SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. XXXI.—No. 22. (NEW SERIES.)

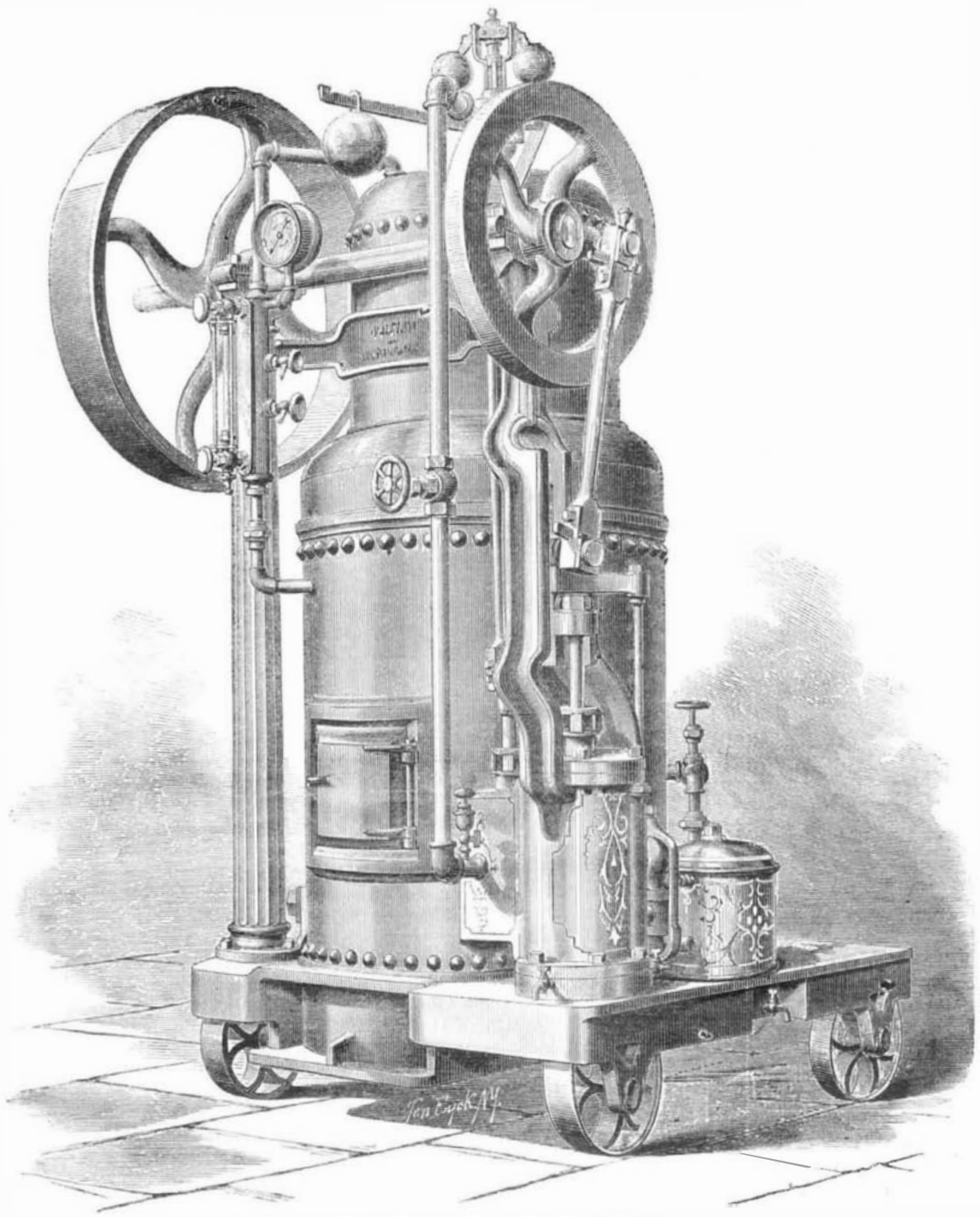
NEW YORK, NOVEMBER 28, 1874.

$3 per Annum, With Postage, $3.20

THE SHAPLEY ENGINE.

A new portable engine, which is claimed to possess the advantages of cheapness and economy, in addition to those of simplicity and compactness, is the subject of the annexed illustrations. The principal features of the invention, which render it an improvement of value, lie mainly in the construction of the boiler, since the engine proper is, as will be seen from the large perspective view, a single upright cylinder with the ordinary slide valve mechanism. There are some minor arrangements in connection with the engine, notably improved stuffing boxes and a neatly contrived feed water heater, which add to the general efficiency; but these, as well as the build of the machine as a whole—except, perhaps, to note that this last is substantial in all respects—may be passed over, in order to direct attention at once to the novelties in construction of the steam generator.

The idea is to build the boiler to generate the greatest amount of steam, and, at the same time, to have a sufficient reservoir for the same. From the sectional view, Fig. 2, it will be seen that the fire box is conical in shape. The heat thus concentrated in the upper portion passes through the horizontal cross tubes, A, thence, following the course of the arrows, down the vertical tubes, B, and finally into the hollow base, at the rear of which it escapes up the flue. This arrangement gives an unusually large amount of heating surface in comparatively small space, the result of which is an economy in consumption of fuel. From actual tests, we are informed that the fuel used does not exceed two and one half lbs. per horse power per hour, and in some cases less than two lbs. has sufficed.



THE SHAPLEY PORTABLE ENGINE.

In order to provide for cleaning the tubes, a detachable jacket is placed between the two sections of the boiler, at C. This can be very easily removed by taking out the bolts, since it is made in two parts. The tubes are then cleaned with a short flue brush, the jacket replaced, and the joints filled with wet clay.

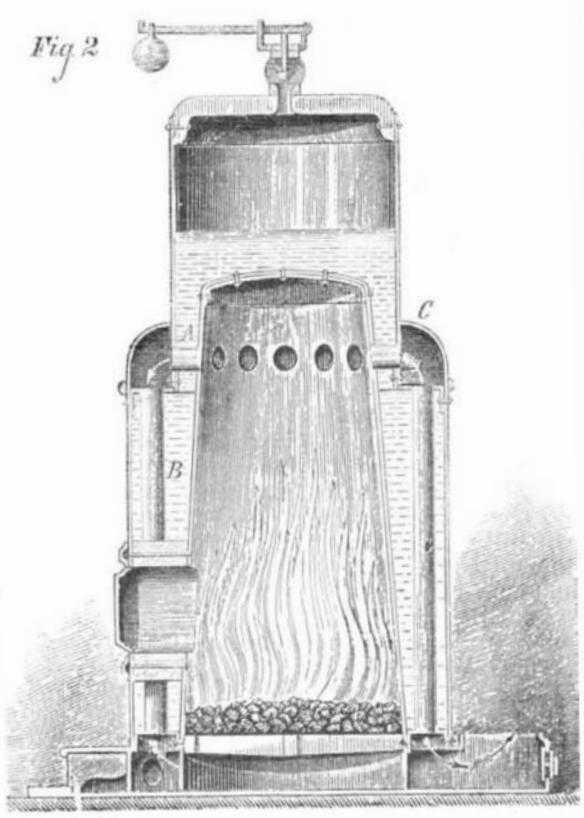
So far as material is concerned, we are informed that none but the best is used. The boiler is thoroughly stayed over the crown sheet of the fire box; and since all the heating surface is below the water line, there is very little chance of its burning out. Sixty pounds of steam is the calculated pressure, but one hundred pounds may be safely carried, since all the boilers are tested to a cold water pressure of one hundred and thirty pounds. They are inspected and provided with certificates by the State Inspector of New York.

The spark trouble—a matter of considerable moment where a boiler is fired in the neighborhood of inflammable material or buildings—is effectually done away with. The sparks are drawn down through the upright tubes and dropped in water on the base; and, as an additional preventive, the exhaust steam passes through the heater into the smoke stack, also giving aid to the draft.

Nothing in the shape of gages, oil cups, fittings, etc., is omitted to render the machine complete. All parts are made in duplicate. The various portions of the engine may be easily adjusted, even when steam is on, thus avoiding delay. The sizes made are 5, 8, and 12 horse power.

Patented February 10, 1874. For further particulars, address Messrs. Tully & Wilde, General Agents, 20 Platt street, New York city.

Fig 2



Chinese or Indian Ink.

Although the Chinese prepare their ink from the kernel of some amygdalaceous fruit, yet, by the aid of our present chemical appliances, we are able to produce a composition in no way inferior to the best Chinese ink, by the adoption of a formula which is given in Riffault's treatise on the "Manufacture of Colors." The following is the formula:

Calcined lampblack, 100 parts; boghead shale black, in impalpable powder, 50 parts; indigo carmine, in cakes, 10 parts; carmine lake, 5 parts; gum arabic (first quality) 10 parts; purified oxgall, 20 parts alcoholic extract of musk, 5 parts.

The gum is dissolved in 50 to 60 parts of pure water, and the solution filtered through a cloth. The indigo carmine, lake, lampblack, and shale black are incorporated with this liquor, and the whole ground upon a slab, with a muller, in the same manner as ordinary colors; but in this case the grinding takes much longer. When the paste is thoroughly homogeneous, the oxgall is gradually added, and then the alcoholic extract of musk. The more the black is ground, the finer it is. The black is then allowed to dry in the air, until it has acquired sufficient consistency to be molded into cakes, which in their turn are still further dried in the air, out of the reach of dust. When quite firm, these cakes are compressed in bronze molds, having appropriate designs engraved upon them. The molded ink is then wrapped in tinfoil, with a second envelope of gilt paper. The ink which has been prepared in this manner possesses all the properties of the real Chinese article. Its grain is smooth; it flows very well, mixes perfectly with many other colors, and becomes so firmly fixed to the paper that other colors may be spread over it without washing it out.

Cultivation of Castor Beans in California.

The method of gathering and preparing for market is as follows: Every day the ripe spikes are gathered by hand, put in sacks, and hauled to the "popping ground," which is a space of about an acre, made smooth and hard, like an old fashioned buckwheat threshing ground. Here the spikes are spread; and during the day they pop open, from the heat of the sun, throwing out the beans. Each morning the straw is raked off, the beans shoveled up, cleaned in a fanning mill, and sacked, ready for market. By the time the field is once picked over, it is ready for another picking, like cotton, and the season, commencing in August, is not yet over. The yield is estimated at fifteen hundred pounds per acre, worth four cents per pound, or a gross yield of $60 per acre. The expense of cultivation, etc, is estimated this year at one half this amount, but is greater than it probably will be another season, owing to inexperience and preparing new land. There is probably no crop so easily raised that will yield so large a return.

THE AMERICAN ELECTRICAL SOCIETY.—An association to be known under the above name was recently organized at Chicago, Ill. The objects are an interchange of knowledge, professional improvement of members, the advance of electrical and telegraphic science, and the establishment of a central point of reference. General Anson Stager, of Chicago, was elected president, and Mr. C. H. Haskins, of Milwaukee, vice president.