J. Laird,

Knob.

No. 6,473. Patented May 22, 1849.

Fig. 4.

Fig. 2.

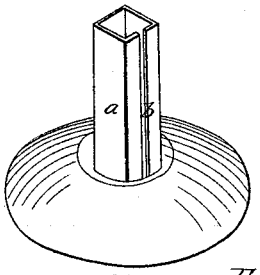


Fig. 10.

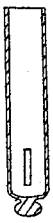


Fig. 7.

Fig. 5.

Fig. 6.

Fig. 8.

Fig. 9.

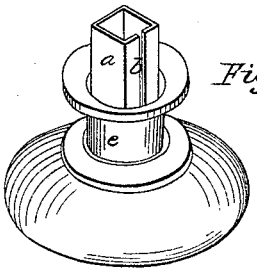
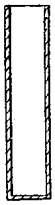
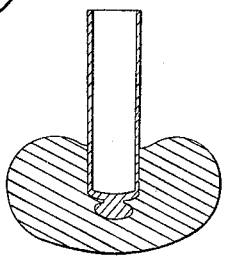


Fig. 1.

Fig. 11.





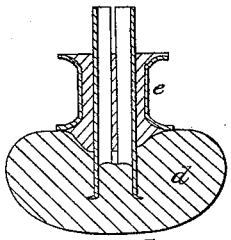


Fig. 3.

UNITED STATES PATENT OFFICE.

JOSHUA LAIRD, OF CINCINNATI, OHIO.

SHANK FOR MINERAL DOOR-KNOBS.

Specification forming part of Letters Patent No. 6,473, dated May 22, 1849; Reissued November 22, 1853, No. 251.

To all whom it may concern:

Be it known that I, JOSHUA LAIRD, of Cincinnati, Hamilton county, Ohio, have invented new and useful Improvements in the Mode of Manufacturing Door-Knobs of Mineral or other Analogous Material with Tubular Shanks; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a view of the knob when finished. Fig. 2 is a view without the mounting. Fig. 3 is a central section and Figs. 4, 5, 6, 7, 8, 9, 10 and 11 represent various analogous shanks.

The nature of my invention consists in manufacturing mineral door knobs or other analogous articles by inserting tubular shanks therein, the small amount of metal in which, in comparison to the bulk of mineral admissible in the construction of such articles, in addition to the characteristics incident to such shanks—viz, thinness, hollowness, elasticity and center vent (whether through slots in, or, if the end inserted in the glass is closed, by the partial yielding of the sides of the tube, or directly up the open tube) adopt them to this purpose, so that the knobs made are complete fellows, are without any undue strain between the mineral and metal when annealed and are consequently broken with difficulty, either by contraction during the process, or temperature or blows when in use; the contact of the mineral and metal spreading over a very large surface in proportion to the amount of materials used and the difference of expansion between mineral and metallic matter when brought into juxtaposition in this way being dwindled in its dangerous tendency to a mere nothing.

Hitherto knobs have been molded around a pattern screw, which was withdrawn before the mineral cooled too much or contracted too tightly upon it. This plan is obviously too nice and uncertain ever to be made cheap. The glass may contract after the withdrawal of the pattern screw more than will permit the entry of the spindle, or else the latter being forced in, the glass must break, or reversing this order of things a loose fit is the result and various other objections are obvious. Knobs have also been cast around solid shanks with variously devised heads to give hold and strength to the junction, but these are also liable to fatal objections and cause great loss to the manufacturer as well as to the purchaser on account of their liability to fracture from too great strain of the glass upon the solid shank, from changes in the temperature of the weather or from slight blows incident to daily use. There is also great liability to unevenness in surface from swellings about the shank head or imperfections in the casting of the same. Knobs of similar material to mine have also been essayed by casting the solid shank into the glass, &c., but this is less successful than any. All the difficulties which have been hitherto most prominent, I avoid by using a metallic tube whether made of cast, wrought or rolled metal. The longitudinal slit incident to making them of sheet metal allows play that enables the metal to adapt itself reasonably and sufficiently to the set of the contracting glass and is unquestionably the best mode of manufacturing mineral knobs. A slight upset on its end forms a strong and tenacious head around which the glass cools with an uniformity that leaves the knobs precisely the same in size and figure and consequently complete fellows. The center vent also plays an important part as by it the glass is allowed room to rise up when displaced by the insertion of the shank upon the inside of the same and thus doubles the hold the glass could otherwise have on the shank if the shank were solid. Still if the end of my tube is closed and large slots made in the sides of the shank I accomplish my purpose in an analogous manner. My knobs being complete fellows (a desideratum long sought after and of great value to the sellers and buyers in the market) are capable of receiving the best finish, the mountings made for one being equally suited to fit any other although the mountings are turned in a lathe. They drop right into place and can be fastened on with cement or alloy, the hollow shank permitting the instant cooling of the same by being filled with water.

It should be recollected that from 10 to 15 per cent of the solid shanked knobs fracture in cooling and that those even which do no fracture at that stage are to a very large percentage left with the mineral so strained that a slight blow is sufficient to set in motion the tendency of the mineral to splinter,

owing to violence done to the process of crystallization by the unyielding shank. With my knob these difficulties are avoided and to such an extent that it can be used as a hammer and still survive a reasonable trial in that way.

The quantity of metal saved by my plan is also an object and pays the expense of molding. I also prefer using rolled or sheet metal as it is more free from burs or irregularities than cast metal, the former being less exposed to disturbing influences or accidents in its manufacture for this purpose and likewise furnishing a shank of at least equal strength and greater lightness. The slight amount of metal cast, wrought or rolled which I insert disturbs so little the hot mineral that a sensible workman can hardly err in the quantity of mineral he should put into the mold. In the case however of the solid cast or wrought shank, differences in the bulk of the shank, one to the other, tend to mar uniformity and precision in shape and size, so that the knobs do not always match the mountings prepared for them and are therefore less susceptible of a cheap and complete finish. In a word the old process does not insure their being fellows.

By my invention whether the shank is an open cylinder, prism, pyramid or cone without their apex or whether these forms or other analogous forms are closed at the end with slots in their sides where they are in contact with the glass or have a longitudinal slit or are without it, the knobs produced are always fellows and one knob will fit a lathe turned mounting as well as any other knob in the lot. The shank when convoluted or crimped for instance will exhibit the same result. All this follows from the form and the small quantity of material used to make the shank, in proportion to the limited bulk of glass admissible in molding mineral knobs. A tube closed at the end inserted into the glass will make a knob somewhat analogous but very far inferior to my other knobs. The metal will meet less resistance on the inside of the tube than from the material surrounding the outside and forced against it by the mold, and therefore a better knob will be made than those at present in the market, but still it will only be an inferior variety of mine.

Figure 1, in the annexed drawing fully represents the finished knob, in which (*a*) is a square or other shaped tube with a longitudinal opening (*b*) traversing it from end to end. This shank is made of any suitable metal and has an upset (*c*) on the end to be inserted in the mineral (*d*) by which it is firmly held. The mounting (*e*) fits to a nicety and that proper for one is equally suitable for any other. This accuracy, uniformity, precision and neatness in the knobs, together with a capacity for being readily matched in case one of a pair should be broken, is attained with a saving in time, material, loss by breakage and other items so important to the wholesale manufacturer that his expenses are nearly covered by the economy attained in the primary cost.

An examination of Figs. 4, 5, 6, 7, 8, 9, 10, and 11, will exhibit many forms for shanks of mineral door knobs involving the same principles and based upon similar construction. Fig. 11 departing further from some of the points yet involving in a greater or lesser degree nearly all the characteristics I introduce into shanks for mineral door knobs.

Having thus fully described the nature, construction and operation of my invention, what I claim as new and desire to secure by Letters Patent is—

Making mineral knobs or other analogous articles such as curtain pins, drawer handles, &c. by inserting a tubular metallic shank (with or without slots or a longitudinal slit,) into the vitreous or earthen matter at a proper stage of the process, so that the quantity of metal in proportion to the bulk of mineral admissible in the case, and comparatively to the extent of surface in contact with the mineral, is very small, and the mineral consequently allowed to take its set about, within or around the more or less elastic shank without any undue strain upon or disturbance with its crystallization; thus rendering the destructive tendencies arising from the unequal expansibility of the metal and mineral too slight practically to endanger the soundness and durability of the finished knob or other analogous articles such as curtain pins, drawer handles, &c.

JOSHUA LAIRD.

Witnesses:
EDWARD H. KNIGHT,
THOS. G. CLINTON.

[FIRST PRINTED 1913.]