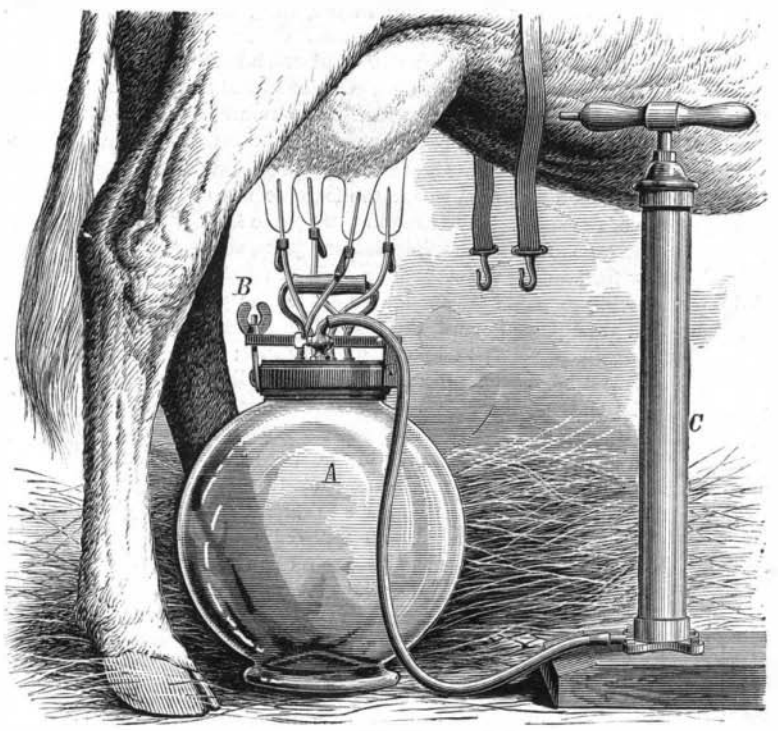
IMPROVED COW MILKER.

We illustrate herewith a new cow-milking machine, which, the inventor says, will do all that can be done in milking by hand, faster and easier. It is a useful device, especially where cows have sore teats or are hard milkers. It prevents any loss of the milk through spilling, it renders milk or straining pails unnecessary, and prevents entrance of dirt. Finally, it can be easily manipulated by anybody.

The apparatus consists of a glass globe, A, sufficiently large to contain the average yield of a cow at a milking. To the top is cemented a metal cover, which is secured by a pivoted bar and thumbscrew, B, so that all the pressure is brought on the thumbscrew and not on the globe flange. Connected with the globe by a flexible tube is the air pump, C. Also rising from the cover are small pipes which terminate in metal tips, which, as shown in the illustration, are inserted in the teats. A hard rubber holder or cut-off is made to fit over the end of each tip after the flexible tube is adjusted so as to form an air-tight joint.

The mode of operation consists simply in forming a partial vacuum in the globe by the air pump. The vessel is then suspended under the animal by straps, or is placed upon the ground, and the tips are inserted in the teats. The suction is then turned on, and the milk is drawn from the bag into the chamber. By having several of these globes, while the attendant is emptying, exhausting, and applying one, others may be kept in operation, and thus the milking of several cows may be quickly accomplished.

Patented October 3, 1876. For further particulars, regarding rights, etc., address the inventor, Mr. Edward M. Knollin, Sandy Creek, Oswego county, N. Y.



KNOLLIN'S COW MILKER.

Rejuvenating Old Butter.

It frequently happens that butter dealers and butter manufacturers have a quantity of butter which becomes rancid and unfit for sale, either through improper handling or carelessness in its manufacture. Such butter can be worked over and be made to appear fresh by the following method, communicated to the Ohio *Farmer* by a Mrs. B. Smith: "In a perfectly clean water barrel, filled with water, put half a pound of alum and allow it to stand until the impurities in the water have all settled to the bottom of the barrel. Fill a large boiler half full with the alum water; heat as warm as the hand can bear—but not boiling—and then add what butter the boiler will hold conveniently. Stir it thoroughly for fifteen or twenty minutes and put the butter into a churn, adding one gallon of new milk for each ten pounds of butter. Add butter coloring enough to give a rich, yellow color and churn the whole. When the butter is gathered in the churn add salt; wash and work it well, and it will have the taste, smell, and appearance of fresh butter. It is hardly necessary to add that when butter has been worked over in this way the sooner it is sold the better."

[The last assertion of the writer renders the value of the recipe, which is otherwise reasonable, rather suspicious.—EDS.]

HYDRAULIC PUNCHING MACHINE.

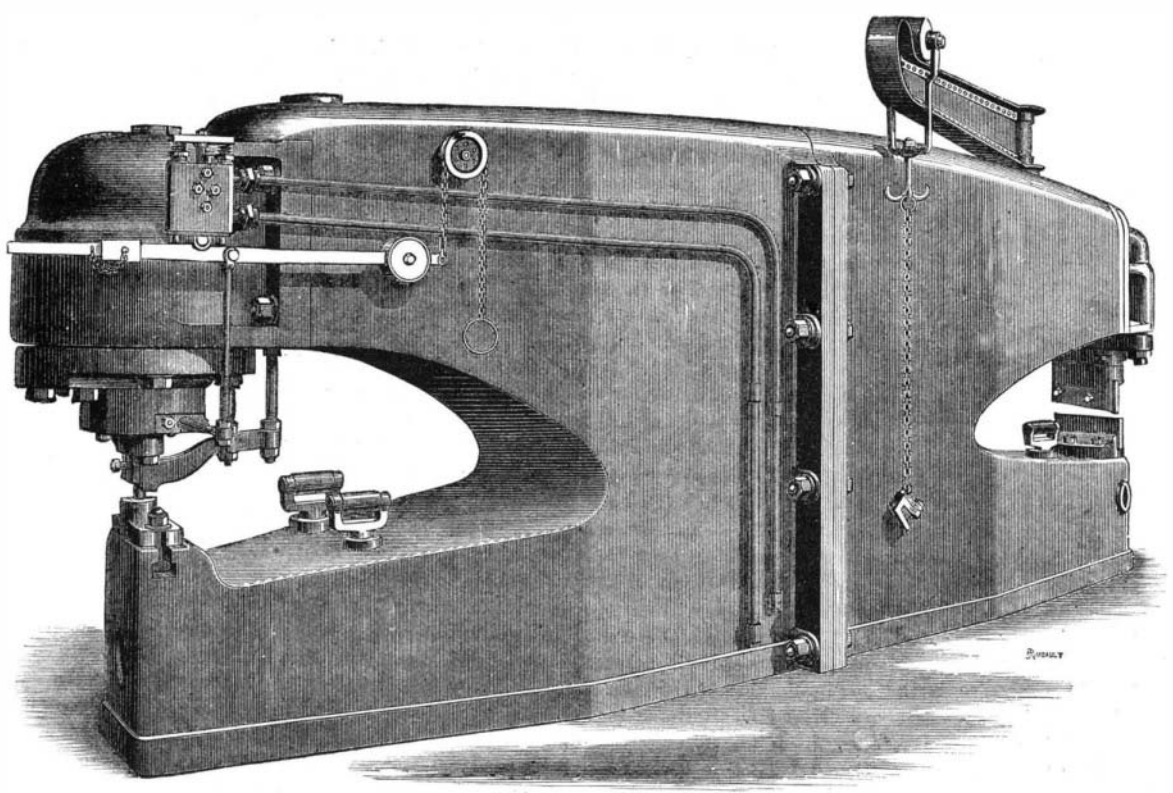
The powerful hydraulic punching and shearing machine we illustrate this week forms part of an entire plant of hydraulic machine tools on Mr. Tweddell's well known system at the French Government dockyards, at Toulon. M. Berrier Fontaine, of the engineering staff at Toulon, having gone into the whole question of economical working very closely, furnished the patentee with his requirements and the general arrangement of the shops; and when we state that there is a 50 horse power pumping engine to force water into two accumulators. each 20 feet stroke and loaded to 1,500 lbs. per square inch, the extensive nature of the application is apparent.

The whole machine weighs about 28 tons. Although shown as one combined machine, there are really two entirely separate tools, and no breakdown in the one affects the other; or, if desired, they can at any one time be placed apart if required for the better working of the shop, or, as is often done, to have a third cylinder inserted for angle bar shears. The machine will punch 1¼ inch holes in 1¼ inch plate at a distance of 5 feet from the edge, and it shears 1¼ inch plates 5 feet from the edge, taking at each cut a length of 18 inches; this long cut is a great advantage in straight work, and reduces the number of strokes to cut the same length of plate fully one third as compared with the ordinary geared machines; the knives also can be turned round, so as to cut at right angles to center line of machine at an angle of 45° either way, or in a line with center line, thus enabling bars of any length to be cut to the length required.

The drawback motion is self-acting; and by means of tapped rods and nuts, as shown on the punching end in the engraving, the length of stroke, and consequently the consumption of water, can be regulated so as to be proportionate to the thickness of plate punched or sheared.

The levers admitting the pressure and opening to exhaust can either be worked by the man in front of the plate being operated upon or from behind by the chain as shown. It may be added that no stop motion is required in these machines, as the machine becomes stationary at any point of stroke the moment the man working it releases the handle; and as the first impulse of a man on discovering an error is to do this, it is found to answer admirably, and to insure extremely accurate work.

The machine requires no foundation; and as the pipes from the main are all underground, the whole space above and round the machine is clear of belts, etc., and thus the cranes fixed on the machine itself can travel all round; and the traveling crane overhead, which works the whole shop, has a traverse clear of all belts, and over the whole area of the shop. The workmanship is of a very high order, and the castings are an especially clean and well finished job. The machine was manufactured by the Hydraulic Engineering Company (Limited), Chester, England, and the results of its preliminary working in their shops was most satisfactory to all concerned.—*Engineering.*



HYDRAULIC PUNCHING MACHINE.

The Young Should be Taught to Think.

We have often suggested in our columns the importance of parents and teachers drilling the young people under their charge to think. The greatest difficulty which the teacher has to contend with is not in accustoming the pupil to repeat the rules in grammar, arithmetic, and other studies, but to induce him to reflect on the reason why the rules are laid down, and why following the rule produces a correct result: in other words, to teach the pupil to think. A correspondent, Mr. R. K. Slosson, reflects in the *Western Rural* our thoughts on this subject in a somewhat lengthy article, from which we make the following extracts:

The world is indebted for nine tenths of its valuable knowledge, its improvements and progress generally, to men and women who have trained themselves to think in a systematic and consecutive manner. No man has ever become eminent in science, art, literature, or farming, who was not a profound thinker—who did not well examine and compare all the items pertaining to the subject—to know whether, in their various relations, they sustain the principle which public opinion upholds as being true. It is not a very uncommon thing that a principle has been enunciated by men who have pet theories to support, and where it is plain to a thinking, unbiased mind, that some of the important items of the theory are in direct antagonism to the principle, and therefore false; or otherwise, the principle itself has no foundation in truth.

The earlier, consistent with health, that youth learn to think, the more massive and powerful will be the brain in maturity—the better prepared will be the mind to shed a glow of interest and happiness on all around, and fill itself with an intense sense of enjoyment unknown to the undisciplined mind. This process of thinking should be systematized, so that the mind can bend its energies in full force on one point at a time, and after having examined in this manner the whole ground, the facts elicited can be classified, managed, and put in a position to be easily understood and appreciated, because they are forcibly and logically brought to bear. If you once acquire the ability to concentrate the mind, so as not to be diverted from the main question or object in view, you have made a long stride in the right direction, and the vigorous use of individuality, comparison and causality will be pretty certain to enable you to reach satisfactory and demonstrative ones.

To assist yourselves very materially you need specially to cultivate memory; and we believe this can best be done by the association of things and ideas. If you wish to retain an idea, you have only to specify in your mind a familiar idea, analogous in some particular to the one you wish to remember; so all you have to do is to recall the familiar idea and the new one immediately pops into your mind. A little practice in this way will convince you of its utility, and remember the longer you practise a thorough analysis of the subjects submitted to your investigation, the more speedy, perfect and satisfactory will be your work. We believe, therefore, that all high schools should have a professor whose business shall be to teach pupils to think, and even our common school law should require elementary instruction in the science of thinking.

Carbonic Acid Exhaled by Animals.

A German chemist has made a long series of careful experiments to ascertain the quantity of carbonic acid given off in respiration and perspiration by different animals. From among his most important conclusions printed in the *Journal of the Chemical Society*, we select a few which appear worth wider notice. In proportion to their weight, the largest quantity of carbonic acid is given off by birds—mammals come next—and worms, amphibia, fishes, and snails form another group in which the excretion of carbonic acid is much smaller; of these, worms give off the most, and snails the least. Those that live in water give off more carbonic acid to the air than they do to the water; and young animals more than old ones. Experiments with colored light show that under the green and yellow more carbonic acid is excreted than in ordinary daylight; and on comparing light and darkness, it was found that much less carbonic acid is given off during the night than during the day. Among the rays of differently colored light, the milk-white and blue rays come next to the green and yellow in activity; and the red and violet are the least active of all the hues of the spectrum.