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## PATENT SPECIFICATION



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### PROVISIONAL SPECIFICATION

#### Improvements in or relating to Twist Grip Controls for Bowden Transmission Mechanism

We, AMAL LIMITED, a British Company, CHARLES LESLIE BINKS, a British Subject, and THOMAS ARTHUR TISDELL, a British Subject, all of Holford Works, 5 Holford Drive, Perry Barr, Birmingham, do hereby declare the nature of this invention to be as follows:—

This invention relates to handle-bar twist grip controls for transmission mechanism of the kind in which a Bowden or like wire is connected through a cable attachment to a rotary sleeve or drum operated by the hand grip.

In handle-bar twist grip controls of this type, the rotary sleeve carrying the hand grip is usually retained in position on the handle-bar, against longitudinal movement, by means of a collar or shoulder which is accommodated within a groove provided in a fixed casing which is clamped to the handle-bar. This construction, however, necessitates the casing being split to facilitate assembly with a result that comparatively large and unsightly lugs with their attendant clamping bolts have to be used.

The object of our invention is to provide an improved twist grip of the kind referred to in which the whole assembly is of neat and compact form and which can be constructed in a simple and economical manner. A further object of our invention is to provide an improved twist grip control which can be readily attached in position on the handle-bar and in which the frictional resistance to angular movement of the said twist grip can be readily adjusted.

According to our invention, in a twist grip control in which the inner wire of a Bowden or like mechanism is attached to and adapted to wind round part of the periphery of a rotary sleeve or the like, the longitudinal movement of the said sleeve is prevented by means of a pin or the like which is secured to a fixed casing and which engages a circumferential slot formed in the sleeve. Part of the fixed casing may be adapted to house the end of the outer Bowden mechanism and the arrangement is preferably such that one end of the pin is located in a hole in the handle-bar so that the said pin can be

screwed to actuate a frictional device which imparts the required frictional resistance to the angular movement of the twist grip.

One form of our invention is illustrated in the accompanying drawing in which:—

Figure 1 is a longitudinal sectional elevation through a twist grip control constructed in accordance with our invention.

Figure 2 is a cross sectional elevation through the line A—A of Figure 1.

Figure 3 is a part sectional perspective view of the twist grip control with the principal working parts separated from one another to illustrate more clearly their configuration.

Referring to the drawings, the numeral 1 designates the end tubular portion of a handle-bar, upon which is mounted a casing 2 which is affixed in position by means of set screws 3. The casing 2 is counterbored at 4 to accommodate the end portion 5 of a rotary sleeve 6 mounted on the handle-bar 1. The casing 2 has a projecting portion which is adapted to house a split collar 7 which forms the abutment for the end of the outer Bowden cable 8. A portion of the end 5 of the rotary sleeve is cut and bent back to form a connection 9 which engages with a terminal nipple 10 of the inner Bowden cable 11.

The casing 2 is also provided with a tapped boss 12 which accommodates a screwed pin 13 having a plain portion 14 which is adapted to register with a circumferential slot 15 in the rotary sleeve 6 and also with a hole 16 in the handle-bar 1. The circumferential slot 15 and its attendant pin 13 while permitting a limited rotary movement of the sleeve 6 prevents the latter from being moved longitudinally. The usual type or rubber grip 17 is affixed to the outside of the rotary sleeve 6 and a twisting movement imparted to the sleeve causes the inner Bowden cable 11 to be wound round part of the periphery of the end portion 5 to open a throttle valve or other mechanism connected to the remote end of the Bowden control.

In order to provide the required frictional resistance to the angular movement of the twist grip, a spring 18 is interposed between the end of the screwed portion of the pin 13 and the periphery of the end 5 of the sleeve. The degree of tightness of the twist grip can be readily adjusted by turning the pin 13 by the slotted head 19 and the pin can be locked in the required position by means of a lock-nut 20.

It will be observed that not only does the pin 13 serve to form the adjusting means for tightening the twist grip and retaining same in position on the handle-bar, but it also provides additional securing means for the casing 2.

Dated the 18th day of November, 1935.

WILLIAM MORRIS,  
Solicitor for the Applicants.

## COMPLETE SPECIFICATION

### Improvements in or relating to Twist Grip Controls for Bowden Transmission Mechanism

We, AMAL LIMITED, a British Company, CHARLES LESLIE BINKS, a British Subject, and THOMAS ARTHUR TISDELL, a British Subject, all of Holford Works, Perry Barr, Birmingham, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to twist grip controls of the kind in which the inner wire of a Bowden mechanism is attached to a rotary sleeve or drum, the arrangement being so adapted that on operating the twist grip the said inner wire is caused to wind around at least part of the periphery of the sleeve or drum.

In handle-bar twist grip controls of this type, the rotary sleeve carrying the hand grip is usually retained in position on the handle-bar, against longitudinal movement, by means of a collar or shoulder which is accommodated within a groove provided in a fixed casing which is clamped to the handle-bar. This construction, however, necessitates the casing being split to facilitate assembly with a result that comparatively large and unsightly lugs with their attendant clamping bolts have to be used.

The object of our invention is to provide an improved twist grip of the kind referred to in which the whole assembly is of neat and compact form and which can be constructed in a simple and economical manner. A further object of our invention is to provide an improved twist grip control which can be readily attached in position on the handle-bar and in which the frictional resistance to angular movement of the said twist grip can be readily adjusted.

According to the present invention, in a twist grip control of the kind described longitudinal movement of the rotary sleeve or drum is prevented by means of

a pin or the like which is secured to a fixed casing and which engages in a circumferential slot in the said sleeve or drum. Part of the fixed casing may be adapted to house the end of the outer Bowden mechanism and the arrangement is preferably such that one end of the pin is located in a hole in the handle-bar so that the said pin can be screwed to actuate a frictional device which imparts the required frictional resistance to the angular movement of the twist grip.

One form of our invention is illustrated in the drawings accompanying the Provisional Specification, in which:—

Figure 1 is a longitudinal sectional elevation through a twist grip control constructed in accordance with our invention.

Figure 2 is a cross sectional elevation through the line A—A of Figure 1.

Figure 3 is a part sectional perspective view of the twist grip control with the principal working parts separated from one another to illustrate more clearly their configuration.

Referring to the drawings, the numeral 1 designates the end tubular portion of a handle-bar, upon which is mounted a casing 2 which is affixed in position by means of set screws 3. The casing 2 is counterbored at 4 to accommodate the end portion 5 of a rotary sleeve 6 mounted on the handle-bar 1. The casing 2 has a projecting portion which is adapted to house a split collar 7 which forms the abutment for the end of the outer Bowden cable 8. A portion 9 of the end 5 of the rotary sleeve is cut and bent back to form a connection which engages with a terminal nipple 10 of the inner Bowden cable 11.

The casing 2 is also provided with a tapped boss 12 which accommodates a screwed pin 13 having a plain portion 14 which is adapted to register with a circumferential slot 15 in the rotary

sleeve 6 and also with a hole 16 in the handle-bar 1. The circumferential slot 15 and its attendant pin 13 while permitting a limited rotary movement of the sleeve 6 prevents the latter from being moved longitudinally. The usual type or rubber grip 17 is affixed to the outside of the rotary sleeve 6 and a twisting movement imparted to the sleeve causes the inner Bowden cable 11 to be wound round part of the periphery of the end portion 5 to open a throttle valve or other mechanism connected to the remote end of the Bowden control.

15 In order to provide the required frictional resistance to the rotation of the twist grip, a spring 18 is interposed between the end of the screw-threaded portion of the pin 13 and the periphery of the end 5 of the sleeve. This spring consists of a slotted flexible strip doubled over so that the two leaves are approximately concentric, the inner leaf being of such a curvature that it registers with the periphery of the sleeve. The degree of tightness of the twist grip can be readily adjusted by turning the pin 13 by the slotted head 19 and the pin can be locked in the required position by means of a locknut 20.

It will be observed that not only does the pin 13 serve to form the adjusting means for tightening the twist grip and retaining same in position on the handle-bar, but it also provides additional securing means for the casing 2.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A twist grip control of the kind

described, in which longitudinal movement of the rotary sleeve or drum is prevented by means of a pin or the like which is secured to a fixed casing and which engages a circumferential slot formed in the said sleeve or drum. 45

2. A twist grip control as claimed in Claim 1, in which the pin is located in screw-threaded engagement within an aperture in the fixed casing, and extends through a hole in the handle-bar, and in which the tension of frictional means for providing the necessary resistance to rotation of the twist grip is adjusted by radial displacement of the pin. 50

3. A twist grip control as claimed in Claim 2, in which only the part of the pin adapted to engage with the fixed casing is screw-threaded, and the frictional means comprise a slotted flexible strip doubled over and interposed between the end of the screw-threaded portion of the pin and the periphery of the end of the rotatable sleeve. 55

4. A twist grip control as claimed in Claim 1, 2 or 3, in which the circumferential slot and its attendant pin are adapted to limit the rotary movement of the sleeve. 60

5. A twist grip control as claimed in any of the preceding claims, in which part of the fixed casing houses the end of the Bowden mechanism, said casing being secured to the handle-bar by means of set screws or the like. 65

6. An improved twist grip control, substantially as hereinbefore described with reference to the drawings accompanying the Provisional Specification. 70

Dated the 18th day of November, 1936.

WILLIAM MORRIS,  
Solicitor for the Applicants.

