

Improved Process of making Turpentine.

The advance in price from 50 cents to \$3 20 per gallon of a commodity so indispensable as spirits-of-turpentine, naturally excites an interest among inventors and among dealers in the article, either to procure a substitute, or to cheapen the product by improvements in the manufacture. The largest use of spirits-of-turpentine has been for drying paints, but since access to the pine regions has been closed by the war, most painters have latterly resorted to the use of petroleum naphtha in its place. As the turpentine, however, makes better work, some of our best painters continue to use it, notwithstanding the enormous price at which it is held.

paratus being thus duplicated or multiplied to any extent.

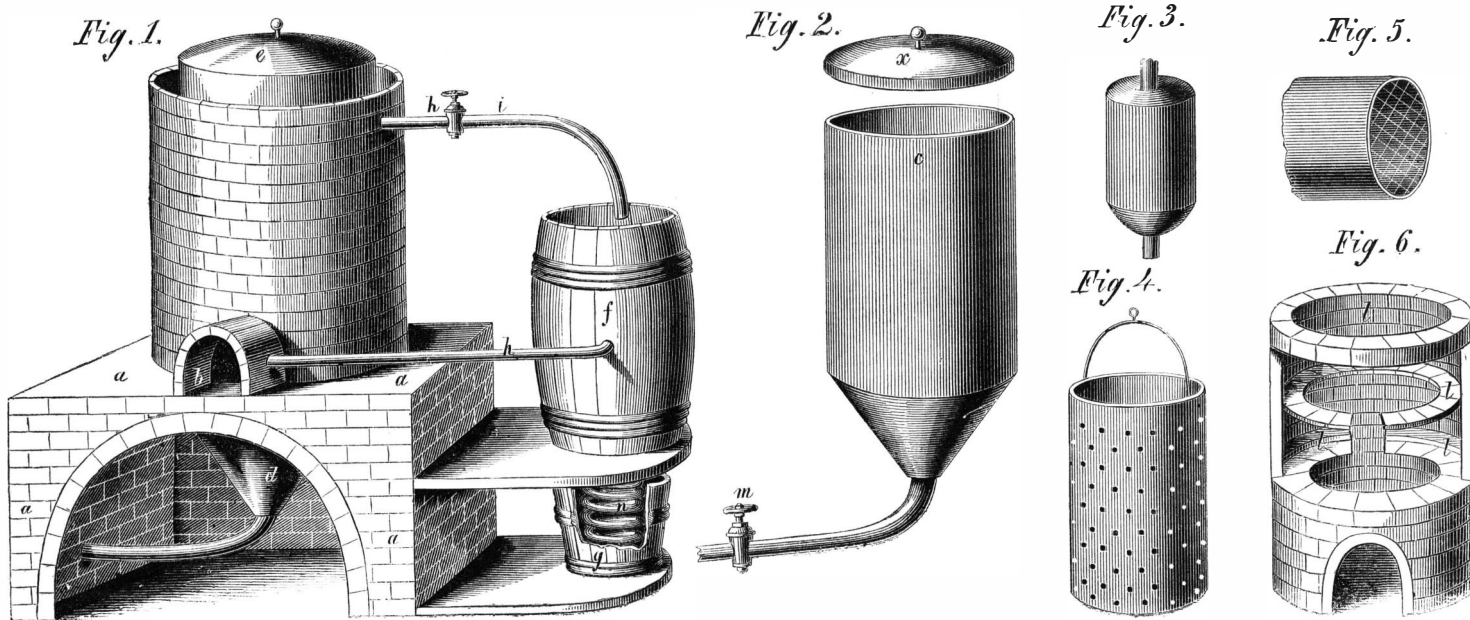
LEWIS'S OSCILLATING CHURN.

The mechanical action of this churn is different from anything we have examined before, and the inventor claims that it is very efficient for the purpose; being easy to operate, and thoroughly separating and breaking the globules so that the butter is made in a remarkable short time. The churn is attached to the bars, A, which are swung on centers at B. The top of the bars, A, is connected to a frame, C, also jointed to the main frame, D. This frame consists of two sets of arms connected at the center by a working

Scientific American Patent Agency, on the 7th of June, 1864; and further information may be obtained of the inventor, George Lewis, Panama, N. Y.

SIGHTING FIELD GUNS.

It is well known to artillerymen that the nature of the ground very often interferes with a correct sight, if one wheel of the carriage is higher than the other the surface must be leveled until both are on a plane; this operation not only takes time but requires the services of an experienced officer of artillery to set the gun in battery. At the front where sharpshooters abound, many a piece is disabled before it gets fairly to work, and the necessity of leveling the

**PROCESS OF MAKING SPIRITS-OF-TURPENTINE.**

In view of the great desirableness of increasing the product of spirits-of-turpentine from the yellow pines of the North, we are on the constant watch for improvements in the process of manufacture, and finding in the Patent Office the model of an apparatus invented by Seth L. Cole, of Burlington, Vt., which seems adapted to this purpose, we present an illustration of it to our readers.

By the usual method, pitch is collected by chopping boxes or pockets in the trunk of the pine, and as these become filled the contents are dipped out with a wooden ladle. In the process here illustrated the whole of the wood is subjected to distillation, by which means a much larger immediate yield is obtained.

The wood is cut into lengths of from 12 to 18 inches and split in pieces $1\frac{1}{2}$ to 2 inches square. The iron skeleton basket (Figs. 4 and 5 of the annexed engraving) is filled with these pieces, and placed in the retort, Fig. 2, which is closed by the cover, x, the joint being luted air-tight to prevent the escape of vapor. The working position of the retort, e, is seen in Fig. 1, where it is set in brick-work, provided with a furnace for heating it to evaporate the oil.

A moderate fire is kindled in the furnace, b, by which the oil is evaporated. The vapor passes out through the pipe, i, which is led into the cask, f, where it enters the gas-holder, Fig. 3. The cask, f, is supplied with a current of cold water which condenses the vapor; the uncondensable gases being led by the pipe, h, into the furnace where they are burned as fuel. From the lower end of the gas-holder a pipe passes down into the lower condenser, g, where it is coiled in the form of a worm, n, and surrounded with cold water to complete the condensation.

The condenser, e, extends below the furnace, to prevent the too great heating of the resinous sediment, and terminates in a cone, d, a pipe being provided to lead off the melted rosin. After the fire has been continued from six to ten hours, the oil will begin to be discolored, when the stop-cock, h, is closed, and the stop-cock, m, is opened. The heat may now be increased, when the remainder of the pitch will be expelled from the wood in the form of tar, and the wood will be charred.

Fig. 6 represents a series of furnaces, l l l, to be set in brick-work like that of a a, Fig. 1; the ap-

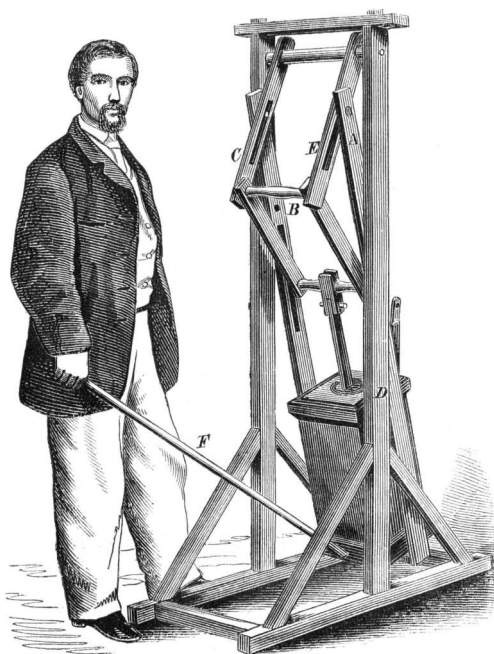
joint, and at the bottom to the churn-dasher. A slot, E, in the upper set of arms permits the pin in the bar, A, to transmit motion to the churn-dasher. It will be seen that when the churn is pushed from or drawn towards the operator by the rod, F, the contents are subjected to two actions, one of which is the result of the swinging motion, and the other caused by the reciprocating action of the dasher. By

ground as mentioned previously, becomes a serious disadvantage. A convenient and simple arrangement for obtaining a correct site on a gun, no matter in what position it may be, has long been desired and artillerymen have acknowledged that it would be a very great addition to their profession.

Major Robert Smith, of the 70th Artillery, has been experimenting with a small instrument for this purpose, and has shown us a model with which he states that he has made accurate shots with the gun carriage in all positions, and that one wheel may stand 45° higher than the other without interfering with the accuracy of the shot. It is also advantageous in that any person without previous instruction can make a line shot at the first trial. When the gunners are all picked off as they are in close action, this becomes a matter of importance and will no doubt prove valuable to the service. Major Smith desires to associate himself with some persons who will take a pecuniary interest in his invention and bring it to public notice, as from its nature it is eminently calculated to prove valuable to the Government. Major Smith refers to General Duryea; and a machine can be seen at this office. The Major's address is at 64 Prince street, Brooklyn, N. Y.

New Method of taking Portraits.

A new era in portraiture is predicted from the discovery of a Mr. Swan, who presents a solid, life-like likeness of any one, inclosed in a cube of crystal. The effect of the new process is to exhibit the subject of the portraiture with life-like verisimilitude, in natural relief. You take up a small case, and look through what appears to be a little window, and there stands or sits before you, in a pleasantly-lighted chamber, a marvelous effigy of a lady or gentleman, as the case may be. The projection of the nose, the molding of the lips, and all the gradations of contour, are as distinct as if an able sculptor had exercised his skill; but the hair and the flesh are of their proper tint, and the whole thing has a singularly vital and comfortable look. Indeed, were it not for the reduction in size, it would be difficult to avoid the belief that an actual man or woman, in ordinary dress, and with characteristic expression, was presented to your eye. The "Swan system" is about to be introduced into this country.



these two motions the cream is thoroughly agitated, and a superior article of butter produced in a much shorter time than by the usual methods. This churn is easily cleaned and kept sweet, and has no parts liable to get out of order—a feature of much importance in machines of this class. It can be moved from place to place without difficulty, and occupies but little room when not in use. This churn can also be converted into a cheese-press of the most powerful character by a very simple alteration, involving no more cost to the purchaser.

A patent for this churn was obtained through the