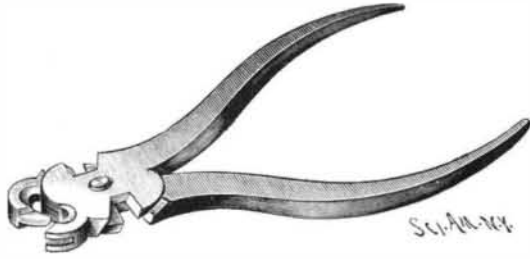


a current in the dynamo to flow through the electrode, through the rear part of the floor, and through the animal to the front part of the metallic floor, thence back to the dynamo.

If desired, the killing may be effected by the direct application of the electrode to the head of the animal. Messrs. J. D. Miller and James A. Dofflemyre, of Gunnison, Colorado, are the inventors of the apparatus.

**INSTRUMENT FOR FASTENING FUSE CAPS.**

A new implement for fastening caps on giant powder fuse has been patented by Mr. Nathan W. Moodey,



**MOODEY'S FUSE CAP FASTENER.**

of Fresno City, Cal. This implement is made in the general form of pliers. It is formed of two similar parts connected together by a pivotal rivet. Each part has a curved handle, and with a cheek having notches with cutting edges at the sides of the notches. Upon the edges of the cheek pieces opposite the handles are formed curved jaws which, when closed together, form a circular aperture for receiving the fuse cap.

The jaws are beveled on opposite sides around the aperture. One jaw is provided with a tongue which fits into a corresponding groove in the other jaw.

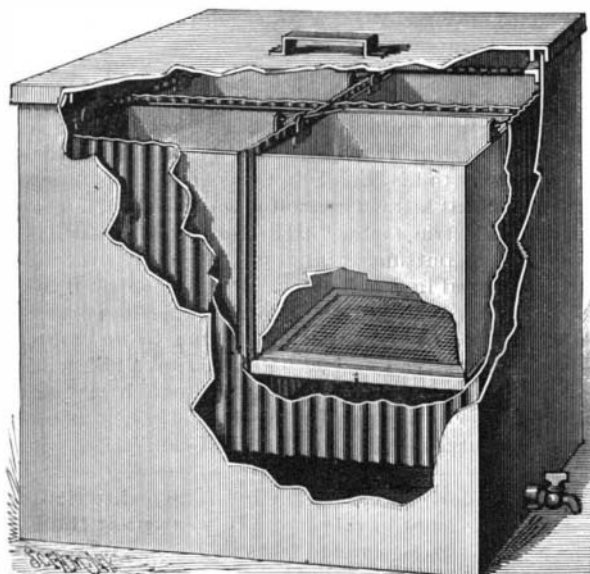
The pliers are used for cutting fuse and for contracting the end of the cap on the fuse. They are well adapted to the purpose for which they were designed, and will doubtless speedily find their way into the kits of users of fuse and fuse caps.

**NEW WASH BOILER.**

A wash boiler in which the articles to be washed may be separated, so that they may be readily sorted and classified, is shown in the annexed engraving. Each lot of articles is separately boiled or steamed and rinsed in one general receptacle. The apparatus may also be used with equal facility in bleaching.

The body or outer portion of the device is a metal vessel having a faucet at the bottom for drawing off the contents, and provided with a suitable cover furnished with a groove for receiving the apertured edge of the vessel. This vessel is divided into a series of compartments by transverse and longitudinal corrugated partitions, the partitions being attached to the inner walls of the vessel. These partitions may be either fixed or removable as circumstances may require. Within each compartment thus formed is placed a perforated bottom, and to each compartment is loosely fitted a bucket furnished with a perforated bottom and a bail for convenience in lifting it out of the boiler.

In the operation of washing, the chamber in the lower part of the vessel is nearly filled with water, and the clothes are sorted and placed in the different



**MRS. MARTINOT'S IMPROVED WASH BOILER.**

buckets, and the buckets are lowered into their respective compartments in the boiler. As soon as the water in the lower part of the vessel boils, it is forced by steam pressure upward between the partitions, the linings of the vessel and the buckets, and flows into the buckets, returning through the clothes by gravity, carrying with it the dirt loosened by the action of the hot water and the steam. This operation goes on continuously so long as the boiling point is maintained.

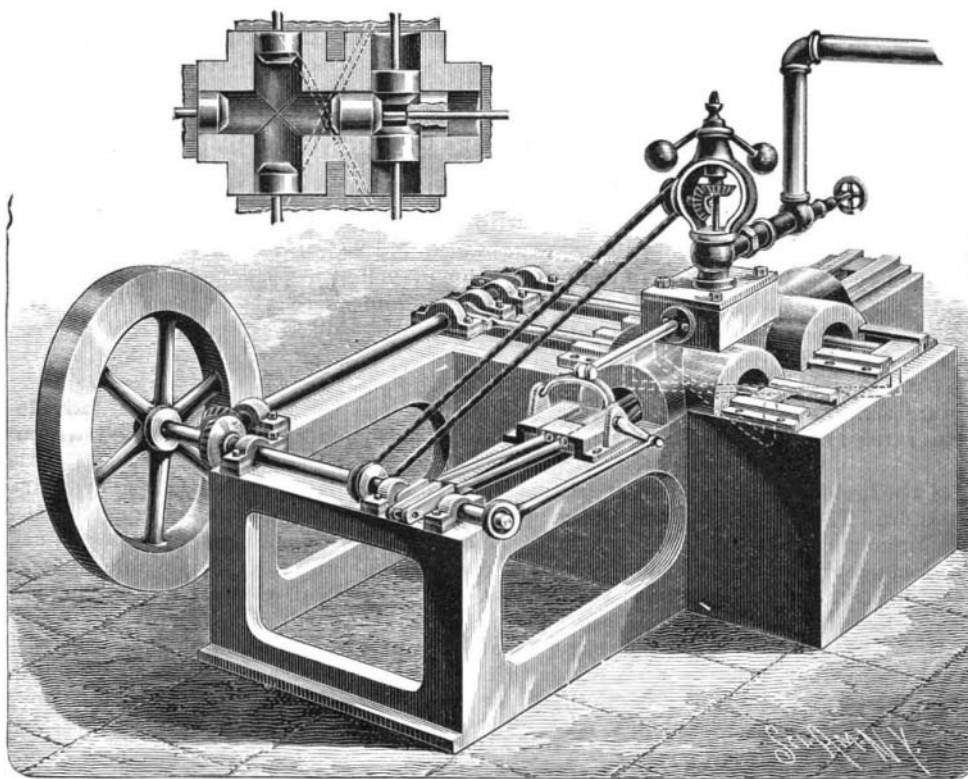
It is claimed that the clothes are not actually boiled, but that the dirt contained in the fabrics is softened by the action of the steam, and is removed by the circulation of the boiling water. As soon as this operation is complete, the different buckets may be removed and placed in another similar vessel for rinsing, or they may be rinsed in the usual manner, each class by itself.

For further information regarding this invention address Mrs. Mary White, 1541 Broadway, N. Y. City.

**NOVEL STEAM ENGINE.**

In the engine shown in the annexed engraving, the inventor has provided a mechanism for utilizing the steam to the fullest extent. This engine is practically furnished with four pairs of reciprocating pistons, although in reality one of the pistons answers a double purpose. The power cylinder consists of a longitudinal cylinder intersected by two transverse cylinders. In the longitudinal cylinder are arranged three pistons, two pistons being placed in opposite ends of the cylinder and connected by a rigid bar outside of the cylinder, the third one being placed in the center division of the cylinder. The central piston and the end pistons are connected with oppositely arranged cranks on the main shaft, so that the end and central pistons move simultaneously in opposite directions.

Transverse cylinders are located at points corresponding to the ends of the strokes of these pistons, and in each transverse cylinder are arranged pistons which move simultaneously in opposite directions, and their



**ROBEY'S STEAM ENGINE.**

movements are so timed relative to the pistons in the main cylinder that when the pistons in the main cylinder approach the point of intersection, the pistons in the transverse cylinders approach in like manner, and the movement of the pistons in the opposite direction are also in unison.

An auxiliary shaft is arranged at right angles with the main shaft, and connected therewith by a miter gearing. The auxiliary shaft is provided with two oppositely arranged cranks, which are connected with the crossheads of the piston rods of the adjacent pistons of the transverse cylinder, and these crossheads are connected by rods running underneath the cylinder with the diagonally opposite pistons in the transverse cylinders. By means of this construction these two sets of pistons are made to alternate with each other in their movements.

Upon the top of the cylinder is placed a steam chest containing a valve adapted to admit steam to and exhaust it from the space at the intersection of the cylinders, and the speed is regulated by a governor of ordinary construction.

It will thus be seen that when steam is admitted at one end of the

cylinder, it presses upon four pistons, which move outward simultaneously, thus utilizing the steam pressure upon all sides of the point of admission. The detail view clearly shows this construction. In this view the pistons of one set have reached the end of their out-



**KNIGHT'S IMPROVED HALTER.**

ward stroke, while the other set are at the inner limit of their stroke and are about to take steam.

This improved engine has been patented by Mr. James G. Robey, of Greenville, Texas.

**AN IMPROVEMENT IN HALTERS.**

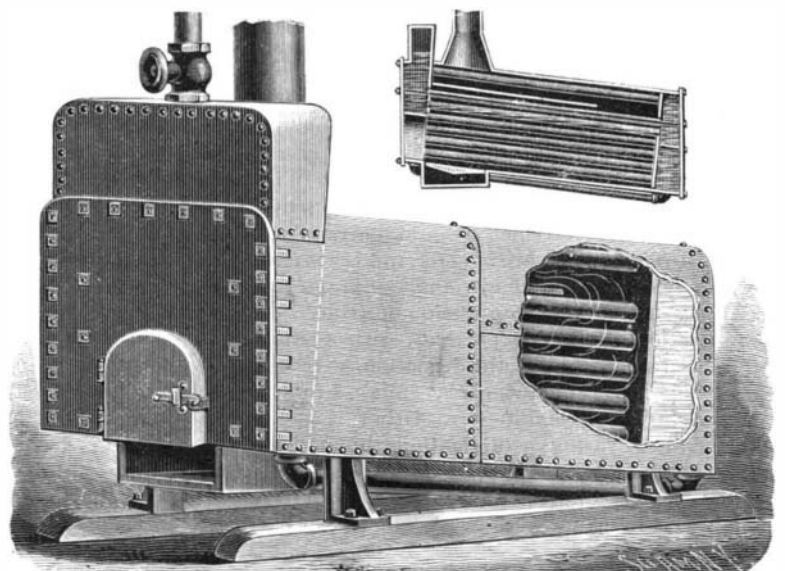
A simple and effective device for controlling and leading unruly horses without danger of doing them any injury is illustrated by the annexed engraving. It

is a halter formed of adjustable head straps, a nose strap containing a flat spring for holding it normally in loose contact with the animal's nose, and a device for contracting the nose strap with more or less force when the halter is unduly pulled upon.

The nose strap is made of two thicknesses of leather, between which is placed a flat spring, bent into such form as will permit of its being worn by the horse without discomfort when he pulls lightly on the leading strap. The ends of the nose strap are provided with yokes, in which are journaled friction rollers. A strap passes through these yokes and partly around the rollers. To the center of the strap is fastened a guide yoke, furnished at its rear end with two friction rollers, between which project the ends of the strap referred to. These ends receive between them a ring, and are fastened together by stitching or otherwise. The snap hook of the usual leading strap is received in the ring. Whenever the horse pulls unduly on the leading strap, the ends of the strap which pass outwardly between the rollers are drawn outward, thus

causing the contraction of the nose strap with a force proportioned to the pull of the animal. The pressure of the strap upon the nose is sufficient to secure the desired result. As soon as the horse stops pulling, the elasticity of the spring returns the parts to their normal position.

The halter is made so that it may be adapted to the



**TOOLE'S IMPROVED STEAM BOILER.**—[See page 68.]

head of any horse. This useful invention has been patented by Mr. Joseph Knight, of Livermore Falls, Maine.

#### A NEW STEAM BOILER.

We give an engraving of a steam boiler which was recently patented by Mr. Charles O. Toole, of Dubuque, Iowa, containing novel features for which superiority is claimed. It is of the water tube type, the connection between the tubes being secured by water heads at opposite ends of the boiler. The tubes are inclined to secure a good circulation and to facilitate the escape of steam to the front water head when it is delivered to the steam dome above. The tubes are arranged to form a fire chamber in the front of the boiler.

A baffle plate resting upon or supported above the upper row of tubes causes the flame and products of combustion to pass rearwardly before reaching the smoke pipe.

Stay bolts are introduced wherever necessary, and a series of rods passing through the tubes connect the front and rear heads of the boiler.

To insure a complete circulation of the water, the front and rear water heads are connected by a pipe which is entirely outside of the heating compartment.

The front water head is provided with an arched opening for the fire door.

When it is desired to clean the tubes, the front plates of the water heads are removed, thus giving access to the tubes through the water heads. By means of this improvement every part of the surface of the tubes is submitted to strong heat.

The boiler when filled or empty is lighter than cylinder boilers of the same capacity, and the tubular construction permits of carrying a high pressure with safety.

#### A Homeopath on Yellow Fever.

Dr. Henry R. Stout gives, in the *N. A. Journal of Homeopathy*, an interesting account of his experiences at Jacksonville, during the yellow fever epidemic in that city in 1889. He says as many as possible of the unacclimated nurses were sent to the Sand Hills Hospital. This hospital was situated in the pine woods, three miles from the city. The non-contagious character of yellow fever was well illustrated at this hospital. With between two and three hundred patients during the epidemic, not one of the nurses or attendants had the disease. The pure air of the pine woods did not become infected.

Another illustration was given by the immunity enjoyed by those families who lived at Pablo Beach, 16 miles from the city, on the seashore. Gentlemen from here, as well as from other points, would come to the city each day at 9 o'clock and return at 4 o'clock, and in some cases visited their friends who were sick, but not one had the disease, nor were the germs carried to any of these points.

Yellow fever is pre-eminently a disease of the night. I doubt if it is ever contracted during sunlight. The attack was not generally preceded by any prominent symptoms, and the person might be seized suddenly with a chill, soon followed by fever, aching of the bones, etc. In some the attack was ushered in with great nervousness and a feeling of alarm. I had cases of men who could not control their emotions, but would weep when first attacked. This feeling was probably due to the depression felt by every one, whether sick or well. Some cases were very turbulent and restless, and required the most careful attention. Should they uncover themselves and the perspiration thereby be checked, the result was liable to be serious. In our practice we did not induce the excessive sweating that our allopathic brethren did. Their patients would not only saturate the bedding and mattress, but in some cases would wet the floor underneath the bed.

We generally began the treatment of a case with a hot foot bath, which relieved the pains and nervousness, and about the same time administered an enema of warm water to evacuate the bowels. The patient was then put to bed, covered with a sheet and one or two blankets, and *aconite* 3x administered every half hour or hour. He was allowed a reasonable quantity of water to drink, and sometimes cracked ice.

In the course of twenty-four or thirty-six hours either *belladonna* or *bryonia* would be indicated. Within the next day or two *mercurius vivus*, *china*, *arsenicum*, or possibly some other remedy would be required. *Argentum nitricum*, *sulphuric acid* and *arsenicum* were sheet anchors in black vomit, and *cantharis* and *apis* for scanty or complete suppression of urine.

A decoction of *watermelon seeds*, with a teaspoonful of *gin* to a small glass of the decoction, as recommended to me by Dr. Falligant, of Savannah, I found to act exceedingly well as a diuretic. Other remedies were required in the various complications, but our works on practice, particularly "Kippax on Fevers," treat fully on these points, and it is unnecessary for me to refer to them. The remedies were used in the 3x, 6x and 30x potency.

Stimulants were necessary for collapse and during convalescence, and of these brandy and champagne

were the best. The latter particularly is exceedingly beneficial.

The diet must be managed with the greatest care. A return too soon to a substantial diet is almost certain to be followed by disastrous results. During the course of the fever gruel should be the only food allowed, followed on the third or fourth day by chicken broth, milk, or milk with lime water. The bowels should be moved by enemata of warm water.

Our allopathic brethren, with nothing to guide them in the selection of remedies, floundered about in their usual aimless manner. The germicidal treatment with *bichloride of mercury* was very popular with the doctors. They were determined to exterminate the germs which infested particularly the intestines, but appeared to lose sight of the fact that the microbes could withstand more *mercury* than the unfortunate patient, and the result was generally disastrous to the patient.

The very best and most rational allopathic treatment can show no such results in yellow fever as homeopathy has shown in many epidemics. Under this treatment the disease is no more to be feared than an ordinary remittent fever. That such is the case is capable of demonstration from the books of the Board of Health. There were reported 4,696 cases, with 430 deaths, a mortality of 9.2-10 per cent. Of this total number of cases 2,178 were white, with 331 deaths, a mortality of 15.2-10 per cent. The mortality among the negroes was 4 per cent. At the Sand Hills Hospital 216 cases were treated, with 34 deaths, a mortality of 15.7-10 per cent.

There were treated homeopathically by Dr. P. E. Johnson, Dr. C. W. Johnson, and myself, 501 cases, with 13 deaths, a mortality of 2.6-10 per cent. This death rate can, I think, be properly compared to that of the whites, inasmuch as we had very few colored cases; but even compared to the general mortality rate it is less than one-third.

It was reported in the newspapers that Mr. Thomas A. Edison claimed that an epidemic could be prevented if on the discovery of the first case or cases the ground about the house and streets about the block were saturated with a germicide. To get an authoritative statement I addressed a note to him, asking for further information. He replied that a five per cent solution of *caustic soda* would destroy every living thing, both animal and vegetable; that it would remain where it was put for weeks, notwithstanding rain; and that germs passing along the ground would be killed by it. If the theory of the propagation of yellow fever along the surface of the earth be correct, and there is every reason to believe it is, the plan of Mr. Edison is well worthy of trial.

#### Venus.

Signor Schiaparelli, the Italian astronomer who has made more wonderful discoveries among the planets than all the other astronomers of our day put together, has just furnished a new surprise, greater even than his recent discovery that Mercury performs only one rotation in the course of a revolution around the sun. He now asserts that Venus, the brightest of all the planets that we see, the twin sister of the earth, which is at present glowing with nightly increasing splendor in the west after sundown, also turns but once on its axis in the course of a revolution around the sun. In other words, there is no alternation of day and night on Venus, as on the earth. The planet enjoys perpetual day on one side of its globe, while the other side is plunged in unending night.

Astronomers have heretofore believed that the time of Venus' axial rotation corresponded almost exactly with that of the earth's, namely, twenty-four hours. This was supposed to have been established by noting the return of spots visible on Venus to a similar position night after night, but Schiaparelli shows that some of these observations have probably been misinterpreted, and that instead of indicating a rotation period of twenty-four hours, they rather confirm his conclusion that the rotation is performed in 224.7 days, which is the time the planet takes to complete a revolution around the sun, or, in other words, is the length of Venus' year. Venus is about 67,000,000 miles from the sun, and its orbit is more nearly a circle than that of any other planet. It follows that there is very little variation in the amount of solar heat falling upon Venus at different periods of its year.

Schiaparelli says the axis of rotation is nearly perpendicular to the plane of the orbit. If that is so, Venus has no diversity of seasons such as the earth enjoys. Its equator forever burns with the ardent heat of an unending summer, and its polar regions undergo no change of temperature. Inasmuch as Venus receives almost twice as much light and heat from the sun, in consequence of its greater proximity, as the earth gets, it must be pretty hot in the equatorial regions, on that side of the planet which perpetually faces the solar furnace. If what the great Italian observer says about Venus' rotation is true, then the additional fact announced by him that the planet's axis is perpendicular to the plane of its orbit seems almost a providential provision of nature, for in that

way it is rendered possible for the polar regions to enjoy a comparatively mild climate, although the equator and the spaces corresponding to our tropical and temperate zones may blaze with unendurable heat.

If the axis of Venus were inclined like that of the earth, the consequent variation of seasons would plunge the poles alternately into a day of fierce sunshine enduring for seventeen weeks and a frosty night of equal duration. The result would be that life under such forms as it assumes upon our globe would probably be impossible anywhere on the surface of Venus, for the sunward side of the planet would be scorched while the night side was frozen. But if, as Schiaparelli's observations indicate, the poles of Venus are not tipped now one and now the other toward the sun, but remain upright at right angles to the direction of the sun, then in their neighborhood the heat may be tempered just as it is at the poles of the earth, in accordance with the law of incidence of the solar rays. Of course the cold, being unbroken, may be very intense just around the poles themselves, and in fact within a few years past white spots have been discerned on Venus, about where the poles would be situated according to Schiaparelli's idea, and these spots may be caused by accumulations of snow and ice there. But in somewhat lower latitudes an agreeable mean might be found between the consuming heat of the equator and the glacial chill of the poles.

The imagination may not go far astray in picturing these intermediate zones, on the sunward side of the planet, as the scene of activities corresponding to those that mark the human occupation of the inhabitable parts of the earth. To be sure, the inhabitants of even these favored regions on Venus could not enjoy the agreeable interchange of day and night, but would be perpetually shone upon by the sun, but even here there are indications that nature may have provided at least a partial compensation. All telescopic observations of Venus testify to the blinding brilliancy of its surface, and the most reasonable hypothesis yet put forth to account for this phenomenon is the existence of an extraordinary amount of cloud in its atmosphere.

Anybody who has watched a sun-illuminated cloud knows how splendidly it reflects the light, and, of course, in looking at the clouds of another planet we can practically see only their sunny side. If, then, as appearances indicate, Venus' atmosphere is largely filled with clouds, the effect would be to screen off the superabundant sunshine, and perhaps render even perpetual daylight far less obnoxious than we might, at first sight, be disposed to regard it. There are reasons for thinking that the atmosphere of Venus is most abundant. Its depth has been calculated to exceed that of the earth by about one third, although Venus is a slightly smaller planet than ours. The existence of watery vapor in this atmosphere has been clearly established by spectroscopic examinations. Of the extent or even the existence of oceans on Venus we know nothing by direct observation, but since the planet possesses an atmosphere and clouds, it is not unreasonable to conclude that it must have oceans capable of supplying the needed vapor.—*New York Sun*.

#### Delayed Telegram.

The Western Union Telegraph Company was sued for \$25,000 in the Chicago Federal Court by Mrs. Hannah Joseph. The plaintiff is the wife of a traveling salesman who, while at Paxton, Ill., one Saturday evening, telegraphed his wife that he would be home the following day. He did not come, and Mrs. Joseph was seized with hysterics, which a physician said were the commencement of a more serious disorder. Mrs. Joseph sent a message to her husband asking him why he did not come, but did not receive a reply until the following day. During all that time she suffered great agony. Judge Gresham heard the evidence and instructed the jury that, while the company was liable for the delay in delivering the telegrams, Mrs. Joseph's sufferings commenced before she sent the message, and she could only recover the price paid for tolls. A verdict for 25 cents was returned.

#### He Will Succeed.

A young man going through a course of electrical engineering at the Thomson-Houston works, in Lynn, Mass., writes to his friends in Osceola, Fla., as follows: "Here I am at last. I started at work in the Thomson-Houston electric factory last Monday. To say I am surprised is putting it mildly. There are over 4,000 men employed in this factory. It is a good sized town in itself. My first position is in the expert department adjusting and testing arc lamps. I am to go through a very thorough course, and be turned out a full-fledged electrician, but it comes very severe upon a lazy devil like me to go to work at 6:30 A. M., and continue until 6 P. M. But if others can stand it, I can."

"THE widest plank on earth" is on exhibition at the railroad depot in this city. It was cut at the Elk River mill, and is sixteen feet in width. It will be among the Humboldt exhibits at the World's fair in Chicago.—*Humboldt Standard*.