Dec. 19, 1944. M. M. RUBENS 2,365,359

HAND WHEEL

Filed Oct. 21, 1943

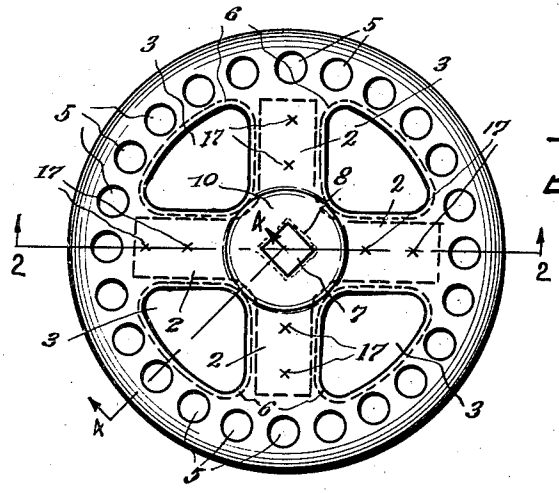


Fig. 1

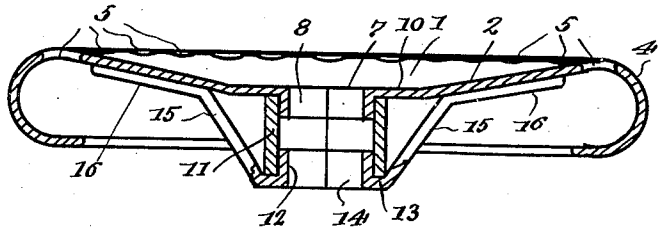


Fig. 2

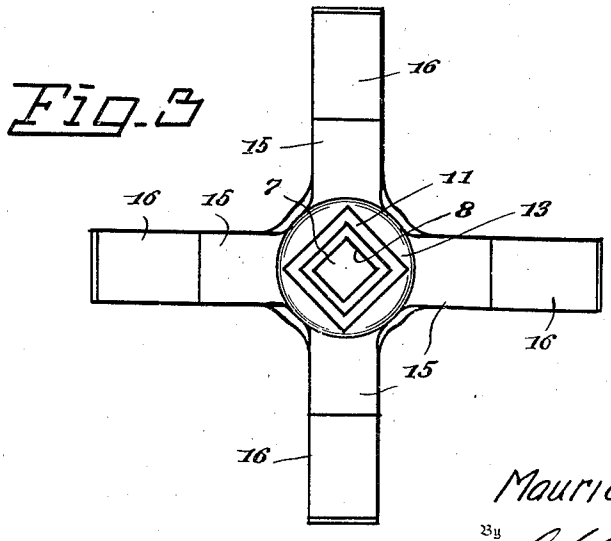


Fig. 3

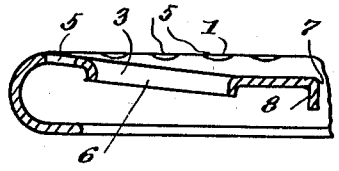


Fig. 4

Inventor

Maurice M. Rubens

By Glenn L. Fish

Attorney

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HANDWHEEL

Maurice M. Rubens, Spokane, Wash., assignor to Spokane Stove and Furnace Repair Works Inc., Spokane, Wash.

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2 Claims. (Cl. 74—553)

This invention relates to hand wheels for valves and it is one object of the invention to provide a hand wheel of such construction that it may be used instead of the solid metal wheels customarily used and thus save brass and bronze from which such wheels are formed.

Another object of the invention is to provide a hand wheel which is formed of sheet metal, the construction of the wheel being such that it will be of light weight and still be very strong.

Another object of the invention is to provide the improved hand wheel with a hub portion of such formation that it may be subjected to twisting strains without being wrenched out of engagement with a valve stem or its elements distorted or torn from each other.

Another object of the invention is to provide the improved wheel with a peripheral portion or rim which is arcuate transversely so that it may be tightly gripped without injuring a person's hand.

Another object is to provide a hand wheel consisting of a body, a frog or spider under the body and having arms welded to the body, and a tube disposed between the body and the frog about square necks thereof and cooperating with the necks to form a socket to receive the squared portion of a valve stem and greatly reinforce the wheel.

In the accompanying drawing:

Fig. 1 is a top plan view of the improved hand wheel.

Fig. 2 is a sectional view taken diagrammatically through the hand wheel on the line 2—2 of Fig. 1.

Fig. 3 is a view looking down on the frog and tube.

Fig. 4 is a fragmentary sectional view on the line 4—4 of Fig. 1.

This improved hand wheel is formed entirely of sheet metal which may be steel or other strong metal of sufficient stiffness to serve the purpose.

The body 1 of the wheel is formed from a circular band having circumferentially spaced portions cut therefrom to form radially extending spokes 2 and openings 3 therebetween. The peripheral portion is rolled downwardly and inwardly to form a hollow transversely arcuate rim 4 extending under the body and of such dimensions that it may be firmly gripped in a person's hand. A circumferentially extending line of openings 5 is formed in the rim of the wheel and along margins of the openings 3 portions of the body are bent downwardly to form bordering lips which provide smooth edges for the openings and also reinforce the wheel against bending out of shape. At its center the body of the wheel is formed with a square opening 7 surrounded by a depending flange or short neck 8 and about the opening 7 the central portion of the body is formed with a flat hub portion 10 from which the spokes 2 extend at an upward incline.

A tube 11, square in cross section, fits snugly about the short neck 8 and within the lower end of the tube fits a short neck 12 projecting upwardly from a frog or spider 13 about an opening 14 at the center of the frog. The arms 15 of the frog extend upwardly at an outward incline in radial relation to the hub portion of the frog and in spaced relation to their outer ends are bent to form anchoring portions 16 which fit flat against under faces of the spokes 2 where they are spot welded to the spokes, as shown at 17 in Fig. 1.

It will thus be seen that the arms of the frog or spider are very firmly secured to the spokes to support and reinforce same and that the tube 11 is firmly held in place about the square necks 8 and 12 and cooperates with the necks to form a socket for receiving the squared portion of a valve stem.

When the improved wheel is applied to a valve stem it fits firmly about the squared portion thereof and, by grasping the wheel, the valve stem may be turned to open or close the valve. Since the body and the spider or frog are welded together and all elements of the wheel are formed of stiff sheet metal, the valve wheel will be very strong but of light weight and require a minimum amount of metal to form the wheel. Therefore, metal will be saved and a light but strong wheel produced.

Having thus described the invention, what is claimed is:

1. A hand wheel for a valve-stem comprising a body formed of sheet metal and having marginal portions rolled downwardly and inwardly to form a transversely arcuate rim for the wheel having its lower portion projecting inwardly under its upper portion, portions of the body spaced from each other circumferentially thereof being cut out to provide a centrally located hub and spokes extending radially between the hub and the rim with openings between the spokes, there being depending reinforcing lips about margins of the openings to provide the spokes with blunt side edges, the hub portions being formed with a centrally located non-circular opening surrounded by a depending neck, a tube fitting snugly about said neck and extending downwardly therefrom, and a spider having a hub portion and arms ex-

tending radially therefrom at an upward incline and having their outer end portions bent to extend flat against under faces of said spokes and welded thereto, the hub portion of the spider being formed with an opening at its center surrounded by an upstanding neck fitting snugly into the lower end of said tube, and the tube and the necks cooperating with each other to form a socket for snugly receiving a correspondingly shaped end portion of a valve stem.

2. A hand wheel for a valve-stem comprising a body having a hub and a transversely arcuate rim and spokes spaced from each other circumferentially of the wheel and extending between the hub and rim, flanges extending downwardly along side edges of the spokes and along inner peripheral portions of the rim between the spokes, the hub being formed with a non-circular opening surrounded by a depending neck, a spider under said body formed with a non-circular opening alined with the opening of the body and surrounded by an upstanding neck alined with the neck of the body, said spider having arms extending upwardly and having their end portions bent to form flat anchoring portions welded to under faces of said spokes, and a tube extending between the body and the spider and fitting snugly about the necks and cooperating therewith to form a socket for receiving a valve stem.

MAURICE M. RUBENS.