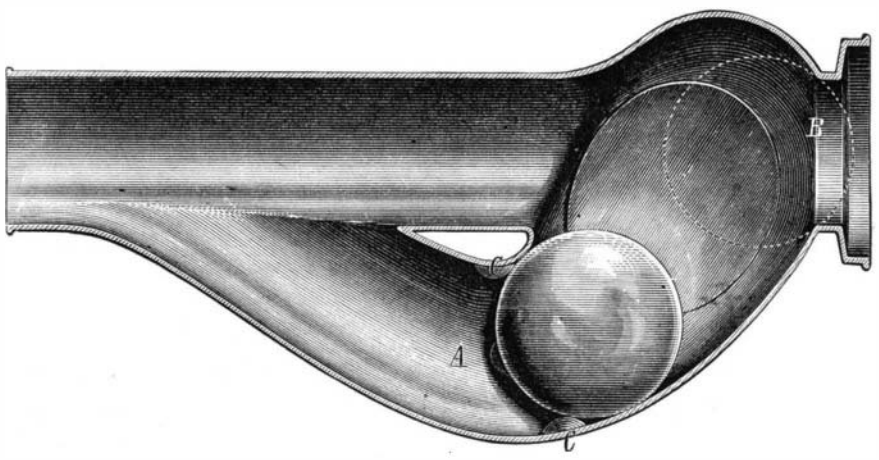
IMPROVED BALL CHECK VALVE FOR SEWERS.

The invention herewith illustrated consists in providing the valve case or body, in rear of the valve seat, with a diverging channel into which the valve passes when it leaves its seat and through which the reflux water passes to carry the ball to its seat again. When the ball is back the water is allowed a direct unobstructed passage, but when the reverse movement of the water begins the valve is quickly closed.

The engraving represents a horizontal section of the case, placed with an inclination downward from right to left. It is also inclined so that the diverging channel, A, is lower than the body. B is the valve seat, and at C, in the diverging channel, are placed four button-shaped projections on which the ball rests until moved back by reflux water. It will be observed that, while the flow is passing from right to left, the ball is carried down into the channel, A, and there remains so that the water passes out directly through the main bore. The instant, however, a back current begins, then the water, entering the opposite and lower end of channel, A, drives the ball against its seat, B, so that it at once cuts off any return of water. The ball is intended to be of hollow rubber and is inserted through a hand hole.

Patented July 31, 1877. For further information address Hay & Bassett, 182 Fulton street, New York city, P. O. Box 4825.



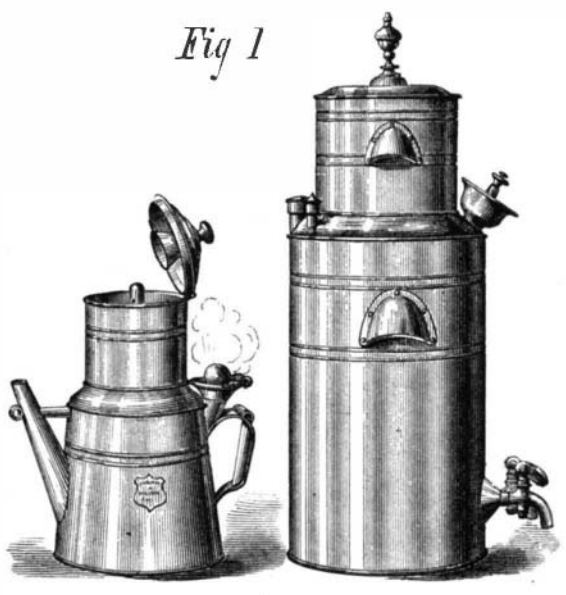
BALL CHECK VALVE FOR SEWERS.

Patented through the Scientific American Patent Agency, May 22, 1876, June 27, 1876, and July 10, 1877. For further information, address Willis H. Sherwood, patentee and sole manufacturer, St. Joseph, Mo.

SHERWOOD'S AUTOMATIC TEA AND COFFEE POT.

We illustrate herewith an improved apparatus for making tea and coffee. Its action is automatic, and may be regulated by a simple device which forms one of the novel features of the invention. The interior construction of a large-sized vessel adapted to the uses of hotels, etc., is exhibited in Fig. 2; but smaller pots are manufactured, as shown in Fig. 1, on the same principle, which are excellently adapted to family employment.

Fig 1

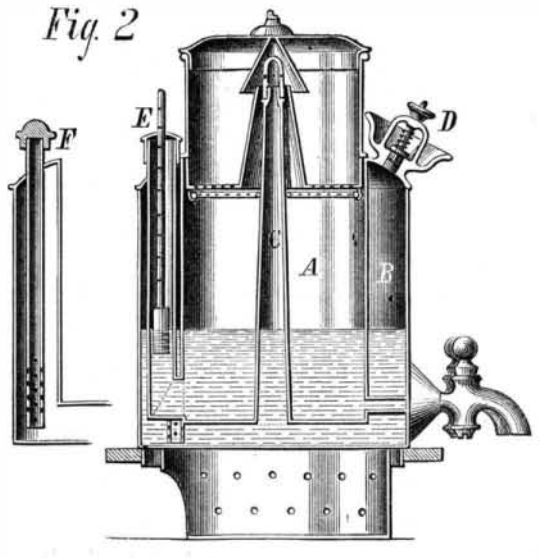


In common with other coffee pots in which the beverage is made by filtration through the ground berry, this apparatus has two principal portions—a water receptacle below and a detachable compartment above, in which the coffee is placed. The lower division is double, a receiver, A, for the made infusion being inserted in the water vessel, B. Communicating with the latter and extending up through the receiver and into the upper compartment, is a tube, C, having a detachable perforated cap. Surrounding the upper portion of the tube is a conical piece and another funnel-shaped portion, attached to the cover, surmounts the perforated cap. The bottom of the upper compartment, on which coffee is placed, is perforated, and below this is a ring on which a piece of flannel is stretched, said ring being detachably held in place by hooks.

When the water in the vessel, B, is boiled, the steam generated forces it up through the tube, C. Escaping at the upper end of said tube and being deflected downward by the conical portions, the water passes down through the coffee and sieves, and the infusion is collected in the receiver, A, whence it is drawn off as desired, by a faucet communicating with said receiver. Another faucet is provided for drawing the water in the outer receptacle, and in order to prevent access to these faucets by unauthorized persons, the handles of the same may be padlocked together, as shown in the exterior view of the apparatus in Fig. 1. The water pot is provided with a filling opening, which is closed by a cap with a spring safety valve, D, said valve being opened or closed by a set screw applied to its stem. On opening the valve, the steam in the boiler may be allowed to escape whenever it is desired to interrupt the coffee-making process. Also in connection with the receiver is a tube in which is a quadrated indicator, E, to which a float is attached, and which seems to show the quantity of coffee made. Heat may be applied directly to the water vessel, or a perforated tube, F, is inserted, which pipe from a steam generator may be attached, to facilitate heating by steam. When this pipe is not used it is closed by a screw cap. The object of making the upper portion of tube, C, detachable, is to allow of cleaning it out in case of its becoming clogged; and the flannel and ring filter may be removed for like purpose.

The smaller sized family pot, represented in Fig. 1, differs in construction from that described, in having, instead of the spring safety valve, a metal ball attached to the filling funnel by a chain. This prevents the escape of steam until a sufficient pressure is generated to lift it.

Fig. 2



SHERWOOD'S AUTOMATIC TEA AND COFFEE POT.

Water for Fire Extinguishment.

Several months ago the Metropolitan Board of Works, of London, directed Sir Joseph Bazalgette, in conjunction with Messrs. Bramwell and Easton, to carry out a series of practical experiments upon the question of fire jets, which should put beyond all doubt the engineering points involved. The result of these experiments is recapitulated as follows in a paper prepared by the last two engineers, and recently read before the British Association at Plymouth:

With a very low jet, say of some 30 feet, about seven eighths of the head or pressure effective at the orifice of the jet will be obtained, as the height of the column of water—that is to say, 40 feet of head at the orifice would give a jet of about 35 feet in perfectly still air; but as the heights of jets are increased, and increased they must be, if they are to be of any service in extinguishing fires in modern buildings, which are so lofty, the percentage which the column of water produced bears to the effective pressure producing it becomes less and less, so that for a jet to rise to the height of 80 feet there must be, roundly, a pressure equal to 128 feet. To rise to a height of 100 feet there must be an effective pressure of about 180 feet. Moreover, the higher the jet the greater must be the diameter of the column of water.

The following is a fair average jet required for London purposes: A jet that would rise 80 feet in still air, if of 1 inch in diameter, would deliver the 150 gallons per minute, and would demand an effective pressure, as has already been said, of 128 feet at the very orifice of the jet; and it might be thought, therefore, that if a pressure could be maintained in the pipes equal to 128 feet of head, when the water was flowing, that all that was desired would be provided. But this is not so. There is the very striking, and to many people very unexpected, consideration of the friction of the water through the hose to be taken into account; and the section may, perhaps, little expect to be told that every foot of the usual size of hose employed by the London Fire Brigade, when conveying 150 gallons of water per minute, requires a pressure of a little over 3 inches to drive that water through.

As a matter of fact, the 200 feet of hose demands 53 feet of pressure to get 150 gallons per minute through them. Therefore, to obtain a jet of 80 feet high, expending 150 gallons per minute at the end of 250 feet of hose, there is needed a pressure of 181 feet, and this pressure must be maintained while the water is flowing.

A Revolving Shell Gun.

A correspondent with the Turkish fleet writes: "In speaking of the armament of the Arsari Tefyk, I should mention that a most valuable addition has lately been made in the shape of a revolving shell gun. It is the invention of a Frenchman, and, in connection with the electric light, may be considered as the very best defence yet brought out against torpedo boats. It throws a one pound shell with a pointed steel head capable of piercing the plates of which the Thornycroft is constructed, and has a range of something like 3,000 yards. Briefly described, it is a Gatling gun on a large scale, having five revolving rifled barrels instead of ten, the said barrels being about 3¼ feet in length, and 1¾ inches bore at the muzzle. The loading and firing arrangements are similar to the Gatling, only, instead of a cylindrical case being placed on top of the breech, the cartridges are arranged in flat cases of five, which are fixed in an inclined position at the side. The turn of a handle causes one of the cartridges to slip into the chamber, when it is thrust forward into the barrel and fired. This weapon is fixed on a pivot at the stern, while a Gatling gun at each end of the bridge, and one on the forecastle, are also always ready for giving a warm reception to any of the enemy's boats which may attempt to approach the Turkish flagship while at anchor.

IMPROVED NEEDLE CLAMP FOR SEWING MACHINES.

The advantages claimed for the improved needle clamp illustrated in the annexed engraving are that it fastens the needle without the aid of wrenches or screwdrivers, and as the hands are separated by the length of the needle-bar, more space is afforded for handling and adjusting the needle, sufficient force can be applied to clamp the needle securely by anyone, however weak in the hand or wrist.

Fig. 2

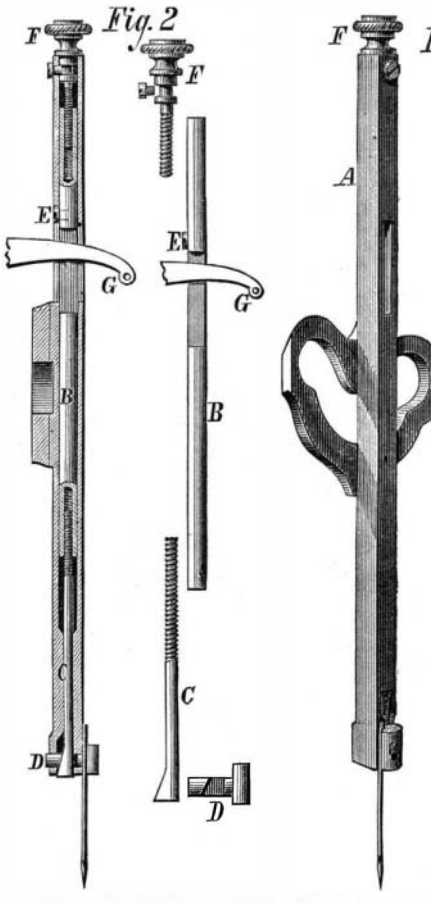


Fig. 1

A, Fig. 1, is the needle-bar, which is boxed longitudinally to receive the rods, B and C, Fig. 2. On the lower end of rod, C, is a wedge-shaped projection, which is fitted in a slot in the bolt, D, said slot being widest at its lower side. The bolt, D, has a head, and enters a hole bored transversely through the lower end of the needle-bar. The rod, C, screws into the rod, B, which is of larger diameter, and is provided with a screw, E, which passes through a slot in the needle-bar, to prevent it from turning. F is a milled screw that engages a thread cut in the upper end of the rod, B, and which is designed to draw the rods, B C, upward in the bar. The check lever, G, passes through a slot in the needle bar and rod, B, and is regulated by screwing the rod, C, more or less into B.

The operation of clamping the needle consists in placing it under the head of the bolt, D, and turning the screw, F, until said head is drawn by the action of the wedge against the needle with sufficient force to retain it.

Patented through the Scientific American Patent Agency May 29, 1877. Parties desiring to manufacture or adopt the device may address the inventor, Mr. Joseph V. Morton, Winchester, Clarke county, Ky.

Carrier Pigeons as Smugglers.

Carrier pigeons have recently been used in France to smuggle tobacco over the border. One individual employed eighty birds, each one carrying from a third to a half ounce of tobacco as its load per trip. It happened that one of the pigeons became injured and fell into the Seine near Paris, and on its being picked up, the fraud was discovered.