

No. 682,045.

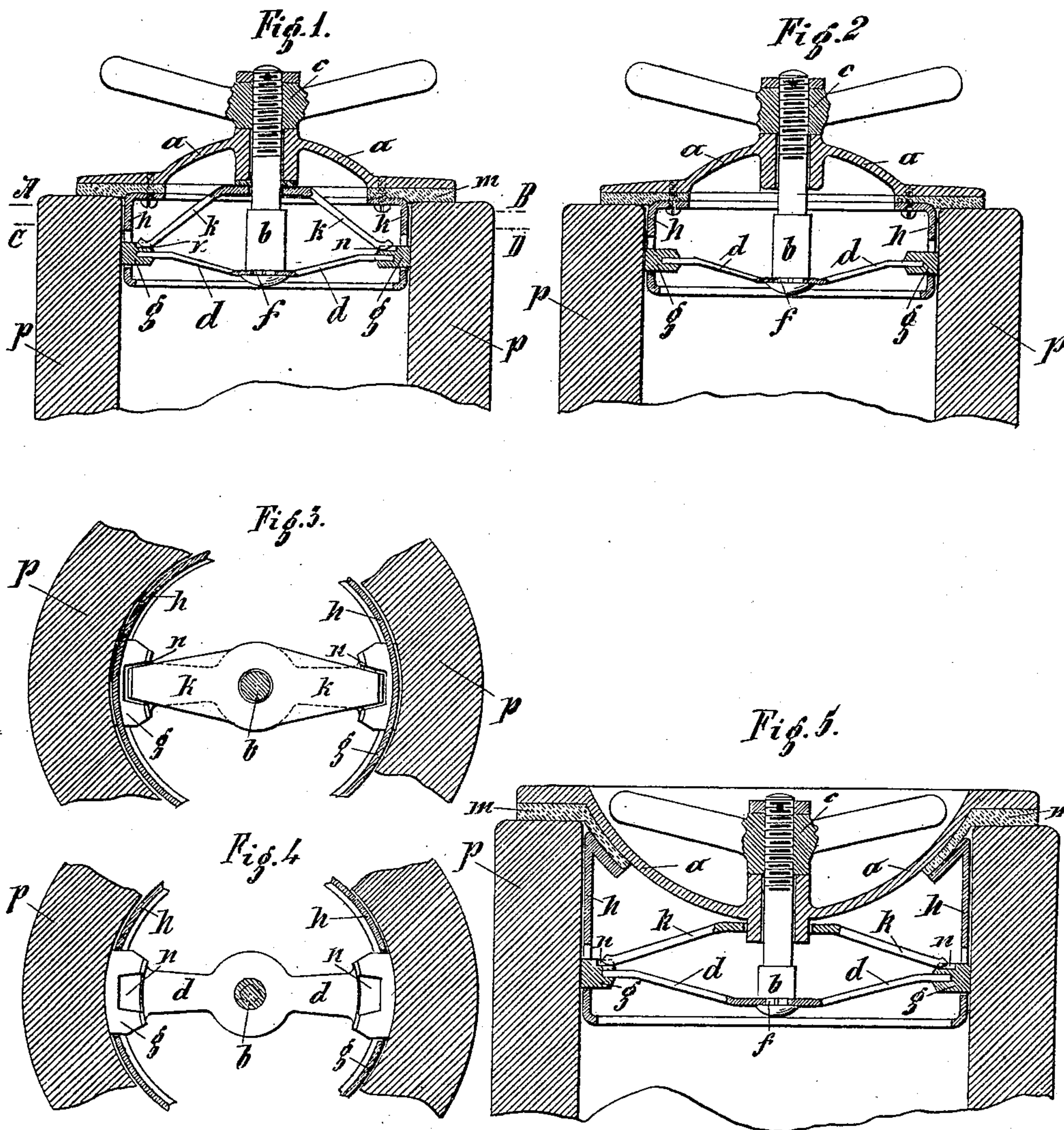
Patented Sept. 3, 1901.

E. DE CARLO.
PIPE STOPPER.

(Application filed May 18, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 6

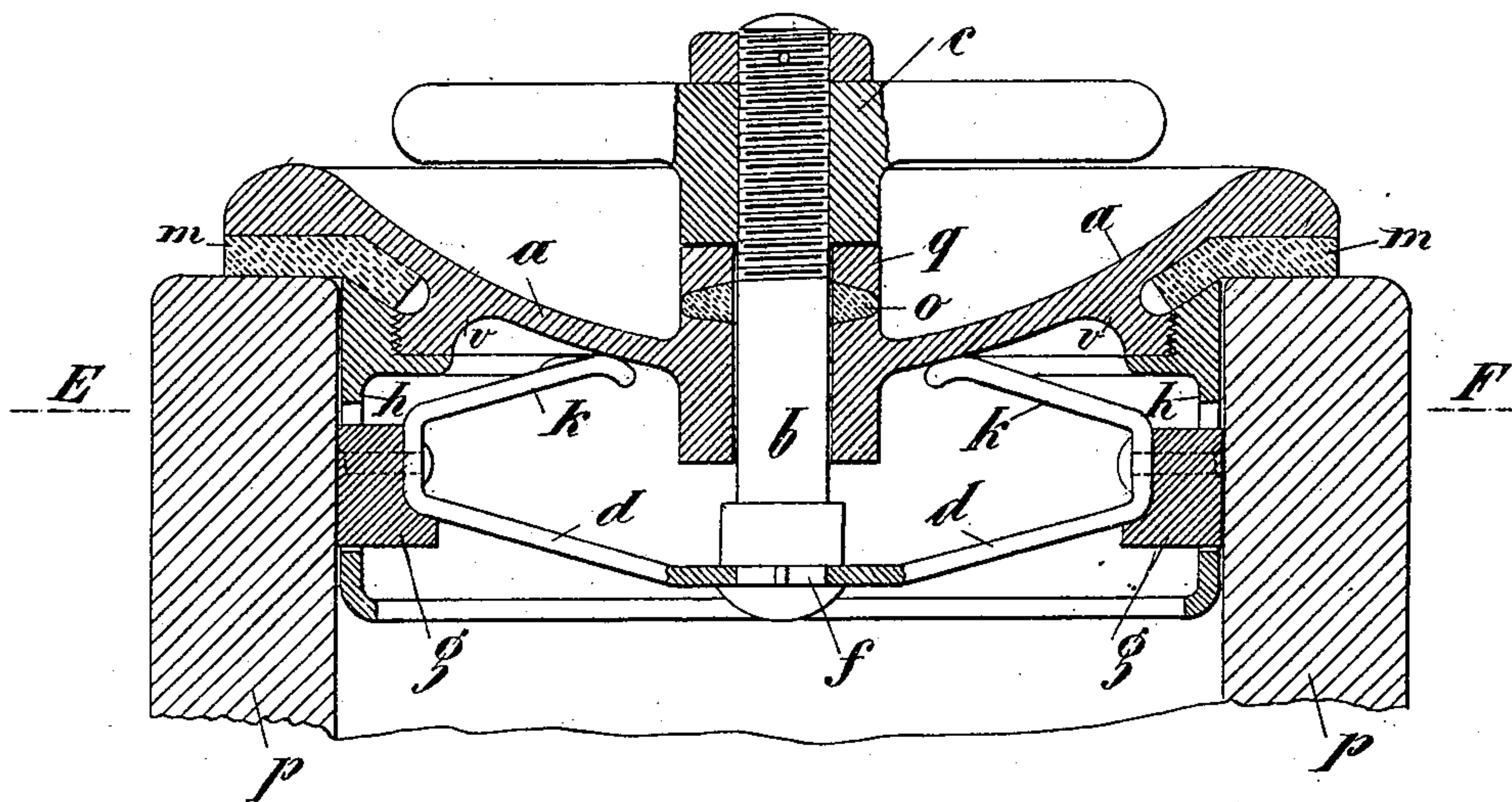
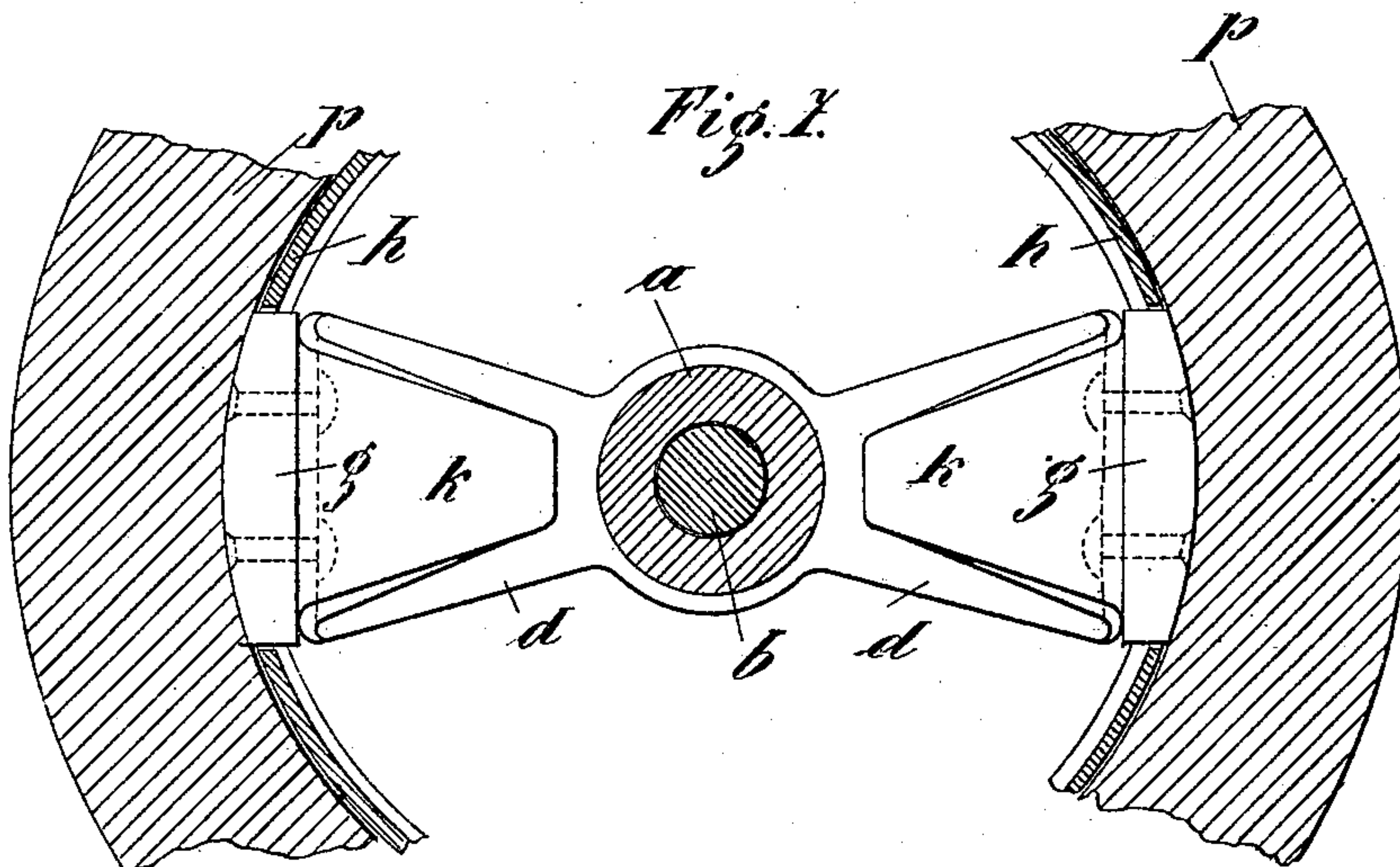


Fig. 1.



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UNITED STATES PATENT OFFICE.

EMILIO DE CARLO, OF TRIEST, AUSTRIA-HUNGARY.

PIPE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 682,045, dated September 3, 1901.

Application filed May 18, 1901. Serial No. 60,907. (No model.)

To all whom it may concern:

Be it known that I, EMILIO DE CARLO, a citizen of the Empire of Austria-Hungary, residing at Triest, Austria-Hungary, have invented certain new and useful Improvements in Means for Retaining and Tightening a Closing Plate or Cap for Tubular Openings; and I do hereby 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.

This invention relates to means for retaining and tightening a closing plate or cap for tubular openings of any description, and has for its object to provide a device of this class in which two spring-arms are disposed at an obtuse angle to each other and within the axial plane of the tubular body, the apex of the angle formed by the said arms being provided with a screw-bolt and the outer extremities of the arms fitted with brake-blocks adapted to be forced against the interior walls of the tubular body by a spring.

With this object in view my invention consists in the improved construction, arrangement, and combination of parts hereinafter fully described and afterward specifically claimed.

In order that my invention may be readily understood and carried into effect, I will describe the same fully, with reference to the accompanying drawings, in which—

Figure 1 is a vertical section of a device embodying my invention, and Fig. 2 is a vertical section of a modification thereof. Figs. 3 and 4 are horizontal sections taken on the lines A B and C D, respectively, of Fig. 1. Fig. 5 shows a modified form of the construction shown in Fig. 1. Figs. 6 and 7 show a further modification in vertical and in horizontal section, respectively, the latter being taken on the line E F of Fig. 6.

According to this invention I provide a closing cap or plate *a* of suitable size and provided with an appropriate packing-ring *m*. Centrally through said closing cap or plate *a* a screw-bolt *b* passes, adapted to be tightened by a nut *c*, pressing against the upper side of the cap or plate, the lower end of such screw-bolt being secured to the apex *f* of two springs *d d*, diverging upwardly within the axial plane of the tubular body to be closed. To the

spring-arms *d d* are fitted brake-blocks *g g*, which are depressed by a pair of springs *k k*, reposing against the cap or plate *a*. The ends of said springs *k k*, which should at least be of the same force and preferably stronger than the two springs *d d*, are prevented from slipping off by engaging in recesses *n* in the brake-blocks *g g*, and the latter (although this is not necessary for their proper working) are guided in slots provided in a tubular extension *h*, depending from the cap or plate *a*. The said tubular extension *h* is formed with a flange at its upper end, serving to fix it to the cap or plate *a* and at the same time securely hold the packing-ring *m*.

The operation of my improved device is as follows: The screw-bolt *b* is completely unscrewed, so that the two brake-blocks *g g* are withdrawn from their guides, thus allowing the cap to be placed into the mouth of the tube *p* to be closed. By now suitably revolving the nut *c* upon the screw-bolt *b* the springs are compressed, and when the resistance of the springs *k k* is greater than or equal to that of the springs *d d* the ends of these latter are caused to extend and to press firmly against the interior of the tube *p*. If the pressure of the brake-blocks *g g* against the interior of the tube has been sufficiently increased by the action of the screw upon the springs, the central portion *f* of the springs *d d* forms a rigid seat for the bolt *b*. If now the screw-nut *c* is further tightened, the cap or plate *a* and packing-ring *m* are firmly pressed against the front of the tube *p*, and thus form a very strong closing means, the strength of which increases with the pressure applied.

In a modified construction shown in Fig. 2 I arrange the parts in such a manner that when tightening the bolt *b* the brake-blocks *g g*, without the counter-springs *k k*, are retained in position by friction upon the internal walls of the tube *p*. This is effected by normally causing the brake-blocks *g g* to slightly project from the guides *h*, so as to slightly press against the internal walls of the tube *p* while being introduced therein. When now after having introduced the closing-cap the bolt *b* is tightened and if the resistance of springs is such that in the first phase of the tightening of the screw-bolt *b*

the upward pull on the brake-blocks *g g* is weaker than the frictional resistance between these latter and the internal surface of the tube, the spring-arms *d d* cause said blocks
 5 *g g* to become more firmly wedged and so prevent them being displaced by the tightening of the bolt, and thereby form a firm seat *f* for the bolt, which latter then is rendered capable of pressing the cap or plate *a* tightly
 10 against the front of the tube *p*.

In a further modification shown in Fig. 5 the cap or plate *a* is of concave form, which enables the screw-nut *c* to be lodged entirely inside the plate *a*.

15 The modified form shown in Figs. 6 and 7 differs from that shown in Figs. 1 to 5 in that the bifurcated springs *d d k k* are replaced by a single C-shaped bent spring *k d d k*, the free ends of which slide upon the under side
 20 of the plate *a*, the middle of said spring being secured to the bolt *b* and the brake-blocks *g g* being fitted at the bends of the springs, as shown. The tubular extension *h* for guiding the brake-blocks and for fixing the pack-
 25 ing-ring *m* is secured to the closing cap or plate *a* by screwing it upon a circular screw-threaded flange *v*, provided on the under side of the cap. By tightening the bolt *b* by means of the hand-wheel *c* the angle formed by the
 30 weaker arms *d d* is extended as far as the springs will yield, and then the stronger arms *k k*, applied against the plate *a*, are depressed in turn, while at the same time the cap *a* itself is pressed against the mouth of the tube
 35 *p*. In order to obtain a tight joint around the spindle *b* and its bore in the cap *a*, the boss of the latter is turned to form a recess, and a packing-ring *o*, together with a superposed ring having a recess, is placed beneath
 40 the hand-wheel *c*.

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

1. In a device of the character described,
 45 the combination with brake-shoes arranged to bear against the inner periphery of a tube, two spring-arms disposed in the axial plane of the tube at an obtuse angle to each other and supported in the brake-blocks at their
 50 outer ends, a cap or plate arranged to bear upon the end and to close the tube, and a screw-bolt attached centrally to the spring-arms and passing through cap or plate, substantially as described.

2. In a device of the character described, 55 the combination with brake-shoes arranged to bear against the inner periphery of a tube, two spring-arms disposed in the axial plane of the tube at an obtuse angle to each other and supporting the brake-blocks at their
 60 outer ends, a cap or plate arranged to bear upon the end and to close the tube, a spring applied to the under side of the cap or plate and pressing the spring-arms away from the plate, substantially as described. 65

3. In a device of the character described, the combination with a cap or plate adapted to close the end of a tube, a tubular projec-
 70 tion extending from the inner side thereof adapted to enter the tube and provided with vertical slots, two spring-arms within the tube and arranged at an obtuse angle with each other in the axial plane thereof, brake-blocks at their free ends entering said slots, and a screw-bolt passing through the cap or plate
 75 and connected with the center of the spring-arms, substantially as described.

4. In a device of the character described, the combination with brake-shoes arranged to bear against the inner periphery of a tube, 80 two spring-arms disposed in the axial plane of the tube at an obtuse angle to each other and supporting the brake-blocks at their outer ends, a cap or plate arranged to bear upon the end and to close the tube, springs
 85 applied to the under side of the cap or plate forming return-bends or continuations of said spring-arms, substantially as described.

5. In a device of the character described, the combination with a cap or plate adapted 90 to close the end of a tube and provided with a tubular screw-threaded flange adapted to project into the tube, and a tubular projection threaded thereon and provided with vertical slots, two spring-arms within the tube and
 95 arranged at an obtuse angle with each other in the axial plane thereof, brake-blocks at their free ends entering said slots, and a screw-bolt passing through the cap or plate and connected with the center of the spring-
 100 arms, substantially as described.

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

EMILIO DE CARLO.

Witnesses:

LUDWIG OBRY,
 F. W. HOSSFELD.