

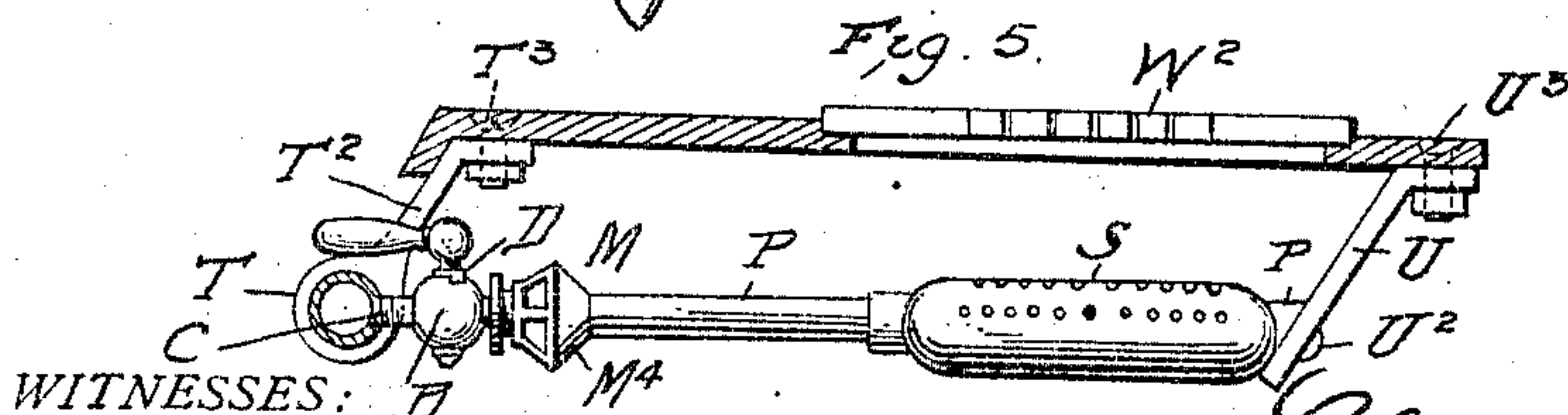
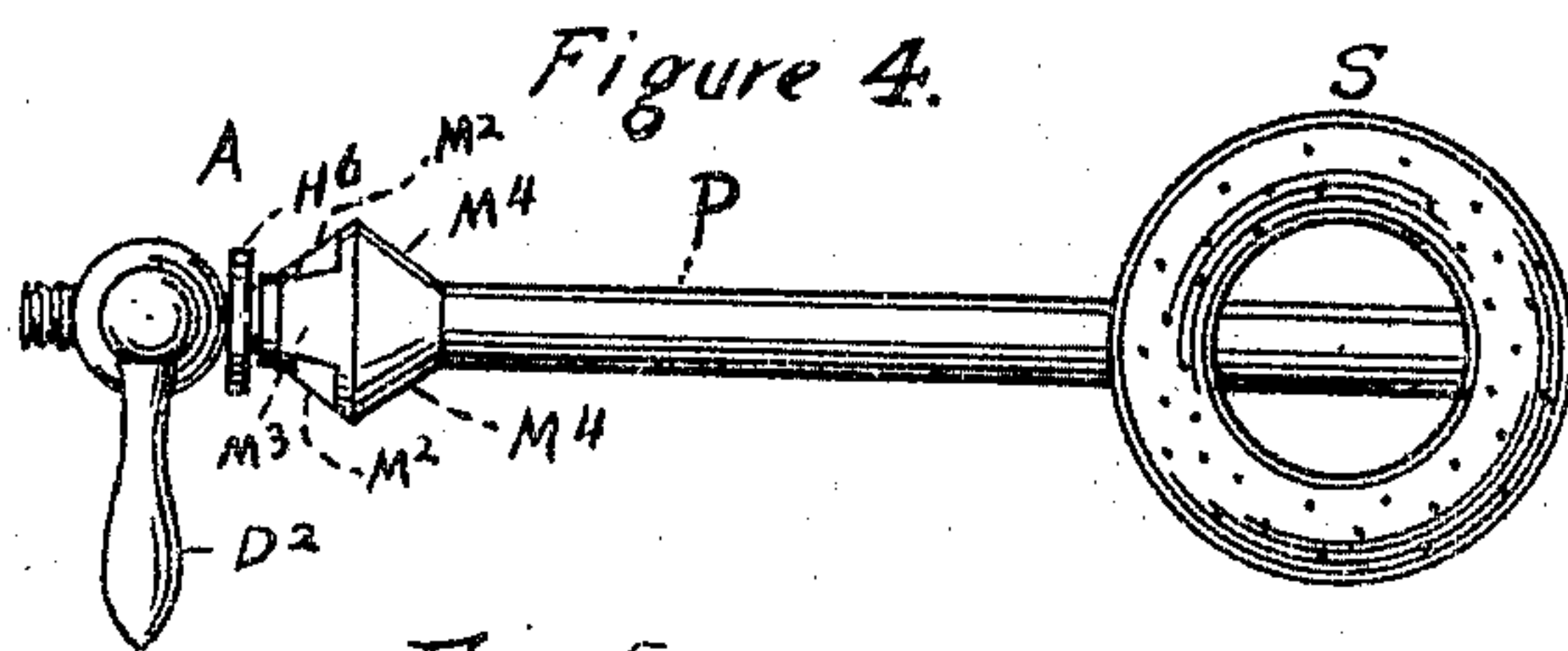
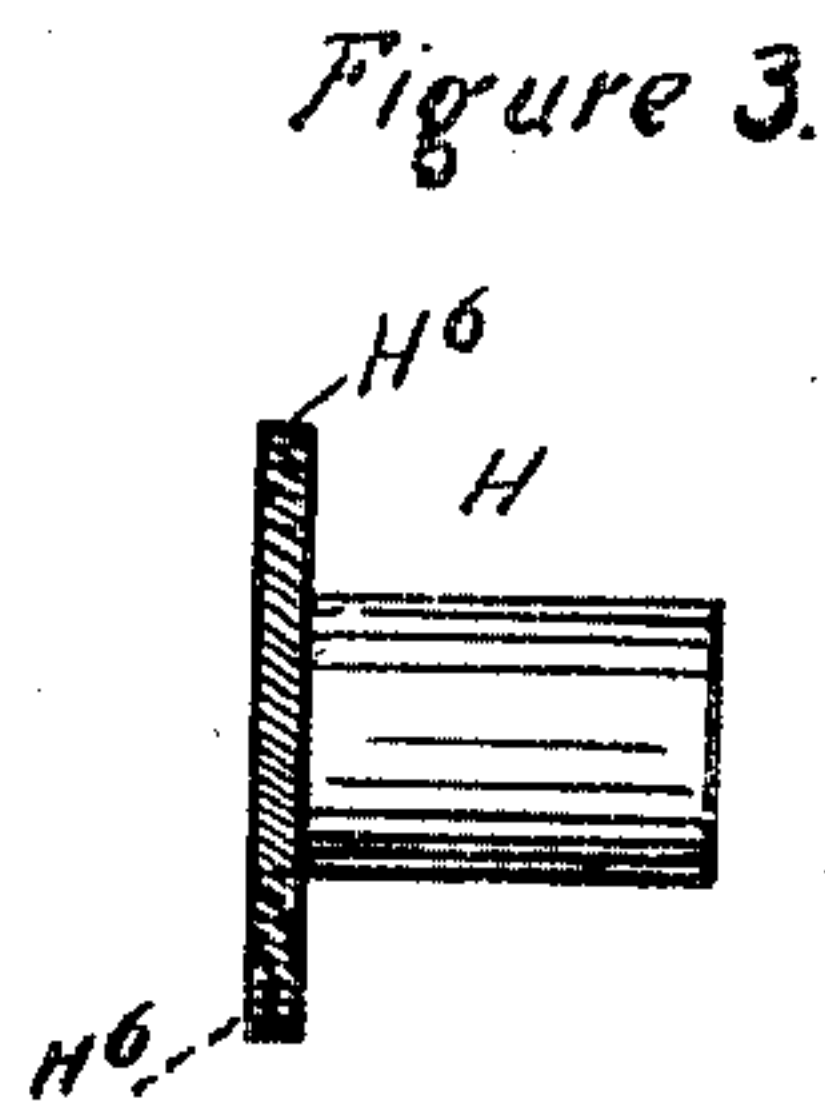
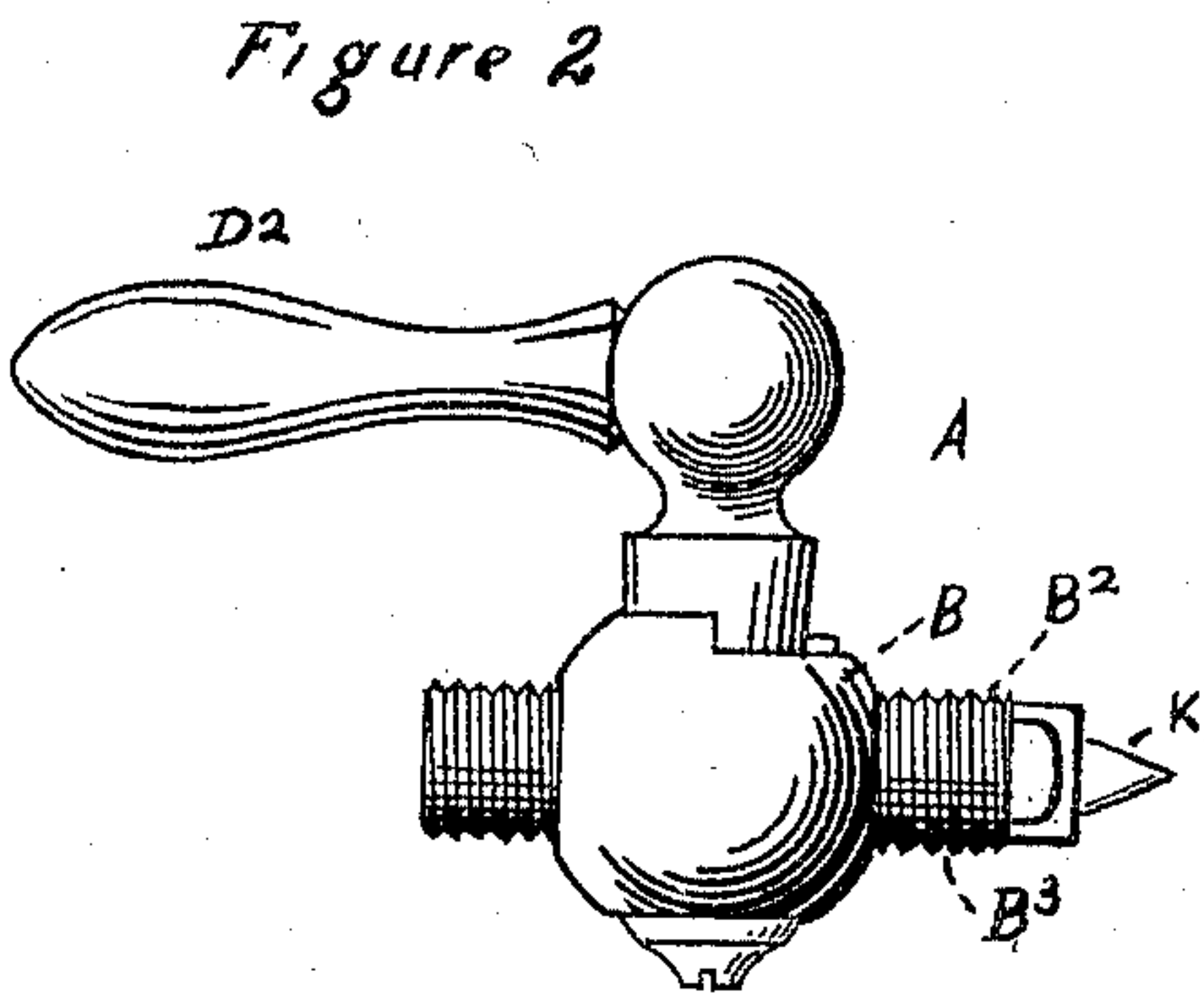
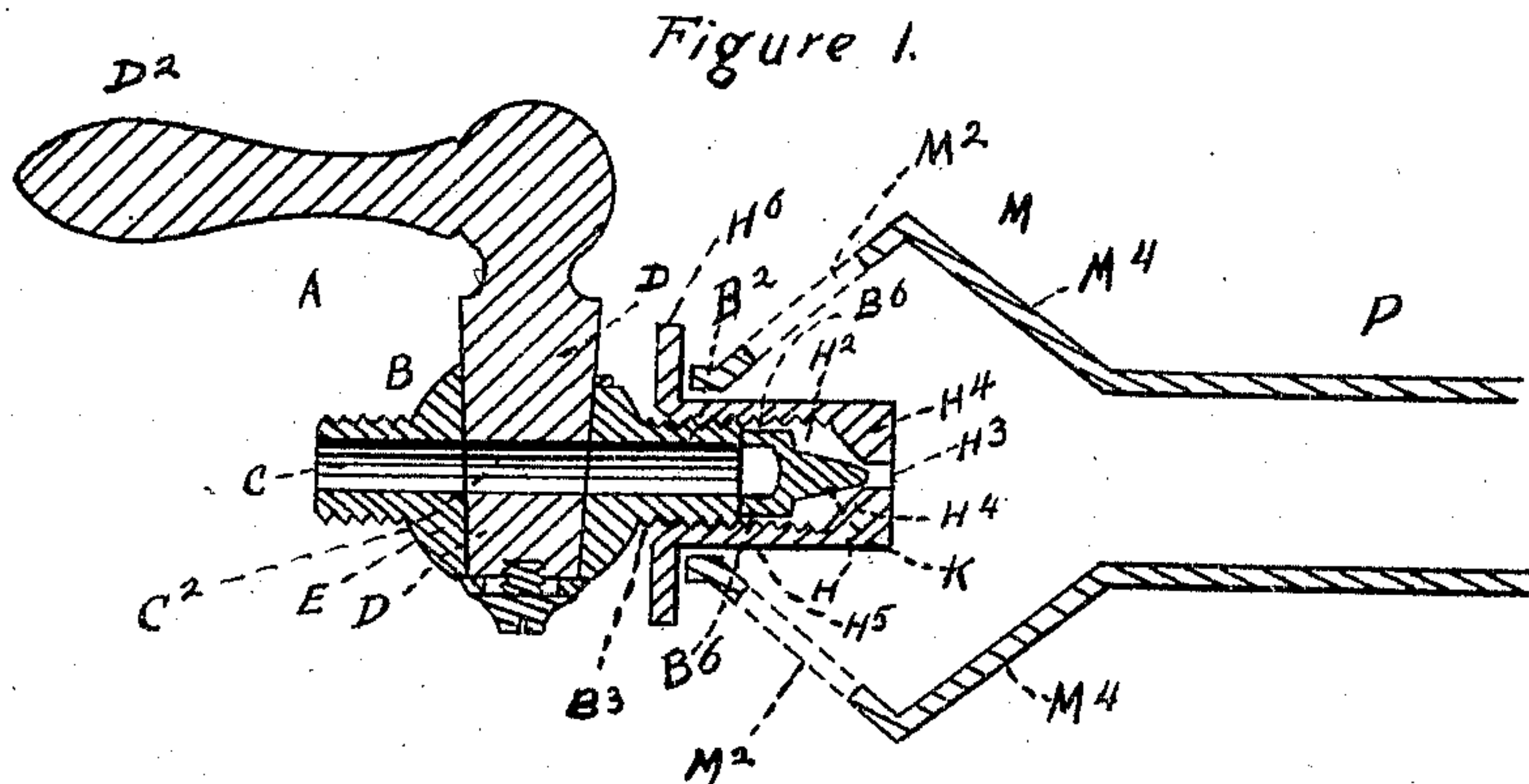
No. 776,258.

PATENTED NOV. 29, 1904.

C. H. RESOR.
REGULATOR FOR GAS BURNERS.

APPLICATION FILED JUNE 6, 1901.

NO MODEL.



WITNESSES:
Samuel C. West
H. Smith

INVENTOR.
Charles H. Resor
BY
Wm. Habbell Fisher
ATTORNEY.

UNITED STATES PATENT OFFICE.

CHARLES H. RESOR, OF CINCINNATI, OHIO.

REGULATOR FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 776,258, dated November 29, 1904.

Application filed June 6, 1901. Serial No. 63,440. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. RESOR, a citizen of the United States, and a resident of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and useful Regulator for Gas-Burners, of which the following is a specification.

My invention is designed to be used in connection with conduits where the pressure of gas passing therethrough is high or variable, as is the case with natural gas; and one of the objects of my invention is to regulate the supply of gas passing through this conduit without reducing the pressure of the gas to such an extent as to so reduce its speed at the point of exit that the air will not be properly entrained. It is well known that the amount of air which can be entrained and carried along with the jet of gas issuing from the delivery-orifice depends upon the speed with which the gas issues from the delivery end of the needle-valve. When the pressure of the gas is light, (low,) the speed of the issuing gas is slow and but little air is entrained. In such event it frequently happens that not enough air is entrained to properly supply the gas with oxygen.

One of the principal objects of my invention is to permit the high pressure to remain and yet regulate the quantity of gas fed from the needle-valve, so that the resulting combustion shall insure a flame of the desired size and so that just the proper amount of air shall be mixed with the gas. Too much air has a tendency to overload the gas, and an imperfect combustion is the result, while too little air results in preventing some of the gas from being consumed. In the latter case the flame will smoke.

The several features of my invention and the various advantages resulting from their use conjointly or otherwise will be apparent from the following description and claim.

In the accompanying drawings, making part of this specification, in which similar letters of reference indicate corresponding parts, Figure 1 represents a central vertical longitudinal section of mechanism illustrating my invention. Fig. 2 is a side elevation of a cock

constructed according to my invention and supplied with those necessary constructions which when combined with supplementary parts enable my invention to be carried into effect. Fig. 3 is a side elevation of a cap constructed according to my invention and adapted to engage the cock. Fig. 4 represents a top view of an apparatus illustrating my invention. Fig. 5, Sheet 2, is a view, partly in section and partly in elevation, showing one means of supporting the structure embodying my invention.

I will now proceed to describe my invention in detail.

A indicates a cock whose main portion B has a conduit C passing therethrough. The cock has a valve for controlling the passage of fluid through this conduit. This valve preferably consists, as shown, of a plug D, fitting into a seat E in the portion B of the cock. In the plug D is a transverse conduit C², which when the plug is turned in one direction alines with the conduit C of the portion B. A device is present for rotating the plug, and such device is preferably a handle D². To the portion B and at one end of the conduit is connected a suitable feed-tube for supplying the fluid to the conduit C. The other end of this conduit C is adapted to receive a regulating-cap H of my invention. The preferred mode of connecting this regulating-cap to the cock A is by means of a male and a female screw, because such a union not only enables the cap to be connected to the body of the cock, but also enables me to effect another object of my invention—viz., the progression or retraction of the cap relatively to the body of the cock and what it carries—as will be hereinafter apparent. This cap H has a large central aperture H², terminating in a small central aperture H³, and the end wall in which the small central aperture H³ is located is inclined outward toward aperture H³, forming the incline H⁴.

H⁵ indicates the female screw of the cap H, while B³ indicates the male screw-thread on the projection B² of the main body of the cock.

The cap H has a provision whereby it may

be conveniently and quickly rotated. Such a provision is present in the thumb-flange H^6 , serrated on its periphery.

The forward end portion B^2 of the body of the cock has thin lugs or extensions B^6 , holding at their outer or forward ends a cone K. The axial center of this cone K, if extended, is coincident with the axial center of the small aperture H^3 , and when the cap H is retracted this cone K will finally enter said aperture and close it.

Surrounding the cap H in front of its flange H^6 , but preferably not in frictional contact with the peripheral surface of the cap, is a compartment M, having an inlet opening or openings M^2 in the rear part of it, substantially as shown. The preferred form of this compartment is that of a double cone one wall, M^3 , of which is inclined down toward the cap H and the other wall, M^4 , of which inclines forward and joins a conduit P, large relatively to the conduit C. This conduit P is suitably connected, as by brazing, with a suitable burner, one well-known description of which—viz., burner S—is indicated in Fig. 4.

Various ways of supporting the several parts which embody my improvements can be followed. One mode of support is illustrated in Fig. 5 and is as follows: The portions S P are supported at the right-hand end of the tube P by the brace U, connected to the part P by the bolt U^2 . This brace is firmly fixed by the bolt U^3 to the top W of the stove. The burner S is of course located under the stove-opening W^2 , which may and usually is provided with a grating, as shown. The portion B C is upheld by having the screw-threaded portion C screwed into the feed-pipe T, running parallel to the side of the stove, the latter being attached to the stove-top by a brace T^2 , connected at T^3 to the said top.

The mode in which my machine operates is as follows: Gas is duly supplied through the conduit C C^2 at a given pressure. This gas comes out of the conduit C, past the extensions B^6 , and into the space H^2 of the cap. Thence it passes forward and is deflected by the walls H^4 to the orifice H^3 and out through this orifice forward into the compartment M. Thence it moves forward through the conduit P to the burner S, where it is duly consumed; but in leaving the orifice H^3 it moves rapidly and entrains air through the openings M^2 , and this air mixes in compartment M with the gas already somewhat oxygenated and still further enriches it with oxygen. In this condition it reaches the burners and is there consumed.

It is well known that the amount of gas to be burned should bear a definite relation to the amount of air to be mixed therewith. My

devices enable the quantity of gas passing from the nozzle H^3 to be regulated at will, and the quantity of gas passing therefrom can be regulated relatively to the quantity of air coming in through the orifices M^2 of the compartment M. My combination of the peculiarly-constructed parts, as heretofore described, enables me to regulate the quantity of gas passing the orifice H^3 and yet obtain sufficient speed in the passing current of gas to fully entrain the amount of air requisite to properly oxygenate the quantity of gas passing through the conduit P.

My invention not only successfully accomplishes the object it has in view, but is simple of construction, economical of manufacture, and easy of operation.

One important advantage of my invention consists in the fact that the part H can be adjusted to regulate the flow of gas through the orifice H^3 and relatively to the amount of air to be entrained and which the flow of gas will entrain after the burner is lighted and while the burner is lighted. By my invention you can see those results at the burner and in the flame which you get, and by operating as mentioned you can get just what you want—viz., the proper amount of air and gas (carbon) to produce at the burner the flame you want. Such an invention affords for this among other reasons an obvious advantage over those devices which compel the operator with every change of pressure of the gas and in getting the necessarily new and different proportion of gas and air and while testing to obtain the best results from the same to extinguish his light while experimenting to readjust the relative sizes of the inlets for properly intermixing the gas and air.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

In a device for regulating the flow of gas the combination with the cock B having a forwardly-extending screw-threaded portion, extensions at the outer end thereof, a cone carried by said extensions, a cap mounted on said screw-threaded portion and having an outwardly-extending flange for operating the same and an opening in the outer end of said cap adapted to be engaged by said cone, of a mixing-chamber, having a reduced inner portion loosely surrounding the said cap, said reduced portion being of less diameter than said operating-flange and said mixing-chamber having air-inlet openings in its body, substantially as described.

CHARLES H. RESOR.

Attest:

JOHN E. FITZPATRICK,
K. SMITH.