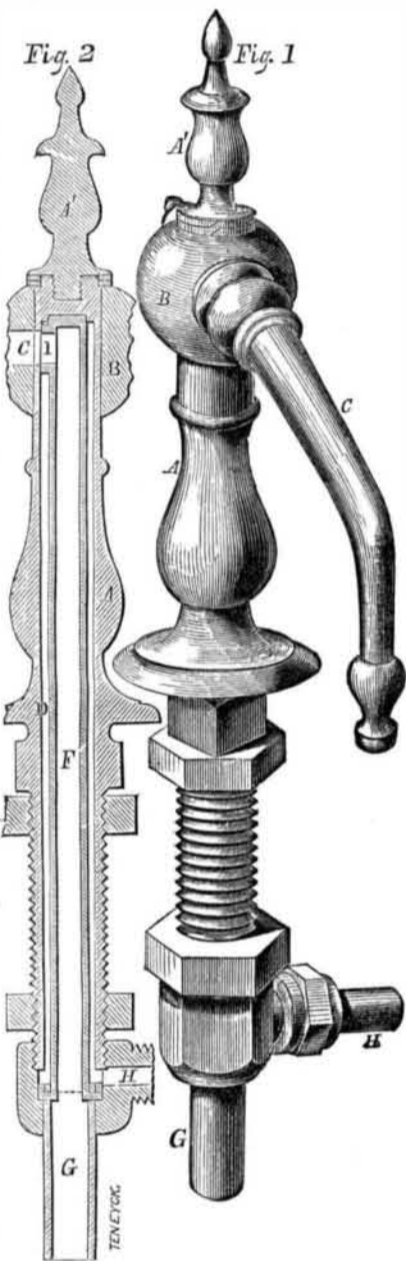


Science and Art.

Improved Basin Cock.

The accompanying engraving represents a cock which discharges either hot or cold water, according to the position in which it is turned. It is the invention of William C. Marshall and Horace W. Smith, of Hartford, Conn. It requires, of course, two pipes to put it in connection with the supplies of water at the different temperature. The hot water is led in through the vertical passage seen at the extreme base of the figure, and the cold water through the horizontal opening represented a little above.

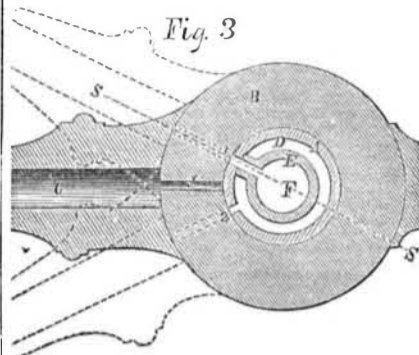
Fig. 1 is a perspective view, and Fig. 2 a vertical section. Fig. 3 is an horizontal section through the ball or top. A is the body of the cock, of any ordinary material. B is the ball, capable of being rotated horizontally. C is the nozzle, or ordinary curved



pipe, through which the water, whether hot or cold, is discharged. D is a large water space or passage through the center of the body A. E is a small tube enclosed within D, and F is the bore or space in the interior of this inside tube. G is the connection or pipe which admits hot water into the interior, F. H is the horizontal pipe referred to, which leads cold water into the annular space D. It will, of course, be understood that the intimate contact of the hot and cold water within the cock will reduce each other to a mean temperature when the cock is allowed to stand without discharging for any considerable time, but this equality of temperature will only obtain in the very small quantity contained within the body A, and consequently when the cock is turned into such position as to discharge either from the central opening or the annular space around it, the water, though at first lukewarm, soon commences to flow in a condition approximating very nearly to the temperature of that in the corresponding pipes, G or H.

J is the discharge opening in the side of

the ball B. It will be observed that there is a corresponding neck, or lateral projection, from the side of the inside tube E, near its top. The inside tube E, does not turn or rotate with the motion of the ball B, but always presents its neck or side opening in one direction. As the ball B is turned by grasping the



nozzle or spout C, with the hand, the discharge aperture J, may be brought into correspondence with the side opening in E, and in this position the nozzle C will discharge hot water, the flow being entirely through the central space F. This condition is represented in Fig. 3 by the dotted lines 1, but by turning the cock into such position that the aperture J, connects with the annular water space D, as shown by the dotted lines 2, in Fig. 3, the discharge is entirely from the annular space, and the water consequently issues cold. With the parts in the position represented by the strong lines in Fig. 3, neither passage will discharge water. It will, therefore, be seen that the cock refuses to discharge when the nozzle C, is either over the center of the basin, or turned too much to either side; but when the nozzle C, is in an oblique position, or just within the edge of the basin on either side, the discharge will be rapid, and either hot or cold, according to which side it is over.

This invention was patented on the 9th of June, 1857. For further information the inventors may be addressed as above.

Heated Galvanic Battery.

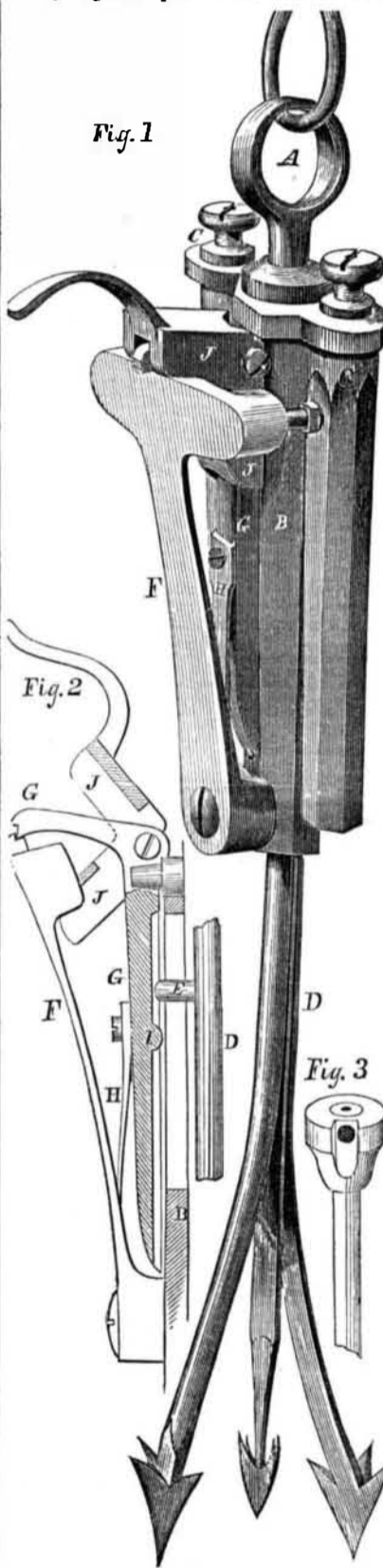
C. Kubns, of Munich, Bavaria, inventor. Long continued experiments have shown that the current of a copper and zinc battery is much more constant, and from one and-a-half to two times stronger than usual, if the same is heated gradually to about 120° Fah., during the process of the operation. His experiments also induce a belief that a battery gives out the strongest current, not, as generally believed, with the largest possible surface of zinc connected with a given surface of copper, but by using just a proper quantity of zinc—ascertainable only by experiment in any given instance. In constructing his batteries he uses two or three hollow copper cylinders inserted one within the other, leaving a space of one-eighth of an inch between them, and connects these cylinders by several strips of copper. The interior one encloses the porous earthen vessel which receives the zinc. Instead of using sheet zinc, the inventor uses short pieces of amalgamated zinc wire, three-sixteenths to one-quarter of an inch in diameter, having small wires soldered to them, by which these several pieces of zinc may be connected. By these means he is enabled to readily add to or reduce the surface of zinc, and to use just such a quantity as gives out the strongest current.

To be able to heat his battery, he divides his box, by a strong cast-iron plate, into two compartments, one above the other. All the elements are put into the upper compartment, which latter, of course, is divided into the necessary number of smaller compartments, each containing a cylindrical glass vessel to receive the element. The spaces between these latter compartments are filled with sand. The lower compartment of the box receives an alcohol lamp, which heats the whole battery. By using warm water in composing his battery, a heating of half an hour's duration is sufficient to bring the battery to the required temperature, and it retains such after removal of the lamp for several hours, if the heat be preserved by a suitable cover, so as to require no very great outlay for fuel.—Translated from Dingler's Polytechnisch Journal.

Reuthe's Animal Trap.

The device here represented is the invention of Frederick Reuthe, of Hartford, Conn., and was patented May 12, 1857. It is a spring gun, designed to capture wild animals in a manner which shall be certain in its operation, and present as little liability as possible of destroying human life.

There are two guns or pistols combined in one instrument, and fired at the same moment, so that in case either should fail to produce a fatal effect, the other may be effective. It is designed to be hung up by a chain to a tree, fence, or other sufficiently strong support, and at such a height that the animal must jump slightly to reach it, thus insuring a very vigorous pull at the moment of its



seizure, and having a direction so nearly perpendicular that no mischance can cause it to do injury. It is intended to apply equally to the destruction of bears, panthers, and the like powerful animals, or to the capture of foxes, and small animals valuable only for their skins; but the machine or trap must, of course, be of a size somewhat proportionate to the animal for which it is intended. The meat or bait is fixed on a strong barbed and forked tongue, the parts of which separate by their own elasticity, and would themselves be sufficient, in many cases, to retain the animal alive for many hours, or perhaps days, supposing the gun-barrels to be unloaded.

Fig. 1 is a perspective view of the ma-

chine complete, with the hammer down, and the tongue drawn out, in short, in a discharged condition. Fig. 2 is a sectional outline through the center of the principal parts, with the hammer up, and the trap ready for action. Fig. 3 is simply an outline of the ramrod. A, figs. 1 and 2, represents a stout ring, to which the chain is attached. B is the frame or hollow case, which forms the central portion, and C C are the two gun barrels fitted with nipples and caps, in the ordinary manner. D is the forked tongue referred to, and E a point on the same, projecting upwards through a slot in B, so that as the tongue, D, is drawn out, the point, E, travels longitudinally down the slot. F is a stout spring fixed on B, and enlarged on the upper end to form a double hammer, for discharging the caps by percussion. G is a bell-cranked lever, binged to B. Its short arm is adapted to retain or hold up the spring or hammer F, while its longer arm lies nearly parallel to B, and has a groove in its under surface, in which E is allowed to travel. I is a cam-like projection on the under surface of G, which is acted on by the point E, on the forked-tongued D, in such a manner as to move G, and release the spring or hammer, and discharge the guns. H is a small spring secured on the back on the long arm of G, and which serves the purpose of holding G in tolerably tight contact with B. J is a stout bell-cranked lever, which is only useful in cocking the piece, or elevating the spring hammer F, to the proper extent. The operation of loading the barrels is conducted in the ordinary manner, the ramrod being peculiarly formed, as represented, in order to serve a double purpose—that of the ordinary ramrod, (fig. 3), and also of a wrench, to unscrew the nipples, when desired, for the purpose of repairs, etc. The spring F is quite stiff, and urges the hammer with considerable violence against the caps, so that there is little danger of failure from want of sufficient force. The caps are waterproof, and as an additional protection against injury from the weather, the whole is covered with a piece of leather, or tight oilcloth, hung on the chain above.

For further particulars the inventor may be addressed at Colt's pistol factory, Hartford, Conn.



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