June 13, 1933. W. E. SMITH 1,913,617

ADJUSTABLE CONTACT FINGER

Filed Aug. 13, 1932

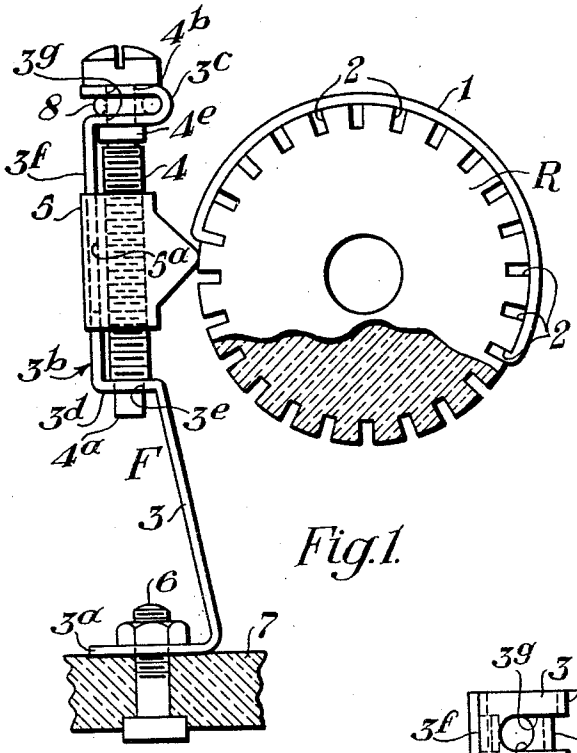


Fig.1.

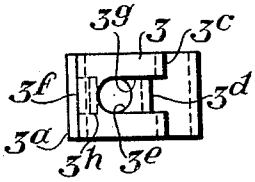


Fig.3.

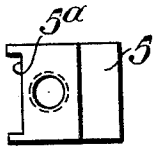


Fig.4.



Fig.5.

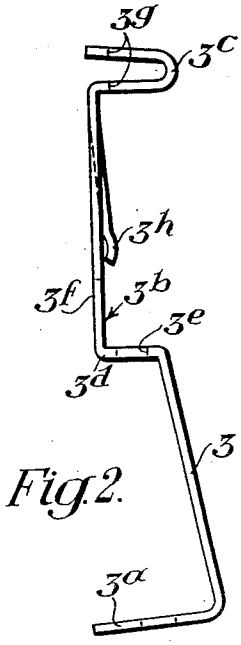


Fig.2.

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UNITED STATES PATENT OFFICE

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ADJUSTABLE CONTACT FINGER

Application filed August 13, 1932. Serial No. 628,685.

My invention relates to adjustable contact fingers.

Contact fingers embodying my invention are particularly suitable for, although in no way limited to, use in circuit controllers of the drum type in which contact bands or segments are attached to a rotatable member in any one of a plurality of positions each spaced a predetermined angular distance apart, and in which it is desirable to be able to complete electrical circuits in angular positions of the rotatable member falling between those which can be obtained by varying the positions of the bands on the rotatable member.

I will describe one form of contact finger embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawing, Fig. 1 is a view, partly in side elevation and partly sectioned, showing one form of contact finger embodying my invention, applied to a circuit controller of the drum type. Fig. 2 is a side view of the member 3 forming part of the finger illustrated in Fig. 1. Fig. 3 is a top plan view of the member 3 forming part of the finger illustrated in Fig. 1. Fig. 4 is a top plan view of the contact block 5 forming part of the finger illustrated in Fig. 1. Fig. 5 is a top plan view of the locking ring 8 forming part of the finger illustrated in Fig. 1.

Similar reference characters refer to similar parts in each of the several views.

Referring to the drawing, the reference character R designates a roller or cylinder forming part of a circuit controller of the drum type, which roller is adapted to be rotated about its longitudinal axis through any angle that may be desired. The roller R is of insulating material and carries a contact band 1. This contact band may be secured to the roller in any preferred manner, but as here shown, it is secured to the roller in a selected one of a plurality of positions each spaced a predetermined angular distance apart, by bending down the ends of the band and inserting the ends thus bent down into longitudinal slots 2 which are cut into the surface of the roller for the purpose of tightly gripping the ends of the band to hold the band firmly in place in the desired position.

Cooperating with the contact band 1 is an adjustable contact finger F embodying my invention. As here shown, this contact finger comprises, in general, a suitable supporting member 3 having journalled therein an adjusting screw 4, upon which a contact block 5 is mounted in such manner that it will move along the axis of the adjusting screw in response to rotation of the screw. The supporting member 3, in the form here shown, consists of a strip of resilient electrical conducting material such as phosphor bronze, bent at its lower end to form a heel portion 3^a which is disposed at an acute angle with the body of the strip, and provided at its upper end with a U-shaped portion 3^c which is connected with the body of the strip by means of an integral L-shaped offset portion 3^b. The heel portion 3^a is apertured to receive a terminal post 6 by means of which the strip may be attached to a suitable insulating terminal board 7. The one leg 3^d of the L-shaped offset portion 3^b is disposed at an obtuse angle with the main part of the strip, and is provided with a hole 3^e which receives the adjusting screw with some clearance at a non-threaded portion 4^a of reduced diameter formed on the lower end of the screw. The other leg 3^f of the L-shaped offset portion 3^b extends parallel to the adjusting screw 4 in spaced relation thereto, and cooperates with a longitudinal slot 5^a (see Fig. 4) formed in the side of the contact block 5 to prevent the contact block from turning when the adjusting screw is rotated, as will be readily understood from an inspection of the drawing. The U-shaped portion 3^c of the strip 3 is so disposed that both of its sides extend substantially parallel to, and in vertical alignment with, the leg 3^d of the L-shaped portion 3^b when the parts are assembled, as shown in Fig. 1, but before the parts are assembled, the upper side of this U-shaped portion is inclined away from the lower side at a slight angle, as shown in Fig. 2, the reason for this being made clear presently. Provided in the U-shaped portion 3^c is a slot 3^g (see Fig. 3), which slot extends

into both sides of the U-shaped portion at their joined ends, and which aligns at its inner end with the hole 3^d. This slot receives the adjusting screw 4 at a turned-down portion 4^b of reduced diameter formed between the head of the screw and a shoulder 4^c which is spaced from the head of the screw. The parts are so proportioned that when the reduced portion 4^b of the adjusting screw 4 is within the slot 3^e, the upper sides of the U-shaped portion 3^c will be forced to the position in which it is substantially parallel to the lower side, thus causing the sides of the U-shaped portion to exert a frictional force on the adjusting screw which prevents undesired turning of the screw. The adjusting screw is held in place in the slot 3^e by means of a resilient open ring 8 (see Fig. 5) which is assembled onto the turned-down portion 4^b between the sides of the U-shaped portion 3^c and pinched together to retain it in position. The contact block 5 is, of course, screw-threaded to receive the adjusting screw, and it will be apparent with this construction that since rotation of the contact block in response to rotation of the adjusting screw is prevented by the slot 5^a in the block 5 cooperating with the leg 3^f of the L-shaped offset portion, rotation of the adjusting screw will cause the contact block to move upwardly or downwardly along the axis of the screw, depending upon the direction in which the screw is rotated. It will also be apparent that when the contact block is moved upwardly or downwardly along the axis of the screw, the angular positions of the roller R in which the contact formed by the contact band 1 and the contact block 5 become closed, will be varied, thus permitting this contact to become closed in different angular positions of the roller from that which would be possible if a fixed contact finger were provided in place of the adjustable contact finger embodying my invention. In order to insure that good electrical contact will be maintained between the support 3 and the contact block 5, a portion of the leg 3^f is punched out and bent inwardly toward the contact block to form a tongue 3^h which engages the contact block at the bottom of the slot 5^a in the block.

Although I have herein shown and described only one form of adjustable contact finger embodying my invention, it is understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim is:

1. An adjustable contact finger comprising an adjusting screw, a strip of resilient conducting material bent to form portions which act as bearings for said adjusting screw, and a contact block screwed onto said adjusting screw and provided with means which cooperates with said strip to cause said block to move along the axis of said adjusting screw in response to rotation of said adjusting screw.

2. An adjustable contact finger comprising a strip of resilient conducting material provided with an L-shaped offset portion which terminates at one end in a U-shaped portion, the sides of which extend substantially parallel to and in alignment with one leg of said offset portion, said one leg of said offset portion being provided with a hole and said U-shaped portion being provided with a slot extending into its sides at their closed ends, an adjusting screw having a portion adjacent the head of the screw journalled in the slot in said U-shaped portion and a portion at its opposite end journalled in the hole in said one leg of said offset portion, an annular flange formed on said screw on the opposite side of said U-shaped portion from said head, a ring surrounding said screw between the sides of said U-shaped portion to hold said screw in place in said U-shaped portion, a contact block screwed onto said adjusting screw, and means for preventing rotation of said contact block in response to rotation of said adjusting screw while permitting movement of said contact block along the axis of said screw.

3. An adjustable contact finger comprising a strip of resilient conducting material bent to form a heel portion at one end which extends at an acute angle with the body of the strip and a U-shaped portion at the other end which is connected with the body portion by an L-shaped offset portion having one leg extending parallel to and in alignment with the sides of said U-shaped portion and at an obtuse angle with said body portion, said one leg being provided with a hole and said U-shaped portion being provided with a slot which extends into both sides of said U-shaped portion at their joined ends and which slot aligns at its inner end with said hole, a screw having a turned-down portion adjacent its head journalled in said slot and another turned-down portion at its opposite end journalled in said hole, a ring surrounding the turned-down portion of said screw between the sides of said offset portion to fasten said screw in place in said slot, and a contact block screwed onto said screw between said U-shaped portion of said strip and said one leg of said offset portion and provided with a slot which slidably receives the other leg of said offset portion, whereby said block is constrained to move along the axis of said screw in response to rotation of said screw.

4. An adjustable contact finger comprising a strip of resilient conducting material provided with an L-shaped offset portion which terminate at one end in a U-shaped

portion the sides of which extend substantially parallel to and in alignment with one leg of said offset portion, said one leg of said offset portion being provided with a hole and said U-shaped portion being provided with a slot extending into its sides at their closed ends, an adjusting screw having a portion adjacent the head of the screw journalled in the slot in said U-shaped portion and a portion at its opposite end journalled in the hole in said one leg of said offset portion, an annular flange formed on said screw on the opposite side of said U-shaped portion from said head, and spaced from said head such a distance that the sides of said U-shaped portion will frictionally engage said screw at said head and said flange to prevent undesired turning of said screw, a ring surrounding said screw between the sides of said U-shaped portion to hold said screw in place in said U-shaped portion, a contact block screwed onto said adjusting screw, and means for preventing rotation of said contact block in response to rotation of said adjusting screw while permitting movement of said contact block along the axis of said screw.

5. An adjustable contact finger comprising a strip of resilient conducting material bent to form a heel portion at one end which extends at an acute angle with the body of the strip and a U-shaped portion at the other end which is connected with the body portion by an L-shaped offset portion having one leg extending parallel to and in alignment with the sides of said U-shaped portion and at an obtuse angle with said body portion, said one leg being provided with a hole and said U-shaped portion being provided with a slot which extends into both sides of said U-shaped portion at their joined ends and which slot aligns at its inner end with said hole, a screw having a turned-down portion adjacent its head journalled in said slot and another turned-down portion at its opposite end journalled in said hole, a ring surrounding the turned-down portion of said screw between the sides of said offset portion to fasten said screw in place in said slot, a contact block screwed onto said screw between said U-shaped portion of said strip and said one leg of said offset portion and provided with a slot which slidably receives the other leg of said offset portion, and a tongue provided on said other leg of said L-shaped offset portion and bent into frictional engagement with said contact block to insure good electrical contact between said contact block and said strip.

In testimony whereof I affix my signature.

WILLIAM E. SMITH.