

Sept. 17, 1935.

P. KNOFF

2,014,531

DIAL FOR REGISTERS AND THE LIKE

Filed March 2, 1934

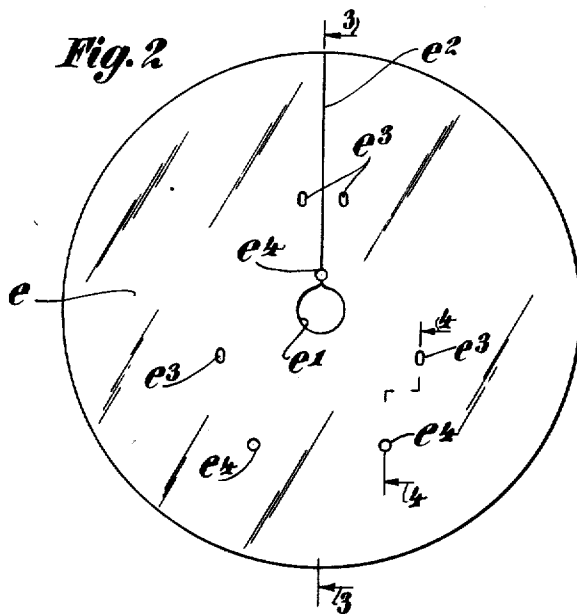
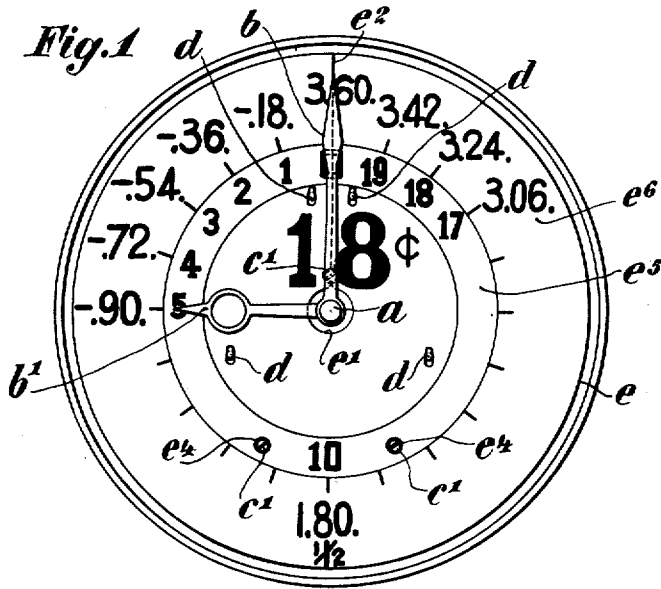


Fig. 3

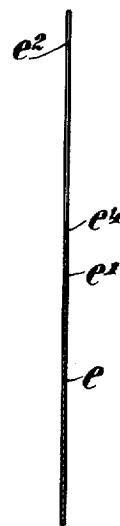
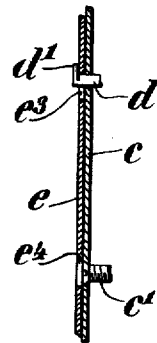


Fig. 4



INVENTOR:
Paul Knopf,
BY
Redding, Greeley, O'Shea & Campbell
HIS ATTORNEYS

UNITED STATES PATENT OFFICE

2,014,531

DIAL FOR REGISTERS AND THE LIKE

Paul Knopf, New York, N. Y.

Application March 2, 1924, Serial No. 713,682

3 Claims. (Cl. 116—129)

This invention relates to dials for indicating or registering instrumentalities such as, for instance, flow meters associated with gasoline dispensing pumps. Such meters as manufactured are, of course, provided with a face plate or dial over which indicators move under the influence of the registering mechanism to give the desired visual indications of gallons, price, or other information. In practice, it may become desirable to provide a different face dial either because different calibrations are required or because the original face dial has become unsightly or blemished in use. So far as known additional face dials to meet the conditions indicated have usually been substituted for original face dials by first removing the latter. This practice is wholly uneconomical, inconvenient, and disturbing to the registering mechanism because it involves the removal of the indicator hand from the central arbor and the removal of permanent retaining means for the dial, such as screws.

The principal object of the present invention is to provide a dial for instruments of the general character referred to, or their equivalents, which are simple in construction, inexpensive to manufacture and readily applicable to and removable from the face of a register without disturbing any of the elements associated therewith and without requiring the use of separate means of attachment. A further object of the invention is to provide readily detachable dials calibrated with price totals based on varying unit prices to facilitate the interchange from day to day in accordance with the change in such unit prices. More specifically, the invention seeks to provide a dial having the characteristics indicated and which is provided with retaining means engageable with existing elements now found on pump meters in general use without, however, destroying the intended function of such elements for other purposes. These elements comprise spaced studs which extend forwardly from the face plates or dials of meters to receive inspection tags, labels or the like which may be attached thereto from time to time, pursuant to local regulations. The improved dials are formed with openings to receive such attaching elements and be engaged thereby to retain the dial detachably in place while permitting cards and tags or the like to be engaged with the exposed ends of said studs. However, the improved dials are also provided with openings adapted to be aligned with the securing screws of standard face plates and dials thereby enabling the improved dials to be entirely substituted for existing plates and retained by such screws.

These and further objects and advantages of the invention will appear at greater length in connection with the detailed description of the illustrated embodiment. In the drawing:

Figure 1 is a view in front elevation showing a face dial for a pump meter calibrated to indicate gallons and total price at the specified unit rate of 18¢ per gallon.

Figure 2 is a view in elevation of the improved dial showing its structure.

Figure 3 is a view in vertical section through the dial and taken on the plane indicated by the line 3—3 of Figure 2 and looking in the direction of the arrows.

Figure 4 is a fragmentary detailed view in section through the openings in the dial with which attaching means may engage the view being taken on the planes indicated by the broken lines 4—4 of Figure 2 and looking in the direction of the arrows.

A registering or indicating instrumentality in the nature of things includes a driven arbor or the like *a* on which is secured one or more indicating hands *b* adapted to be moved by the arbor under the influence of the prime mover. Such hand or hands move over calibrations on a face plate or dial so as to indicate visually the performance of the prime mover. For the purposes of this application and because of the great practical commercial importance of the improved dial in association therewith there has been indicated the face plate and associated parts of a meter for gasoline pumps. Such a face plate which may or may not have been calibrated in the first instance is indicated in Figure 4 by the reference character *c*. This plate is attached to the frame of a meter by screws *c'* the relative locations of which are indicated in Figure 1. Through the face plate extends the arbor *a* carrying the indicator hands *b, b'*. It is the practice to provide such meters with forwardly extending studs *d* which may be flanged at their exposed ends as indicated at *d'* to constitute lugs with which may be engaged inspector's tags or cards after the accuracy of the meter has been duly tested. The improved dial *e* may be made of metal, cardboard or any other material but it is necessary for the successful practice of the invention that it shall be slightly flexible while sufficiently stiff to retain its intended shape. As shown in Figure 2 the dial is formed as a flat disk having a central opening *e'* therein to receive the arbor *a* of the meter. From this central opening *e'* the disk is split radially as indicated at *e''*. Slots *e'* are formed in the dial at locations corresponding to the respective locations of the studs *d*. These

slots are preferably elongated for reasons which will later appear. In addition, the disk *e* is preferably formed with holes *e'* located at points corresponding to the screws *c'*. The dial is suitably calibrated as indicated in Figure 1 showing, for instance, gallons marked in the margin *e'* and price totals in the outer margin *e'*, these price totals being based on the unit price of 18¢. Since this unit price changes from time to time or from day to day, it is evident that the proprietor of the gas station will carry in stock a number of dials corresponding to such differences in unit prices as may be encountered. The principal object of the present invention is to provide dials of simple and inexpensive construction which may be readily applied to the face plate of existing meters and readily detached therefrom as circumstances require without involving the use of special tools and attaching members and without requiring partial disassembly of the metering elements such as the indicator hands.

In applying the improved dial it is immaterial as to what number of indicator hands is found on the particular meter and as to the relative angularity or positions of such hands at the moment the dial is being applied or removed. While it is ordinarily true that such hands are reset to zero and thus will be found aligned in Figure 1, the hands have been shown at 90° displacement. The indicator *b'* pointing to five gallons is mounted on the arbor under the hand *b* which is disposed vertically. The dial is engaged by the several studs *d* which pass through the openings *e'* and the flanges *d'* of the several studs overlie the surface of the dial. To remove the dial it is displaced upwardly to a slight extent until the flanges *d'* of the several studs are in alignment with the respective slots *e'*. The dial is then moved away from the face plate of the meter until it is wholly disengaged from the several studs. It is then free to be rotated on its central axis until the opening *e'* is brought in the vicinity of the hand *b'*. By flexing the dial along its radial slit *e'* the proximate edges are brought out of alignment thereby permitting the dial to be slipped over the hand *b'* as the dial is slowly revolved. The slit *e'* is then brought in the vicinity of the other hand *b* and the dial flexed at one side of the slit *e'* so it can be passed over the hand *b*. A little movement of the dial will again permit the edges adjoining the slit *e'* to come together and the dial will be wholly free of the hands and detached. A new dial is attached by the reverse operation. It is flexed adjacent the slit *e'* so as to permit it to be passed over first one hand then another or both together if they are in alignment and the dial is rotated around the arbor *a* until the several slots *e'* are in alignment with the respective studs *d*.

The dial is then forced onto the studs by a slight downward movement and the several flanges *d'* are engaged with the face. This method of attaching and detaching suffers no disturbance to the indicator hands or to the arbor so there is no danger of disturbing the accuracy of the meter. The ends of the studs *d* are left exposed after the dial is attached and inspection tags or the like may be engaged therewith in accordance with the intended purpose of such studs as now provided. If desired, the face plate *c* of the meter may be removed by removing the screws *c'* and a dial made in accordance with the present invention can be substituted therefor by bringing the holes *e'* in proper relation to the mounting and passing the screws *c'* therethrough to attach the dial with relative permanence. Other dials embodying the improvements may then be engaged with the studs *d* detachably as heretofore described.

In the illustrated embodiment the slit *e'* when the dial is in place extends vertically. In many meters now in use two studs *d* extend forwardly from the metering mechanism in close proximity to the median line of the face. A distinct advantage is gained in the improved construction by having the slit *e'* disposed vertically because in that case two of the engaging studs *d* will be found in proximity thereto when the dial is in place and these studs will positively prevent relative distortion of the dial at one side or the other of the slit and the dial will appear as a flat disk having an unbroken surface.

I claim as my invention:

1. In a meter, a driven arbor, an indicator hand thereon, forwardly protruding studs and a dial having an opening to receive the arbor and a slit from said opening to the periphery to permit distortion of the dial when it has passed over the indicator hand, said dial having openings for engagement by said studs.

2. In a meter having a driven arbor and an indicator means carried by the arbor, studs extending forwardly from said mechanism, a flexible dial having an opening to receive the arbor and a slit extending from said opening to the periphery, and said dial having slots disposed to receive said studs, at least two of the said slots and studs being located in proximity to the said slit.

3. In a meter, a driven arbor, an indicating hand thereon, and a flexible dial having an opening to receive the arbor and a slit from said opening to the periphery to permit distortion of the dial when it has passed over the indicator hand, said dial having means to engage cooperating retaining means on the meter.

PAUL KNOPF.