

**THE COOPER PORTABLE ENGINE.**

In our illustration is shown one of the latest designs of portable engines, composed of an engine, pump, heater, fixtures, and connections, all mounted on the boiler; the last being supported on side timbers which form the foundation for the whole structure. The apparatus comes complete from the shop, having been previously tried by actual tests with steam, and is ready for work. All that is required is to place it in proper position and connect it to such machinery as it is to drive.

The boiler is then filled and the fire started. This arrangement, it is claimed, saves all the expense and time required to build the engine foundations, set the boiler in brick work, and make the connections, as would be the case with stationary engine and boilers, while it adds greatly to the facility with which the machinery can be moved from place to place.

The construction of the device merits particular attention. The engine consists of a bed piece supported on lugs attached to the boiler. This piece contains the shaft, pillow block, slides, and cylinder head, and to it the cylinder is so attached as to allow of the expansion of the latter without strain on the joints. The valve gear connects directly, doing away with the rock shaft, and the valve is proportioned to use the steam expansively. The pump is a vertical plunger of short stroke, driven by direct

attachment to the crosshead, obviating the use of a belt and making the feed positive, with easy work on the valves. The heater is of wrought iron, with cast iron sleeve and slip joint, proportioned to give a large heating surface to a thin sheet of water, thereby insuring a high degree of heat to the feed. All the moving parts are balanced so as to give steady motion at high speed. The journals and wearing surfaces are supplied with self-oilers, and the boiler with glass water gage, cocks, whistle, steam gage, etc.

The internal arrangement of the boiler and tubes, it is claimed, has been thoroughly studied, so that the highest degree of evaporation is obtained with the least consumption of fuel. A jet blower is supplied for increasing the draft, and the chimney is provided with a spark catcher.

We are informed that when the Japanese Government (in 1870) ordered samples of machinery, the agents, after examination and tests, gave the preference to this engine over all others, and ordered a twenty horse power machine, with circular saw mill, to be sent to Japan. Letters since received show that the apparatus gave perfect satisfaction.

The engine represented in our engraving is of twenty horse power and is mounted with a slide throttle valve in place of the governor as used with circular saw mills.

For further information address The John Cooper Engine Manufacturing Company, of Mount Vernon, Ohio.

**Lawns in Midsummer.**

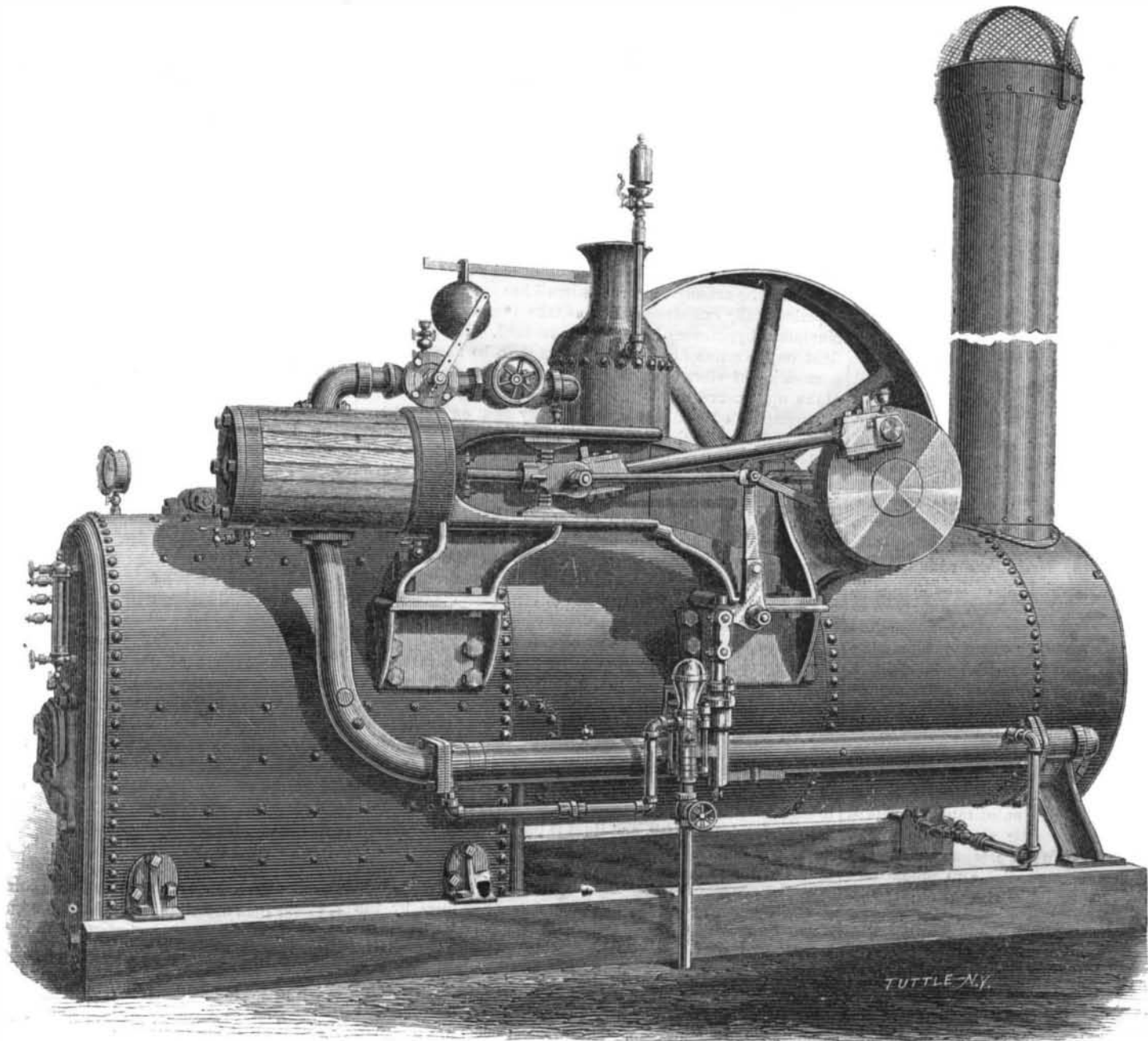
We have touched the renewing and improving of lawns time and time again, says the *Cleveland Herald*, yet every now and then we are button-holed on the street with: "I wish you would tell me what to do with my lawns." Well, we ask about it. "Why, somehow, the grass seems to have got thin, and don't look good and strong; the soil is rather light, although every year I have given it a top dressing of manure in the fall and raked it off in the spring."

Yes, we say, just as many another man, void of the knowledge of the wants of the grass roots, has done. You have supplied a little stimulus, and a very little one, to enable the plant to make a first start in the spring, by reason of the ammoniacal alkali obtained from the leaching of the manure during the winter; and as soon as that is exhausted, which generally is ere the heated season comes in, the plant has nothing but the poor old soil and its broken roots to sup-

port it. Now, if you would first sow over your lawn fine bone meal at the rate of eight bushels to the acre, then plaster at the rate of one bushel to the acre, then cover the whole half an inch thick with fine garden soil, leaf mold, or fine chip mold from an old wood yard pile, and then sow clean blue grass seed at the rate of two bushels to the acre, and rake the whole with a fine tooth iron rake, finishing by rolling, we guarantee a lawn that will stay fresh and green all summer, no matter how dry the season. We hope that

To the vast array of quaint devices, with which the earlier archives of the Patent Office are replete, belongs the invention illustrated herewith. Our engraving, derived from the patent drawings, represents an individual not suffering under any painful malady, as might be inferred from his prostrate position, but "laying off," if the apt vulgarism be admissible, while calmly enjoying the luxury of a breeze raised by the oscillation of the fan above him. The latter, with its mechanism, is the first device of its kind ever patented in this country, and the inventor was Commodore Jas. Barron, of the navy, a name famous for gallant service in the war of 1812. The date of the patent is November 27, 1830, and from its specification we extract the following brief description of its operation: Within the box shown near the head of the couch is placed a train of clockwork, which moves a crank, shown in the left hand lower corner of the case. This crank actuates a pitman which, by means of a vertical arm, oscillates a rock shaft, supported as shown by two horizontal rods projecting from the box. To the upper arm, extending from the rock shaft, is connected the fan, which is thereby freely vibrated, while suspended from the ceiling, by suitable means.

In an old volume of the *Journal of the Franklin Institute*, we find an abstract of this patent, accompanied by editorial comment to the effect that "it is certainly a very complex mode of attaining the proposed object. We should find no difficulty in making a much more simple instrument for the purpose," a view which, perhaps, some scores of inventors have, since the date the above was written, demonstrated to their own, if not to the public's, perfect satisfaction. We need not add that, in this case, for obvious reasons, we omit our usual peroration beginning "for further information," etc.



**THE COOPER PORTABLE ENGINE.**

some of our button-holing friends will read this, cut it out and keep it.

**THE FIRST AUTOMATIC FAN.**

There is a peculiar interest which attaches to the first crude embodiment of any well known device, which renders it almost as much an object of curiosity as the most recent ap-

plication of the same idea, improved, altered, and carried apparently to perfection. The one, indeed, indicates the higher attribute, originality; the other, in its relation thereto, forms but a mark on an onward path which, while serving as a limit of present advancement, attained through the aid of past experience, must, in its turn, be left behind and forgotten, as that experience, augmenting, enables the engraving, upon the pristine stock, of newer, better, and more useful conceptions



**Discovery of America--Columbus Anticipated**

Interesting relics of the early discovery of America occasionally turn up. At a late meeting of the Mexican Geographical Society, Mr. Bliss stated that some brass tablets had been lately discovered in the northern part of Brazil, and not far from the coast, which careful examination had shown were covered with Phœnician inscriptions, telling of the discovery of America five centuries before Christ. The tablets had been acquired by the Museum of Rio Janeiro, with whose director he was personally acquainted, and the connection of this gentleman with the discovery of the tablets was in itself a guarantee of the correctness of the report. The inscriptions, so far as yet deciphered, relate that, from a port on the Red Sea, a Sidonian fleet sailed, and, following the east coast of Africa, doubled the Cape; thence following the African west coast, probably with the southeast trade winds of the southern latitudes, until the northeast trades, preventing further progress northward, forced the prows of the vessels across the broad Atlantic. At any rate, according to Mr. Bliss, the tablets record the fact of the Phœnician fleet having reached the Americas five centuries before Christ, at some point now known as northern Brazil; that the tablets give the number of vessels, the number of the crews, the name of Sidon as their home, and, indeed, various very interesting particulars. Mr. Bliss has promised, when he acquires further particulars, to hand them to the Society.

A GIGANTIC passenger depot, the largest in the world, is now in process of erection at Jersey city, N. J.