IMPROVED AIR RESERVOIR.

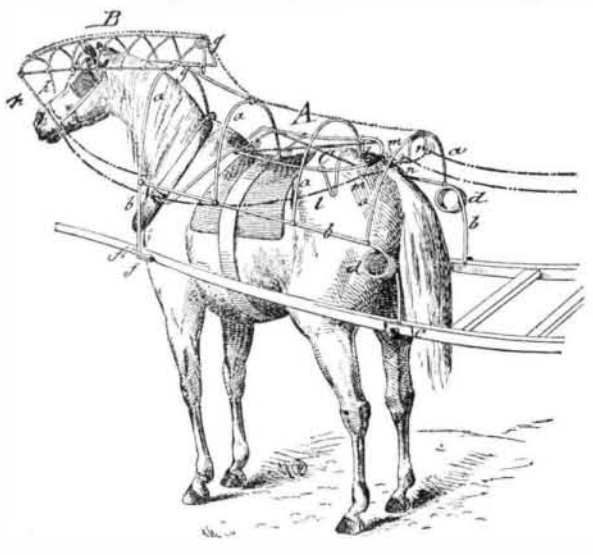
M. A. Galibert, of Paris, France, has recently patented in this country respiratory apparatus, consisting of an air reservoir made of a skin, india rubber, or any other airtight material, in which pipes are suitably arranged for inspiring and expiring the air from and into said reservoir.

The apparatus is intended for furnishing pure air for breathing in localities where vitiated air, smoke, etc., render the atmosphere unfit to sustain life. The engraving represents the airtight bag. Two rubber or other flexible pipes penetrate to the inside of the air bag—one fastened near the top and the other dropping to a point near the bottom. These pipes, after passing to the outside a certain distance, are fastened to the mouthpiece, which is so shaped as to fit inside of the mouth, to be held by the help of the teeth and lips. Two straps are fastened to the air bag, and by them it is carried by the bearer.

In use the air bag is inflated with bellows. When full, the tubes are stopped by a pressure with the fingers, or by twisting them so as to arrest the escape of air from the bag. The bag is now strapped to the back, the nose stopped with spring pinchers or otherwise, the mouthpiece is inserted between the lips, the pipes relieved from pressure, and the apparatus is now ready for use.

DEVICE FOR PROTECTING HORSES.

Mr. R. P. Lawton, of Oramel, N. Y., has recently patened, through the Scientific American Patent Agency, a horse protector, the object of which is to allow the head piece of

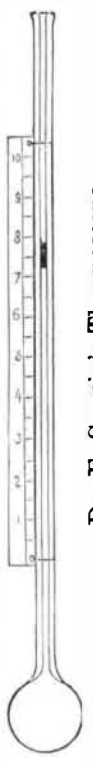


the same to be used in place of the check rein, and be thrown out of the way on detaching it, while the body of the protector is so applied to the thills that the horse may be readily unhitched without being hindered thereby. The reins are guided and supported in such a manner that no entangling of the tail with the same is possible.

In the engraving, A represents the main part or body of the horse protector, which is constructed in the usual manner of lateral bent wires, *a*, applied to longitudinal supporting wires, *b*. The net, blanket, or other article used for protecting the horse against flies, storms, sun, etc., is placed over the main frame, A, and supported by the same and suitable stiffening wires, which are stretched to connect diagonally over the bent pieces, *a*. The longitudinal supporting pieces, *b*, are bent at their rear ends into coiled springs, *d*, and firmly attached by means of socket slots and clamp screws, *e*, to the thills. The front ends of the side pieces, *b*, are bent under right angles toward the thills, and applied by end hooks, *f*, to loops or staples, *f'*, of the thill. The action of the spiral springs, *d*, carries instantly the main part, A, in upward direction, as soon as the front ends of the supporting pieces are detached from the thills, so that the horse can be unhitched without being interfered with by the supporting frame. The head piece, B, is attached to the upper part of the front wires, *a*, in some suitable manner, the connecting wire piece, *g*, being provided with a spiral spring, *g'*, which has the tendency to throw the head piece back on the body, A, unless connected to the bridle. Light wire rods, *h*, connect the front part of the head piece, B, with the bridle, and take thereby the place of the check rein for holding up the head of the horse The spring connection of head piece and body gives sufficient freedom to the head of the horse, that this check arrangement is not onerous to the same. The reins are supported, for the purpose of not getting entangled with the protector or tail, on a separate wire frame, C, which is also in yielding manner applied either to clamps of the harness or attached to the main part, A. The reins first pass along a lateral V-shaped wire, *l*, of frame, C, placed laterally across and resting on the back of the horse, then over rear guide hooks, *m*, of the same, and finally over hooks or eyes, *n*, of the bent rear wire, *a*, of the main frame, A, to the driver, who is thereby enabled to retain full control of the horse. The protector may be constructed of steel wire of sufficient lightness to form a neat and practical attachment to the thills. In using the protector with a double team, in which case the thills are not available, it is necessary to support the same on a standard attached to the hip and back straps, the front ends being fastened into a slot or socket of the hames. The head piece is applied in the same manner in both cases.

NEW CLINICAL THERMOSCOPE.

Dr. E. Seguin, of 17 East 21st street, New York city, has recently invented a clinical instrument for the detection of anomalies in the condition as to heat of the human body. It is a very simple device of merely nominal cost, and is the most sensitive indicator of changes in temperature which we have ever seen. The inventor calls it the clinical thermoscope; and it consists of a glass tube, of a quarter of a line bore, seven inches long, closed at one end by a bulb nine lines in diameter, and flared at the other end. To make it ready for use, the bulb is heated over a lamp or fire, or more readily in a bowl of hot water; and when the air contained in the bulb is heated to a few degrees above the atmospheric temperature, the open end is quickly plunged an inch deep into, and quickly withdrawn from, a bowl of cold water. The drop or two which will have then entered the mouth is seen to run up the tube. If it stops near the bulb, it will be the index of the thermoscope. If it stops sooner, say two or three inches from the mouth, or if it runs into the bulb, the latter was too cold or too hot, and we have to jerk away that drop of water and recommence; three or four trials, to obtain a good water index, take hardly a minute.



Dr. E. Seguin's Thermoscope.

In this condition, the air contained behind the water index makes itself isothermal to the ordinary temperature, and the thermoscope is ready.

It is applied to any spot where an anomaly of caloricity is known or suspected. Its place by preference is in the closed hand. In five to ten seconds the index has attained the maximum hight or fall; and to read it, we note the distance the index drop of water travels, and the time in seconds it takes to reach it. To take more exact observations, a movable scale is attached to the stem, so as to put its lowest figure on a level with the head of the water index; so that the thermoscope is always correct—"which," says Dr. Seguin, "is more than can be ssid of most of our clinical thermometers."

But with or without a scale, it gives indications of the thermal condition at the start (*a*), and of the volume of heat escaping by radiation (*b*); while by gently blowing on the bulb, it shows the degree of combustion which takes place in the lungs; and other phenomena of heat may be diagnosed by its use.

Without using a scale, an attendant can tell, by application to the affected part of a patient's body, at what hour the index rose quicker and higher, or quicker only, and not so high, etc. Without a scale, too, a physician who well knows his case, and is short of time, can, in less than ten seconds, decide upon the dynamic conditions of the next twelve or twenty four hours, dependent on the waste of caloricity by radiation—that is to say, life itself in many cases—and prescribe accordingly.

Dr. Seguin recently communicated to the New York State Medical Society the following interesting case, in which the value of his instrument was made apparent:

"Called to a man fallen from a three story hatchway, I found a compound fracture of one leg and a fracture of the skull; and the patient, rather insensible to pain, had full consciousness, with jactitation, with a speck of erotism; his pulse was confused, temperature 98·5° Fah., in other terms, at the point of perfect health. Was it delusion? No, it was a compound temperature whose component elements escaped the fever thermometer.

"I tried the thermoscope. Put in the hand, it rose, in the axilla it rose more, below the sternum it rose less, in the inner angle of the eye it fell rapidly. The thermoscope had discovered the point where extravased blood was coagulating, at the base of the brain. Thus it became comprehensible that a temperature of 98·5° Fah., the thermal point of perfect health, may in a dying man be a compound temperature, whose composition could be approximated by these figures: 100·3° Fah. of general pyrexia, balanced by 96·7° Fah. of hemorrhagic apyrexia, equals 98·5° Fah. This thermoscopic analysis saved the man further painful manipulations, and he died, as predicted, inside of three hours.

"The thermoscope in contact with the living shows the activity of their caloricity; and in contact with the dead, it ceases to indicate heat only as organic combustion becomes progressively extinct. As thousands have been buried alive, the invention of a true necrometer excites a deep interest, increased, if possible, since cremation was mooted. For some have knocked at their coffins and re-entered the world; but of what use would it be to knock for help inside the furnace? The proof of death is wanted now more than ever, and, if I am not mistaken, the thermoscope gives it.

"I give this simple and costless instrument to my *confrères*, begging them to try it in the spirit of candor which made Biot say: "We must not shun the humblest contrivances, when they can improve or supplement the medical senses."

IMPROVED TREADLE SAWING MACHINE.

We illustrate herewith a sawing machine operated by a treadle, in the engraving of which A represents a sawhorse

of the common construction, with side standards and lateral cross pieces of suitable strength, for supporting the weight of the body and the additional parts attached thereto. A platform treadle, B, is pivoted by a cross rod, *a*, to suitable bearings, *a'*, of the side standards above the lateral bottom piece of the same, and made of concavo-convex shape, for giving a firmer hold to the feet of the person operating the machine, and preventing, also, the contact of the under side with the ground. The treadle, B, is extended to one side to project beyond the horse standard, and provided with an inclined lever arm, C, which is rigidly braced to the treadle, and connected by its curved extension, C', with the bifurcated end of the saw frame, D. The rear part of extension, C', is connected to a pivoted lever rod, *b*, with a crank wheel shaft, *d'*, and balance wheel, *e*, at the opposite side of the saw horse, with shaft, *d'*, turning in suitable bearings of the same. The balance wheel is weighted at one side for the purpose of carrying the crank wheel into position to be readily moved by the treadle and arm, avoiding the position of the same on one of the dead points for starting. The forked end of said frame, D, is adjustably pivoted to the rear end of the extension, C', and reciprocating motion imparted to it by the arm and extension, C C'. Said frame, D, is made in a curved shaped, in any approved manner, with a saw blade cutting in both directions, clamped adjustably and detachably therein. A rear extending arm, E, is bolted to the upper part of the sawhorse, A, serving for guiding the saw frame along the same, it being held in forward position for the sawing by a pin, *f*, of the same, and in rearward position, when thrown back for adjusting the log, by a spring hook, *g*, near the outermost end of the arm, E. A V-shaped piece, F, corresponds in shape with the upper legs of the sawhorse, A, and slides by a groove, *h*, on the main cross piece of the sawhorse, and by a sleeve-shaped perforation, h^2, in a lateral guide rod, h^1, of the upper part of the saw horse. Crotch or piece, F, serves to support sticks or logs of lesser width than the sawhorse, by being carried between the side standards into the required position.

The machine is operated by rocking the treadle platform with the feet, pressing with one hand the upper part of the saw frame, and feeding with the other hand the sticks to the saw.

Mr. John M. Linnell, of Monticello, Iowa, is the inventor, and the invention was patented through the Scientific American Patent Agency.

CHEMICAL FILTER.—Place inside of the glass funnel used a small filter of parchment paper pierced at the bottom with a fine needle; afterwards place the ordinary filter in the funnel, and filter as usual. Such cones of parchment paper can be used in any required size, are easily obtained, and may be applied to almost all purposes where the more expensive platinum cones have hither been used.

CHLORIDE OF BARIUM, as a remedy for boiler incrustations, gives general dissatisfaction.