before they leave the machinery. Third, in a peculiar device for feeding two or more printing cylinders from one feed-board, and causing the sheets to fall, in one pile, from the machine. Fourth, in the employment of an elastic or yielding feed and fly board.

Improvement in Saws.—By T. T. Prosser, of Oconomowock, Waukesha Co., Wis.—Consists in straining the saw by placing it between levers, which work upon pivots, and are adjusted by set screws, and having the lower end of the saw attached directly to the pitman, the upper end of which bears against the under side of the lower frame. The above parts are so constructed and arranged that the saws may be perfectly strained and thrown out from the kerf, which is thus kept free from saw dust.

Pickpocket Detector.—By S. W. Ruggles, of Fitchburgh, Mass.—This contrivance consists externally of a case, resembling that of a watch in size and shape. It has a fob chain or string, and is worn in the pocket like a watch. Within the case is a bell and spring hammer, the latter connected with the fob chain. The supposition is, that the thief will suppose the fob chain to be attached to a *bona fide* watch, and will accordingly pull the chain in order to obtain the prize. But instead of getting the watch, the *watch* gets him. The pull sounds the alarm bell, the owner of the watch grabs the rogue, and the policeman conducts him to limbo.

Improved Smut Machine.—By G. H. Starbuck and L. D. Gillman, of Troy, N. Y.—Consists in a combination of conical plates or funnels, rotating screens, etc., whereby the grain is most thoroughly cleaned, and delivered free of all impurities.

Improved Turning Lathe.—By G. W. Walton and H. Edgarton, of Wilmington, Del.—Consists in the employment of intermittingly rotating feed rollers, and expanding cutters fitted within a hollow rotating cylinder. This invention is intended for turning articles of irregular forms, such as ornamental table legs, balusters, tool handles, &c. It is said to perform the work with great excellence.

Stave Machine.—Charles Hoyt, of West Aurora, Ill.—Relates to a new device for jointing the staves and giving them the proper shape or swell. The invention consists in attaching the cutter heads to vibrating frames, which are operated by means of jaws, inclined planes or wedges, and springs, whereby the cutter heads are expanded and contracted so as to perform the required work in a rapid and excellent manner.

Machine for Making Gutta Percha Pipes and Covering Telegraph Wires.—By James Reynolds, of New York City.—This invention is for the purpose of forming tubing, or coating wires—both operations being substantially alike—by forcing the gutta percha, while rendered plastic by heat, through a die. The necessary pressure for this purpose is applied by a piston working in a cylinder, in which the material is placed and kept heated, or by other suitable forcing apparatus.

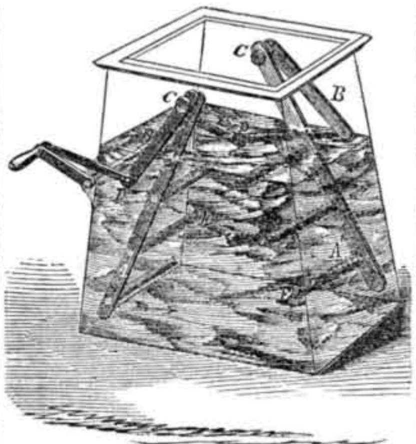
One improvement consists in connecting the cylinder with an air pump, or other suitable exhausting apparatus, whereby any air remaining in the said cylinder after it has been filled as full as possible with gutta percha and closed, may be extracted before applying the pressure. The manufactured article is thus rendered free from blow holes, and is perfectly firm. This is a result of great importance for small tubing and the covering of fine wire.

A second improvement consists in arranging the die and core by which the tube is produced or the covering of the wire performed, in a position transverse to the direction in which the piston works to produce the pressure, to allow a hollow core to be used for the admission of air into the tube as fast as it is formed, and also to prevent it from collapsing by the formation of a vacuum within. The same arrangement also permits the passage of the wire through the die when it is being covered by the percha.

A third improvement consists in providing the stomach in which the die is placed, with an opening, to allow of the constant escape of a certain quantity of material during the operation. By this means the quality of the manufactured article is rendered more uniform. Without such an arrangement it is almost impossible to produce small tubing or cover fine wire with any degree of uniformity of thickness.

A fourth improvement consists in the employment of a continuously revolving trough of water, suitably arranged to receive the tube or covered wire as fast as it leaves the die, and coil it up in the water to cool it, to prevent the coils from sticking together.

Improved Churn.—By John Lamb, of Callicon Depot, Sullivan Co., N. Y.—In this improvement the churn box is made of wood in the usual manner, but in our cut it is shown as if it were composed of glass, in order to exhibit more clearly the arrangement of the interior parts.



The invention consists in the employment of two swinging dashers, A A′, which are suspended from pivots, C, within the churn and work in opposite directions. The beaters, E, of one dasher passing between the beaters of the others, whereby the cream is subjected to the requisite agitation or commotion, so as to produce butter in the shortest possible time, and with but a small expenditure of power.

The dashers, A, are connected together, and also connected with the crank by means of rods, D. When, therefore, the crank is turned, the dashers, A, move simultaneously in contrary directions. This is a very simple arrangement of parts. Patent applied for. Address the inventor, as above, for further information.

Clover Seed Harvester.—By C. B. Wheeler and Austin Bascom, of Steuben, Ohio.—Consists in the employment of a reel and cutters placed within a sliding frame, and an endless apron arranged within the body of the vehicle. By the use of this invention clover seed may be harvested with great rapidity from the standing stalks.

Notes on Patented Inventions.—No. 17.

Soap Manufacturing.—This useful article, so necessary to cleanliness, health, and comfort, has been known and used in some form, for ages. The manufacture of that which is known by the name of soft soap is pretty generally understood. It is simply a compound of a caustic alkali and some greasy or oily substance. They are either boiled or kept together and frequently stirred under a moderate heat until they combine, and form a thickish ropy compound, very different in its nature from either of the two ingredients separately. The common way to make it is to use a potash lye, made by lixivating wood ashes; into this, grease is introduced and boiled until chemical union is formed between the two. A rude way to test the strength of the lye is by placing an egg in it; if it floats, the lye is considered of sufficient strength. Another method of making soft soap is to introduce the lye among the grease in a barrel, and keep stirring it, at intervals, for some days, out doors, during warm weather. The barrel (an iron cauldron is better) must be covered during the intervals of stirring. Fish oil boiled in lye until it assumes the consistency of honey makes good soft soap. This kind of soap is simple and easy of manufacture. It was used in all parts of the world long before hard soap was known. No glycerine is produced in making it, and from the same amount of materials a greater quantity is made than hard soap; hence it is the cheapest, and is, therefore, the most economical for washing coarse wool, dyed cloth, &c.

Most of our farmers make their own soft soap, using refuse fats and greasy matters for the purpose. They also make their own potash lye from their fire-wood ashes. Sometimes they experience trouble in making their soap—the contents of the soap cauldron will not thicken—the materials refuse to form into soap. In making their soap, some talk of good and bad luck, according to their success or want of it. There is no such a thing as luck or chance governing the laws of chemistry, otherwise they could not be laws. When soft soap does not readily form in the kettle by boiling, it is owing to one of two causes, viz., too much carbonic acid in the lye, or too much and too great strength of lye. If the ashes from which the lye is made contain numerous pieces of charcoal, and if they have been freely exposed to the air the lye will generally contain too much carbonic acid.—To remove this acid from the lye, slacked lime is generally put into the bottom of the leaches; but the best way to use lime is to stir about a handful to two gallons (it must be fresh slacked, or it will not answer) in the lye itself, then allow it to settle, and use the clear. The carbonic acid in the lye unites with the lime and forms chalk, which falls to the bottom, and leaves the lime alkaline-caustic. When soft soap is slow of forming, on account of the quantity and strength of the lye, the addition of some common salt has been found to remedy the defect and complete the process. The soft soaps are termed *potassa* soaps, the hard *soda* soaps, because the latter is made from the alkali soda, and the former from the alkali potash. Common salt is the chloride of soda—soda and chlorine—therefore, when salt is added to a very caustic potassium lye in the soap boiler, an exchange of bases takes place, the soda uniting with the fatty acid, and the chlorine with the potassium alkali. A harder or thicker soap is formed with the soda and fatty acid than with potash; many persons are acquainted with the practical results of the use of salt in soap-making who do not know the why and wherefore of its use.

Pure soap may be termed a *salt*, because it is the product of an alkali base and an acid. Numerous are the substances which have been and are still used to increase the quantity of soap. Some of these form curious mixtures. In July, 1837, D. E. Stillwell, of Utica, N. Y., secured a patent for converting hard into soft soap by dissolving 8 lbs. of common bar soap in four quarts of water, and adding to it, while warm, 4 ounces of the subcarbonate of soda. This was an improvement in the wrong direction.

On March 23rd, 1829, Arthur Dunn, of England, obtained an American patent for making soaps in a steam-tight soap kettle, when the liquor was boiled under a pressure of 57 lbs. to the square inch; he also claimed the addition of soluble glass.

To make common yellow soap he employed 700 lbs. of tallow, 300 lbs. of palm oil, 300 lbs. of common rosin, and 150 gallons of a caustic soda and silicate lye of a specific gravity of 1·10. These were introduced into the closed steam kettle, and boiled under a pressure of 57 lbs. for one hour, they were then drawn off into a cooler to cool down and to be cut in bars.

The soluble glass or silicate of soda, was made by taking 112 lbs. of small pieces of black flint, putting them into the steam-tight boiler, among 100 gallons of caustic soda lye, of a specific gravity of 1·10, and boiling them under steam pressure of 57 lbs. for four hours. It was then drawn off and cooled down, and used in the caustic soda lye to make the soap—no definite quantity was claimed. The above is not only information respecting the manufacture of soap, but also respecting a mode of making soluble glass—silicate of soda, and may be useful to many persons. Soluble glass can also be made by boiling sand or flint, in an open vessel, with a strong caustic lye. The use of steam (though not under pressure,) for boiling soap, was first applied in London in 1825. In 1830, two patents were granted to citizens of Baltimore, Md., for manufacturing soap by steam; they were of little importance.

In December, 1844, Mr. Dunn took out another United States patent for purifying and bleaching oils and fatty matters in soap-making. The process consisted simply in causing streams of heated air to pass through the fatty matter when combined with suitable saponifying materials.

In March, 1846, D. F. Albert, of France took out a U. S. patent for making soap by saponifying butchers' offals, by means of a strong caustic alkali. Our Indians, from time immemorial, have made a soap of the entrails and brains of animals and the lye of wood ashes. They use this soap in preparing skins for moccasins, &c. The skins are pounded and also steeped in it, then dried, and afterwards smoked in a pit dug in the ground. Thus prepared they are always soft, pliable and resist the action of water better than common leather. On the same day a patent was granted to John K. Vaughan and Evan H. Everman, of Philadelphia, for a soap made as follows:—Take good yellow soap 900 lbs., water 2100 lbs., borax 75 lbs., common salt, 37 1-2 lbs., good glue 15 lbs., palm oil 10 lbs. The bar soap was first dissolved in the water in a boiler, then the other ingredients were added gradually, and well stirred; when the vessel was brought to a boiling point, the borax and salt were added last, stirred well, and the fire withdrawn. This was a method of increasing the quantity but not improving the quality of soap.

On July 27th, 1852, Wm. McCord, of New York City, obtained a patent for combining ammonia with soap, by the use of kaolin. In December, 1853, Ira F. Payson, of New York, also obtained a patent for the use of ammonia with other ingredients in the soap, to keep it moist.

In June, 1854, T. C. Taylor, of Camden, N. J., obtained two patents for making soap; one was for the use of the bran of cereal grains, dissolved in caustic alkali, and the other for dissolved potatoes—skins and all. They were used as ingredients of the soap. In January, 1855, R. A. Tighlman, of Philadelphia, was granted a patent for making soap under high heat and pressure with the use of carbonated alkalies—the high heat and pressure was patented by Dunn before.

Potato starch, glue, dextrine, ground flint, clay, bone dust, and many other substances, have been used in making soap, but not to improve its quality.

This subject being one in which every person is practically interested will be continued in our next number.

British and French Rifle Shooting.

A rifle shooting match came off a short time ago near Paris between Captain Wellington Guernsey, late of the Turkish Contingent, and Lieut. Arnaud, of the Chasseurs de Vincinnes, for 500 francs a side. The distance was 150 yards, and the mark 25 pigeons for each.—Lieut. Arnaud used one of Minie's latest improved rifles, and Capt. Guernsey used one of the Enfield military rifles now supplied to the British army. Lieut. Arnaud killed eighteen birds, and Capt. Guernsey twenty-four out of the twenty-five in consecutive shots—missing the last only. Quite a number of French officers were present.

Coke for Iron Smelting.

A correspondent writing to us from Athens, Ga., states that he is in the foundry business, and they use coke in smelting their iron for castings, because it is cheaper in that place than coal, but it causes a great deal more *slag*, and the castings are more brittle. He is desirous of finding out a remedy for this evil. We cannot conceive how the coke can generate more slag than the coal from which it is made. We can conceive how it may produce more brittle castings by the absence of volatile matter, thus leaving too much carbon in the metal when drawn off for castings. By keeping the molten metal exposed for a longer period to the blast in the furnaces, a portion of the carbon will be thrown off in the form of carbonic acid, and thus afford a partial remedy. Perhaps some one who has experienced the same difficulties, and who has discovered a remedy, may be willing to communicate the same to the public for the benefit of our correspondent, and many others who may be laboring under the same disadvantages. By the use of wood in the furnace, or some niter, &c., the evil may be remedied, but these will increase the expenses, and this is what is desirable to avoid.