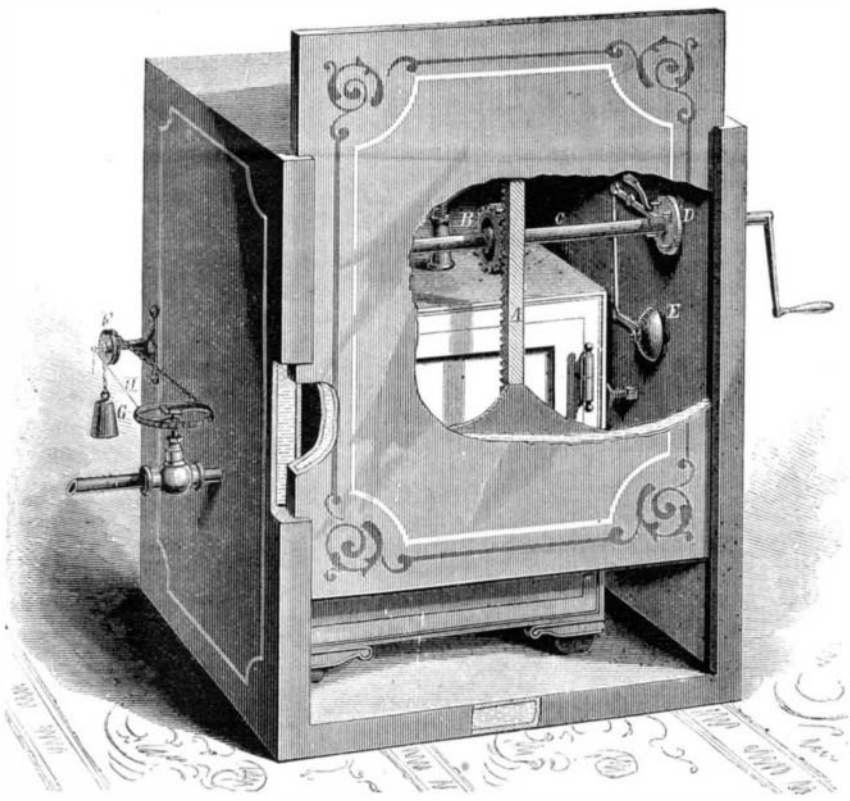
IMPROVED SAFE PROTECTOR.

Our engraving represents a new portable safe protector designed to render ordinary fireproof safes more secure by enclosing them in an iron case, made with double walls, the hollow space between being filled with water. A continuous supply of the latter is maintained by connecting the protector to a suitable reservoir, situated in the upper part of the building, or to the ordinary water mains. The details of construction as represented in the illustration are as follows: The rectangular case is composed as above stated with double sides, top and bottom. The door is made to slide up and down in grooves and is all hollow; and, by suitable connection to the supply, is filled with water. The safe, which may be of any desired variety, is shown through the broken away portion of the door, and is firmly held in position by jack screws set up between it and the inside of the case.

The mechanism for opening the door consists of the rack A, attached on the inner side, in which works the pinion B, on the shaft C. This shaft is held in bearings in the sides of the case and is turned by means of the crank shown. The outside end on which the handle fits projects in a recess so that it is flush with the exterior of the wall and may be of any peculiar or contorted shape so as to render an ordinary handle inapplicable. On the shaft just inside of the casing is a disk, D, on which are a number of pins, which, when the shaft is rotated, strike in succession and so raise a lever which is suitably connected with the gong, E, causing the latter to sound and thus act as an alarm.

At the left of the drawing is represented the supply pipe and valve, in a groove on the rim of the wheel of which is wound a small chain which passes over the pulley F, and sustains the weight G. As it is designed that, when in ordinary use, the casing shall not be filled with water, this apparatus is an ingenious means of admitting a supply automatically whenever necessity arises. The weight is sufficiently heavy to turn the wheel and so open the valve, but is prevented from so doing by the piece of common string H. In case of fire, however, this cord is at once consumed and the weight, falling, causes a constant supply of water to be admitted. Suitable vents may be provided to relieve the steam pressure due to intense heat. The water cannot rise to a temperature beyond 212° Fah, and as this is necessarily far below that which the interior safe is capable of withstanding, the protective qualities of the latter are greatly enhanced. The portability of this device will render it superior to the similar method lately suggested, and in some localities practiced, of placing the safe in a permanent brick vault made with water connections.

Patented October 1, 1872. For further information relative to the sale of the entire right, etc., address the inventor, Mr. James W. Brook, Lynchburgh, Va.



BROOK'S EFFECTUAL SAFE PROTECTOR.

About Walking.

A gentleman who lately made a pedestrian tour, from Portland, Oregon, to San Francisco—some eleven hundred miles—gives the following particulars relative to the experiences of his party:

Before starting, I was strongly urged to wear shoes ("English walking shoes") and my own prejudices were in their favor, but careful deliberation told me of the fearful dust to be encountered, following, as we would have to, most of the way, a thoroughly traveled road that had not seen rain for months, and also of the necessity of having to take boots or shoes off many times each day to bathe the feet. This decided me in favor of high top boots, the wisdom of which I had no occasion afterward to doubt. The pants were also protected from the dust by being worn inside of them. The feet can be saved much irritation and many blisters by the use of insoles (boots or shoes having been made large enough to admit them). The greater friction between an easy fitting boot and the foot is at the fore part of the front foot. Every time the heel raises, the relative position of the foot and the sole of the boot must change, causing great friction, as the entire weight of the body is upon the foot at the time of change between foot and boot. An insole, if a trifle shorter than the boot, will take much of this friction from the foot, as it must then take place, to a great extent, between the insole and sole of the boot. A second insole will relieve the foot still more. They will also furnish the additional advantage of relieving the feet when much swollen, by taking them out. No matter how toughened the feet become, they will blister very readily if rapid walking is persisted in, say for three or four hours, while, at a pace that is not unduly exhausting the system, they will not feel the slightest discomfort.

We practiced bathing feet, hands, and heads very often, say from three to six times a day, when water was found, and when we were tired and exhausted it would have a very exhilarating effect.

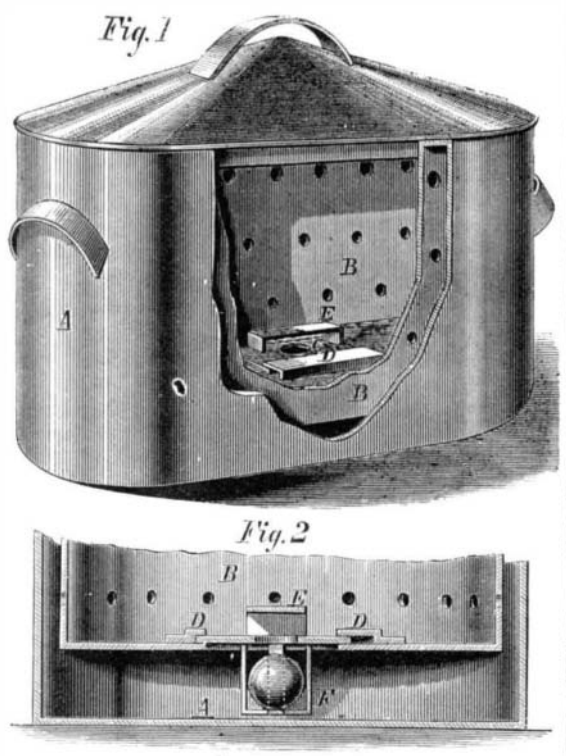
Rapid walking, "spurts," at the rate of four miles an hour, of two or three hours duration, or long marches, say twelve miles or more, without a halt, is very exhausting. If indulged in, in the early part of the day, it will incapacitate one for the balance of the day, or if at the close of the day, its effects will be felt the following day. The same will apply to ascending high hills or mountains. Movements in such instances should be sufficiently moderate to avoid getting into a "pud" or perspiration, more than when moderately walking on the level.

The Graham crackers, upon which we principally existed, were baked hard and dry like sea biscuit, and we found it necessary to moisten and soften them before eating, and we resorted to the use of boiling hot water, breaking the crackers into it, and allowing them to absorb all the water they would. The hot water seemed so grateful to us that we soon fell into the way of taking it freely, and were often astonished at the quantity we consumed. Its use did away with much of our thirst while walking, and was beneficent in all of its effects. I venture the assertion that there is a virtue in the use of hot water, where great exertion is to be endured, that is not generally understood. By hot water I mean water that has been made to boil and then taken as hot as it can be borne; tepid water is unpalatable.

In our preparations, it was proposed that we carry sun umbrellas. I did not second the proposition, believing their use would not compensate the trouble of carrying them; I yielded, however, and subsequent experience convinced me of their great value to us. Our estimate was that we could perform one fourth more with than without them, whenever the temperature was above 90°.

PUTT'S WASH BOILER.

The steam clothes washer herewith illustrated consists of an outer boiler, A, and an inner boiler, B, securely soldered together at their upper edges. The boiler, B, as shown through the broken away portion in Fig. 1, is constructed smaller in size than the boiler, A, so that a suitable space is left between the two. The inner receptacle is perforated with a number of holes, which gradually increase in size, those nearest the top being the largest. Through the middle of the bottom is made an aperture, which is covered by the plate, C, shown more clearly in section in Fig. 2. This plate is held in strips, D D, one of which is wider than the other, so that the plate may be applied and removed by slipping its edge so far beneath the wider strip that its other edge may be inserted and withdrawn past the edge of the narrower strip. The piece, E, is used to cover an orifice in the plate, C, so as to prevent the same becoming clogged by the clothes, and also serves as a handle. Attached to the lower side of the plate, and surrounding the abovementioned aperture therein, is a slotted tube or tubular frame, F, in which is placed a ball, which is retained from falling out by wire or other suitable means. Lastly, the apparatus is closed by a cover fitting tightly into the mouth of the boiler, B.



In using the device, the plate, C, with its attachments, is removed, and a quantity of soap and water is placed in the bottom of the boiler, A. The plate is then fixed in position, the clothes put in, and the apparatus set over the fire. As the water becomes heated, the steam raises the ball, which thus closes the bottom orifice. The water and steam are then forced up between the walls, thence through the perforations in the sides of the inner boiler, and so pass laterally and at the same time, entering through holes above the clothes, percolate through the garments. This invention has the merits of both ingenuity and simplicity, and will doubtless prove a useful convenience in the laundry.

Patented through the Scientific American Patent Agency, Nov. 19, 1872. For further particulars address Mr. W. C. Putt, Ludlow, Champaign Co., Ill.

Man Engines.

For the purpose of lifting the miners out of deep mines without the use of rope and kibble, man engines were invented 40 years ago by Bergmaster Dörrell, of Clausthal, in the Upper Harz, when he used two pump rods, which, side by side, went up and down a shaft, and fixed to them small platforms and handles at all those points of the rods which came opposite after every stroke. So, by simply changing his stand after each stroke, from one rod to the other, a man would be lifted up to the surface without any exertion. This ingenious system, says a correspondent of *Engineering*, was soon imitated in other parts of Germany, Belgium, France, and England, and generally special machinery was designed to drive these man engines. At the deep silver lead mines of Przibram, in Bohemia, since 1854, in the Maria shaft, a direct acting man engine, with two steam cylinders and cataract reversing gear, has been employed, both rods being connected by chains which run over pulleys; the great wear and tear of the latter, however, the great pressure of steam required, the inequality of the engine stroke when differently loaded, and other inconveniences, caused this direct acting engine to be abandoned and replaced by another indirect acting man engine in the Anna shaft. This latter was constructed so as to transmit the up and down motion from a rotating crank by two pump crosses—by-the-bye, exactly the same principle which was originally employed by the inventor. This system is now quite successful at Przibram, and a small condensing steam engine, working expansively, is quite sufficient to work it with the greatest safety and regularity, a brake attached to the flywheel controlling the engine with certainty, whenever required. The engine reaches a depth of 400 fathoms, and 3,000 men go up and down it daily, in about 9 hours (3 hours for each shift); it makes four to five strokes per minute of 10 feet each, requires 6·2 to 6·9 lbs. of coal per hour, and per effective horse power, and costs from 2s. to 2s. 3d. per horse power in 24 hours. Quite recently the old engine in the Maria shaft has been also replaced by a similar one, only the stroke of the rods has been increased to 12 feet.

Centrifugal Drying Machine.

MM. J. Decondin and Co., of Paris, have, according to the *Engineer*, invented a new type of centrifugal machine, which presents certain advantages. The employment of such machines has, as is well known, been largely extended in dyeing operations, in sugar factories, and generally in all industries where it is desired to express liquids from solids. They consist of cylinders pierced with holes to receive the material from which more or less moisture is to be extracted. The cylinders revolve at very high speeds on vertical shafts, and the centrifugal force drives out the liquid. The machines in general use are open to objection, on account of the trouble they give the workmen from mechanism placed above the cylinder. In the apparatus of MM. Decondin this objection is removed. The following particulars relating to its constrution are extracted from the *Annales Industrielles*: The cylinder carries in its center a vertical tube, closed at the upper end, the level of which corresponds with the top of the cylinder. This tube rests at the end on a fixed axis, upon which the whole revolves. The cylinder is thus placed in a condition of stable equilibrium. A pinion, fastened to the central axis, is connected to the bottom of the cylinder, and movement is communicated to this pinion through a pair of horizontal toothed wheels, of a vertical shaft, some bevelled gearing, and driven by hand or off a pulley. The price of the apparatus, including cover, etc., varies from £10 to £32.

REMARKS.—The above is one of many examples of the adoption of American improvements in Europe. The idea of removing the mechanism from above the machine, out of the way of workmen, suspending and driving the dryer from below, was patented in this country several years ago, and dryers working in this manner have long been in operation here.—EDS.