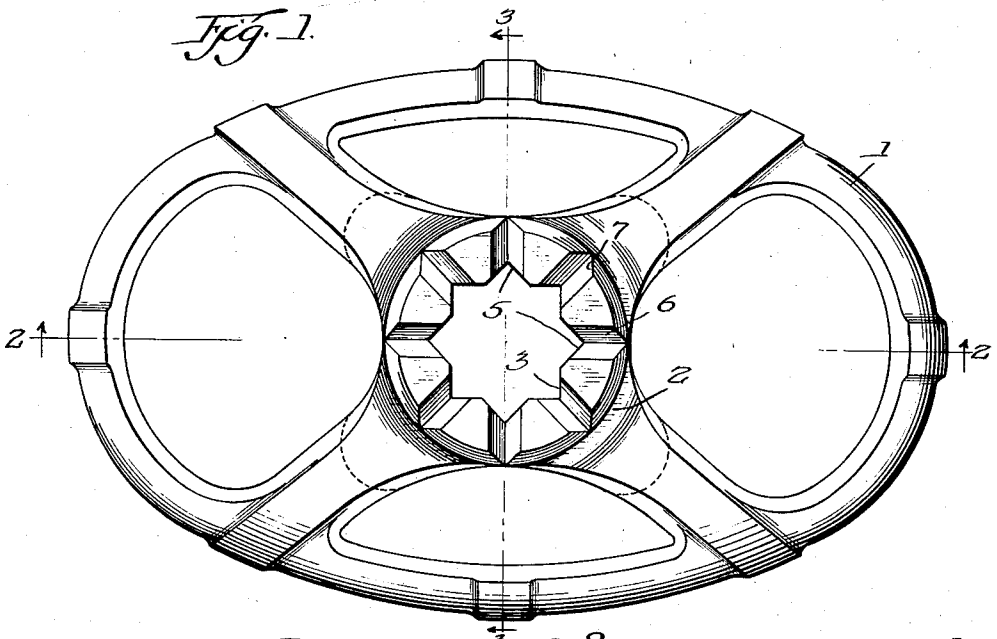
Aug. 1, 1939. V. P. RUMELY 2,168,072

VALVE HANDLE, WHEEL, AND THE LIKE

Filed Oct. 27, 1937

Fig. 1.



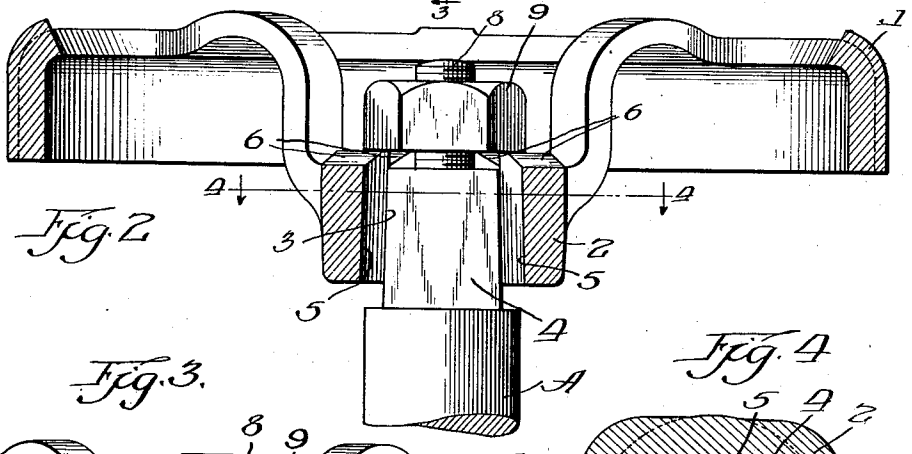


Fig. 2

Fig. 3.

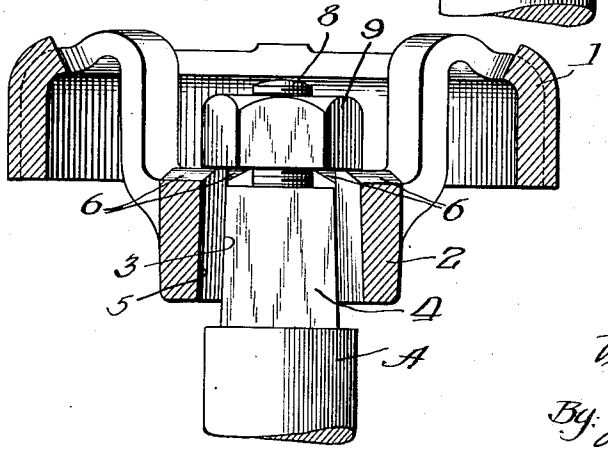
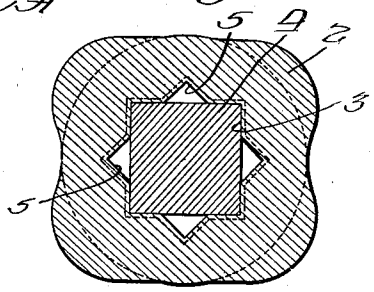


Fig. 4



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VALVE HANDLE, WHEEL, AND THE LIKE

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Application October 27, 1937, Serial No. 171,227

4 Claims. (Cl. 16—117)

My invention relates to improved means for providing the combination of a conventional type of valve handle in assembly with a valve stem featuring simple and effective ventilation at its central or hub portion thereby overcoming the objectional effects of the heat transfer normally occurring in service between the wheel and stem. The latter condition obviously contributes to an undesirable condition in the manipulation of the wheel or handle.

I am aware that in the past means for ventilating valve handles and the like have been provided, but to my knowledge these prior constructions have either necessitated expensive and frequently impractical provisions, such as special rim openings involving special complicated cores, or else the hub of the handle or wheel has necessarily been made sufficiently large to accommodate a special circulating or heat dispelling chamber. However, these types of earlier constructions have introduced troublesome problems in the foundry or else in the machine shop objectionable expense has been incurred thus making the cost of the improvement prohibitive, especially realizing the staple character of the article involved. In addition, the past efforts in this direction have frequently necessitated the addition of extra parts applied to the wheel and stem assembly, thus adding further to the cost thereof.

It will be evident that my invention is capable of very broad application in numerous unrelated fields, but in my experience I have been mainly concerned with its application to such metal valve wheels and handles where heating of the wheel has been a real problem. Examples of the general types of wheels and handles in contemplation are disclosed on page 166 of Crane Co.'s No. 52 Catalogue, and are designated, respectively, as styles C, D, E, F, M, N and U, as well as the lever type of handles therein referred to, respectively as styles J, K and S.

Special steps have been taken at various times in the past to design the hubs, spokes or rims of the wheels and handles presumably in an effort to reduce the amount of heat transfer occurring, but so far as I am aware none of these steps has included the provisions for the construction which is hereinafter described in detail.

As a principal object of my present invention, simple and effective means are provided for removing the heated air from around the stem and also such accumulations thereof which normally are above the stem and around the wheel nut, thus avoiding the entrapment or pocketing of the heated air and facilitating the local circulation of the generally cooler air of the surrounding atmosphere.

It will be further apparent that by the same means which are used for effecting such desirable air circulation the valve wheel or handle is also rendered capable of being adjustably positioned in a number of different degrees of angularity with relation to the vertical axis of the valve when the latter is closed, so that a more nearly perfect axial alignment with the valve body can easily be secured. For example, in connection with an oval wheel or a lever handle it may be desirable that the major or longitudinal axis thereof extend parallel, or substantially so, with the horizontal centerline of the valve, and the latter positioning can be accomplished easily by simply lifting the wheel or handle from the stem and then repositioning it as desired.

Further, by my invention I avoid expensive machining because I am able to use a preferably integral air passage construction in which the necessary circulation grooves being of relatively simple form, are easily made in the foundry core or upon the pattern itself.

Other objects and advantages will become more readily apparent upon proceeding with the specification in connection with the accompanying drawing, in which

Fig. 1 is an exterior plan view of the top of a preferred valve handwheel incorporating one embodiment employing the principle of my invention.

Fig. 2 is a longitudinal sectional view taken on the line 2—2 of Fig. 1, showing a fragmentary assembly with a conventional valve stem A.

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a section taken on the line 4—4 of Fig. 2 showing the connection between the valve stem A and the wheel.

Similar reference characters refer to similar parts throughout the various views.

As illustrated in the plan view of Fig. 1, a conventional type of oval valve handwheel is generally designated as 1, having a central hub portion generally designated as 2, with the internal polygonal configuration 3, the sides of which, as shown more clearly in Fig. 4, allow for fitting the hub 2 snugly upon a preferably tapered valve square 4, the latter contacting with the cored configuration 3 intimately upon the four sides thereof except for the relieved channels 5 preferably spaced equidistant upon the sides of the square 3. As shown in Fig. 2, the grooves 5 extend vertically and are preferably parallel, or substan-

tially so, in relation to the axis of the valve stem A.

Thus the relieved grooved portions **5** as well as the corners of the core square **3**, as shown more clearly in Fig. 1, are perimetrically arranged so as to accommodate the square of the stem as desired, and it is further apparent that the cored square **3** with its relieved portions **5** on any axis passing through is a symmetrical figure. Therefore, regardless of the degree of angular rotation which the handwheel may assume when the valve is closed, the wheel may be adjustably positioned as desired and there will remain an idle number of relieved portions around the square having for their function the carrying away of diffusion of the heat normally accumulating therebetween as transferred from the usually hot valve stem.

However, it is obvious that if the usual valve handle or wheel is attached to the stem A in the conventional manner, employing for example the threaded spindle **8** and the nut **9**, the ventilating passages **5** might thereby easily be covered or plugged and thus the complete circulation therethrough would be prevented. Accordingly, to overcome such objection I provide that the upper face portion of the wheel hub **2** is made with relieved horizontally positioned radially extending channels **6**, the ends **7** of which extend beyond the periphery of the handwheel nut **9**. Therefore, as shown in Figs. 2 and 3, each of the vertical passages **5** will connect at its upper limits with the horizontally extending grooves or passages **6** and thus provide for complete circulation of the heated air between stem and wheel to escape into the surrounding atmosphere.

Thus by simple relieved means which are provided integrally within the cored hub portion of the handle or wheel, a substantial heat dispelling circulation of air is obtained without the sacrifice of any of the essential contacting surface necessary in operating the wheel and the stem, in addition to eliminating separate pieces as heretofore provided and without the need for employing complex foundry practices.

It should be obvious that the size and the shape of the handwheel or the handle and its central cored portion may vary considerably, depending upon the installation, without affecting the application of my invention. Further, the detailed manner in which the circulatory passages or channels have been provided may also be varied considerably. I desire, therefore, to be limited only by the extent of the claims appended hereto.

I claim:

1. A handle adapted to engage a stem, the said handle having an integral apertured hub for non-rotatable engagement with the said stem, means for holding the said handle to said stem, intercommunicating through passages arranged in transverse planes respectively within the said aperture and upon the upper surface of the said hub surrounding the engaged portion of the said stem whereby circulation of air therepast within and adjacent to the exterior of the said hub and immediately beneath the said holding means is provided.

2. A handle adapted to engage a stem, the said handle having an integral cored hub portion for reception of the said stem, holding means for mounting the said handle fixedly upon the end portion of the said stem, grooved interconnected through passages in transverse planes within the said cored portion and also extending upon an upper face of the said cored portion whereby substantial movement of air may be effected respectively below, through and immediately above the said cored portion, said latter means including apertures extending substantially transversely to the longitudinal axis of the said stem, the said apertures being formed by the contact of the lower surface of the said holding means with the upper surface of the said cored portion.

3. A handle in assembled relation with a stem substantially as described, said handle having an integral hollow hub portion substantially surrounding a portion of the said stem adjacent its end, means for providing for the circulation of air between the said assembly, the said latter means comprising intercommunicating radially extending horizontal channels in substantially the same plane upon the upper surface of the said hub portion, the portion of the said hub which surrounds the stem adjacent its end having vertically extending through passages communicating at their upper ends with the said horizontal channels.

4. A handle in non-rotatable relation with a stem substantially as described, means for holding the said handle to the said stem, the said handle having a hollow hub portion through which a portion of the said stem projects, an end portion upon the said stem for engagement with the said holding means, the said hub portion having respective longitudinally and transversely extending through passages substantially surrounding the said stem when in assembled relation therewith, the said transversely extending passages being provided upon an upper face of the said hub portion and communicating with the said longitudinally extending passages, the said holding means being mounted over a portion of the said transverse passages, to provide circulatory apertures for the movement of air respectively within the hollow portion of the hub and between the upper portion of the said hub and the underside of the said holding means, the latter bearing against the upper face of the said hub.

VINCENT P. RUMELY.