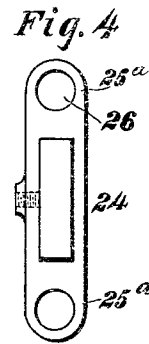
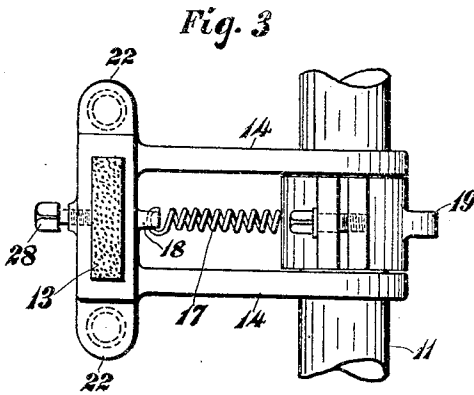
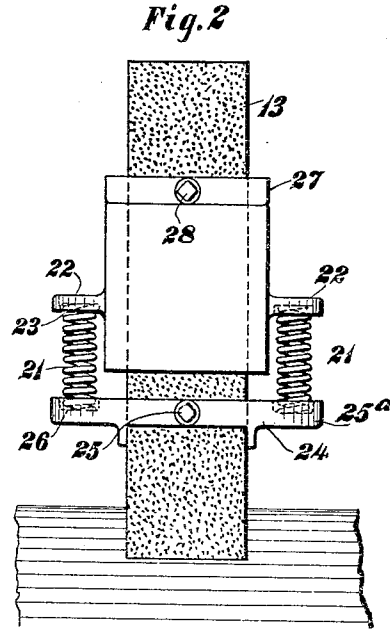
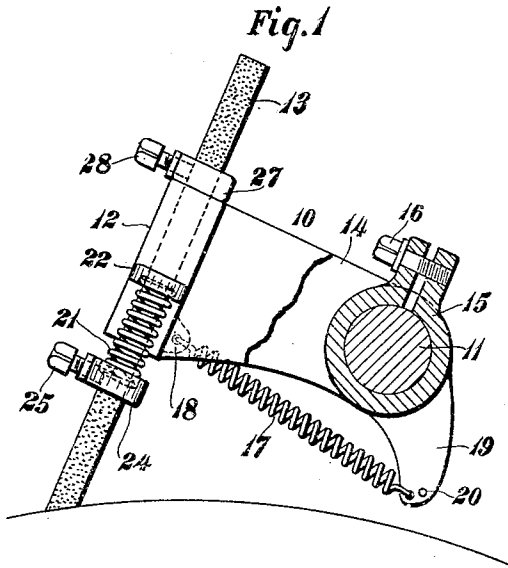


E. MATTMAN.
BRUSH HOLDER.

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1,126,546.

Patented Jan. 26, 1915.



WITNESSES

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BRUSH-HOLDER.

1,126,546.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EMIL MATTMAN, citizen of the Republic of Switzerland, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Brush-Holders, of which the following is a full, clear, and exact specification.

My invention relates to brush-holders for dynamo-electric machines.

In a dynamo-electric machine, as is well known, irregularities of the commutator or collector rings cause the brushes to be thrown from the contact surface, resulting in a disagreeable chattering and also in an injurious sparking which rapidly destroys the brushes and rotating contact members. The degree of sparking and chattering depends on the speed of rotation, increasing rapidly as the speed increases.

The object of my invention is to provide a brush holder which is so designed that the brush is held down on to the commutator or collector ring evenly and with uniform pressure, and follows closely the irregularities of the rotating contact surface even at very high speeds of rotation, so that sparking and chattering are reduced to a minimum. With this end in view I provide a pivoted spring-pressed frame or arm for carrying the brush, and resiliently or yieldingly mount the brush on said frame. In this case, the brush frame is pressed toward the commutator by a helical tension spring, although any other type of pressure device may be employed, and in the preferred form of my invention, as shown in the drawings, a compression spring is mounted between the brush and frame, the brush being provided with a sleeve or collar on which one end of the spring bears, and the frame being provided with a support for the other end of the spring, so that, when the main pressure spring is in action and the brush engages the commutator or collector ring, the spring between the brush and frame is slightly compressed whereby when the frame is rocked away from the rotating contact surface, the compression spring moves the brush relatively to the frame maintaining the brush in engagement with the rotating surface.

My invention consists in the combinations and arrangements of parts described in the

specification and set forth in the appended 55 claims.

For a better understanding of my invention reference is had to the accompanying drawings in which—

Figure 1 is a side elevation of my improved brush holder mounted on a brush stud, parts being in section and broken away; Fig. 2 is a front elevation of the same; Fig. 3 is a plan view of the same; and Fig. 4 is a detail of the collar or sleeve 60 mounted on the brush. 65

Referring now to the figures of the drawing I have shown at 10 a brush frame mounted on a brush stud 11. The frame, which in this case consists of a metal casting, is provided at one end with a brush guide or socket 12 to receive the brush 13, and with two parallel arms 14, the outer free ends of which are provided with aligned openings through which the brush stud 75 loosely passes. The frame is held in position, longitudinally of the stud, by means of an adjustable split collar 15, having outwardly extending lugs through which passes the tightening screw or bolt 16. 80

At 17 is shown the main pressure spring for holding the brush yieldingly upon the rotating member which may be a commutator or collector ring. The spring 17, which, in this case is a helical tension spring, 85 is fastened at one end to a perforated lug 18 on the rear side of the brush socket and at its other end to a downwardly extending lug 19 on the normally stationary split collar 15. Any desired means may be provided 90 for adjusting the tension of the spring. In this instance the lug 19 is provided for this purpose with several perforations 20 in any one of which the end of the spring may be inserted. The brush instead of being fixed 95 to the pivoted member 10 as in a usual construction, is yieldingly or resiliently mounted thereon so that a slight relative movement can take place. This result is obtained in this instance by interposing between the 100 brush and the socket one or more helical springs 21, two being here shown, in such a manner that when the brush is pressed downward on to the rotating surface the springs are slightly compressed. As here 105 shown the brush socket is provided on opposite sides with lugs or projections 22 having cup-shaped depressions 23 to receive

the upper ends of springs 21. Mounted on the brush a short distance below the brush socket is a collar or sleeve 24 which can be adjustably secured to the brush in any desired position by a set screw 25. The collar or sleeve is provided on opposite sides with projections 25^a, having on their upper sides cup-shaped depressions 26 similar to, and in alinement with, the depressions in the lugs 22 on the brush-socket. The lower ends of the springs are located in the depressions 26. The downward movement of the brush relatively to the socket is, in this case, limited by a sleeve or collar 27 which may be adjustably secured to the brush in any desired position by a set screw 28.

It is seen that when the brush is pressed against the rotating member by the spring 17, the springs 21 are slightly compressed, and in case the brush frame is rocked away from the rotating surface on account of irregularities thereon, the springs 21 either prevent the brush from leaving the surface, or quickly restore the brush thereto if the contact has been broken. Thus sparking and chattering are reduced to a minimum.

I do not wish to be confined to the details shown, as I have shown and described only the embodiment of my invention which at present seems the best and most practicable, and I aim in my claims to cover all modifications which do not involve a departure from the spirit and scope of my invention.

What I claim is:—

1. In a brush holder, the combination of a spring-mounted brush frame, a brush mounted in said frame and movable relatively thereto, a collar on said brush for limiting the movement of said brush relatively to the frame in one direction, a second collar on said brush, and a spring between said second collar and the frame for biasing said brush in the aforesaid direction.

2. In a brush holder, a pivoted frame free to move in either direction, an abutment, a spring between said abutment and said frame for yieldingly urging said frame in one direction, a recessed portion at one end of said pivoted frame, a brush mounted to

slide therein, a collar adjustably mounted on said brush, said collar being provided with a projection forming a spring abutment and said brush receiving portion of said frame being provided with a portion forming a spring abutment, and a compression spring between the abutments on said collar and said brush receiving portion for urging said brush in one direction relatively to said frame but permitting a slight movement in the opposite direction.

3. In a brush holder, a pivoted brush supporting arm free to swing in either direction, means for resiliently urging said arm in one direction, a brush slidably mounted in said arm, a spring abutment adjustably secured to said brush, a spring abutment on said brush supporting arm, and a compression spring between said abutments for resiliently urging said brush in one direction relative to said pivoted arm.

4. In a brush holder, a movable brush supporting arm free to move in either direction and resiliently biased in one direction, said arm being provided with a brush receiving portion and portions adjacent said brush receiving portion adapted to form spring seating abutments, a brush mounted to slidably engage said brush receiving portion and provided with adjustable spring seats, and springs mounted in the seats of the supporting arm and said brush and acting to resiliently urge said brush in one direction relative to said supporting arm.

5. In a brush holder, the combination of a spring-mounted brush frame, a brush mounted in said frame and movable relatively thereto, means for limiting movement of said brush relative to said frame in one direction, an abutment on said brush external of the brush receiving portion of said frame, and a spring between said abutment and said frame for biasing said brush in the aforesaid direction.

In testimony whereof I affix my signature, in the presence of two witnesses.

EMIL MATTMAN.

Witnesses:

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