May 7, 1963 R. M. SAXBY 3,088,320

AUTOMATIC CHOKE ADJUSTING MEANS

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FIG.1.

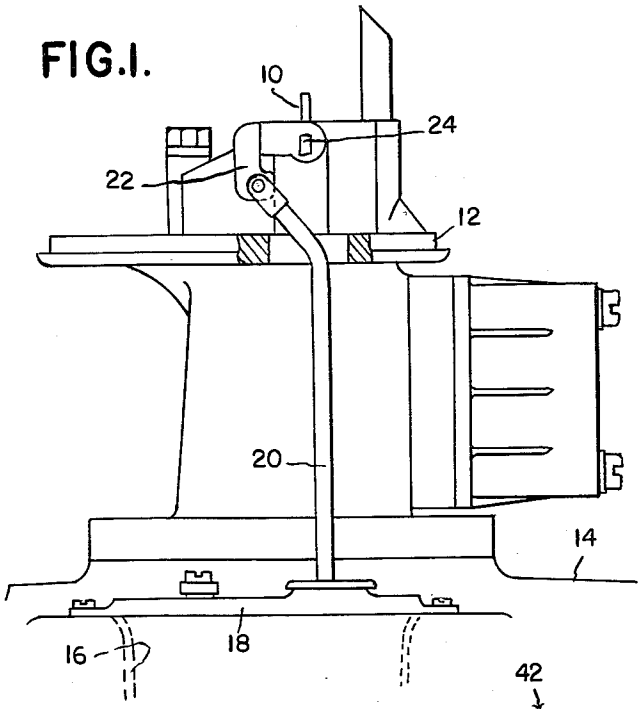


FIG.3.

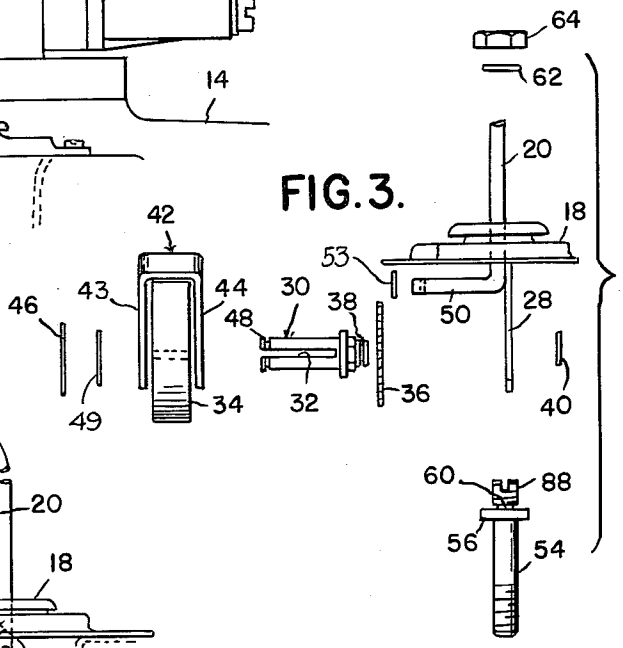
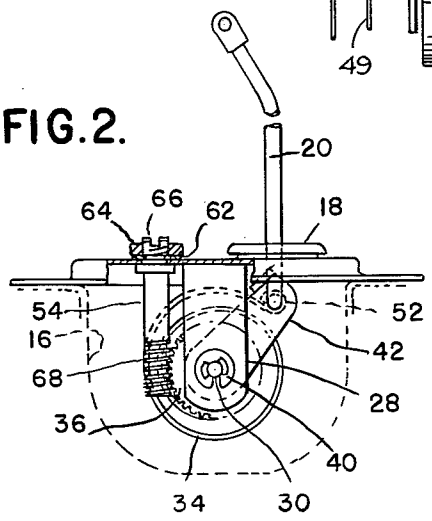


FIG.2.



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FIG.5.

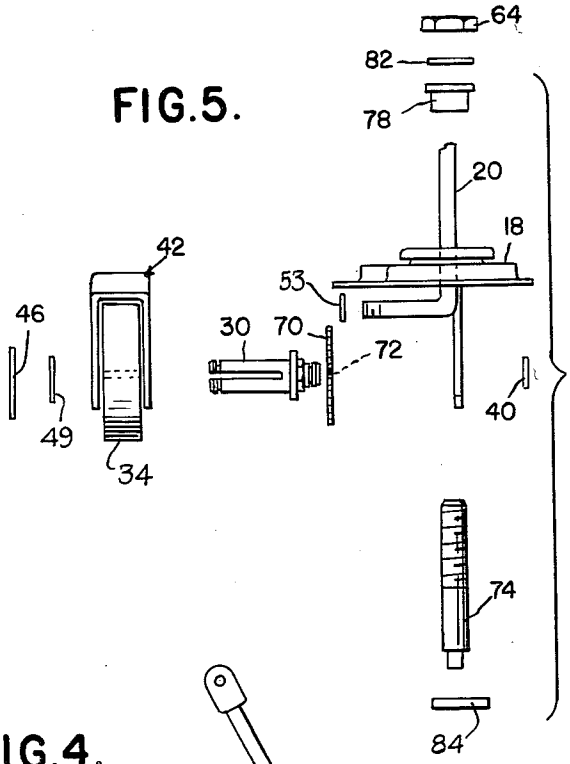
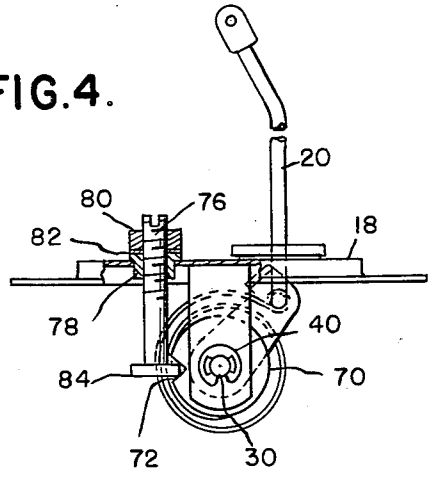


FIG.4.



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AUTOMATIC CHOKE ADJUSTING MEANS

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The present invention relates to automatic choke adjusting means, and more particularly, to adjustable thermostat mechanism including improved adjusting means therefor.

It is an object of the present invention to provide adjustment means for an automatic choke accessible when the automatic choke mechanism is fully assembled.

It is a further object of the present invention to provide a thermostat, preferably a bimetal thermostat, having an actuator connected thereto, in combination with means for adjusting the effectiveness of said thermostat.

More specifically, it is an object of the present invention to provide a temperature responsive mechanism for effecting adjustment of an automatic choke comprising a housing and a removable cover plate on which is mounted a temperature responsive thermostat, and means for adjusting the effectiveness of said thermostat.

More specifically, it is an object of the present invention to provide mechanism as described in the preceding paragraph in which the thermostat is a coiled bimetal thermostat having one end secured to a rotatably adjustable post, and in which the means for adjusting the effectiveness of the thermostat comprises a rotatable member having a portion extending to the inner side of said cover plate and connected to said post, and a portion extending to the outside of said cover plate for providing for adjustment of said post when said cover plate is in position.

Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunction with the accompanying drawings, illustrating preferred embodiments of the invention, wherein:

FIGURE 1 is a fragmentary elevational view showing the association between a carburetor having an automatic choke and temperature responsive means for adjusting said choke.

FIGURE 2 is a fragmentary side elevational view of the temperature responsive adjustment means with parts broken away.

FIGURE 3 is an exploded view of the elements of the temperature responsive adjusting means.

FIGURE 4 is a view similar to FIGURE 2 showing a specifically different embodiment of the present invention.

FIGURE 5 is an exploded view similar to FIGURE 3, showing the components of the device illustrated in FIGURE 4.

As best seen in FIGURE 1, the present invention relates to automatic control of the choke **10** of a carburetor **12** provided in association with an internal combustion engine. Specifically, the carburetor is shown as mounted on the intake manifold **14** of an internal combustion engine. The intake manifold is provided with a recess as suggested by the dotted lines at **16**, which is adapted to receive a temperature responsive element as will subsequently be described. The recess **16** constitutes a housing having a relatively large opening adapted to be closed by a removable cover plate **18** as will subsequently be described. A temperature responsive thermostat is received in the housing and is connected to an actuator **20** which extends through an opening in the housing cover plate and is adapted to be connected to a lever **22** fixed

to the shaft **24** of the choke **10**. Longitudinal movement of the actuator **20** controls the position of the choke.

Referring now to FIGURES 2 and 3 the cover plate **18** has fixed thereto in depending relation a bracket **28** to which is secured a rotatable post **30** having an elongated slot **32** for receiving one end of a coiled bimetal thermostat **34**. The post **30** has fixedly secured thereon a disc or sector **36** having teeth formed at its periphery. The reduced end portion **38** of the post extends through an opening in the bracket **28** and is retained in position thereon by an E-ring **40**.

Associated with the post **30** is a thermostat lever **42** of U-shaped cross-section having legs **43** and **44** between which the coiled bimetal thermostat is received. The post **30** extends through openings in the legs **43** and **44** and receives the inner end of the coiled bimetal thermostat. The post, thermostat, and lever are retained in assembled position by a hairpin retainer **46** having legs received in an annular groove **48** formed adjacent one end of the post **30**. A washer **49** is received between retainer **46** and leg **43**.

The lever **42** adjacent its closed end is provided with a pair of aligned openings which receive a laterally bent portion **50** of the actuator link or rod **20**, the upper end of which is secured to the lever **22** previously referred to. The outer end of the bimetal coil is looped as indicated at **52** to engage the laterally bent portion **50** of the actuator **20**. The lever and portion **50** are retained assembled by a hairpin retainer **53**. In practice, as the thermostat **34** warm up it winds more tightly.

To effect adjustment of the thermostat from the exterior of the housing, means are provided on the cover plate **18**. As shown in FIGURES 2 and 3, this means comprises a rotatable member **54**. The member **54** includes a shoulder **56** adjacent its upper end and is provided with an upper threaded end portion **58**. Intermediate the threaded portion **58** and the shoulder **56** is an annular groove **60** adapted to receive an E-ring **62** which is located at the upper side of the cover plate **18**. Thus, the rotatable member **54** is retained in assembled relation on the cover plate by engagement between the shoulder **56** and the E-ring **62** at opposite sides of the cover plate **18**. The rotatable member **54** includes a clamping nut **64** which clamps the rotatable member in adjusted position. In addition, its upper end is slotted as indicated at **66** for engagement with a screw driver to effect adjustment of the thermostat after the clamping nut **64** has been loosened.

The lower portion of the adjusting member **54** extends into the housing formed by the pocket or recess **16**, and is there provided with a worm-like thread **68** which engages with the toothed periphery of the disc or sector **36**. Accordingly, rotation of the member **54** results in rotation of the toothed sector or disc and since this is fixedly connected to the post **30** it results in rotational adjustment of the post with corresponding adjusment of the effectiveness of the coiled bimetal thermostat **34**.

Referring now to FIGURES 4 and 5 there is shown a similar construction in which like parts are identified by like reference characters. This embodiment of the invention differs from that previously described in that instead of the toothed sector or disc **36** fixed to the post **30**, there is provided a plate **70** having at one side thereof a notch **72**. The plate **70** thus constitutes an arm for connecting the post **30** to a rotatable member **74**.

In this case the member **74** instead of being mounted for rotation only, has its upper portion threaded as indicated at **76**, and this threaded portion is received in a threaded nut **78** fixed in an opening in the cover plate **18**. A lock nut **80** and lock washer **82** are provided for locking the rotatable member **74** in adjusted position.

With the construction as described, it will be apparent

that after loosening the lock nut 80 the rotatable member 74 may be rotated with corresponding vertical or axial advance. At its lower end the member 74 is provided with a disc 84 which extends into the notch 72, so that vertical movement of the member 74 results in corresponding rotational adjustment of the plate 70.

In both cases it will be observed that the entire construction is mounted on the cover plate so that it may be pre-assembled and adjusted and inserted as a unit into the recess or pocket 16 formed in the manifold.

The drawings and the foregoing specification constitute a description of the improved automatic choke adjusting means in such full, clear, concise and exact terms as to enable any person skilled in the art to practice the invention, the scope of which is indicated by the appended claims.

What I claim as my invention is:

1. Temperature responsive actuating mechanism for adjusting a movable member exterior of a housing in accordance with temperature variations within said housing, said housing having an enlarged opening, a removable cover for said opening, a bracket carried by the cover at its inner side, a post mounted on said bracket, a coiled bimetal thermostat having its inner end fixed to said post, a U-shaped thermostat lever including laterally spaced arms at opposite sides of said thermostat rotatable at one end thereof on said post at one side of said bracket, an elongated element extending between said arms adjacent the other end of said arms, the outer end of said thermostat having a hook portion connected to said element to rotate said lever and to be guided thereby, and an elongated actuator connected to said element and extending through and movable in an opening in said cover for transmitting motion to said movable member.

2. Temperature responsive actuating mechanism for adjusting a movable member exterior of a housing in accordance with temperature variations within said housing, said housing having an enlarged opening, a removable cover for said opening, a bracket carried by the cover at its inner side, a post mounted on said bracket, a coiled bimetal thermostat having its inner end fixed to said post, a U-shaped thermostat lever including laterally spaced

arms at opposite sides of said thermostat rotatable at the free ends thereof on said post, an elongated element extending between said arms adjacent the other end of said arms, the outer end of said thermostat having a hook portion connected to said element to rotate said lever and to be guided thereby, and an elongated actuator connected to said element and extending through and movable in an opening in said cover for transmitting motion to said movable member.

3. Temperature responsive actuating mechanism for adjusting a movable member exterior of a housing in accordance with temperature variations within said housing, said housing having an enlarged opening, a removable cover for said opening, a flat bracket on the inner side of said cover, a rotary post mounted at one end thereof to said bracket and extending laterally therefrom, a coiled bimetal thermostat having its inner end fixed to said post, a U-shaped thermostat lever including laterally spaced arms at opposite sides of said thermostat mounted for rotation at one end thereof on said post at one side of said bracket, an elongated actuator movable generally longitudinally through an opening in said cover, said actuator including a laterally bent inner end portion extending between said arms adjacent the other ends of said arms, the outer end of said thermostat having a portion engaging the bent inner end of said actuator to rotate said lever and to be guided in its path of movement thereby.

4. Mechanism as defined in claim 3, comprising means for rotating said post to adjust said thermostat, said means comprising a rotary member having an inner adjusting portion within said housing connected to said post and an outer end portion accessible for adjustment of said post while said cover is in place.

References Cited in the file of this patent

UNITED STATES PATENTS

2,123,979	Ward	July 19, 1938
2,275,742	Dillon	Mar. 10, 1942
2,319,418	Lund	May 18, 1943
2,564,114	Kittler	Aug. 14, 1951
2,657,862	Carlson et al.	Nov. 3, 1953