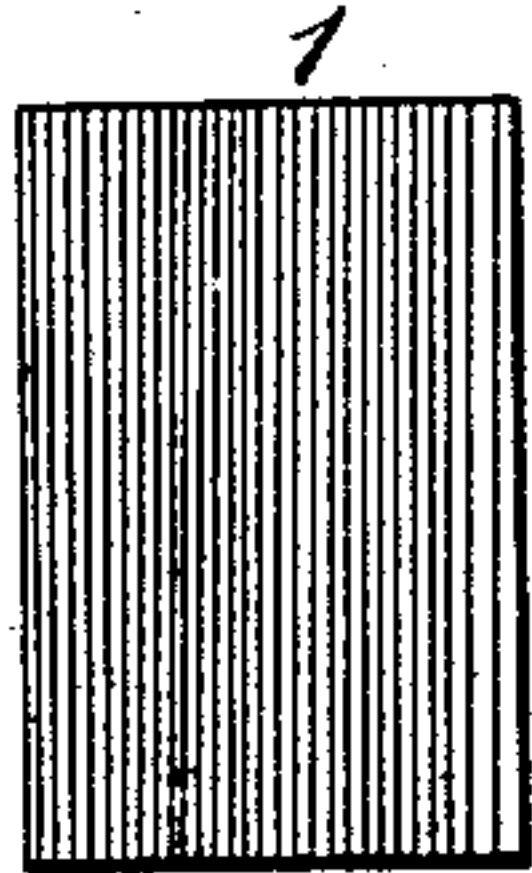
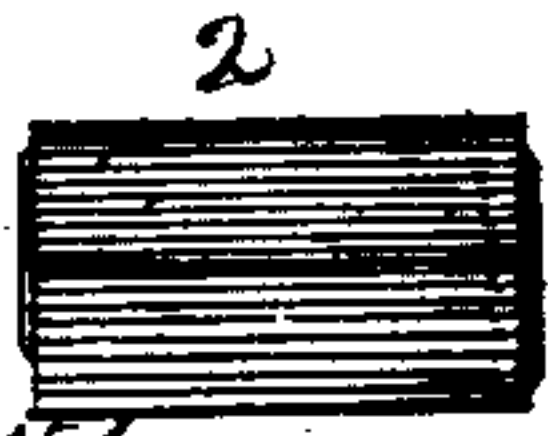
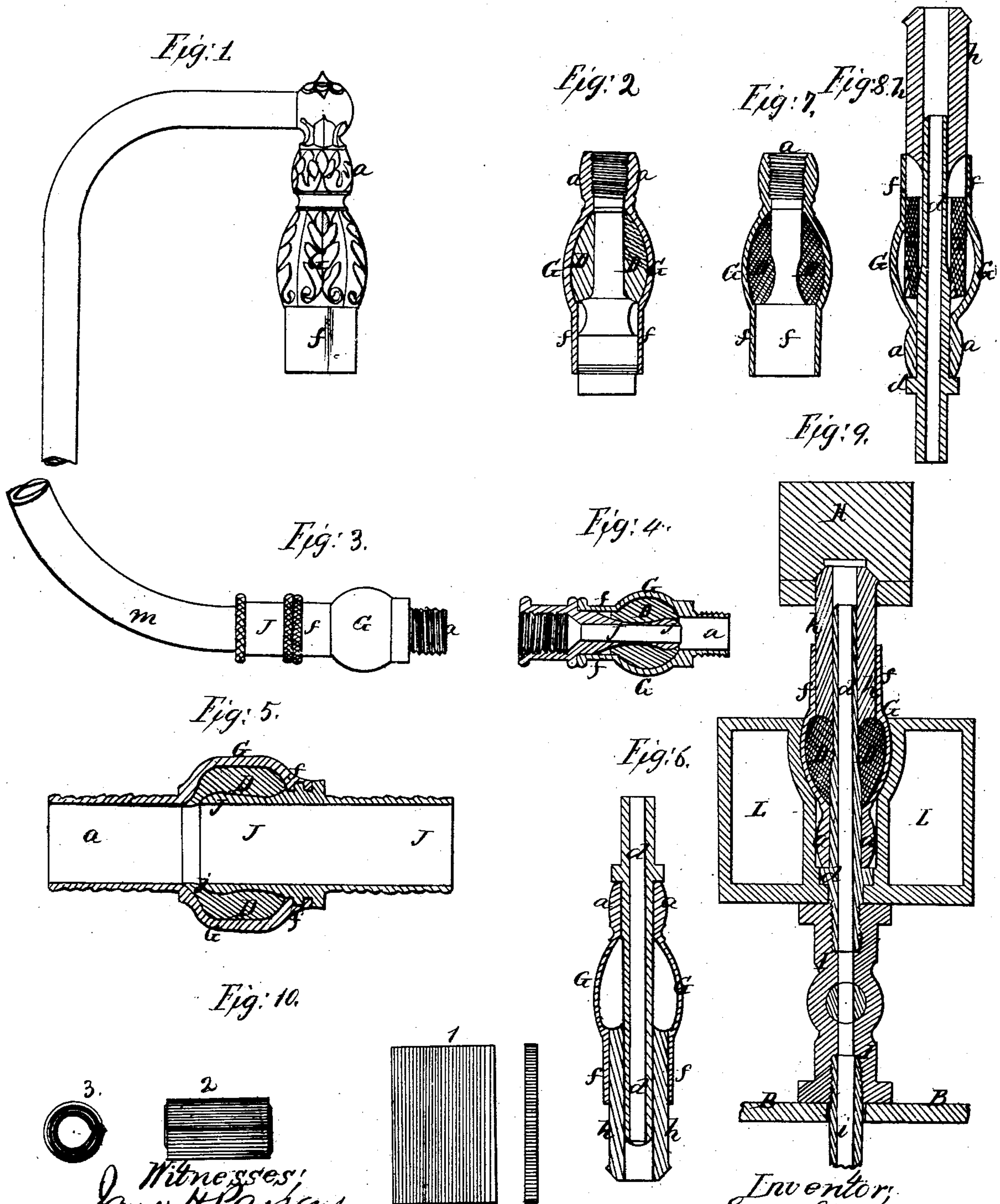


E. P. Gleason

Socket Coupling.

N^o 30,400

Patented Oct. 16, 1860.



Witnesses:
James H. Passon
Isaac A. Bunnell

Inventor,
E. P. Gleason

UNITED STATES PATENT OFFICE.

ELLIOTT P. GLEASON, OF PROVIDENCE, RHODE ISLAND.

SOCKET-COUPLING.

Specification forming part of Letters Patent No. 30,400, dated October 16, 1860; Reissued August 3, 1869, No. 3,577.

To all whom it may concern:

Be it known that I, ELLIOTT P. GLEASON, of Providence, in the county of Providence and State of Rhode Island, have invented a new and improved socket coupling which is applicable for the purpose of uniting pipes or tubes for the conveyance of gas or in flexible tubing or engine-hose for the conveyance of water; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a view of an ornamental socket for connecting with gas burners. Fig. 2, is a transverse section of the same, fixed upon a gas-burner. Fig. 3, is a view of a coupling attached to a flexible tube, for connecting with a portable gas standard or burner. Fig. 4, is a transverse section of the same. Fig. 5, is a transverse section of a hose coupling, for the conveyance of water. Fig. 6, is a transverse section of the socket shell with the mandrel and plunger used in filling the same. Fig. 7, is a transverse section of the socket. Fig. 8, is a transverse section of the shell with the mandrel and plunger, containing a cylinder of caoutchouc about to be acted upon. Fig. 9, is a transverse section of the socket within the apparatus used for heating the gum. Fig. 10, represents the gum cut from the sheet and formed into a cylinder.

Similar letters of reference denote like parts in the different figures.

The nature of my invention consists in forming within a metallic shell a hollow cylindrical cushion of caoutchouc or other like elastic gum, by means of heat applied within directly to the gum, and to the shell without, whereby the gum is molded to a desirable form, and "vulcanized" upon the inner surface of the said cushion, and made to adhere firmly to the inner walls of the shell, for the purpose of forming an air tight joint with a metallic pipe, tube or socket piece inserted within said hollow cushion, and applied for conveying gas, water, &c.

To enable others skilled in the art to make use of my invention I will proceed to describe the same with reference to the drawings.

I construct the shell of the socket or coupling G, of brass, or iron cast in one piece having an oval or globular swelling of suffi-

cient capacity to receive, or contain a proper quantity of gum to render the cushion elastic and terminating in a contracted neck *a*, and *f*, upon each side thereof, one of which *a*, is provided with a thread cut inside, Figs. 1, 2, and 7, or upon the outside, Figs. 3, and 4, for attaching the same to a gas fitting pipe or standard, or with a corrugated surface, as seen in Fig. 5, for attaching hydrant hose by winding with cord or wire. The reverse end *f*, is of a larger diameter generally, to receive the lower portion of a gas burner, Fig. 2, and to provide for a socket piece or nipple J, Figs. 3, 4, and 5, of the same diameter of bore with the socket neck *a*. This nipple has a bulb or swelling *j*, Figs. 4, and 5, against which the inwardly projecting sides of the cushion press, or expands from behind to prevent the said nipple from being easily or accidentally withdrawn. To this nipple is attached a flexible tube *m*, or hose, in the manner herein before mentioned.

The cushion D, is formed within the swelling portion of the shell, to the inner walls of which it adheres firmly to prevent any escape of gas or water upon the outside of the cushion, and upon the inside, said cushion is molded to a suitable form to receive a nipple or a gas burner, and is rendered elastic by the process of "vulcanizing" at the same time it is molded, whereby the opening through the said cushion expands to receive a nipple or tube of a greater diameter, or to admit a tapering gas burner, and contracts and embraces the same with sufficient force to form an air tight joint with the outer surface of such nipple or burner. This cushion is formed, within the shell, as above described, by the following process: A piece of soft gum, of the size shown in Fig. 10, No. 1, is formed into a cylinder Nos. 2, and 3, by cementing. This is placed within the shell, as shown in Fig. 8, through which passes a hollow mandrel *d*, from the end *a*, the upper end of which enters the plunger *h*, which slides with a close fit into the end *f*, of the shell. The mandrel is turned smaller within the swelling portion to impart the proper form to the sides of the opening through the cushion, and the lower end of the plunger is turned in a conical form, to give shape to the entrance of the opening in the cushion. These surfaces which mold the said opening in the cushion

may be wrought in various forms to produce a greater or less bearing surface upon the cushion, or to form a corrugated surface, or a number of projecting wings or ridges, always providing for the withdrawal of the mandrel by the yielding of the surface it has formed in the cushion.

The mandrel *d*, is attached by a thread to a cock I, upon a steam pipe *i*, upon the bed piece or table B, of a lever press, resting upon said cock in a steam chest L, Fig. 9, of cast iron or brass, in the center of which is formed a deep cup shaped cavity for the reception of the shell, G. The plunger *h*, is secured in the sliding plunger H of the press, and is acted upon to cause it to descend by a lever operated by the hand or foot.

In the operation of forming the cushion the mandrel and plunger, in Fig. 9, are put in the position shown in Fig. 8, with a cylinder of gum 2, surrounding the mandrel, when steam of from 75 to 100 pounds pressure is admitted to the mandrel by cock I. The plunger *h*, is then forced down and at the same time steam is admitted to the steam chest L. The heat from steam thus applied acts to fuse the gum, and causes it to assume the form of the surfaces which encompass it. Steam is then shut off from the chest L, and the socket shell permitted to cool gradually, which operation causes the gum to adhere firmly to the inner walls of the shell, while the continued heat from the mandrel "vulcanizes" the gum immediately surrounding the same, and from thence penetrates outwardly toward the shell, but not to the entire thickness of the gum which would cause the cushion to separate from the walls of the shell. The gum should be subjected to the action of heat, from 3 to 5 minutes according to the temperature, when cock I, is turned shutting off the steam, plunger *h*, is raised and withdrawn, and the shell is removed from the cavity in the steam chest, and another shell supplies its place to be operated upon in a similar manner. By vulcanizing the cushion from the center with a heated mandrel, the surface of the opening through the same, is rendered more elastic, than any other portion thereof, which gives a greater range of expansion and contraction, to said surface, and thus provides for the admission of tubes or burners of different or varying sizes. Said surface, also,

from being subjected longer, to the intense heat is never softened by contact with a gas burner which has been heated by the burning gas, which is very desirable in its use for drop lights, so called, upon chandeliers. This cushion to be effective must adhere firmly to the shell; otherwise the gas or water will escape between it and the shell, and thus become inoperative and worthless for the purpose.

I am aware that caoutchouc, has been applied in a variety of ways for this purpose: by inserting thick rings of tubing, or disks of thin rubber, secured within the socket, between two surfaces which are united by threads or screws, but such sockets have objections which are overcome by my invention.

Having thus described my invention and the method of producing the same I would not be understood as claiming broadly the application of a cushion of caoutchouc, or other elastic substance, within a metallic shell, for forming a joint with a metallic pipe, tube, or a gas burner, as this has been done before. Neither do I claim the application of heat to caoutchouc, for the purpose of rendering the same elastic, as this has been previously patented. I do not claim an elastic plug of india rubber, nor such a plug incased in a metallic shield, as, and for the purpose described in the patents of Albert Fuller of October 16th 1855, and of August 30th 1859 respectively.

I claim—

1. A socket coupling having a hollow cylindrical cushion of caoutchouc or other similar elastic gum adhering to the inner walls of the socket shell, and having the surface of the opening through the same molded in a proper form by compression, and made elastic by the action of heat applied thereto in the manner and for the purpose substantially as herein specified.

2. In combination with such a cushion, a socket piece or nipple having a bulb or swelling ridge upon the end which passes through the opening in said cushion, by the contraction of which opening, the nipple is held securely within the socket, as set forth.

E. P. GLEASON.

Witnesses:

JAMES H. PARSONS,
ISAAC A. BROWNELL.