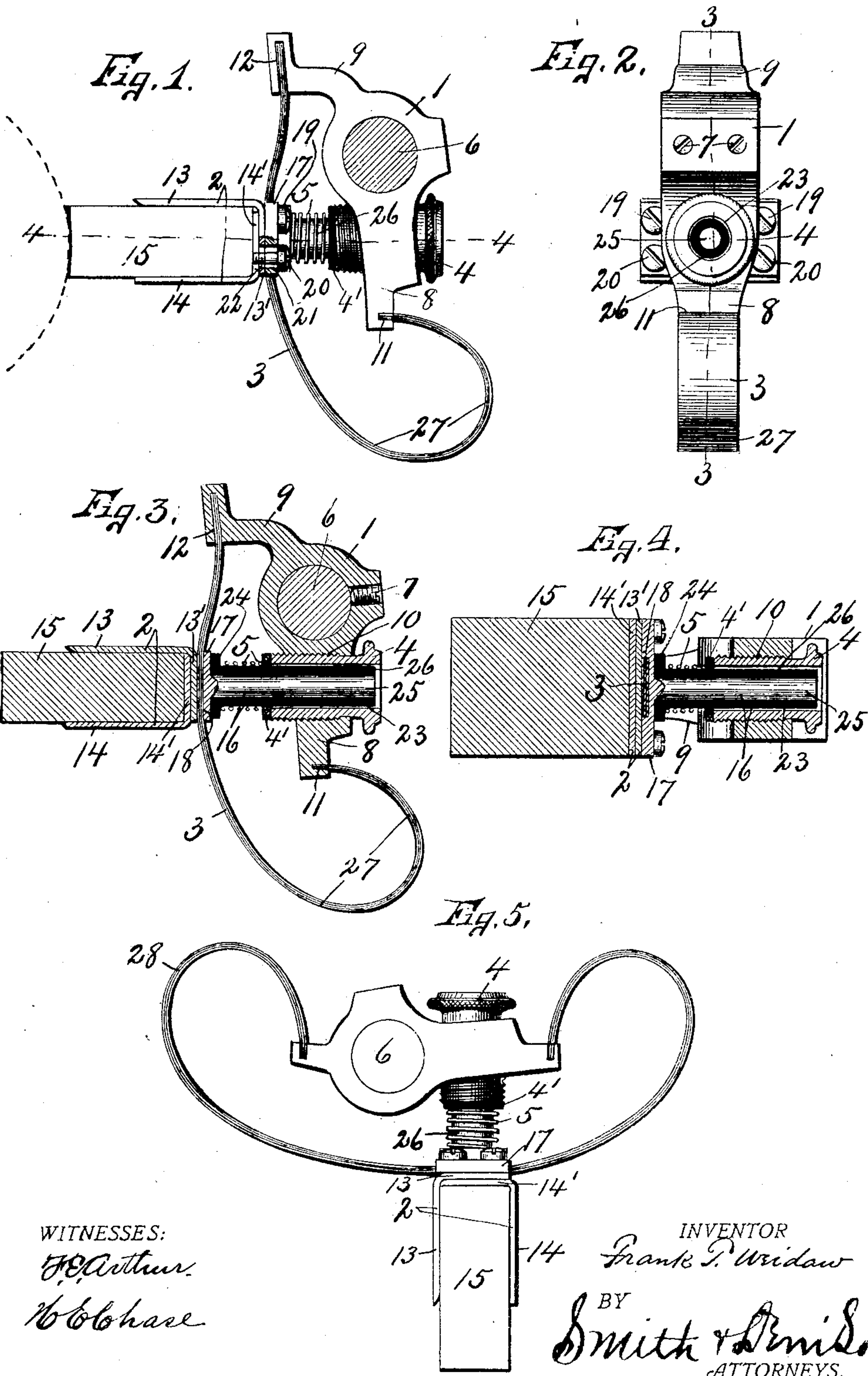
Patented Aug. 5, 1902.

F. T. WEIDAW.

BRUSH HOLDER.

(Application filed Feb. 10, 1902.)

(No Model.)



UNITED STATES PATENT OFFICE.

FRANK T. WEIDAW, OF SYRACUSE, NEW YORK.

BRUSH-HOLDER.

SPECIFICATION forming part of Letters Patent No. 706,286, dated August 5, 1902.

Application filed February 10, 1902. Serial No. 93,441. (No model.)

To all whom it may concern:

Be it known that I, FRANK T. WEIDAW, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and
5 useful Improvements in Brush-Holders, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in
10 commutator-brush holders for dynamos and other electric machines.

The object of this invention is to provide a brush-support mounted upon a suitable rock-arm and adapted to automatically force the
15 brush against the periphery of the commutator in a substantially radial line and under a light and uniform pressure.

Another object is to construct and arrange the parts of the support with as few working
20 or moving parts as possible in order to obviate any friction resulting from the automatic feed of the brush to the commutator as the brush is worn away.

A further object is to prevent the leakage
25 or shunting of the current to the moving parts of the support, and to thereby obviate the burning out or disintegration of any of the working parts by said leakage or shunting of the current.

30 A still further object is to provide a simple and practical means for adjusting the tension of the brush against the commutator while the machine is in operation.

To this end the invention consists in the
35 combination, construction, and arrangement of the parts of a brush-holder, as hereinafter fully described, and pointed out in the claims.

Referring to the drawings, Figures 1 and 2 are respectively a side elevation and an outer
40 face view of a brush-holder embodying the various features of my invention. Figs. 3 and 4 are sectional views taken, respectively, on lines 3-3, Fig. 2, and 4-4, Fig. 1. Fig. 5 is an elevation of a slightly-modified form of
45 my invention.

Similar reference characters indicate corresponding parts in all the views.

In devices of this character one of the economical requirements is to prevent sparking
50 at the contact of the brush with the commutator, which results in undue abrasion of the commutator-surface and irregular wear on

both the commutator and brush. As a result of this imperfect contact the current is often localized in the brush-supporting mechanism and is usually concentrated at the
55 junction of the working parts in which the slightest friction is produced, the friction of said parts moving one upon the other tending to induce the current to those particular
60 parts and frequently results in the burning out or disintegration of one or both of the working parts having frictional contact with each other. In my improved holder I have sought to overcome these difficulties by providing yielding means to hold the brush to
65 the commutator under a light pressure and in a line or plane substantially radial to the commutator, the specific yielding means forming an essential part of my invention. 70

Another essential feature of my invention is that the parts which move one upon the other are insulated from each other, and thereby prevent the localizing of the current and consequent burning out or disintegration of either of said parts. 75

In carrying out the objects of my invention I preferably provide a head or support 1, a brush-clamp 2, a spring 3, an adjusting member 4, and a supplemental spring 5. 80

The support 1 may be of any desired size, form, or construction and is adjustably mounted upon a rock-arm 6, which forms a part of the rocker, (not illustrated,) said rocker being of any desired construction and
85 mounted in any well-known manner to carry one or more pairs of brush-supports and to move the same concentric with the commutator. As this rocker forms no part of my present invention, it is not necessary to further illustrate or describe the same. This support, which may hereinafter be designated as a "head," may be rocked upon the arm 6 for the purpose of adjusting the brush-clamps to the desired radial position and is held in
95 its adjusted position by one or more set-screws 7, which are adapted to engage the arm 6. The support 1 is preferably provided with oppositely-extending arms 8 and 9, one of which, as the arm 8, is provided with a threaded aperture 10 for receiving the threaded sleeve 4, presently described, said arm 8 being also provided with a seat or groove 11, which receives one end of the spring 3 and 100

serves to hold the same in its operative position. The other arm 9 is provided with a seat or groove 12, in which is secured the opposite end of the spring 3.

- 5 The brush-clamp 2 preferably consists of the oppositely-arranged jaws 13 and 14, one of which is adjustable toward and away from the other for receiving various thicknesses of brushes—as, for instance, a carbon brush 15.
- 10 These clamping plates or jaws 13 and 14 are secured to a reciprocally-movable rod or bar 16, which is formed with a head or plate 17, having a central recess 18. The jaws 13 and 14 are preferably separate from each other,
- 15 each being formed of copper or equivalent conductive material and having their outer ends provided with laterally-extending flanges 13' and 14', lapping one upon the other, the flange 13' being secured to the plate 17 by
- 20 suitable screws 19, and the flange 14' is engaged by screws or equivalent fastening means 20, which are passed through slots 21 and 22, formed, respectively, in the plate 17 and flange 13', these slots permitting the lat-
- 25 eral adjustment of the jaw 14 by simply releasing the fastening-screws 20 and sliding the flange 14' upon the flange 13' to separate the jaws 13 and 14 the required distance for receiving the brush 15 and clamping the
- 30 same firmly in position, after which the screws 20 may be again tightened to hold the jaw 14 in its position.

The spring 3 may be of any desired form adapted to support the brush-clamp 2 and

35 preferably consists of a series of copper laminations arranged in close contact and following the same contour, the opposite ends of said laminated spring being secured, respectively, in the seats 11 and 12, and the intermediate portion is arranged in the recess 18

40 of the plate 17 and is clamped between said plate 17 and the adjacent flange 13' of the jaw 13, thereby firmly securing the brush-clamp to the intermediate portion of the

45 spring 3. In order to more firmly secure these parts together, I usually solder the spring 3 in the seat or recess 18 and also to the adjacent flange 13'.

The sleeve 4 is preferably adjustable independently of the head 1, being threaded externally and engaged with the threaded aperture 10, and is provided with a lengthwise aperture 23, which forms a suitable guide for the reciprocally-movable rod or bar 16.

- 55 The supplemental spring 5 preferably encircles the rod or bar 16 and is interposed between an insulating-washer 4' at the inner end of the sleeve 4 and an annular shoulder 24, formed upon the inner end of the rod 16,
- 60 whereby the tension of the brush against the surface of the commutator may be varied by the operator or attendant even when the machine is in operation. This rod or bar 16 is reciprocally movable endwise in the aperture
- 65 23 of the sleeve 4 and preferably consists of an inner metal stem 25 and an insulating-sleeve 26, surrounding the stem 25 and insu-

lating the adjacent metallic parts from each other. The annular shoulder 24 preferably forms a part of the insulating-sleeve 26, and the plate 17 forms a part of the metallic stem 25, and it is thus apparent that the supplemental spring 5 serves to hold the sleeve 26 in its operative position against the outer face of the metallic plate 17 and that when it is

75 desired to vary the force of contact of the brush 15 with the commutator the sleeve 4 may be rotated for this purpose.

In the preferred form of my invention the laminated spring 3 is formed at one end with

80 a loop 27, which affords a longer and more resilient tension to the spring, and it is obvious that the other end may also be provided with a similar loop, as 28. (Seen in the modified form at Fig. 5.)

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The operation of my invention will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that some change may be made in the detail construction and arrangement of the parts without departing from the spirit thereof. Therefore I

90 do not limit myself to the precise construction and arrangement shown and described.

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

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1. A brush-holder comprising a support, a laminated bow-spring having opposite ends secured to the support and its central portion

100 movable toward and away from said support, and a brush-clamp secured to the central portion of the spring.

2. A brush-holder comprising a support, a spring having its opposite ends secured to

105 the support and its intermediate portion movable toward and away from the support, and a brush-clamp secured to the intermediate portion of the spring.

3. A brush-holder comprising a support having a guideway, a reciprocally-movable brush-clamp guided in said way, and a spring fixed to the support at opposite sides of the guideway and its intermediate portion movable and provided with a clamp to hold the brush to the

110 commutator.

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4. A brush-holder comprising a support, a reciprocally-movable brush-clamp guided on the support, a spring having its opposite ends secured to the support at opposite sides of the

120 clamp and its intermediate portion fixed to the clamp to hold the brush to the commutator.

5. In a brush-holder, a support, a movable brush-clamp provided with a stem guided on

125 the support and a spring secured to the support at opposite sides of the stem and its intermediate portion movable and provided with a clamp to hold the spring to the commutator.

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6. In a brush-holder, a support having an adjustable member provided with a guideway, a reciprocally-movable brush-clamp guided in said way and a spring operating be-

tween the adjustable member and clamp and insulated therefrom for moving the brush-clamp away from the support toward the commutator.

5 7. A brush-holder comprising a support having an adjustable member provided with a guideway, a brush-clamp guided in said way and insulated from said member, and a spring interposed between the member and brush-

10 clamp for forcing the brush to the commutator.
8. A brush-holder comprising a support, a brush-clamp having a projecting rod, a sleeve formed of insulating material guided in the support and encircling a rod, and a spring op-

15 erating upon the clamp to force the brush to the commutator.
9. A brush-holder comprising a support having a threaded aperture, a threaded sleeve movable in the aperture, a plunger-rod mov-

20 able in the sleeve and insulated therefrom, a brush-clamp secured to the rod and a spring interposed between the sleeve and clamp and operating to force the brush to the commutator.
25 10. A brush-holder comprising a support, a reciprocally-movable brush-clamp guided in the support, a bow-spring having its ends fixed to the support and its central portion movable toward and away from said support

30 and provided with a clamp to hold the brush to the commutator, and yielding means for holding the central portion of the spring away from the support.

35 11. A brush-holder comprising a support, a threaded member adjustable on the support and provided with a guideway, a sleeve of in-

insulating material guided in said way and having one end provided with an annular shoulder, a spring interposed between the adjustable member and said annular shoulder, a 40 brush-clamp actuated by the sleeve to force the brush to the commutator and having a stem extending into the sleeve.

12. A brush-holder comprising an arm, a support adjustable on said arm and provided 45 with a threaded aperture, an adjustable threaded sleeve in the aperture, a brush-clamp having one of its jaws adjustable toward and away from the other, a rod or stem secured to the clamp and projecting into the threaded 50 sleeve, an insulating-sleeve surrounding said rod or stem, a spring interposed between the adjustable sleeve and clamp for holding the brush to the commutator and an additional spring having its opposite ends secured to the 55 support and its intermediate portion secured to the clamp.

13. In a brush-holder, a support, a laminated spring having its opposite ends secured to the support, a reciprocally-movable brush- 60 clamp guided on the support and secured to the intermediate portion of the spring, said clamp having oppositely-arranged jaws, one of which is adjustable toward and away from the other. 65

In witness whereof I have hereunto set my hand this 6th day of February, 1902.

FRANK T. WEIDAW.

Witnesses:

H. E. CHASE,

MILDRED M. NOTT.