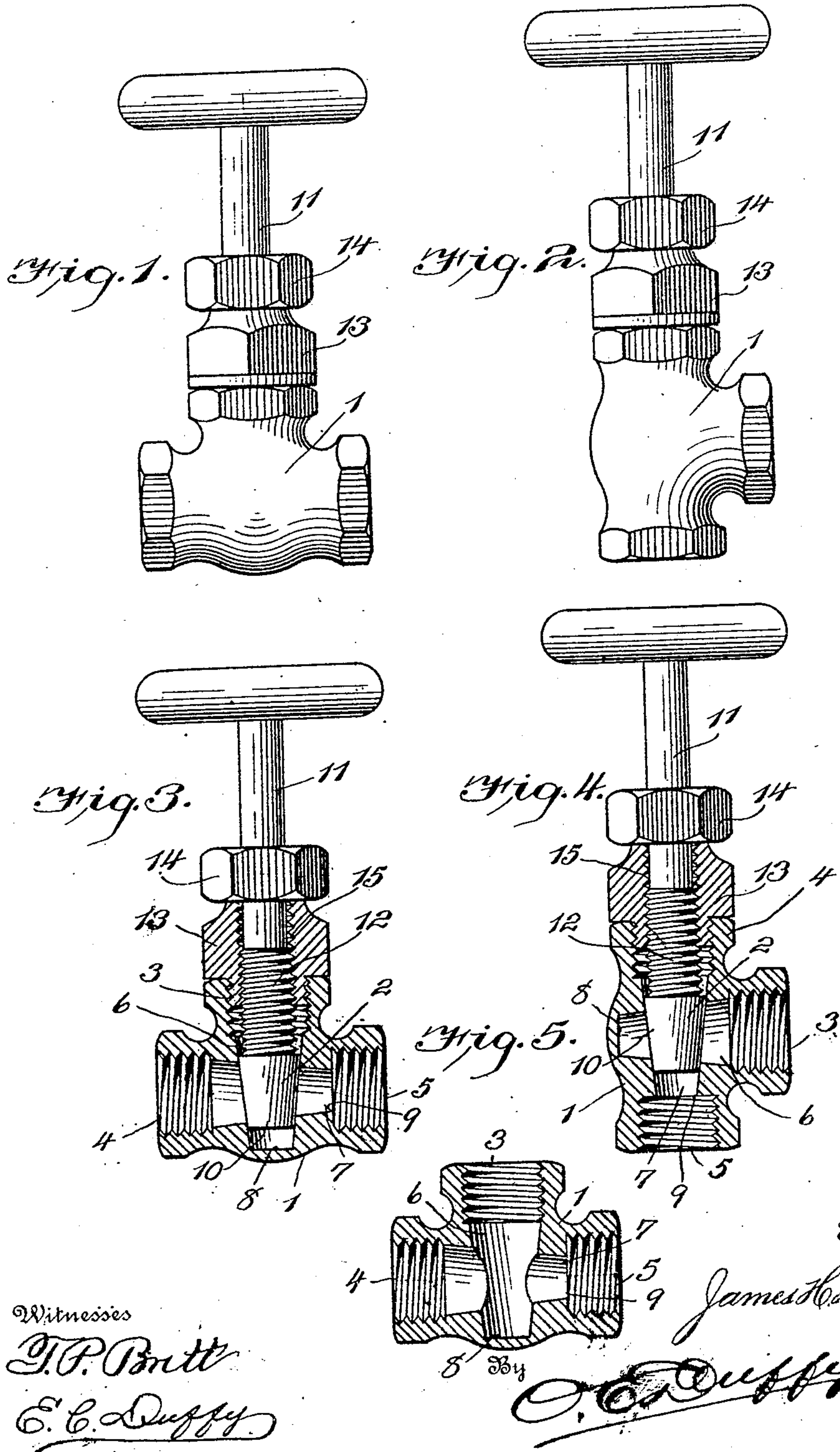


976,804.



Witnesses

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VALVE.  
APPLICATION FILED FEB. 15, 1910.

Patented Nov. 22, 1910.  
2 SHEETS—SHEET 2

Fig. 6.

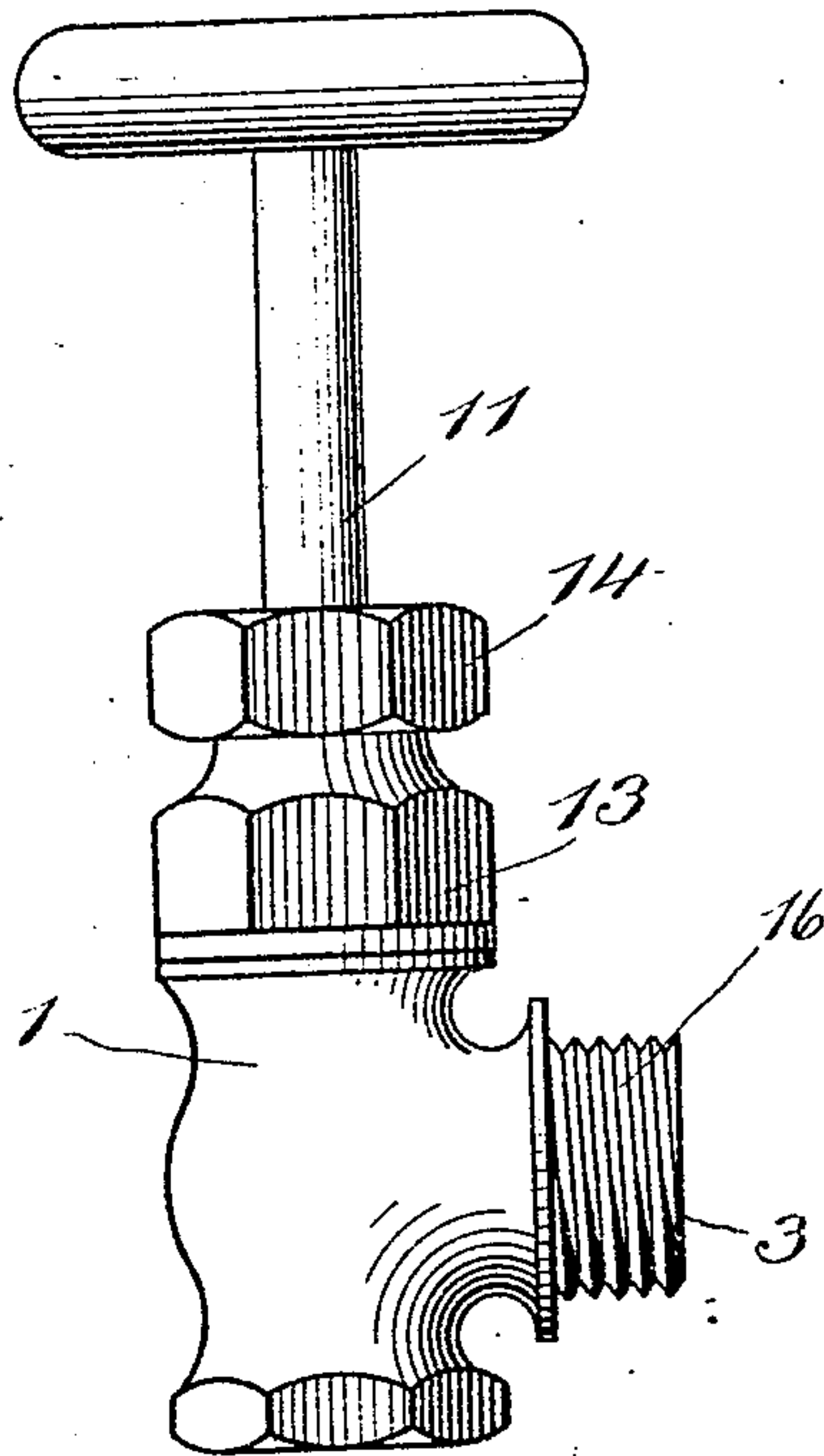


Fig. 7.

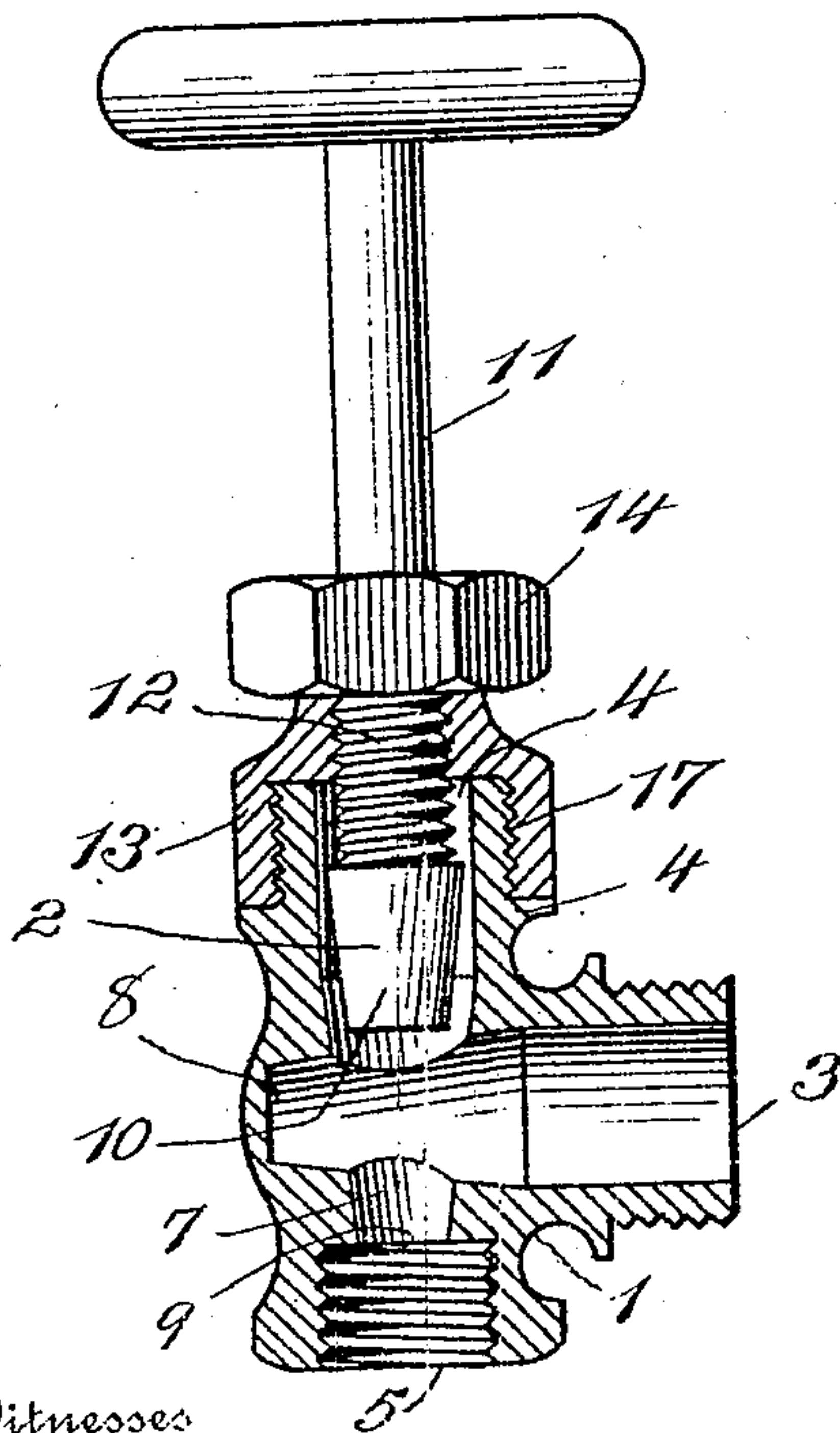


Fig. 8.

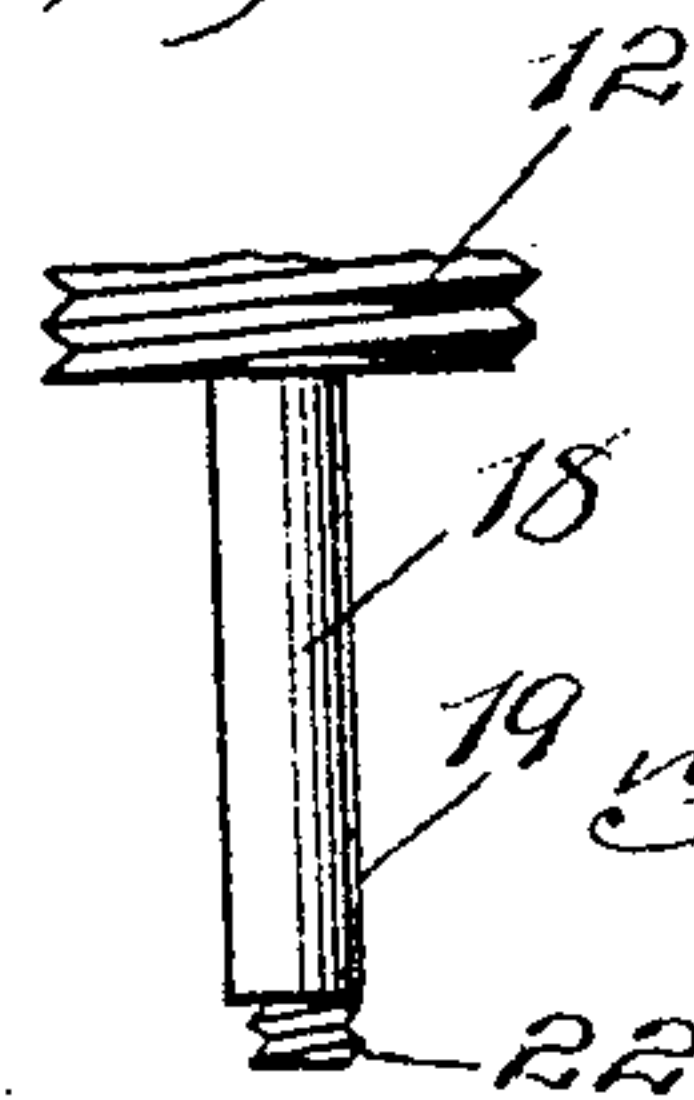


Fig. 9.

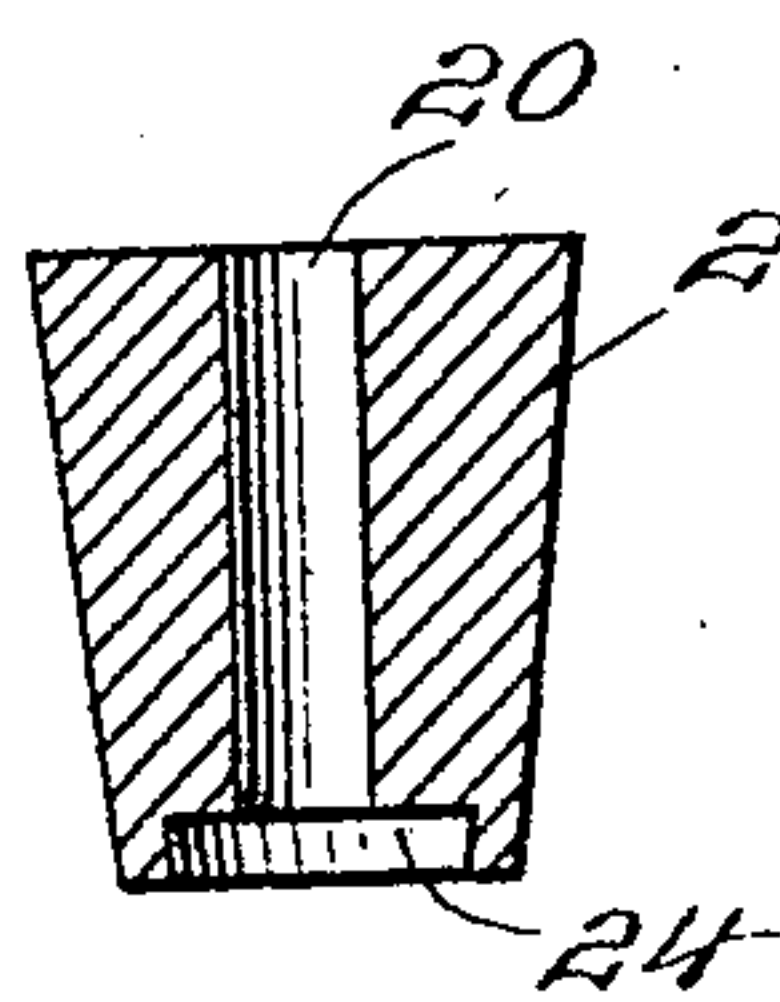
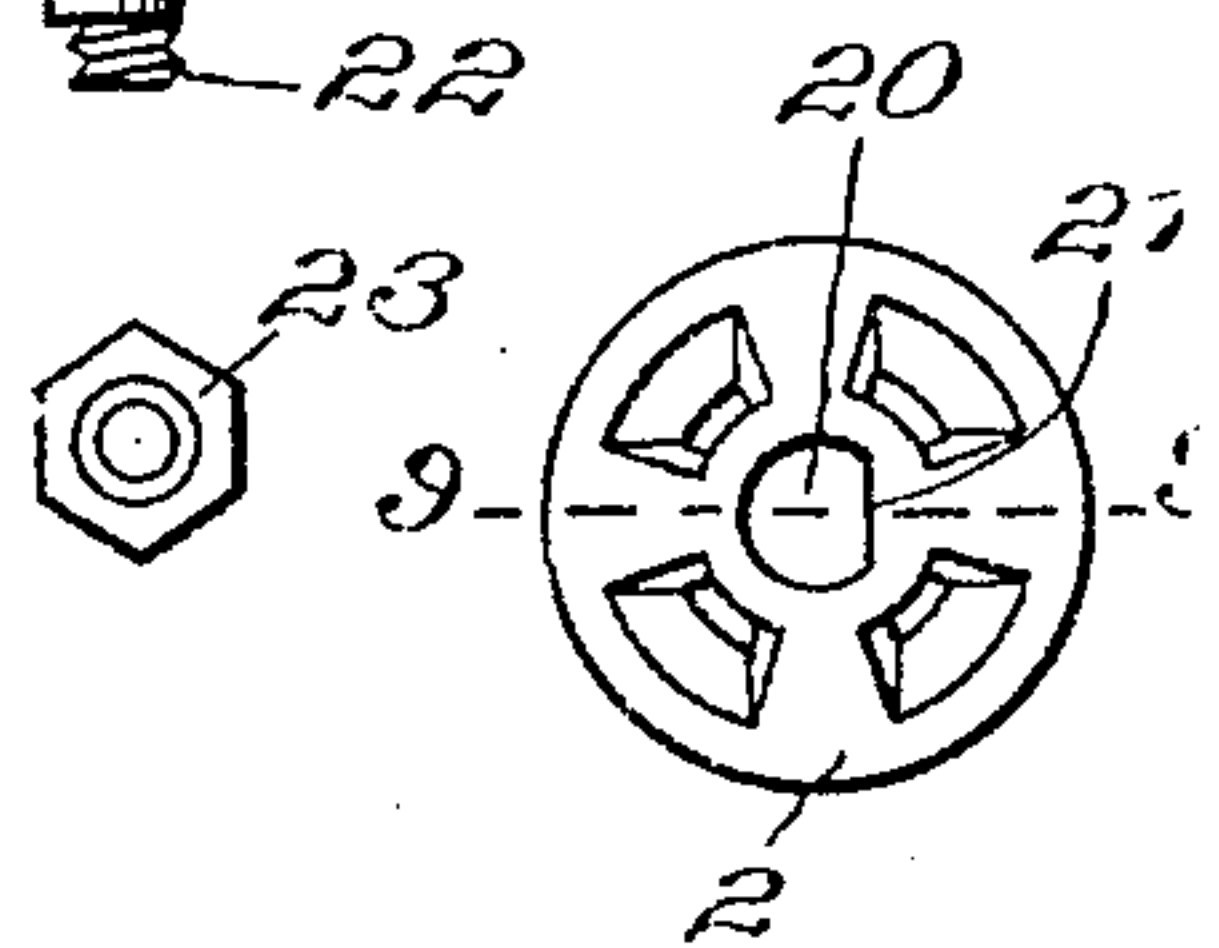


Fig. 10.



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# UNITED STATES PATENT OFFICE.

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## VALVE.

976,804.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed February 15, 1910. Serial No. 544,115.

*To all whom it may concern:*

Be it known that I, JAMES H. HULINGS, a citizen of the United States, residing at Parsons, in the county of Tucker and State of West Virginia, have invented certain new and useful Improvements in Valves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to the class of valves and has for its object to provide an interchangeable combination gate, globe and angle valve which is so constructed and arranged that the valve can be instantly changed from a globe valve to an angle valve in such manner that the same valve can be employed for either purpose.

A further object of this invention is to provide a combination gate, globe and angle valve which is particularly simple in construction, cheap and easy to manufacture, strong, durable and efficient and composed of a minimum number of parts.

With these objects in view this invention consists in the novel construction of the valve casing and also in combination with the valve plug or gate as will be hereinafter fully described and afterward specifically pointed out in the appended claims.

Referring to the accompanying drawings: Figure 1 is an elevation of the valve illustrated as a globe or gate valve. Fig. 2 is an elevation of the valve illustrated as an angle valve. Fig. 3 is a longitudinal sectional view through Fig. 1. Fig. 4 is a longitudinal sectional view through Fig. 2. Fig. 5 is a longitudinal sectional view through the valve-casing with the valve plug or gate removed. Fig. 6 is an elevation of a valve illustrating a modified construction of the casing. Fig. 7 is a longitudinal sectional view through Fig. 6. Fig. 8 is an enlarged fragmentary view of the lower portion of the valve stem. Fig. 9 is a sectional view through the valve plug taken on line 9—9 of Fig. 10, and Fig. 10 is a plan view of the valve plug illustrating a webbed construction.

Like numerals of reference indicate the

same parts throughout the several figures in which;

1 indicates the valve casing which as shown in the drawings has the general appearance of the casing of a globe valve, and 2 indicates the valve plug or gate.

As will appear from Fig. 5 the valve has three branches 3, 4 and 5 each of which is tapped for connection with suitable pipes, and as will appear from this figure the branch 3 is tapered at 6, said taper extending into the passage 7 and terminating in a depression or seat 8. It will also be seen that the branch 4 is tapered or rather the passage 7, the said taper extending from the branch 4 to the point 9 at which point the passage 7 is reduced as shown.

The valve plug or gate 2 as shown in Figs. 3 and 4 has its inner end tapered at 10, the stem of the valve 11 being threaded at 12 to receive the nut 13, a suitable packing nut 14 being provided on the nut 13 for the purpose of packing the stem in the usual manner.

The nut 13 is threaded at 15 in such manner as to enter and run in either the branch 3 as shown in Fig. 3 or in the branch 4 as shown in Fig. 4. When the valve plug or gate 2 enters the branch 3 the tapered end 10 thereof enters the taper 6 within the casing and seats itself in the seat or depression 8 as clearly shown in Fig. 3. When, however, the valve plug or gate 2 is inserted in the branch 4 the tapered end 10 of the plug or gate passes entirely through the tapered passage 6 and seats itself in the tapered passage 7 as clearly shown in Fig. 4. It is immaterial which of the branches 3 or 4 the plug or gate enters as the nut 13 is threaded to fit the tapped branches in such manner as to rigidly hold and maintain the valve plug or gate in its proper position within the casing, and as will be clearly seen from the drawing when the valve plug or gate is passed in through the branch 3 and seated in the taper 6 the said plug or gate passes through the tapered passage 7 entirely closing communication between the branches 4 and 5, and when the valve plug or gate is passed into the branch 4 and seated the tapered end 10 thereof passes entirely through the tapered passage 6 entirely closing communication between the branches 3 and 5.

Having thus fully described this invention



its operation is obvious, for it is perfectly apparent from the drawings that communication between the branches 4 and 5 can be opened and closed by turning the valve plug or gate to seat or unseat the same in the tapered passage 6; and it is also perfectly apparent that when the valve is employed as shown in Fig. 4 communication between the branches 3 and 5 can be opened or closed by turning the valve plug or gate so as to seat or unseat the same within the tapered passage 7.

It is thus seen that by means of a very simple and inexpensive construction the same valve can be employed either in the capacity of an ordinary gate or globe valve or in the capacity of an angle valve which interchangeability is effected by means of this construction in an extremely simple and inexpensive manner, and a combination and interchangeable valve is thereby obtained which is particularly strong, durable and efficient being capable of withstanding high pressures without injury to the valve.

Referring to Figs. 6 and 7 which illustrate a modified construction of the valve casing it will be seen that the branch 3 is male threaded at 16, while the branch 4 is male threaded at 17 so that the valve can be employed for radiators and can be directly connected to a pipe by means of the ordinary union or coupling. It will also be seen that the packing nut 13 is female threaded so that it can be applied either to the branch 4, as shown in Fig. 7, in order to utilize the valve as an angle valve or it can be applied to branch 3 in order to utilize the valve as a globe or gate valve.

Referring to Figs. 8, 9 and 10 it will be seen that the valve stem 11 can if desired be provided with a reduced lower stem or spindle 18 which may be of any shape in cross section other than round and which is preferably provided with a flattened side 19. The valve plug 2 is then provided with a central opening 20 having a flattened side 21 as clearly shown in Fig. 10 to receive the reduced stem or spindle 18 of the valve stem in such manner that the valve plug 2 must necessarily rotate with the valve stem 11. The lower end of the reduced stem or spindle 18 is threaded at 22 to receive a small nut 23 which is accommodated in the recess 24 in the valve plug 2. As will appear from Fig. 10 the valve plug 2 can if desired be webbed as shown in order to reduce the weight of the plug 2 and to save metal in its manufacture, this construction being only employed in the manufacture of large heavy valves.

The diameter of the tapered portion 6 at its point of intersection through the tapered portion 7 is slightly greater than the diameter of the tapered portion 7 at that point. The purpose of this will be clearly apparent

by referring to Figs. 3 and 4. When the valve plug 2 is inserted in the valve casing so as to form an angle valve as shown in Fig. 4 the valve plug 2 enters the lower portion of the taper 7 thus forming an absolute closure for said taper. When, however, the valve plug 2 is inserted within the casing as shown in Fig. 3 the valve plug 2 must pass through the taper 7 and effectually cut off communication between the branches 4 and 5. In order to accomplish this the taper 6 must be of such size as to allow the valve plug 2 to have a perfect bearing on two sides thereof, and when the valve plug 2 is properly ground within the taper 6 it will effectually close communication between the branches 4 and 5.

Having thus fully described this invention what I claim as new and desire to secure by Letters Patent of the United States, is—

1. A valve comprising a valve shell having three branches, two of which branches are each provided with a tapered passage, two of said branches being in line with each other, one of said branches being disposed angularly to the other two, a valve plug comprising a stem and a tapered portion, said tapered portion being arranged to be inserted in one of the said two tapered passages in the said valve casing to open and close communication between the said two branches in line with each other, said tapered portion of said valve plug being adapted to be inserted in the other of said two tapered passages to open and close communication between the angularly disposed branch and one of the other branches.

2. A valve comprising a valve shell having three branches, two of which are arranged in line with each other, one of said branches being disposed angularly to the other two, two of said branches being each provided with a tapered passage, a valve plug comprising a stem and a tapered portion, said tapered portion being arranged to be inserted in either of the said two tapered passages in the said valve casing to open and close communication between the two branches in line with each other or between the angularly disposed branch and one of the other branches.

3. A valve of the character described comprising three branches, two of which are each provided with a tapered passage one tapered passage crossing the other, a valve plug adapted to be inserted in either of the said two branches and to be seated in either of the two tapered passages.

4. A valve comprising three branches two of which are in line to provide a straight passage, the other branch being disposed angularly to the two first mentioned branches, and means for opening and closing communication between one of the said two branches and either of the other two.



5. A valve of the character described comprising a valve casing having three branches, two of said branches being in line with each other in such manner as to provide a straight  
 5 direct passage through the valve casing, the other of the said three passages being arranged in said casing angularly to the said two branches, a valve plug being adapted  
 10 to be inserted in the angularly disposed branch to open or close the straight direct passage through the valve casing, said valve plug being also adapted to be inserted in  
 15 one of the other branches to open and close communication between the angularly disposed branch and the other branch.

6. A valve comprising three branches, two of which are arranged opposite to each other, the other branch being disposed angularly  
 20 to the two oppositely disposed branches, and means for opening and closing communication between one of the two oppositely arranged branches and either of the other two.

7. A valve of the character described comprising

prising more than two branches, two of which branches are each provided with a  
 25 tapered passage one passage crossing the other, a valve plug adapted to be inserted in either of said branches having a tapered passage and to be seated in either of the said tapered passages.

8. A valve comprising three branches, two of which are in line to provide a straight  
 30 passage through the valve, the other branch being disposed angularly to the said two branches and means for opening and closing  
 35 communication between the said two branches arranged in line, and for opening and closing communication between one of said two branches and the said angularly arranged branch.

In testimony whereof, I affix my signature, in presence of two witnesses.

JAMES H. HULINGS.

Witnesses:

T. J. ANVIL.

E. M. SHEETS.