

**IMPROVED HAY AND COTTON PRESS.**

The invention represented in the annexed engraving is a novel and simple form of hand hay or cotton press, designed to replace the more cumbersome machines usually actuated by horse power. The present device, we are informed, can, if necessary, be operated by one man, and two men can, if stated, by its aid, bale from six to eight tons of hay per day.

A are toothed bars secured to the lower cross piece of the frame, which pass up through slots in the follower beam, B, and are attached to the upper cross beam, C. At D are other bars notched outwardly, also passing through a slot in beam, B, and attached to beam, C. To their lower ends are pivoted the hand levers, as shown, the inner extremities of which work upon the bars, A, so that by means of said levers the bars, B, may be moved up and down.

Pivoted to the ends of the follower beam, B, are stirrups, E and F. E passes around the bar, A, so as to engage in its teeth, and thus hold the follower against the back pressure of the material being baled. The other stirrup, F, passes around the movable bar, D, so that, as the latter is raised by the lever, it will slide through the stirrup; but as the bar is drawn down, its teeth will catch in the stirrup, and thus carry the follower down with it, so compressing the material. The teeth of bars, A and D, are made larger at the upper end, and gradually become smaller toward the lower end of the bars, so that the press is worked with the greatest advantage of leverage where the heaviest resistance is encountered.

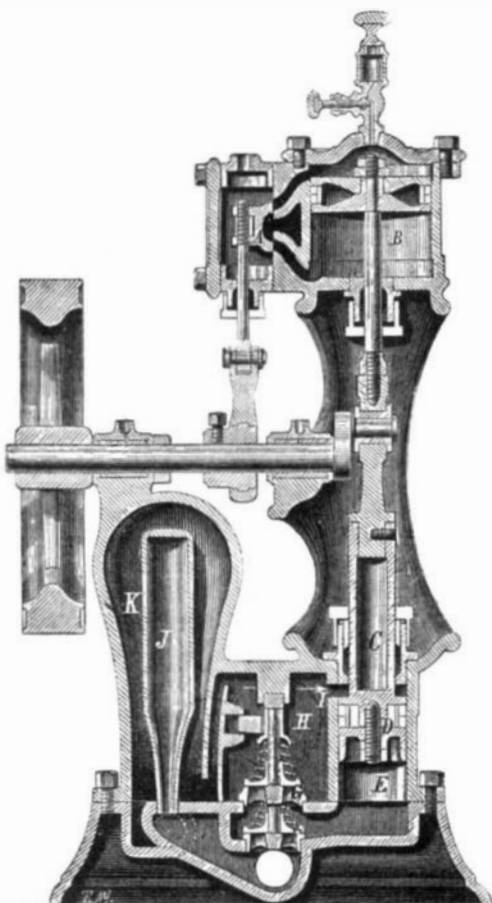
To the follower beam are connected ropes which, passing over guide pulleys, carry weights which balance the follower at any desired point. G is a short lever which is pivoted to one of the stirrups. Its inner end is so formed as to strike against the opposite stirrup, E, raising the latter away from the teeth of bar, A. The lower part of stirrup, E, then strikes a stop, H, attached to the follower beam, and is arrested, causing the lever, G, to raise the stirrup, F, from the teeth of bar, D, in which position lever, stirrup, and stop lock themselves, so that the follower may be readily elevated.

As the follower rises, a pin on lever, G, strikes a stop, I, on the framework of the press, which disengages the lever and allows the stirrups to drop, ready to take a new hold of the teeth on the bars when the hand levers are again operated.

Patented through the Scientific American Patent Agency, April 21, 1874, by Mr. M. Mickelson. For further particulars address the owner of the patent, Mr. O. A. Davis, Ashland, Jackson county, Oregon.

**AN IMPROVEMENT IN STEAM PUMPS.**

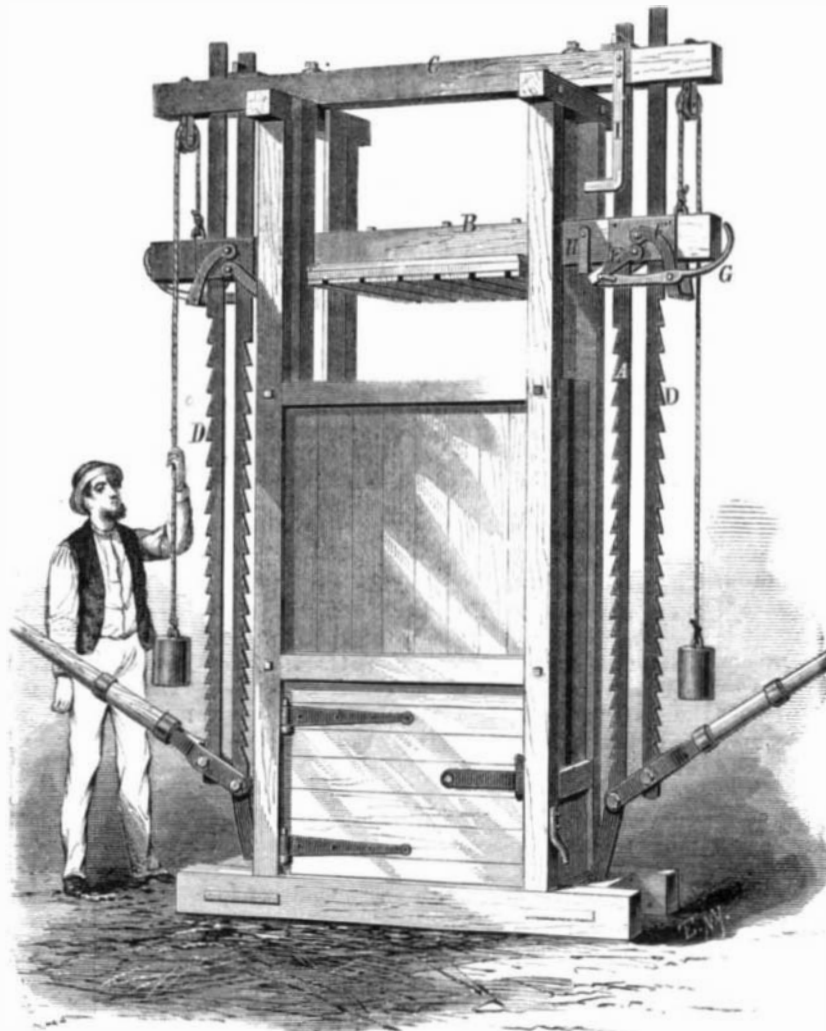
The Wright patent double-acting bucket plunger steam pump, an engraving and description of which, not very long ago, appeared in our columns, has recently been made the subject of some valuable improvements which will doubtless tend to add considerably to the efficiency of the machine. The points of novelty consist in constructing the apparatus much heavier than ever before, a complete set of new pat-



terns (nine sizes) having been made for the purpose. Bronze or gun metal has also been substituted for yellow brass, and steel has replaced iron, in portions where the latter metals were formerly employed. By simple modifications the water valves may be removed from the pump with great readiness.

By the unscrewing of a single nut and the withdrawal of a key, which is inserted by hand, the discharge valve and seat may be taken out, thus giving access to the suction valves underneath. The key above mentioned is not driven in, but its end rests against the hand hole cover, so that it cannot work out of place.

The valves are simply circular pieces of metal, rubber, or leather, rising on a stem, which is fastened to the valve seats. Thus, should a valve fail, a circular piece of leather



**DAVIS' HAY AND COTTON PRESS.**

or rubber packing would answer temporarily until something better could be obtained.

Another improvement is in the lower end of the water plunger, which is now made separate from the remainder of that portion. Packing rings can be hence inserted with but one cut in them, causing them, it is stated, to wear much longer and more evenly than when divided into several pieces, as was necessary in the old style of plunger. The inside ring also being made thinnest at the cut, greater elasticity is gained.

We give herewith a sectional view of the pump, from which the operation will be readily understood. A is the steam valve, and B the steam cylinder; C is the upper and small portion, and D the lower and large portion of the plunger connected thereto. E is the water cylinder, F the suction valve, and G the discharge valve. H is a hand hole for access to the water valves. I is a passage in the upper end of the water cylinder, through which water is taken in on the down and discharged on the up stroke. J is the vacuum, and K the air chamber.

The crank shafts, crank, and pin are in one continuous forging. The manufacturers, the Valley Machine Company, of Easthampton, Mass., (who may be addressed for further particulars), inform us that, out of seven hundred pumps of this description now in use, but one failure has taken place, and that could only be ascribed to neglect.

The agent for the company in New York is I. H. Shearman, 45 Cortlandt street, where the pump may be examined.

**Microscopical.**

At a recent meeting of the Royal Microscopical Society, Mr. Slack called attention to a slide exhibited under one of the Society's instruments as being a remarkable specimen of Herr Muller's technical skill in mounting. The slide has photographed upon it, in an extremely beautiful and perfect manner, eighty spaces, with the names of diatoms below each, and a diatom of corresponding species was mounted in every space. Mr. Slack said he had received specimens on silica solution in the milky condition described by Mr. Read at the last meeting, but was himself unable to detect any particles suspended in it, though some had been detected by Dr. Anthony. Mr. Charles Stewart described and figured on the board the peculiar position of the touch corpuscles in the skin of the hand, and he also exhibited and described a section of an ascidian, and explained the method of preparation.

**The Hotchkiss Marine Log.**

The self-registering log, made by Captain Truman Hotchkiss, of Stratford, Conn., consists of a sort of clock which is placed on the taffrail or stern of the ship. A cord is then thrown overboard, to which is attached a small float that has feathers on its sides like a screw propeller. The feathers cause the float to revolve with a speed equal to the progress

of the ship, and the float twists the cord which operates the pointers of the clock, and thereby shows at all times, day or night, the exact speed of the vessel in miles per hour, and also adds up and keeps account of the total distance traveled by the ship. We have received a letter from Captain Blakeman, commander of the large steamship Isaac Bell, plying between New York and Richmond, who states that this log has been for a considerable time in actual use on that steamer, with entire success. He informs us that during six passages between the Highlands of Neversink and Cape Charles, the log indicated substantially the same distance and corresponded in its showing with the government chart. Captain Blakeman considers it a valuable assistant and safe guard for navigation, and thinks that no ship, whether steamer or sailing vessel, ought to go to sea without the clock log.

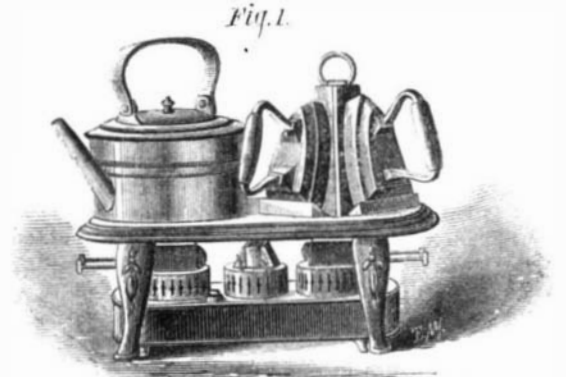
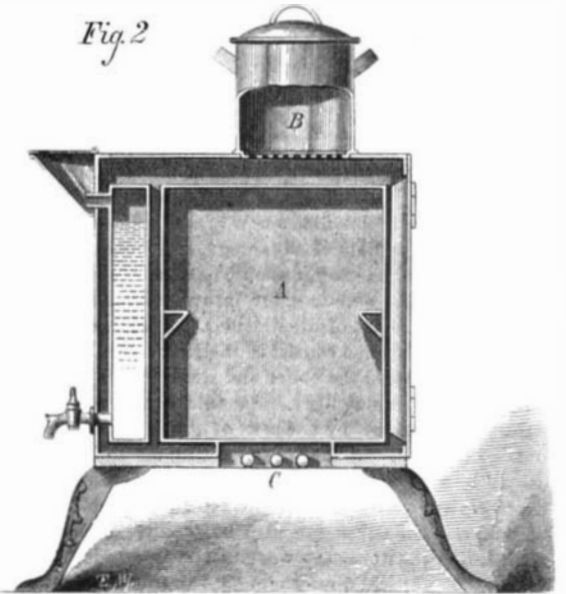
**A NOVEL COOKING STOVE.**

The necessity of constantly maintaining a coal fire in a range or cooking stove during hot summer weather, in order to perform the necessary culinary operations, is an annoyance which many families would gladly be rid of. A device which avoids the trouble, saves fuel, and, at the same time, forms a convenient substitute for the range, is represented in the annexed engraving. It consists of an ingeniously contrived stove, which, in a short time, can be heated by a coal oil lamp sufficiently to fulfil all culinary or laundry requirements. When no longer needed, the flame can be extinguished, and the heat, which would otherwise render the kitchen and house uncomfortable, be done away with.

In Fig. 1 is shown the peculiar form of lamp, in which any kind of oil may be used, and which requires no chimney. There is a central air tube between the wicks, and air passages outside of the latter. A suitable air chamber protects the oil from the heat of flame. The arrangement is such that a current of air is brought in contact with the tip of each wick, thereby supplying oxygen and causing, it is claimed, a clear and smokeless flame. Means are provided for regulating the size of the latter, and consequently the heat, and also for governing the draft.

A sectional view of the stove will be found in Fig. 2. A is an oven, at side of which is a hot water tank. Heat is applied to the tubes at C. B is a steamer having a perforated bottom.

The inventor claims that the stove will roast 12½ pounds of meat in two hours and a quarter, and will bake a loaf of bread, 3 pounds in weight, in one hour. It will heat water, steam vegetables, and roast meat at one and the same time. It is claimed to steam potatoes perfectly in half an hour; and, in brief, will do any cooking that can be accomplished



with an ordinary coal stove. There is no smell from the lamp. Patent pending through the Scientific American Patent Agency. For further particulars regarding sale of rights, etc., address the inventor, Mr. James Iredale, 101 Queen street, Toronto, Canada.