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J. L. L. A. A. MOULET

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COCK

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Fig. 1

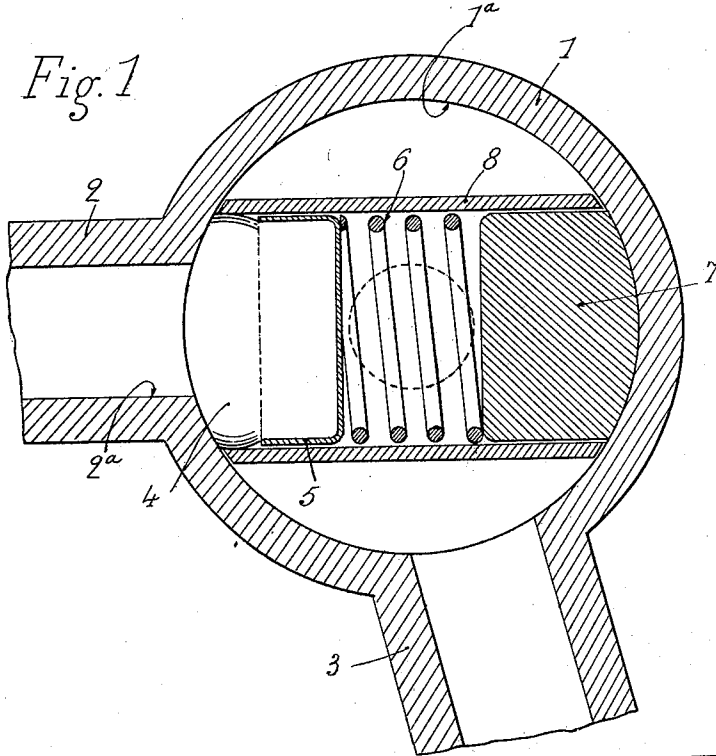


Fig. 2

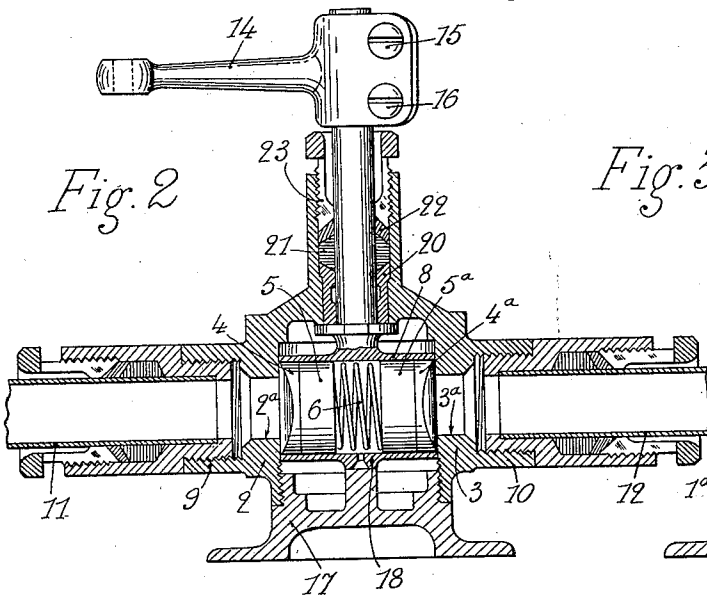
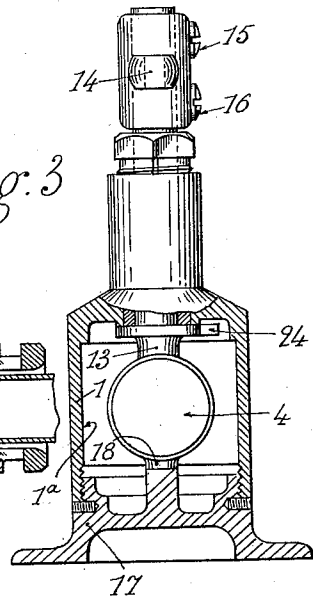


Fig. 3



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COCK

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The invention relates to cocks of the type in which throttling of the liquid inlet and outlet ports is effected by means of shutters, consisting of spring-pressed plates operated by a handle.

In all the cocks of this type, the spring-pressed shutters are made of metal or possess a hard surface, and, in order to secure efficient fluidtightness, the joint surfaces should be accurately fitted, thus requiring an accurate machining, and hence a delicate and costly manufacturing. In the case of use with liquids such as benzine which dissolves lubricants, wear and leakage take place within a short time.

The present invention has for its object to remedy such drawbacks and contemplates a cock of the aforesaid type, having one or a plurality of shutters, and whose essential feature resides in that each shutter is made of a mass of yielding or plastic material, such as cork, preferably held in a cup-shaped metal member adapted to protect said yielding material and in some cases to improve the fluid tightness.

According to another feature of the invention, the shutter thus formed is arranged in a bush integral with the key, the length of which is such that the plastic material is well protected laterally and cannot be damaged or torn when the cock is being operated.

Such improved cock, in which the shutters may be adapted to perform a rotary, a translatory, a spiral or any other motion, enjoy the following important advantage: thorough and durable fluid tightness, soundness, cheap manufacture, possibility of use with such liquids as benzene which dissolve the lubricants and cause metal contact surfaces to seize together, etc.

In the accompanying drawings, selected solely by way of example:

Fig. 1 is diagrammatic cross-section of an improved cock according to the invention.

Fig. 2 is a longitudinal section of a con-structural form of the invention.

Fig. 3 is a sectional side view of the same.

According to the diagrammatic showing of Fig. 1, 1 denotes the body of the cock, having a cylindrical, conical or otherwise shaped

chamber 1^a; two bores 2 and 3 open into chamber 1^a, their outer ends being adapted to be fitted with couplings (not shown) for securing impervious joints with suitable pipes.

Within cavity 1^a is arranged a shutter, which comprises a member 4 of yielding or plastic material, held in a metal cup 5. The shutter is pressed against port 2^a which is to be throttled, by a spiral spring 6 or the like, bearing against a thrust-piece 7 engaging the opposite face of cavity 1^a; said thrust-piece may form another shutter, preferably similar to that above described.

The shutter may be imparted a rotary, translatory or spiral motion, by means of a key or stem (not shown) having a tubular transverse extension 8 adapted to receive shutter 4, spring 6 and thrust member 7. Said extension 8 of the operating stem encases shutter 4 upon almost its whole length, the outer end thereof being so machined that extension 8 moves within chamber 1^a with a very slight clearance.

Due to this arrangement the shutter may be applied against the port to be throttled with enough pressure to secure the proper sealing, while the plastic material is prevented from escaping or slipping between extension 8 and the wall of chamber 1^a.

It will be readily understood that sufficient seating surface will have to be provided for the shutter on the portion of the wall of chamber 1^a which surrounds port 2^a, in order to prevent the material of the shutter from penetrating to an appreciable extent into said port.

The above described disposition has many advantages. It will be understood that the body 1 only requires normal machining, whereby special accuracy is not indispensable, and yet imperviousness is perfect on account of the yieldingness of shutter 4. Friction of the plastic material cannot cause any seizing, scratching or wear, likely to damage the joint seatings of the shutter. As a consequence, light metals may be used for the manufacture of body 1, such as aluminium alloys which would seize and get rapidly damaged under the effect of friction from metal shutters. The shutters are not subjected to tor-

sional strain, since they are guided by extension 8 over their whole length, and therefore do not risk being torn or damaged when the cock is operated. When the plastic material has longitudinal crevices or ducts, as in the case of cork such crevices or ducts are sealed by the cup member 5^a, and no leakage is to be feared. Finally, the manufacture of such shutters is very simple and cheap. The plastic material may be cork, in its natural state, or treated with a substance which does not impair its plasticity, rubber, fiber, etc.

The cock may comprise one or a plurality of shutters, said shutters being arranged, either around the same circumference or step-like, and capable of effecting any rotary, translatory, spiral or other motion. In the same way, may be manufactured two-way or many-way cocks, distributors, etc. without getting out of the scope of the present invention.

Figs. 2 and 3 illustrate, solely by way of example, an improved cock according to the invention.

According to this construction, the body 1 of the cock has two bosses 2 and 3, wherein are arranged couplings 9 and 10 provided for the purpose of impervious connection between the cock and two pipe sections 11 and 12. The body of the cock has a cylindrical bore 1^a, into which open the ports 2^a and 3^a corresponding to the liquid inlet and outlet pipes.

Said ports may be covered or uncovered simultaneously by two shutters—constructed on the principle above described.

Each shutter is formed with a cylindrical piece of cork or yielding material 4—4^a, contained in a metal cup 5—5^a. Pieces of cork or yielding material 4—4^a have a flat end bearing against the bottom of the cup, and an opposite cylindrical end adapted to fit the inner shape of the body. Said cork or yielding material is held in the cap with a certain pressure.

Said shutters are arranged in a bush 8, a spring 6 being interposed between the cups 5, 5^a. Bush 8 is integral with the stem 13 of the cock, to which is secured an operating handle 14, in any suitable manner, as for instance by means of clamp fitting with two clamping screws 15 and 16.

The body of the cock is sealed by a threaded stopper 17, which may be used as a sole for fixing said cock in place and also provides a thrust-piece 18 for the stem of the cock.

Moreover, the stem 13 of the cock extends through a stuffing-box arranged in the head of the cock for the purpose of securing an impervious joint. Said stuffing-box may consist for instance of a bush 20, a plastic joint 21, a joint-pressing ring 22 and a joint-squeezing-nut 23.

The stem of the cock is formed with a lug 24 (Fig. 3), movable between two shoulders

inside the cock body for the purpose of limiting the angular displacement of the shutters to 90°.

The operation of the apparatus is obvious: In the position illustrated, shutters 4—4^a are applied against ports 3—3^a and the cock is shut off. When rotating the stem through 90°, the shutters are moved away from the ports, the cock is open and the liquid is allowed to flow.

It is to be noted that the passage provided for the liquid has a large area and the loss of head due to the cock is therefore very slight.

The cock may be provided either with an imperative control in both directions, or with a one way control and a return spring, such an arrangement being advantageous in the case of distance control. Owing to the shutters being held fast by a spring, vibrations do not affect the setting of the cock, an automatic braking action being obtained in all positions.

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

A cock comprising in combination a cock body having at least two diametrically opposite ports, a rotary plug embodying an integral sleeve coaxial with said ports in the closed position of the plug, two shutter members slidable in said sleeve, each comprising a cup shaped metal member and an outwardly projecting insert of yielding material held therein and a helical spring engaging the rear faces of said cups to urge said shutters outwardly, said sleeve extending close to the inner wall of said body to surround said yielding inserts adjacent said inner wall while leaving a clearance between the plug and cock body.

In testimony whereof I have signed my name to this specification.

JEAN LOUIS LÉON ALEXANDRE ALBERT MOULET.