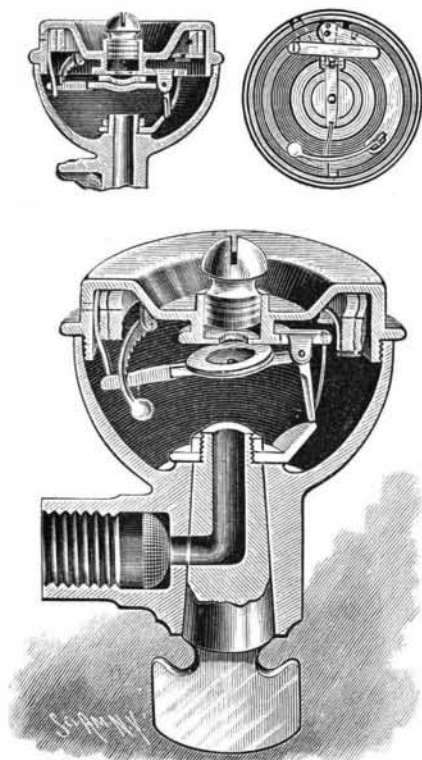


AN IMPROVED GAS BURNER.

The illustration represents a burner from which the gas is automatically shut off when the flame is extinguished while the pressure of gas continues. It has been patented by Messrs. Athanase P. Frechette and



FRECHETTE & DUPUIS SAFETY GAS BURNER.

Peter M. Dupuis, of Carson City, Nev. The larger view represents a longitudinal section of the burner with interior parts adjusted to permit the flow of gas, one of the smaller views showing the parts adjusted to shut off the gas, and the other being an inverted plan view, the safety valve being closed. The burner body or shell has a cap screwing into its top, the central part of the cap being depressed and having a cylindrical flanged aperture above which the burner tip projects. Below this aperture a disk valve is held, on the upper edge of a swinging bar pivoted at one end between depending ears, and there is integral with the pivoted end of the bar a downwardly projecting arm adapted to engage a toe projecting upward from a washer clamped on the end of the plug, so that when the washer is revolved, as in opening the plug valve, the bar will beswung downwardly, opening the disk valve. A strong plate spring returns the arm when free to vertical position, thus closing the valve. Within the walls of the cap piece are seated two rings, an inner and heavier ring of brass, and an outer ring of steel, the rings being severed and held closely to the side of the cap by a screw near one end. Two dowel pins are laterally inserted in the rings near their ends on each side of the cuts, and when the rings are differentially expanded by heat from the burner they separate at the ends, so that upwardly projecting small pins on their opposed ends will be thrown out of line. Fitting on these pins, and conforming to the curvature of the inner brass ring, on which it freely works, is a curved bar, lightly held in place by a finger spring, the free end of this bar having a ratchet-cut curved extension, on the outer end of which is a ball weight. From the inner side of the cap a post projects downward, in line with the swinging bar on which is the disk valve, and on the outer end of this bar is attached a thin steel plate laterally elastic but edgewise rigid, this extension of the bar being adapted to rest on the lower end of the post when the bar is swung downward by opening the plug valve. The latter valve is always turned far enough to disengage the toe on its washer from the arm on the pivoted end of the bar carrying the disk valve, so that after the plug valve is opened the disk valve is held open by the extension of the bar on which it rests being engaged by the opposite post. The heating of the differentially expanding rings then causes the ratchet teeth on the extension of the curved bar connected therewith to slip over the plate extending from the disk valve under the post, but should the

gas be extinguished without the cutting off of its flow, the ratchet teeth would be drawn the other way by the cooling of the shell and rings, and would dislodge the plate from its engagement with the post, when the plate spring bearing on the pivotal end of the bar carrying the disk valve would close the latter. The turning of the plug valve to light the gas resets the disk valve in open adjustment.

Living by Rule.

Oliver Wendell Holmes thinks that he owes his good health and the retention of his mental vigor, in his eighty-first year, to the extreme care he has long taken of himself. Never robust, he was still wiry in his earlier and maturer life, but since he reached eighty his hygienic vigilance is unceasing. The rooms that he daily occupies are equipped with barometers, thermometers, aerometers, every kind of instruments, in short, to prevent his incurring the slightest risk of taking cold. He knows that pneumonia is the most formidable foe of old age, and he is determined to keep it at a distance if possible. He never gets up until he knows the exact temperature, during winter, or takes his bath without having the water accurately tested. He lives by rule, and the rule is inflexible. His time is scrupulously divided, so much allotted to reading, so much to writing, so much to exercise, so much to recreation. His meals are studies of prudence and digestion. He understands the specific qualities of all ordinary foods, and never departs from the severest discretion in eating.

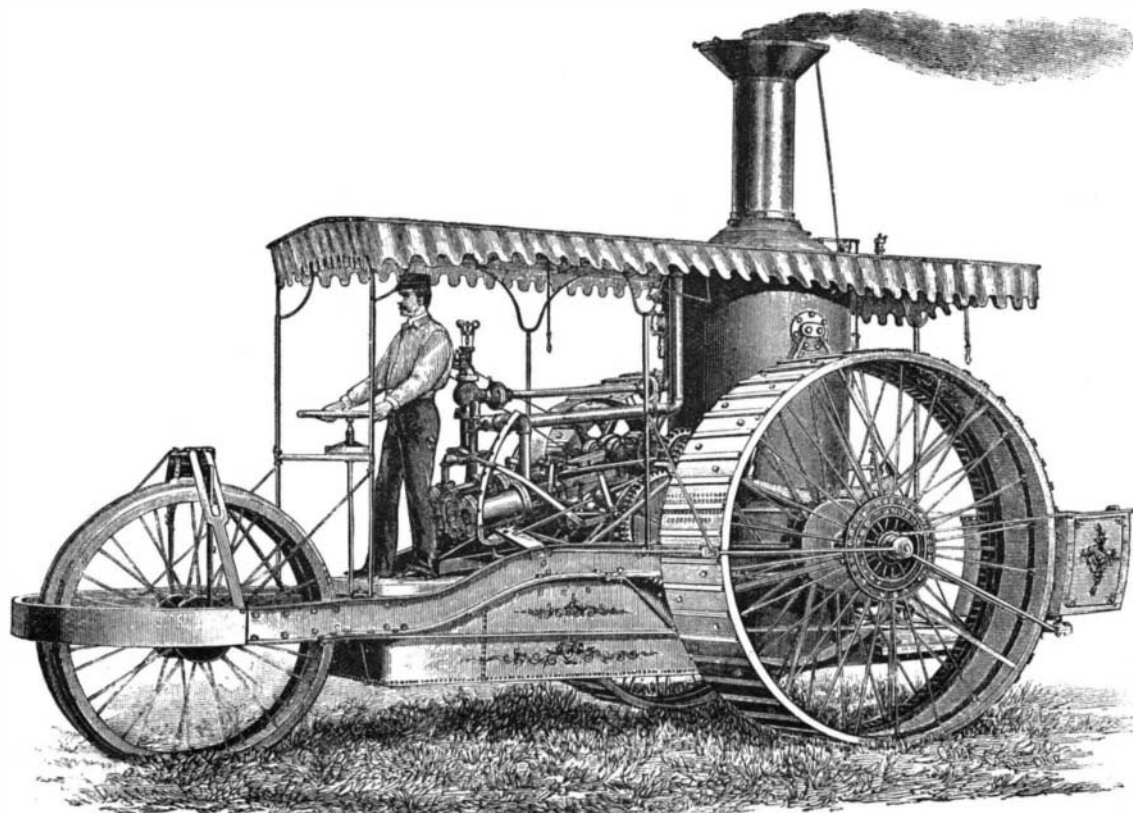
One might think that it would be a serious infliction to keep up existence by such precise, unvarying methods. But the little doctor enjoys them, having settled firmly in these habits years ago. Philosophic as he is about death, he has an eager curiosity to see how long he can live by following the laws he has rigorously prescribed for himself. He has long had various theories on the subject of health and longevity, and he relishes experimenting upon himself. He thinks sometimes that he may attain one hundred, which he would dearly like, if he could retain, as he has retained thus far, the full possession of all his faculties. —*Chicago Mail.*

IMPROVED FIELD LOCOMOTIVE.

Among the latest machines designed for use on large farms is the new field locomotive of Jacob Price, of Racine, Wisconsin, illustrated herewith. It is said that this machine pulled, near San Leandro, an outfit of twelve 11-inch plows in a dry, adobe soil, traveling at the rate of over four miles per hour in doing so, and maintaining the steam pressure at 130 pounds, without difficulty.

It is of about 100 horse power—as horse power is commonly figured; or, to express it in another manner, it will pull as much as 40 or 50 horses, besides propelling itself. Its weight is only 8½ tons. The carrying wheels are about 8 feet high and 26 inches wide. The steering wheel is 5 feet high and 14 inches wide. The boiler is an enlarged fire engine boiler of the most approved type, and is made strong enough to carry 200 pounds working pressure with safety. Its fire surface is 200 feet and its other heating surface (flues) 200 more, making a total heating surface of 400 feet. The main gears are steel rollers working on oiled steel pins.

The entire machine is mounted on long, easy, elliptic springs in a manner that utterly obviates any interference with the working of the gears, a result, according to Mr. Price, never accomplished before. The ma-

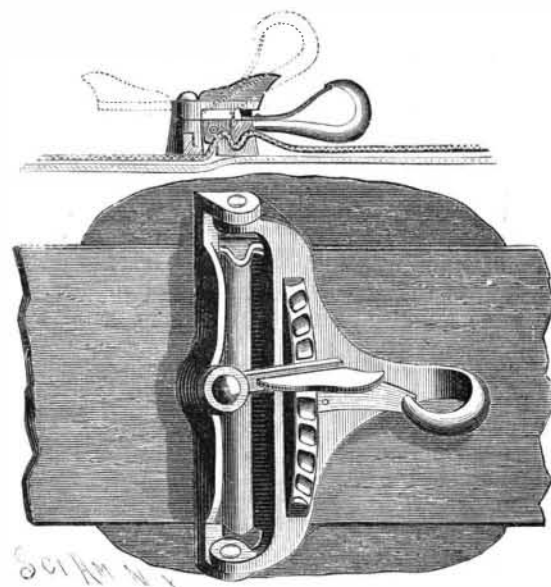


IMPROVED FIELD LOCOMOTIVE.

chine has twin engines, piston valves, and link motion. It is adapted for plowing, running combined harvesters, freighting with wagons, hauling saw logs, or pulling of almost any kind, and is suitable for any stationary work, such as running thrashing machines, sawmills, etc.—*Min. and Sci. Press.*

AN IMPROVED BACK BAND BUCKLE.

The buckle shown in the illustration is designed to be quickly adjusted to place, and its clamping mem-



MITCHELL'S BACK BAND BUCKLE.

ber is free from sharp or abrading surfaces, thereby preserving the band from mutilation. It has been patented by Mr. William D. Mitchell, of McComb City, Miss. Our engraving shows the buckle applied, and also a transverse section. In the upper surface of the base portion of the buckle are two parallel longitudinal ribs, in front of a longitudinal slot, and at the back is an offset having a central bore to receive a pin carrying a locking button, having a vertical wing to facilitate its manipulation. The hinge member of the buckle has on its under surface a longitudinal rib adapted to enter the space between the parallel ribs of the base, forcing a portion of the strap downward therein, and on its upper surface is a longitudinal ridge having a series of cavities or depressions, the ridge being higher at one end than at the other. The strap is passed upward through the slot of the base and over the two ribs, when it is locked in position by carrying the hinge member downward and moving the button to enter a convenient cavity in the ridge on top of the hinge member.

Magazine Rifle Firing at Bisley, England.

The report of the chief umpire of the brigade field firing with the new magazine rifle on August 16 has been issued. The troops engaged were the 1st Royal Rifles, Royal Scots, and Devon Regiment, with squadrons of cavalry and a battery of artillery. The umpire in chief remarks that the weather was stormy, with heavy showers, the atmosphere clear, and the wind strong and gusty. Firing was carried out with steadiness, and words of command were given intelligently and with decision by section commanders. The accuracy of range finders was fairly good, and the sights of rifles were properly adjusted. In the first phase of attack the percentage of hits was 14.64. In the second phase, when only marksmen and first-class shots fired, the distance being 1,100 yards, the percentage rose to 22.6, and in the third phase, when two battalions of mixed shots fired, the percentage was 14.86. This is the first time field firing has been practiced with the new rifle by a large body of troops.

IN the case of George Westinghouse, Jr., of the Philadelphia Natural Gas Company, against the Chartiers Natural Gas Company, for infringement of patent on the double safety in-vent pipe, Judge Acheson, of the United States court, decided that the defendant company had not infringed upon the patents of the plaintiff, and, furthermore, that the invention was not patentable. The suit involved vast sums of money.