July 2, 1957 M. W. MARRAPESE 2,797,591

APPLIANCE KNOBS

Filed July 6, 1953

Fig. 1.

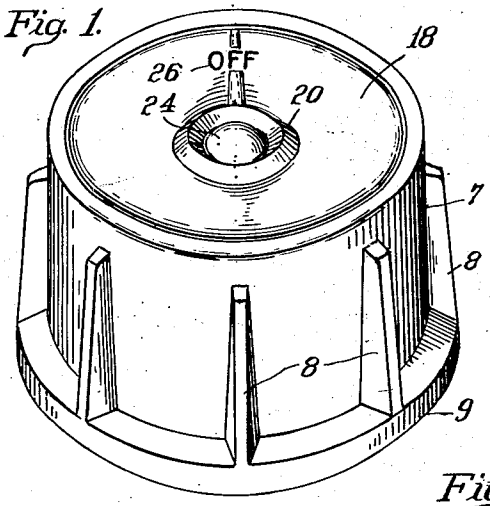


Fig. 2.

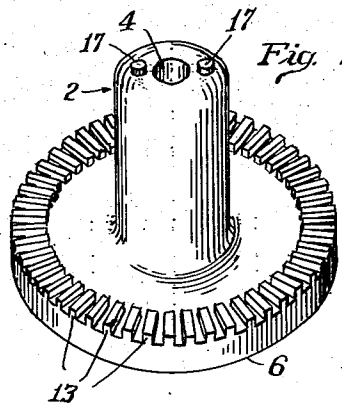


Fig. 3.

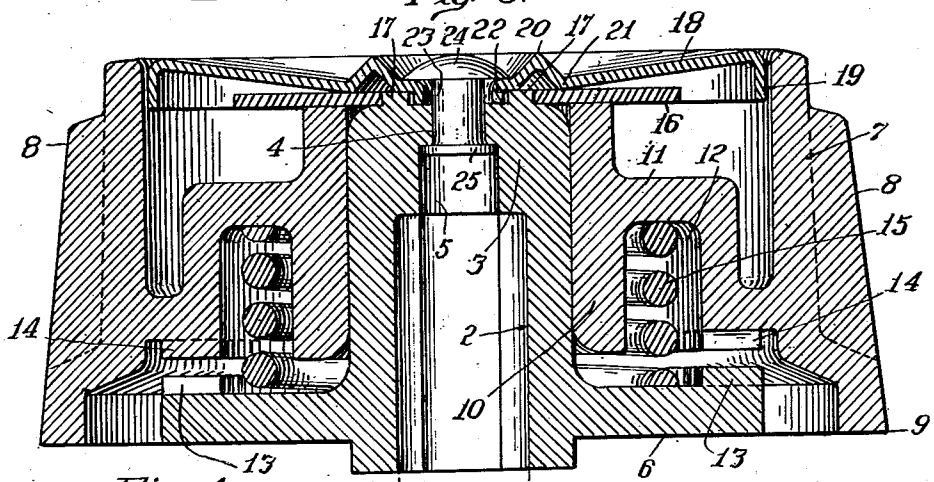


Fig. 4.

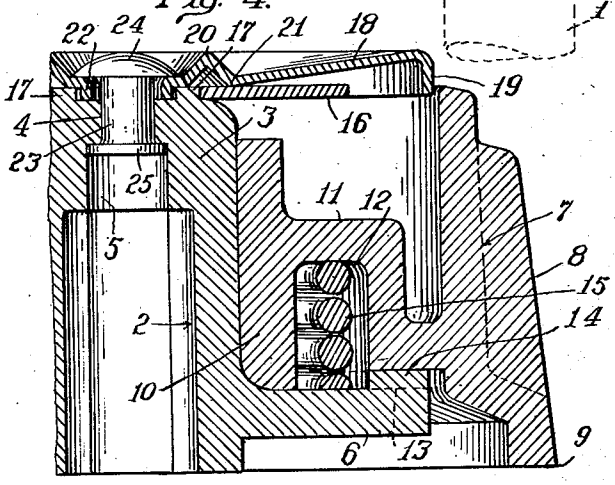
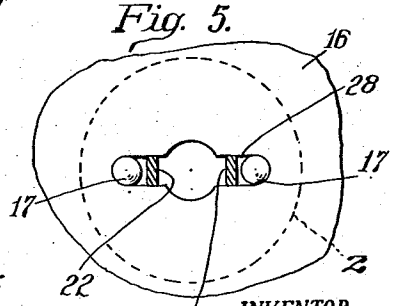


Fig. 5.



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APPLIANCE KNOBS

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Application July 6, 1953, Serial No. 366,140

8 Claims. (Cl. 74—528)

This application is a continuation-in-part of my prior application for Appliance Knobs, filed September 3, 1952, Serial No. 307,617.

This invention relates to improvements in appliance knobs, and more particularly to the control knobs for gas and electric stoves and other appliances.

It is well known that young children tend to turn on electric and gas appliances, which often create real hazards and sometimes serious injury. Various attempts have been proposed heretofore to provide knobs which will prevent accidental operation of such appliances, or manipulation thereof by small children, but these have depended on threaded connections between the parts, or other objectionable characteristics thereof, which have not been satisfactory for efficient manufacture and use.

A valve knob generally requires at least one indication point to show the different set positions of the valve or other control for the appliance, as the "Off" position. In some instances, additional legends are desirable thereon, as "On," "Broil," "Simmer," etc. Such markings must necessarily rotate with the turning of the valve stem or control for the appliance.

In my prior application, such legends were applied to the surrounding rim of the back plate, which required an outward projection thereof beyond the rotatable knob. It has been found that such a projection leaves that portion exposed to the possibility of its being gripped for turning the valve or appliance control, whereby that particular construction may not be considered as completely foolproof as is desired.

One object of this invention is to overcome the objections heretofore encountered in prior constructions, including the form of knob set forth in my above-mentioned application, and to improve the construction thereof for controlling various appliances.

Another object of the invention is to provide a surface which is fixed to the appliance control member upon which an indication may be applied and which cannot be grasped for turning of the appliance control except by manipulation of the control knob.

These objects may be accomplished, according to one embodiment of the invention, by confining the back plate of the center post within the outer periphery of the shell of the control knob so as not to leave it exposed for grasping by children or anyone else who may try to turn the appliance control, without the necessity for manipulation and engagement of the control knob. The center post is adapted to be fixed to the appliance control unit, such as the valve stem of a gas appliance. A disk is fixed to the center post to rotate therewith upon turning of the post, and carries the indicia that indicates the rotated position of the appliance conrol, such as the valve stem. This disk is confined within an axially projecting portion of the outer shell of the control knob, so that it cannot be grasped by a child, for instance, for rotating the control member. Thus, a completely foolproof appliance

knob is provided without projecting parts of the appliance control for rotating the latter without manipulation of the control knob to its engaged position. The latter normally is disengaged by spring means and has suitable clutch means for engagement thereof, as set forth more in detail in my above-mentioned application.

One embodiment of this invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of the appliance knob detached;

Fig. 2 is a perspective view of the center post and back plate;

Fig. 3 is a cross section through the appliance knob, with the control knob in its disengaged position.

Fig. 4 is a similar view showing the control knob engaged; and

Fig. 5 is a detail plan view of the center portion of the appliance knob with parts removed.

This appliance knob may be used for controlling the valve of a gas stove or the electric switch of an electric stove, or other electric appliance that will prevent operation of the valve or switch by young children, or accidental or unintended operation thereof by bodily contact with the valve or switch. I have designated a portion of the appliance control, either a valve stem or an electric switch shaft, generally by the numeral 1, and it will be understood that this is intended merely as an example of the control means for the appliance to which the invention may be applied.

The appliance knob includes a center port generally designated at 2, which is tubular and has a suitable provision for connection with the shaft 1, such as a split D-shaft that will provide a press-fit or other connection between the post 2 and the shaft 1 or other control means. The post 2 is partially closed at its upper end by an inturned flange 3, provided with a central hole 4 therein, as shown in Figs. 2 and 3. The hole 4, through the closed end portion 3 of the center post, may be provided with a counterbore 5, as shown, to receive the head of a fastening that extends through the central hole 4, as hereinafter described.

At its lower end, the center post 2 is provided with a back plate 6, which projects outwardly therefrom in a radial direction, and preferably is formed in one integral piece with the center post 2.

A control knob is provided on the post 2 and comprises an outer shell generally indicated at 7, which is somewhat cylindrical in form but may have peripheral ribs 8 thereon to facilitate grasping of the shell, or other suitable means that will provide a friction surface thereon to facilitate rotation of the control knob by hand. The outer shell 7 is shown as having a depending skirt portion at its lower edge, as indicated at 9, that extends to the lower face of the back plate 6 and encloses the latter completely, thus confining the back plate at its periphery againset accidental grasping by a child who might try to turn the appliance control thereby.

The control knob has a hub 10 of cylindrical form surrounding the post 2 and journaled thereon for rotation and axial sliding movement relative thereto. The hub 10 is spaced radially from the outer shell 7 and is connected therewith by a radially extending rib 11 that extends circumferentially around the hub 10 therebetween. The web 11 is offset axially of the outer shell 7 with a portion of the web spaced from the hub 10 to provide a circumferential channel 12 therearound, forming a spring seat in the underside of the control knob.

Provision is made for clutch connection between the control knob 7—11 and the hub 2 upon axial shifting of the control knob relative thereto to engage the clutch means, while permitting free turning movement of the

control knob relative to the center post upon disengagement of the clutch means. Several forms of clutch engagement means are shown in my application referred to above, any of which may be used, as desired, for this purpose. However, I have illustrated in this embodiment a clutch connection provided with interengaged teeth **13** and **14** formed, respectively, on the outer edge portion of the back plate **6** and on the offset portion of the web **11** just inside the outer shell **7**. These teeth are formed in respective rows, spaced apart circumferentially in each row, and so disposed as to interengage with each other to form a positive jaw clutch upon inward movement of the control knob relative to the post **2**.

Yieldable means should be provided for normally maintaining the control knob in its outer position with the clutch means disengaged, except when it is desired to positively turn the appliance control. I have shown a coiled compression spring **15** interposed between the back plate **6** and the web **11**, surrounding the hub **10** and seated within the recess **12** of the control knob. This spring **15** normally will disengage the clutch teeth **13—14** when the control knob is released, and yet will permit engagement thereof upon axial shifting of the control knob relative to the center post **2**.

The outer end portions of the center post **2** and hub **10** are overlapped by a washer **16** which is seated upon the outer end of the post **2** and centered by projecting pins **17** on the post, preferably formed integral therewith, as illustrated in this embodiment. The washer **16** thus limits the outward sliding movement of the control knob **7—11** axially along the center post **2** under the influence of the spring **15**.

The washer **16** is retained in place by a central disk, generally indicated at **18**. The disk **18** extends over the outer face of the center post **2** and the control knob throughout the major portion of the area thereof with an inturned peripheral flange **19** that is spaced from the surrounding wall formed by the outer shell **7**, so as to allow freedom of rotary and axial movement of the control knob relative to the central disk **18**, and yet closing the outer end of the control knob by said central disk.

The central disk **18** has a corrugation **20** formed therein at the outer end of the post **2**, providing an edge portion **21** that bears upon the periphery of the washer **16** to reduce the area of contact therewith, and yet to confine the washer in place on the post **2**. The central disk **18** also has inturned ears **22** on opposite sides of its center, beside the axially projecting pins **17** on the post **2** to center the disk **18** with respect thereto.

The central disk **18** is confined by a rivet or other suitable fastening, generally indicated at **23**, having a head **24** overlying the outer face of the central disk **18** at the center thereof, while a head **25** on the rivet **23** engages the countersunk portion **5** of the centerbore of the post **2** to confine the parts in secure relation thereto without the use of screw means.

Provision is made for holding the central disk **18** against rotation relative to the center post **2** and to cause it to rotate therewith. In this embodiment of the invention, the washer **16** is provided with an elongated slot **28**, as shown in Fig. 5, through the opposite ends of which the pins **17** project. The ears **22** on the central disk **18** are also turned down into the opposite ends of the slot **28** beside the pins **17**, while the center of this slot **28** is enlarged to accommodate the rivet **23**. The projecting pin **17** and ears **22** act as keys to the washer **16**, while the latter connects the central disk **18** with the center post **2** through these key connections, thereby eliminating any independent turning of the washer **16** on the central disk **18** with respect to the center post **2**.

The central disk **18** also serves to carry suitable indicia thereon, as generally indicated at **26**, being illustrated by the word "Off." Any other suitable indicia may be used thereon such, for instance, as "On," "Broil," "Simmer," etc. Being placed on the central disk **18**, these indicia or markings will rotate with the turning of the appliance control member, such as the valve stem. This construction makes it possible to apply the indicia to a part of the appliance knob which will rotate with the valve stem, and yet does not project in an exposed position where it may be possible for grasping by larger children who could thereby manipulate the appliance control.

Thus, the appliance control cannot be turned by hand without manipulating the control knob, which normally is disengaged by the spring **15**, thus providing an effective foolproof control. As noted above, the disk which carries the indicia or legend is recessed within the free rotatable outer shell and confined entirely by the surrounding wall thereof, when the control knob is in its outermost position, which prevents grasping of this disk by hand.

The center post and control knob may be molded of plastic or otherwise constructed of suitable material.

This construction also eliminates the requirement of appliance knobs proposed heretofore which used threaded connections between the parts. Thus, a practical unitary structure is provided, with the part fully enclosed and without danger of disconnection as a result of such threaded connections, as were required therein. An effective appliance control which is completely foolproof is thus provided.

While the invention has been illustrated and described in one embodiment, it is recognized that variations and changes may be made therein without departing from the invention as set forth in the claims.

I claim:

1. An appliance knob comprising a center post adapted to be connected with an appliance control member, a control knob mounted on the center post for rotary and axial movement relative thereto, clutch means between the knob and post engageable upon rearward movement of said knob and a disk carried by the center post and fixed thereto and substantially covering but received in the front of the knob.

2. An appliance knob comprising a center post adapted to be connected with an appliance control member, a control knob mounted on the center post for rotary and axial movement relative thereto, clutch means between the knob and post engageable upon rearward movement of said knob and a disk carried by the center post and fixed thereto and substantially covering the outer portion of the knob, means yieldably urging control knob outwardly relative to the center post, said control knob having an outer rim portion surrounding the disk.

3. An appliance knob comprising a center post adapted to be connected with an appliance control member, a control knob mounted on the center post for rotary and axial movement relative thereto, clutch means between the knob and post engageable upon rearward movement of said knob and a disk carried by the center post and fixed thereto and substantially covering the front of the knob, and means yieldably urging the control knob to an outer position relative to the center post, said control knob having an outer rim portion therein with the periphery of the disk inwardly of the outer edge of said rim portion in said outer position.

4. An appliance knob comprising a center post adapted to receive therein an appliance control member, a control knob mounted on the center post for rotary and axial movement relative thereto, said knob having an outer recess providing an internal hub wall portion and a spaced external rim wall portion, means yieldably urging the control knob outwardly relative to the center post, a member carried by the center post and fixed thereto, overlapping and providing a stop for the hub wall portion, and a disk overlapping the center post and extending between the rim portion of the knob and the member.

5. An appliance knob comprising a center post adapted

to be connected with an appliance control member, a control knob mounted on the center post for rotary and axial movement relative thereto, clutch means between the knob and post engageable upon rearward movement of said knob, said control knob having a hub portion journaled on the center post and having an annular recess therein surrounding the hub portion, and a coiled spring surrounding the center post and having one end seated in said recess, said control knob having an outer shell spaced from the hub portion with a radial web therebetween having the annular recess formed in said web.

6. An appliance knob comprising a center post adapted to be connected with an appliance control member, a control knob mounted on the center post for rotary and axial movement relative thereto, means forming a clutch connection therebetween the control knob and the center post for engagement upon axial movement of the control knob in one direction relative thereto, a central disk covering the outer end portion of the control knob and having indicia thereon to represent a position of the center post, and means forming a key connection between the center post and the central disk locking these parts together.

7. An appliance knob comprising a center post adapted to be connected with an appliance control member, a control knob mounted on the center post for rotary and axial movement relative thereto, means forming a clutch connection between the control knob and the center post for engagement upon axial movement of the control knob in one direction relative thereto, a central disk covering the outer end portion of the control knob and having indicia thereon to represent a position of the center post, a washer overlapping adjacent portions of the control knob and center post and having an elongated slot therein, key means fixed to the center post and projecting into the slot, said central disk overlapping the washer, and key means

connected with the central disk and projecting into the slot beside the first-mentioned key means and cooperating therewith to form a locked connection between the central disk and the center post for maintaining these parts in secure relation to each other.

8. An appliance knob comprising a center post adapted to be connected with an appliance control member, a control knob mounted on the center post for rotary and axial movement relative thereto, clutch means between the knob and post engageable upon rearward movement of said knob, a disk carried by the center post and fixed thereto and substantially covering, but received in, the front of the knob, said post having a back plate at the rear end thereof, said knob having a rearwardly projecting rim at the rear end thereof enclosing the adjacent periphery of the back plate.

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