IMPROVED PLENUM AND VACUUM PUMP.

The novel form of pump herewith illustrated may be used either for a bellows to force an air blast, or as a pump for raising water. By producing a vacuum in one of its receivers, and compressing air into the other, both of the above capabilities may be utilized simultaneously, or both receivers may be maintained either in a state of continuous vacuum or filled with compressed air, as may be desired.

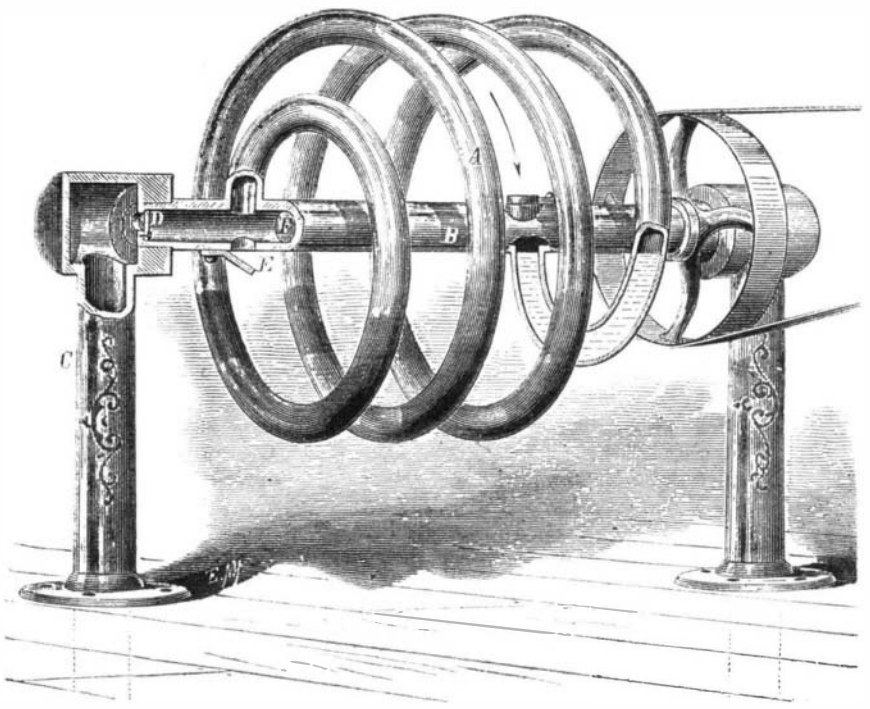
A is a spiral tube coiled about (and the ends of which are in communication with) the hollow axial shaft, B. C C are hollow supports for the latter, and, at the same time, supply conduits, the water passing therefrom into shaft, B, by the inlet valves at D. E are the exhaust valves, and at F is a partition which divides shaft, B, into two compartments, so that, through its axis, there is no communication between the ends of the coiled tube, A. A portion of the coil is filled with mercury, as indicated by the broken-away section on the right, the hight of the column being equal to or greater than 28 inches, so as to overbalance atmospheric pressure.

When the coil is turned by the action of the belt pulley or by hand, in the direction of the arrow, the mercury, flowing along the spiral tube from one end to the other, will create a vacuum in its rear while compressing the air before it. In so doing, it will draw water or air through the valve, D, at one end of the shaft, and expel the air before it from the valve, E, at the opposite extremity. If the motion be reversed when the mercury has traversed the length of coil, A, the same takes place with the other pair of valves, while, of those first affected, the inlet valve now closes and the outlet valve opens. A moment's inspection of the arrangement of the valves in the diagram will show that a continuous suction and exhaust is thus maintained.

If the positions of the inlet and outlet valves be changed—valves, E, being inlet valves and D, outlet—the apparatus may be used as an air compresser, of which the tubes, C, may be conduits to the reservoir. In such case valves, E, which, as represented, open outside the shaft, would open inwardly, while valves, D, now opening inside the shaft, would open into the receivers.

It is claimed that, by this device, water may be raised 33 feet. The amount of compression attained is dependent upon the weight of the mercury column and the size of the machine. Air, however, it is stated, can be compressed five times, equal to a pressure of 60 pounds to the square inch. The receivers may be made of any desired size. The diameter of the tubes and number of coils may be increased at pleasure. The diameter of the coils may be from three to fifteen feet, and either hand or steam power may be utilized for their rotation.

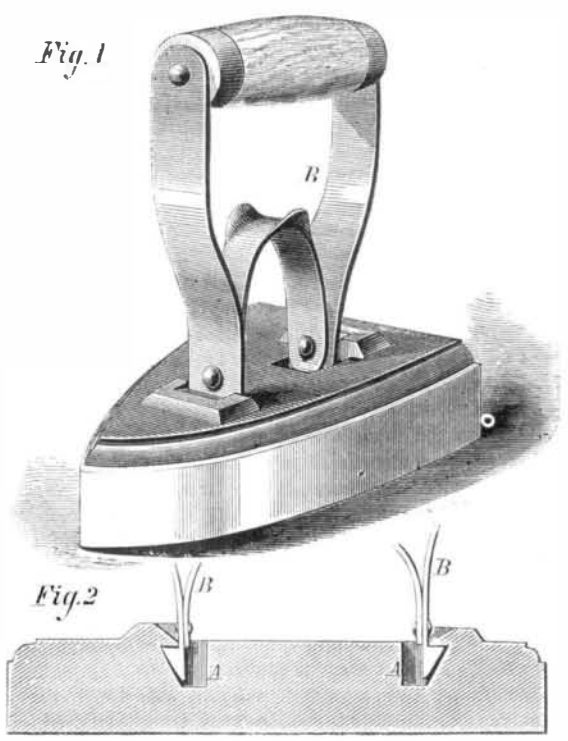
Patented through the Scientific American Patent Agency, November 24, 1874, to Daniel L. Cameron. For further particulars regarding sale of rights, or of patent, etc., address the patentee at Madison Station, Madison county, Miss.



CAMERON'S PLENUM AND VACUUM PUMP.

A NEW SAD IRON.

Flat irons with fixed handles are fast becoming things of the past. They occupy too much room on top of the stove or range, cost more to manufacture, and, besides, require the use of a holder, which is not always at hand when required. It is a much better arrangement to have the flat portion of the iron separate, with provisions made to accommodate a light handle, which may be inserted and removed at pleasure, one handle answering for a number of irons, and which, being detached while the iron is heating, keeps cool enough to manipulate without the interposing cloth holder or the liability of burnt fingers.



An invention of this description is represented in our engraving, and is one of the simplest of the many that have come under our notice. The sectional view, Fig. 2, shows that, in the stock part of the iron, two recesses, A, having lips, are formed. The handle consists of two spring braces, B, of steel, attached to each end of the wooden piece which receives the grasp. These, at their lower extremities, are provided with catches beveled and notched to fit the lips of the recesses of the stock. The side pieces are united by an arched brace. The fingers are inserted beneath the flattened upper portion of this last, pulling it upward, and so drawing the catches on the ends of the side pieces together, so that they may be easily inserted into the recesses. On relaxing the pressure, the elasticity of the springs carries the catches under the lips. Removal is effected in the same manner.

Patented September 22, 1874, to Daniel B. Snow, of South Lancaster, Worcester county, Mass., who may be addressed for further information.

HAYDEN'S REVOLVING CARTRIDGE BELT.

Sportsmen will recognize, we think, at a glance that the new cartridge belt, represented in the engraving given here-

with, offers a very convenient way, not merely of carrying ammunition, but of so disposing it about the person that it is always in the most accessible position. This belt is double, consisting of an inner girdle, A, which is buckled about the waist and to which are attached four guides. The outer belt, B, to which the sockets for the cartridges are affixed, slides in the guides, so that any portion of it may be readily turned to the front of the wearer. The ammunition is thus always near the hand; and the necessity of reaching awkwardly about the body, as is the case when the belt is immovable, is avoided. Stout straps, which pass over the shoulders, are secured to the guides and inner belt, and sustain the weight, which is thus distributed about the person in a convenient and comfortable manner. The inner belt is fastened by a strap and buckle, and the outer one by an ingenious latching clasp, which, when closed, makes a firm and rigid joint.

The device may be worn over the vest and under the coat, and its contents are thus protected from the weather, while the outer garment need not be unbuttoned to reach the cartridges. It is also equally serviceable without a coat for summer shooting. The belt is especially adapted for army use, as it can be arranged to carry metallic cartridges of any caliber. The usual make, however, is for paper or metallic cartridges for fowling pieces. The invention appears to us to be excellently calculated both for easy loading and for rapid firing, no matter in what position the wearer may be placed.

For further particulars address the Hayden Belt Works, Columbus, Ohio.

When to Get Up.

The Duke of Wellington always slept on an iron camp bedstead eighteen inches wide. "When a man wants to turn over," he said, "it is time for him to turn out." The Emperor Nicholas did the same, Mr. Owens says. The principle is well enough; but I think the detail is wrong. Sleep itself is far too important to be made uncomfortable. My old friend Rossiter fixed his alarum so that, at the fore-ordained moment, the bed clothes were dragged from the bed, and Rossiter lay shivering. I have myself somewhere the drawings and specifications for a patent (which I have never applied for), which arranges a set of cams and wheelwork under the bedstead, which, at the moment appointed, lift the pillow end six feet, and deliver the sleeper on his feet on the now horizontal footboard. He is not apt to sleep long after that.

Rossiter found another contrivance which worked better. The alarm clock struck a match, which lighted the lamp, which boiled the water for Rossiter's shaving. If Rossiter staid in bed too long, the water boiled over upon his razor, and clean shirt, and the prayer book his mother gave him, and Coleridge's autograph, and his open pocketbook, and all the other precious things he could put in a basin underneath when he went to bed; so he had to get up before that moment came.—*Old and New.*

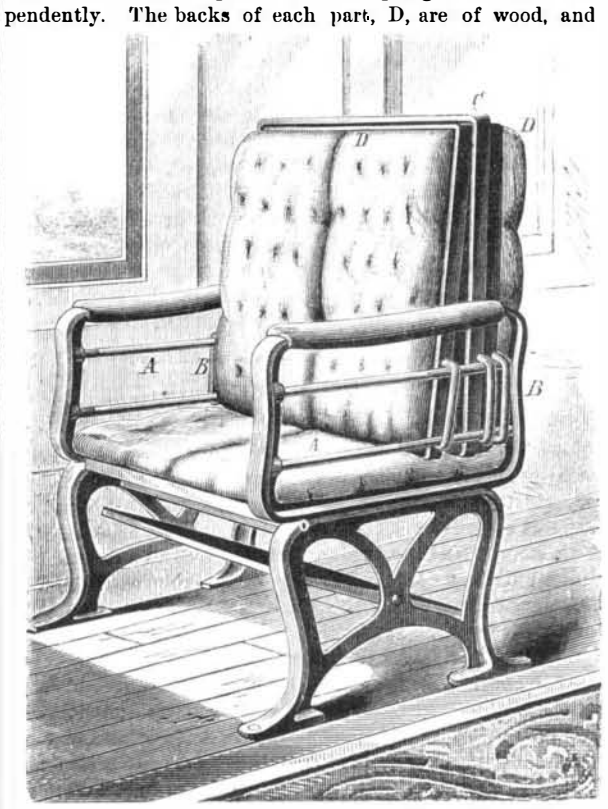
A Good Lawn.

The first great requisite in making a lawn is to have good drainage, after which prepare the ground by deep plowing and also by subsoiling, the soil requiring to be well pulverized and enriched, to expect any success in our hot climate.

A good lawn is one of the most pleasant appendages to a house; but to make it so, it requires to be well attended to, both in the formation and by keeping it mown every two weeks at farthest, using the most approved lawn mower. By doing so you will soon have a lawn like a carpet. Inexperience and neglect have been the causes of numerous failures.

WELLMAN'S IMPROVED CAR SEAT.

The novel feature of the car seat, represented in the accompanying engraving, consists in the manner in which it is reversed. Instead of turning the back over, as is usually done, arrangements are provided whereby the back is slid from one side of the seat to the other, without being lifted or turned. To this end, fixed rods, A, are provided at the ends of the seat, over which slide the staples, B, which confine the three portions of the back. The latter consists of a center piece, C, which may be of wood or metal, or both, to the top of which are secured the outer parts, D. These last are each made in two portions, which spring out and in independently. The backs of each part, D, are of wood, and



springs or upholstery are inserted between them and the central portion, C, to give further elasticity.

It will readily be understood that the entire back is supported on the staples and rods, and hence, by the sliding of the former over the latter, is readily pushed from front to rear of the seat, or *vice versa*.

Patent pending through the Scientific American Patent Agency. For further particulars address the inventor, Mr. Edwin G. Wellman, Canandaigua, Ontario county, N. Y.