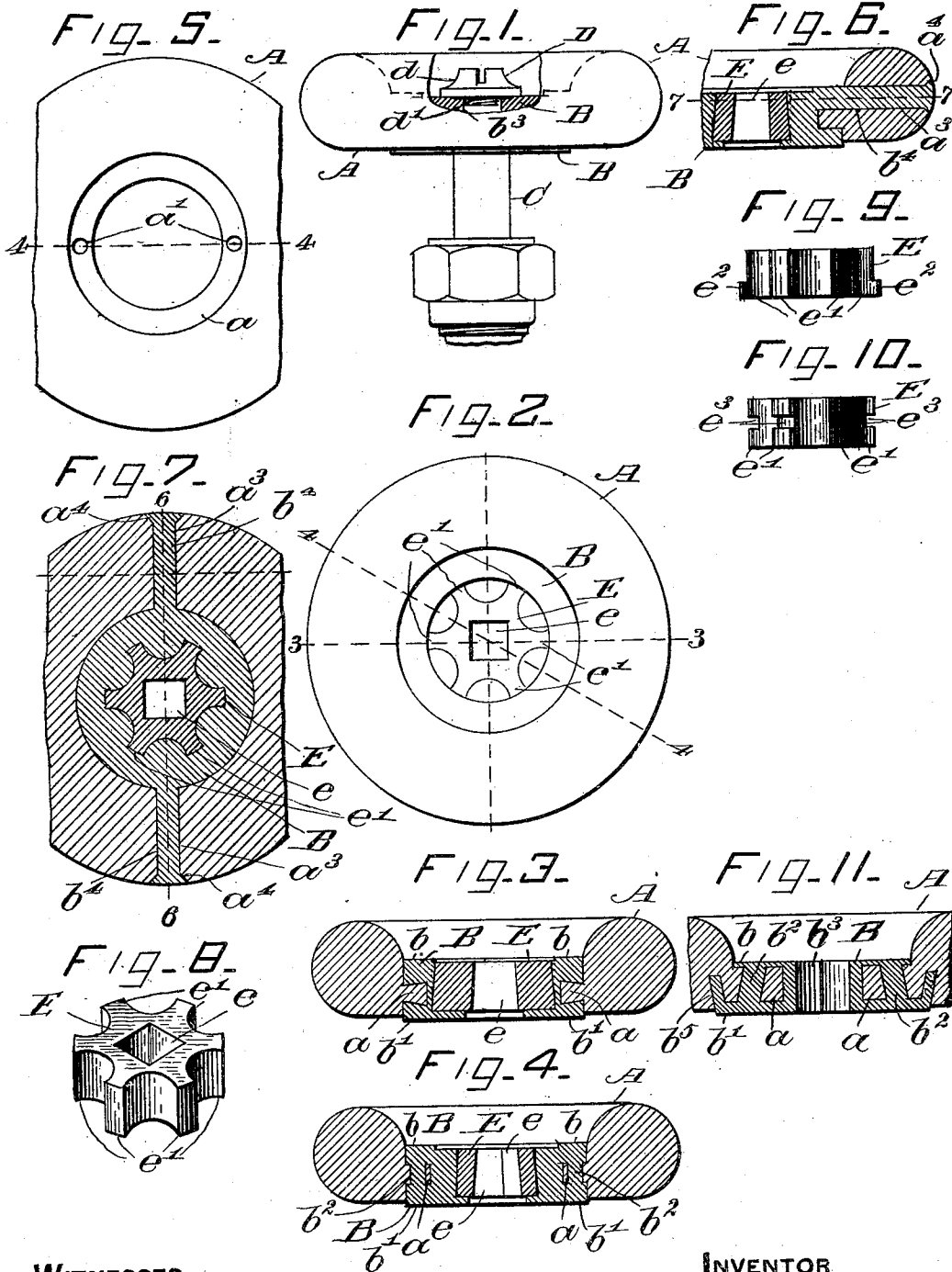


A. HALLOWELL.
HAND WHEEL.
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935,019.

Patented Sept. 28, 1909.



WITNESSES.

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HAND-WHEEL.

935,019.

Specification of Letters Patent. Patented Sept. 28, 1909.

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To all whom it may concern:

Be it known that I, ALBERT HALLOWELL, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Hand-Wheels, of which the following is a specification.

This invention relates to hand-wheels such as are used on the spindles of valves and other spindles and stems requiring to be turned by hand.

The invention is applicable as well to handles not circular in cross-section, but in which the attaching end of the handle contains a socket or perforated core of different material from the body of the handle. Such hand-wheels are more commonly made of a wooden body consisting of an annular bead and a thin central web formed in one piece of wood, the web being clasped between two disks of metal or alloy, as brass or similar composition and provided with a central many-sided hole to receive and fit the free end portion of a stem or spindle. The part of the valve-stem on which the wheel is placed is usually tapering, and the hole in the hand-wheel is usually also tapered to fit the spindle and said wheel is retained on the stem by a nut or screw. Usually one of the clamp-plates is provided with small projections which enter holes in the web of the body of the wheel, without passing through said web. The wood of the web is apt to shrink away from the clamp-plates or disks and to move slightly between them, so that the holes in the wood become worn by the projections into arc-shaped grooves. When the grooves that are worn as described, reach a point where the grain is nearly radial to the wheel, the wooden body of the wheel is likely to be split by the ordinary effort required to turn the wheel. Sometimes these grooves are worn into a continuous circle, so that turning the wheel will not turn the valve stem. The wooden body of the wheel frequently checks or splits from the effect of varying conditions of moisture and temperature and the parts of said body fall away from the clamp-plates or are removed by the ordinary use of the wheel.

The object of this invention is to make, at much less expense than heretofore, a hand-wheel or other handle that will not split or

become loose and which is therefore much more durable than the ordinary hand-wheel, and also to provide a simple means of attaching to said wheel or handle a suitable part to engage a spindle. This I accomplish by casting the clamp-plates in one piece connected by posts, from a metallic composition or alloy which can be melted at so low a temperature as not to burn the wood, using for this purpose white metal, type-metal, Babbitt-metal or similar alloy, and I preferably secure a hub or core having a central orifice, in said clamping-plates.

In the accompanying drawing, Figure 1, is a side elevation of a hand-wheel embodying my invention; Fig. 2, a plan of the same; Fig. 3, a central vertical section of the hand-wheel on the line 3 3 in Fig. 2; Fig. 4, a central vertical section of the hand-wheel on the line 4 4 in Fig. 2, the body of the wheel being also in section on the line 4 4 in Fig. 5; Fig. 5, a plan of the body of the wheel, the sides being broken away; Fig. 6, a central vertical section of a part of a wheel on the line 6 6 in Fig. 7; Fig. 7, a horizontal section of the same on the line 7 7 in Fig. 6; Fig. 8, is a perspective view of a hub or core detached; Fig. 9, a side elevation of a core with radial projections; Fig. 10, a side elevation of a core with transverse grooves; Fig. 11, a vertical transverse section of a wheel with filling of alloy without a core, showing a modification of the clamping device.

The body A of the wheel is usually of wood and is represented as a ring having an internal annular flange a , which has a plurality of perforations a^1 . It is not however necessary that the body A should be circular in horizontal section as obviously any of the bodies shown might have a radially projecting handle. The perforations a^1 are arranged on opposite sides of a central line drawn parallel with the grain of the wood, that is, if only two such perforations a^1 are used, as in Fig. 5, they will preferably be on a diameter, which is at right angles to the direction of the grain of the wood. The flange a may have parallel top and bottom faces as shown in Figs. 4 and 6, but I prefer to make the inner unattached edge of the flange thicker than the attached edge, so that a vertical section of the flange is of a dove-

tail form, as shown in Fig. 3, so that said flange may be grasped more firmly by the clamping-plates b b^1 . The body A is then placed in a suitable mold provided with a molding-spindle of the shape of the spindle on which the wheel is to be used and the metal or alloy is poured into the central cavity of the body A around the molding-spindle, so that said metal or alloy flows over and under the flange a and through the holes a^1 forming a single filling or clamping piece B which constitutes the upper and lower clamping-plates b b^1 and posts b^2 which unite said plates. The removal of the molding-spindle leaves a central perforation b^3 which is usually square in horizontal section and upwardly tapering. When the wheel is in use, the perforation b^3 receives the free end portion of a spindle of corresponding cross-section.

In Fig. 1, C represents a valve-spindle or stem on which a wheel is placed and retained in position by a cap-screw D, the head d of which rests upon the upper clamping-plate, the shank d^1 of said screw being threaded into the top of the spindle C in a well-known manner. Sometimes the spindle C projects up through the clamping-plates and carries a nut which turns on the threaded projecting part of the spindle.

Usually and especially where the hand-wheel is exposed to rough usage or great heat from the spindle, I use a central hub or core E, Figs. 2, 3, 4, 6, 7 and 8 of material harder than the filling or clamping-piece B, using for this purpose preferably iron or brass, the core E being provided with a spindle-receiving perforation e and being held centrally in the body A by a molding-spindle which passes up through said perforation e while the alloy or composition B is cast around said core. The core E is represented in Figs. 3, 4 and 6 as slightly tapering upwardly to prevent its withdrawal from the filling or clamping metal B and is provided with a tapering central many-sided opening e to receive and fit the spindle to be turned thereby. The core E is represented as externally approximately gear-shaped, the arms e^1 which resemble the teeth of a gear, and the spaces between said arms interlocking with the soft metal or alloy and preventing the core from turning therein.

To assist in preventing the core from moving upward in the filling or clamping part the arms e^1 of said core may be provided with radial projections e^2 of less depth than the teeth as shown in Fig. 9 or with lateral grooves as shown in Fig. 10, at e^3 .

As an additional precaution against the splitting of the wood, radial arms b^4 , as shown in Figs. 6 and 7 may extend horizontally from the clamping part B to the circumference of the body A in holes a^3

bored for this purpose across the grain of the wood and counterbored or enlarged at their outer ends as at a^4 .

Fig. 11 shows that the posts b^2 which connect the clamping plates may be inclined downwardly and outwardly to reach more nearly to the circumference of the body and to include between them a greater number of the fibers of the wood. Said Fig. 11 also shows that the lower clamp may be provided with an upwardly extending annular flange b^5 which fills an annular groove in the underside of the body A, this flange serves the general purpose of preventing splitting of said body.

I claim as my invention:—

1. A hand-wheel or similar handle provided with an internal annular flange, and a centrally perforated metallic core or hub united to the handle-flange by the embracing and united flanges of a metal of greater fusibility than that of the core or hub.

2. A hand-wheel or similar handle provided with an internal annular flange, a hard metal hub or core located within said annular flange, and a pair of integral flanges of softer metal embracing the annular flange and uniting the hub thereto.

3. A hand-wheel or similar handle provided with a central perforation, a metallic hub located in said perforation and an integral body of metal of greater fusibility than that of the hub exposed on both sides of the handle and interlocking with the hub and with the handle and leaving the center of the hub exposed.

4. A hand-wheel or similar handle provided with an internal annular flange, a metallic hub located within said flange, and a body of metal of greater fusibility than that of the hub uniting the hub and annular flange and having flanges which embrace and interlock with said annular flange.

5. A hand-wheel comprising an annular body having an internal annular flange provided with perforations, and a filling or clamping-piece formed of soft metal cast in place and extending above and below said flange and through said perforations, and having a central opening.

6. A hand-wheel comprising an annular body having an internal annular flange provided with perforations, and a filling or clamping-piece formed of soft metal cast in place and extending above and below said flange and through said perforations, and having a central opening, and radial arms integral with said clamping piece and extending therefrom to the circumference of said body through holes with which said body is provided.

7. A hand-wheel consisting of an annular body having an internal annular flange provided with perforations, a central core hav-

ing a spindle-receiving opening, and a filling or clamping-piece formed of metal softer than said core, cast in place around said core and connecting said core to said body.

5 8. A hand-wheel consisting of an annular body having an internal annular flange provided with perforations, a centrally arranged core having a spindle-receiving opening, and having radial projections, and a filling
10 or clamping-piece of metal softer than said core, cast in place around said core and connecting said core to said body.

9. In a valve handle, the combination of an annular grip portion, a hub member located in the opening of said annular grip
15 portion and formed for attachment to a valve stem, and a cast connection engaging said hub member and having flanges which inclose and engage the inner edge of said
20 annular grip portion.

10. In a valve handle, the combination of

an annular grip portion having an inwardly projecting flange, a centrally located hub member having external projections radiating toward and into proximity to said flange, 25 and a cast connection filling the spaces between said projections and interlocking said flange and hub member.

11. In a valve handle, the combination of an annular grip portion of heat-insulating 30 material having an inwardly projecting perforated flange, a centrally located hub member having external projections, and a cast connection which has flanges inclosing said grip portion flange, fills said perforations, 35 and engages said hub member.

In witness whereof I have affixed my signature, in presence of two witnesses.

ALBERT HALLOWELL.

Witnesses:

ALBERT M. MOORE,
LUDGER A. NICOL.