

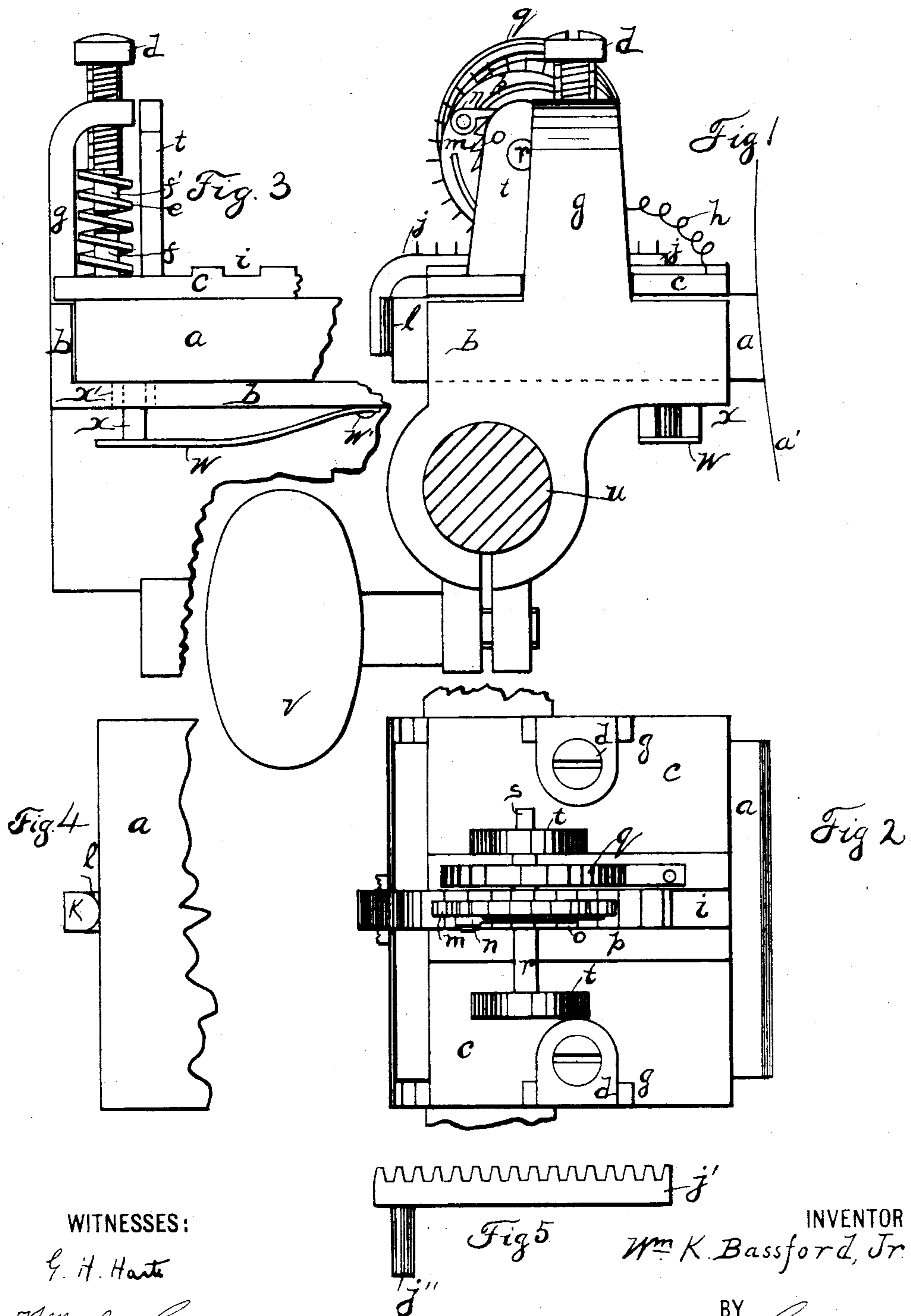
No. 610,620.

Patented Sept. 13, 1898.

W. K. BASSFORD, JR.
COMMUTATOR BRUSH HOLDER.

(Application filed Feb. 1, 1898.)

(No Model.)



WITNESSES:

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WILLIAM K. BASSFORD, JR., OF BOUND BROOK, NEW JERSEY.

COMMUTATOR-BRUSH HOLDER.

SPECIFICATION forming part of Letters Patent No. 610,620, dated September 13, 1898.

Application filed February 1, 1898. Serial No. 668,735. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM K. BASSFORD, Jr., a citizen of the United States of America, and a resident of Bound Brook, in the county of Somerset and State of New Jersey, have invented certain new and useful Improvements in Commutator-Brush Holders, of which the following is a specification.

The invention relates to a brush-holder for maintaining the brush in proper contact with the commutator of a dynamo or motor.

The invention is designed for the purpose of holding a carbon brush of rectangular cross-section and preferably electroplated upon its lateral surface or surfaces in contact with the electric conductors.

Another feature of the invention consists of a pressure-plate held by springs against the upper surface of the carbon brush, which lies loosely in a rectangular channel and which is adapted to be forced through the channel while in sliding contact therewith and with the pressure-plate. The result secured by this construction is the non-heating of the brush during use, because the large amount of surface of metal in contact with the carbon brush affords a very low resistance. The brush is somewhat loose laterally in the channel, and the pusher has a small rounded surface bearing upon the rear of the brush, so that there may be provided a slight amount of rolling contact. Consequently the brush may accommodate itself to the commutator and be in contact therewith, not simply on one corner, but throughout the whole length of the front surface of the brush. The pusher for the brush consists of a rack provided with the said curved surface and movable lengthwise with the brush in a groove furnished upon the outside of said pressure-plate, along which the rack is longitudinally movable by a mechanism consisting of a pinion which is driven by a spring under tension.

Drawings are annexed showing all the details of the mechanical construction.

Figure 1 is a side elevation of the brush-holder with its brush. The supporting-pin to which the brush-holder is clamped is shown in cross-section. Fig. 2 is a plan of that which is represented in Fig. 1. Fig. 3 is an end ele-

vation of about one-half of the device, some of the parts being omitted. Fig. 4 is an inverted plan of the carbon block or brush and the pusher having a curved surface in contact therewith. Fig. 5 is a modified pusher or follower.

a is the carbon block.

b is the base-plate, having a rectangular channel for supporting the carbon block, and the width of the channel is slightly greater than the width of the block *a*, while the thickness of the block *a* is greater than the depth of the channel.

c is a pressure-plate resting upon the top of the block *a* and pressed thereon by helical springs, adapted to be regulated in tension by screws *d*, near opposite edges of the plate *c*. These springs are alike and are both held in a similar manner. One of the springs is shown at *e*, the lower end resting upon the plate *c* and the lower portion surrounding an upright pin *f*, projecting from the plate *c*. The upper end rests against a shoulder on the end of the screw *d*, while the upper portion of the spring *e* surrounds the pin *f'*, extending downward from the screw *d*. By turning the screw *d* the pressure of the plate *c* upon the block *a* may be gradually and sensitively regulated.

g represents upright posts for supporting the screws *d* and located upon the opposite sides of the base-plate *b*. They serve also to prevent any sliding motion of the pressure-plate *c*, which has grooves containing said posts; but, as before intimated, the plate *c* is capable of motion up and down on account of the springs *e*. One or more flexible wires may connect the plate *c* to the post *g* for insuring a good contact with the outside circuit.

i is a groove in the plate *c* parallel to the length of the block *a* and containing a rack *j*, one end *k* of which is bent downward and provided with a cylindrical surface *l*, which bears upon the rear of said block. The forward motion or a movement to the right of the rack *j* will evidently move the block *a* to the commutator *a'* of the machine and will continue to move the block as its front end wears away. Furthermore, the block *a* will press squarely upon the commutator because

of the two facts that the said block is laterally loose in its channel and that the propelling-surface *l* is rounded.

Gearing with the rack *j* is a pinion *m*, having the usual pawl *n* and ratchet-wheel *o*, spring-wire *p* for holding down the pawl *n*, and the spiral spring *q* for driving the pinion, the elements *m n o p q* being carried upon an arbor *r*, having a stem *s* for receiving a key to wind up the spring *q*. The arbor is carried in bearings in the standards *t*, which are cast upon the plate *c*.

In order to operate the device, the same is placed upon and clamped to the pin *u* by means of the thumb-screw *v*. The screws *d* are then adjusted temporarily, so that the block *a* may be moved along by one's finger. The surface *l* is then brought into contact with the rear of the block *a*. A key is applied to the stem *s* and the spring wound up until the block is forced against the commutator with the desired pressure. The screws *d* may then be again adjusted more or less, and so may also the spring *q*, which may be unwound by applying a key and permitting it to turn while the rack *j* is entirely removed from the device. On the other hand, the spring *q* is wound up by a key like a clock, at the same time holding one's finger upon the rack *j* to hold it in position.

The remaining details of the device are as follows: Occasionally the commutator is to be cleaned or for some other reason it is desired to prevent the block *a* from touching the commutator. Of course this could be prevented by unwinding the spring *q*; but I have devised means much more convenient of operation, the same consisting of a spring *w*, held at one end by a spring *w'* to the base-plate *b*, while the other end carries a pin *x*, entering a slot *x'* in the plate *b*. The pressure of the spring *w* continually forces the pin *x* against the under side of the block *a*. When it is desired to remove the block *a* from the commutator, it is forced back by any convenient means and until the pin *x* escapes the end of the block *a*, and thereby locks it in its off position. Upon forcing the pin *x* downward again the block *a* returns to the commutator.

The whole device may in all its operations

be manipulated without necessarily stopping the dynamo or motor. The reason of this is evident from the description and drawings.

An advantage following from the accommodating feed is the wearing away of the block throughout its whole surface, which is intended to be in contact with the commutator. Greater efficiency is thereby obtained because of a minimum resistance between the commutator and block *a*.

It will be noticed that the motor, consisting of the rack *j*, pinion *m*, and the accompanying elements, is carried upon the pressure-plate, thereby enabling the construction to be free from intricacy, to be easily accessible, and to add to the weight of the plate for assisting the springs *e* to produce the proper pressure upon the conducting-block *a*.

In Fig. 5 the pusher is modified, consisting of a straight rack *j*, having a pin *j''* to take the place of the downwardly-bent portion of the rack *j*.

I am aware of the Bayles commutator-brush holder protected by Letters Patent of September 12, 1893, No. 504,901, with which I am practically acquainted and which I believe I have improved in the manner set forth herein.

I claim as my invention—

1. A commutator-brush holder consisting of the combination of a base-plate, having a channel for containing the brush, a pressure-plate upon the brush to hold the same in the channel, a pusher bearing upon the end of the brush, and a motive device carried by the pressure-plate for driving the pusher.

2. The combination with a commutator, of an electric conducting-block, a pusher for driving the block against the commutator, and an automatic device for retaining the block from the commutator against the action of the pusher.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 31st day of January, 1898.

WILLIAM K. BASSFORD, JR. [L. S.]

Witnesses:

EDWARD P. THOMPSON,
AN. J. PROVOST.