

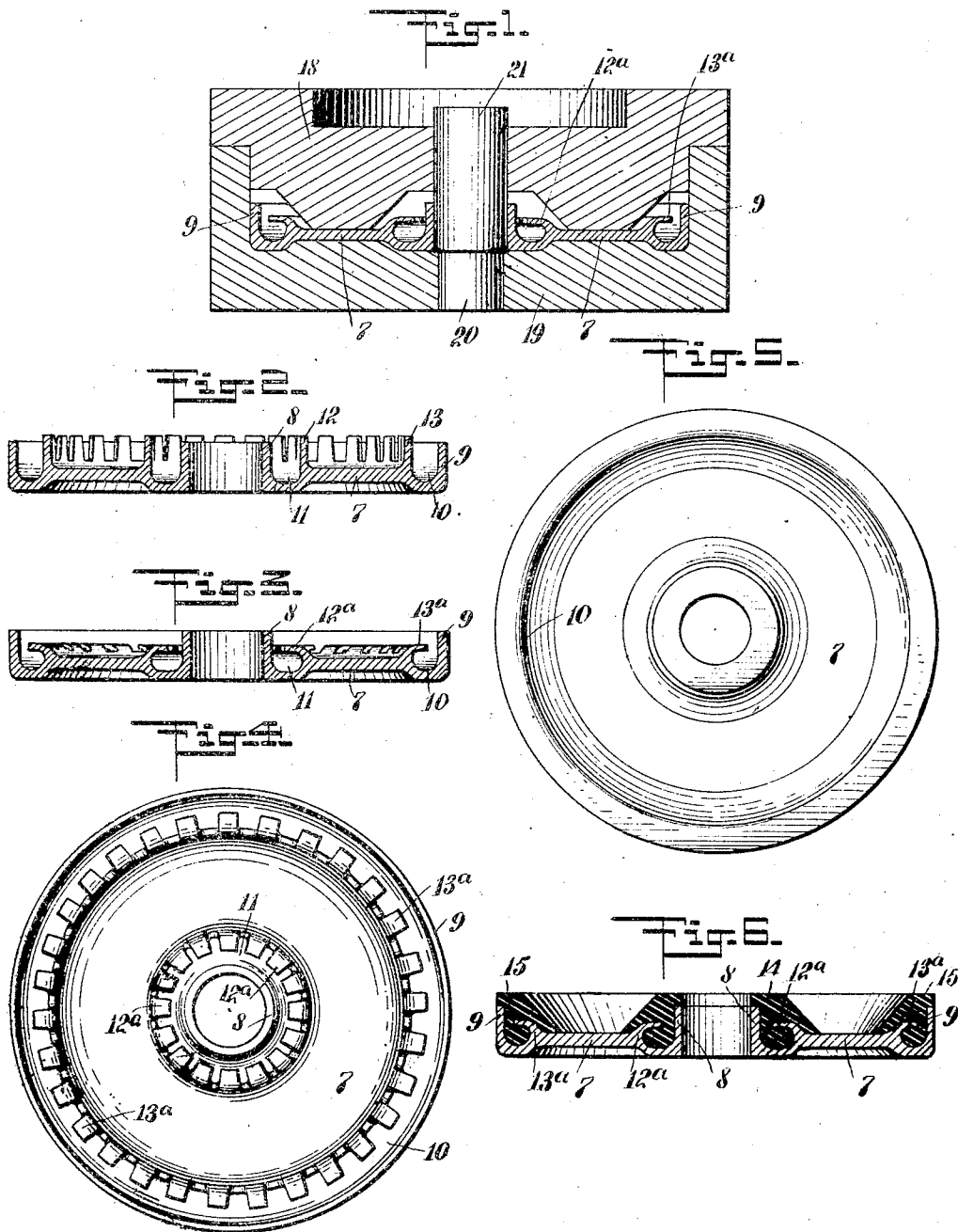
J. HEWITT.

VALVE.

APPLICATION FILED AUG. 4, 1909.

1,053,992.

Patented Feb. 25, 1913.



WITNESSES

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JAMES HEWITT, OF NEW YORK, N. Y., ASSIGNOR TO INTERNATIONAL STEAM PUMP COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

VALVE.

1,053,992.

Specification of Letters Patent.

Patented Feb. 25, 1913.

Application filed August 4, 1909. Serial No. 511,163.

To all whom it may concern:

Be it known that I, JAMES HEWITT, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Valve, of which the following is a full, clear, and exact description.

The object of the present invention is to provide an improved valve of that class having a metal body and rubber seating surface or face, which shall be light, strong and cheap of manufacture, and in which the rubber shall be held securely.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a vertical section of a metal form held in position within the male and female members of a metal mold for casting the rubber valve faces, a centering tool being shown in connection therewith; Fig. 2 is a vertical section of the metal form shown in its condition as delivered from the metal casting mold; Fig. 3 is a similar section showing the metal form after having been subjected to the forming dies; Fig. 4 is a top view of the metal form after having passed through the forming dies; Fig. 5 is a back view of the metal form; and Fig. 6 is a vertical section of the completed valve.

The special application for which a valve of the character described is employed is in water pumps and particularly of the plunger type. It has been found that the hard rubber valve serves the purpose of the clapper valve employed in such machines better than the ordinary metal valve. On the other hand, the fragile character of the rubber valves has given considerable trouble owing to the breakage of the valves in use. It was to overcome the objections involved in the use of the ordinary rubber valve that I invented a valve composed of rubber reinforced by metal, upon which invention a patent was granted to me the 4th day of June, 1895, bearing the number 540,547.

The present invention provides an improved valve of this class, avoiding the use of perforations for keying the rubber, which tend to weaken the body, and in which the rubber is held more securely against breakage or separation from the metal.

In the present valve the metal form is preferably cast from copper, bronze, brass or other suitable metal and run as thin as is compatible with strength, forming the body portion or web 7 which connects the up-standing flanges 8 and 9 and the tongues 12 and 13. The flange 8 forms the central guide perforation adapted to fit over the valve guide stem. The outer flange 9 is provided to give strength and form to the completed structure. Both flanges are restricted in height so that in the completed structure their edges do not approximate too closely to the seat of the valve.

The valves may readily be made by the following method which is preferably used. The metal forms are cast, being arranged as shown in Fig. 2 of the drawings, with an outer and inner series of separated vertically arranged tongues 12 and 13. These tongues are so shaped as to be readily drawn from the molds in which they are cast and without complicating the mold. That is, so that the forms may be drawn from a two-part mold. The tongues 12 and 13 are formed as thin as compatible with good casting. When delivered as castings the forms are placed in suitable dies in which the tongues 13 are curled or struck outwardly toward the flange 9. The tongues 12 are curled or struck inwardly toward the flange 8. In this operation there are formed channels 10 and 11 overhanging which are the curled tongues 12^a and 13^a. The forms are now centered and bored to receive the valve stem.

In the further process of manufacture a mandrel 21 is driven into the perforation for the stem, and the mandrel form with the mandrel in place is introduced into the female member 19 of the mold for casting the rubber face rings 14 and 15. For introducing the form and mandrel into the female mold 19, there is provided in the said mold a perforation to receive the extension 20 of the said mandrel. The mandrel and form being in position, the male member 18 of the mold is slipped over the mandrel 21 depressed upon the webs 7, 7 and the sides of the said mold, and the male and female members, where they register, are closely met so as to prevent the feathering of the rubber when run into the mold. The metal form being thus held between the mold members, the rubber composition is poured into the mold, flowing intermittently about the

tongues 12^a and 13^a in such manner as to be anchored rigidly in position thereby.

When the mold has cooled and set and the mold members 18 and 19 parted, the valve is found to have the characteristics as follows: A metal valve provided with rubber face rings, said rings being rigidly and inseparably connected with the metal of the valve.

A valve constructed in accordance with the method above described and having the structural features set forth and as shown in the drawings, will be light, strong and durable, and may be formed to occupy as little space as the ordinary metal valves employed in this art.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A valve, comprising a metal body having an unperforated portion for receiving a face ring, a series of anchors extending transversely to and within the face ring space, and a rubber face ring molded about the anchors to form a continuous body penetrated by the series of anchors and anchored thereby to the unperforated portion of the body.

2. A valve, comprising a metal body having unperforated portions for receiving face rings, a series of anchors extended transversely to and within each of the face ring spaces, and a plurality of rubber face rings forming the valve face and molded about the anchors to form a continuous body penetrated by the series of anchors and anchored thereby to the unperforated portions of the body.

3. A valve, comprising a metal body having formed therein a perforation to receive the guide stem and provided with a channel the side whereof is divided and overhung to form a series of anchors, and a rubber face ring molded within said channel and held therein by the said overhung portion thereof.

4. A valve, comprising a metal body provided with a suitable peripheral flange and a channel adjacent thereto having overhung

sections forming anchors for a face ring, and a rubber face ring extending from said channel and formed by being molded therein.

5. A valve, comprising a metal body having peripheral and central upstanding flanges and a solid connected web or body portion between the said flanges, annular grooves formed adjacent to said peripheral and central flanges, tongues formed integrally with the body portion to overhang the said annular grooves, and face rings formed of a composition different from the said body portion, extending beyond the said body portion and secured thereto by being molded within the said annular grooves.

6. A valve, comprising a body portion having upstanding peripheral and central flanges and a central perforation to receive the guide stem, annular grooves adjacent to the said peripheral and central flanges, short tongue sections formed integrally with the said body portion and extending over said grooves, and valve face portions formed of suitable material by being molded within the said annular grooves to extend beyond the said body portion and totally inclosing the said tongue sections.

7. A valve body portion, comprising a metal disk having a flange and short tongue sections extending toward said flange to form an overhung channel therewith adapted to receive a suitable face ring.

8. A valve body portion, comprising a metal disk having a peripheral and a central upturned flange and short tongue sections for each of said flanges formed integral with the body and extending toward said flanges to form in conjunction therewith overhung channels adapted to receive and hold face rings.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES HEWITT.

Witnesses:

E. F. MURDOCK,
JOHN P. DAVIS.