depending upon the fall of the hammer, is regulated by adjusting the collar, J, to cause the opening of the rolls sooner or later. For governing the motion of the head more accurately, delivering longer or shorter blows or drops of varying hight, the hand lever provides a simple means. By this the rolls can be brought together or separated at any moment. The hammer can be held up at any point below the collar by simply bringing the lever into action when the head attains the desired hight, so that the next blow can be given from a state of rest of less hight than that for which the collar is set. A gentle pressure upon the treadle, slightly relaxing the grip of the clamps, will allow the hammer to descend slowly; and by removing the pressure, an instant stoppage and suspension of the head is effected. The clamps, in holding up the hammer, keep the board from touching either roll, and prevent the same from being worn. By means of the set screws, shown on the back roll and on the clamp in Fig. 2, these portions are made nicely adjustable to different thicknesses of board or belt.

The machine, we learn from parties using it, is reliable and efficient in practical operation, and its construction, while simple, is of durable and strong material. It needs no explanation to show that the entire apparatus is completely under the control of the operator, as much so, in fact, as the steam hammer, and hence the blows may be graduated in force and rapidity, to an extent, it is claimed, unattainable by other devices. It is manufactured only by the Stiles and Parker Press Company, of Middletown, Conn., to whom letters for further information may be addressed.

Coffee as a Disinfectant.

Roasted coffee, says the *Homœopathic World*, is one of the most powerful means, not only of rendering animal and vegetable effluvia innocuous, but of actually destroying them. In proof of this, the statement is made that a room, in which meat in an advanced degree of decomposition had been kept for some time, was instantly deprived of all smell on an open coffee roaster being carried through it, containing one pound of newly roasted coffee; and in another room, the effluvium occasioned by the cleaning out of a cesspool, so that sulphureted hydrogen and ammonia could be clearly detected, was entirely removed on the employment of three ounces of freshly burnt coffee. Refrigerators sometimes get musty from flesh, fowl, or fish, kept too long in them. No remedy for purifying such receptacles, so simple as burnt coffee, can be employed.

THE TODD AND RAFFERTY HOISTING ENGINE.

The above named machine is so plainly represented in the annexed illustration that but few words are needed supplementary thereto. It is, in brief, a double reversible hoisting engine with drum attachments, the two drums, winding and unwinding at the same time, being geared to the actuating mechanism by spur wheels. The engines are of a well known type, and are constructed, as is the entire apparatus, with a view to economy, simplicity, and durability. Self-packing pistons are employed, the link motion is used for reversing, and every device which experience can suggest has been added in order to produce a strong and reliable machine.

The manufacturers are the Todd & Rafferty Machine Company, of Paterson, N. J. They inform us that since its introduction the hoister has met with a wide appreciation, and a sale in numbers counted by hundreds. It is largely employed in the mines, mills, and furnace establishments of Pennsylvania, and no less than sixty machines are in constant use by the great Thomas Iron Company. We need hardly add that the reputation of the manufacturers is the best guarantee for the excellence of their work, and hence further recommendation at our hands is unnecessary. The reader interested can obtain further information by addressing the Todd & Rafferty Company, as above, or at their warerooms, 10 Barclay street, New York city.

THE CORAL ÆCHMEA.

This plant (*æchmea fulgens*) is extremely elegant in habit, requires but little attention to grow it in perfection, and forms a very decorative plant for the greenhouse, stove, or drawing room. Some of the species are hardy in constitution, and remarkably tenacious of life; indeed, they may be grown with less trouble than any other class of plants, if we except succulents. The plant illustrated, says *The Garden*, to which we are indebted for the engraving, forms a striking object in a conservatory or drawing room vase, especially when bearing clusters of coral-colored, purple-tipped flowers. The leaves are bright green, robust in character, and gracefully recurved. Its flower spikes continue in perfection for several weeks at a time, and form conspicuous objects. Nearly all the species grow vigorously in good sandy loam, to which a little leaf mold may be added, and they should be liberally supplied, when growing, with water at the roots. A little clear manure water, too, strengthens them in a marked degree, and assists them in producing strong flower spikes. They are easily propagated by taking the offsets produced by the old flowering plants, and potting them at once in small pots, which may be plunged in a gentle bottom heat until well rooted, after which they may be encouraged to make good growth, and will generally produce flowers the second year; but, for decorative purposes, this plant is always handsome either in or out of bloom.

New Researches in Wines and their Colors.

M. Duclaux, has recently submitted to the French Academy of Sciences, two notes, in which he gives the results of recent investigations into the nature of the coloring matter and volatile acids of wines. Some interesting facts regarding the effect of the latter constituents are given, as well as in relation to the peculiar substance to which is due the rosy hue. The latter is a transparent mass having the color and consistence of currant jelly. It is soluble in water and in alcohol, to which it gives a violet reddish tinge which quickly turns to bright red on the addition of a trace of acid. Left for some time to the influence of the air, and especially in a heated place, the substance absorbs oxygen, darkens in color, and becomes more and more soluble in water. It finally is deposited in pellicales, which, when the solution is completely evaporated, remain in the form of a coherent paste, quite opaque, and finally hardening and becoming detached in scales after cooling. In this condition, the substance is not soluble in water, but remains so in alcohol, which it colors a fine purple even in the absence of acids.

This is Nature's coloring, but art frequently adds other materials to darken the hue, or to mask the fraudulent additions of water. The commonest substances used are mauve, phytolacca decandra, and cochineal. These can be distinguished, M. Duclaux tells us, as follows: For mauve, the coloring material under the action of oxygen acts in reverse manner to the true substance, that is, instead of becoming insoluble, it becomes more soluble in water. Cochineal may be detected by the characteristic absorption bands in the spectroscope, which are essentially different from those of wines. Lastly, phytolacca is found by means of the nascent hydrogen, which causes it to discolor quickly, while it does not alter the tinge of pure wine except very slowly.

With reference to the volatile acids in wines, M. Duclaux states that, when the latter are healthful, they contain acetic acid in very slight proportion, mixed with from one twelfth to one fifteenth butyric acid. He notes the existence of valerianic acid, of which the quantity does not exceed 0·1 grain per quart, and also, in proportions almost infinitesimal, a superior fatty acid, of which he is as yet unable to ascertain the nature. The various causes of deterioration in wine carry to the composition of this mixture of acids various modifications. Thus when the liquor is turned, nearly equal quantities of acetic and melacetic acids are formed. Bitterness develops acetic acid, butyric acid, and the fatty acid above referred to.

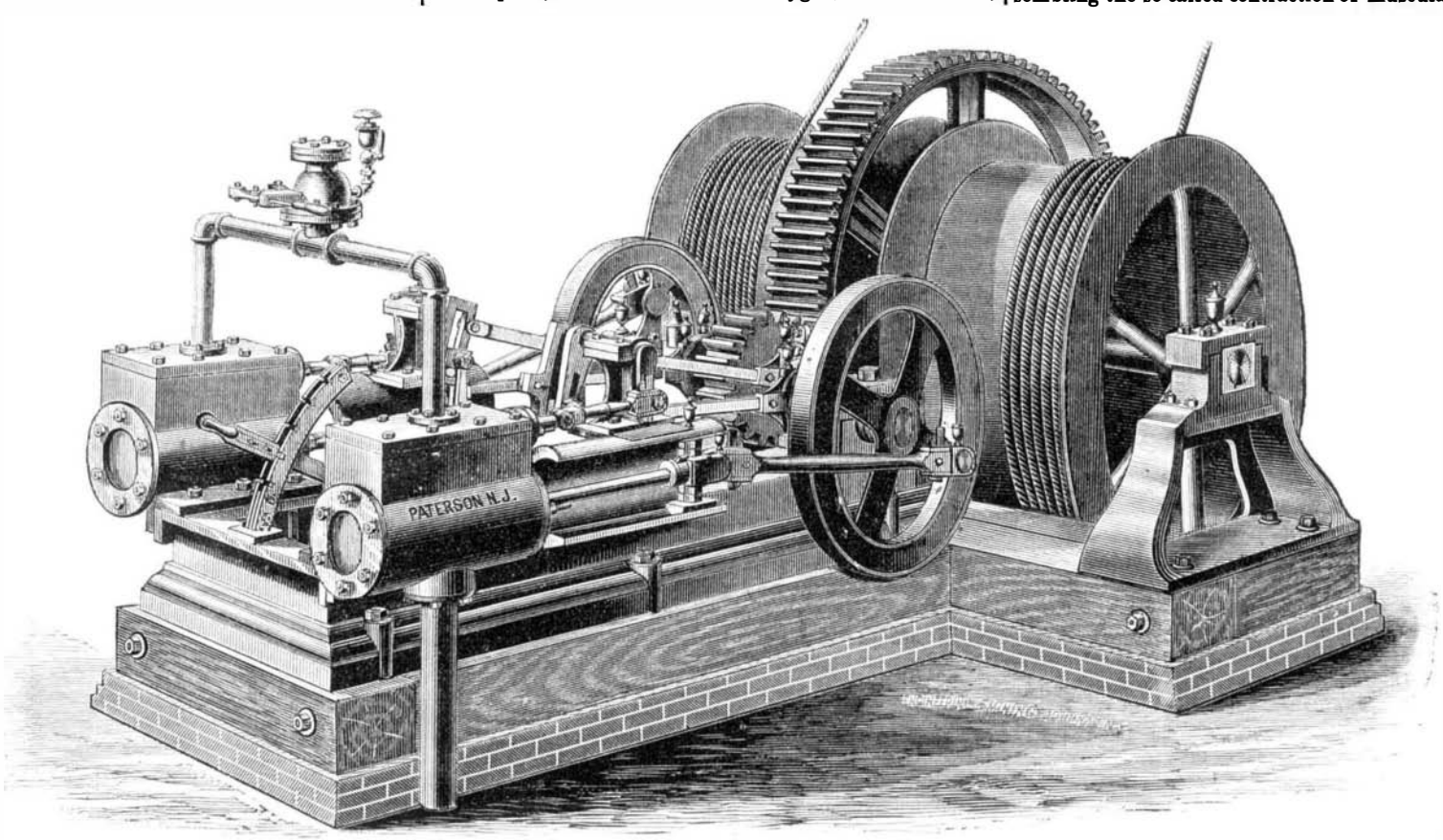
An Amusing Chemical Experiment.

Place five glasses in a row, then pour into the first a solution of potassium, the second a solution of corrosive sublimate, the third a small quantity of iodide of potassium and some oxalate of ammonium, the fourth a solution of chloride of calcium, and the fifth some sulphide of ammonium. Now pour part of the contents of the first glass to the second, and a scarlet color will be obtained; next pour the second into the third, and the mixture will be colorless; again, pour the third into the fourth, and the contents will be white; finally, pour the fourth into the fifth, and the mass will be a dense black. Then you will have had two glasses colorless, one scarlet, one white, and one black.

Refraction of Compressed Water.

M. Mascart followed M. Jamin's method, sending light through two tubes filled with water, and counting the interferential fringes which passed a point of the spectrum when a difference of pressure was produced. A change of pressure of 1 meter mercury caused the displacement of about seventy fringes; and as the tenth of a fringe could be measured, there was much precision in the arrangement. The number of fringes displaced by corresponding variation of pressure is not constant but increases with the pressure. The author deduces from his experiments the coefficient of compressibility, and the liberation of heat produced by compression of water.

AT a recent soirée of the Royal Society, Dr. R. Norris, of Birmingham, exhibited experiments to illustrate a form of contractive energy which displays itself in various substances. Among other things the doctor showed that the statement that india rubber contracts by heat is incorrect; this substance, it is true, contracts in the direction of its length, but it expands in breadth at the same time, thus resembling the so-called contraction of muscular fiber.



THE TODD AND RAFFERTY HOISTING ENGINE.