History of American Friction Matches.

I notice in No. 44, Vol. XI., SCIENTIFIC AMERICAN an article upon Friction Matches; perhaps I may be able to give you a little light upon the subject as to who was the first American inventor and manufacturer,—or at least tell you what I know to be a fact.

In the latter part of August, 1835, a friend handed me two friction matches as a curiosity, the like of which I never saw before. They were tipped with red composition, and were said to be imported; he said that he had purchased a whole box full of them, and snapped them nearly all off, "just to see things." Being engaged at that time in the manufacture of lucifer matches at Mechanicsville, N. Y, I received them as a treasure. I immediately set my wits to work to unravel the mysterious little sticks, or rather the compound upon their ends. Not being much of a chemist at that time, I found it "no go," for I did not like to try any experiments with such a small and precious treasure. After trying all the chemical heads and M. D.'s in the neighborhood, I found them to be quite as much puzzled as my own self.

I now took my two matches to Albany, a distance of twenty miles; my sole business was to find a chemist that could analyze them. I was referred to Prof. Beck, Professor of Chemistry in the Female Academy. The Professor told me that the quantity was so small that he did not like to undertake it, but if I would bring him a larger quantity he would analyze them for me; but this I could not do, as there was nothing of the kind in market. I carried my matches home again, and examined them with care, and made up my mind from the smoke and light that they emitted in the dark, that they contained the article of posphorus. The next morning I obtained a piece of phosphorus from one of our physicians, and a little gum arabic, and went to experimenting, trying to combine them in a clam shell, on some hot coals. The first batch took fire and burned up. Nothing daunted I got another piece (all he had,) and went to work a little more systematic, and succeeded well in adding a little chlorate of potash. My next job was to furnish myself with match sticks strong enough to bear rubbing (for my lucifers were too thin to bear much friction) and this I did in the following manner:—After sawing some pine blocks of suitable length. I took a common case-knife, hammer, and lapstone, and slabbed them off; after this I slit them up with my penknife until I had on hand about 1400 match sticks; I then charged them with brimstone. I now procured a shallow square box, and filled it with damp sand, and commenced dipping my matches, one at a time, sticking each match in the sand, charged and up, until dry. These 1400 matches I sold at one man for fourteen shillings. I then started for Troy, in search of phosphorus,—searched the city through, then went to Albany, searched all the drug stores, and got but about *four ounces* in both places, and paid at the rate of $2400 per pound; and this, I think, was the first of Loco Foco Match Making in the United States.

I had manufactured matches of this kind for about fourteen months prior to the issuing of Mr. Phillips' patent (but used no glue or chalk.) You state that in June, 1837, John Ettfield obtained a patent for dipping matches by planing them in a conical tube. This is true, but the name ought to have been *Jehu*, instead of John—the mistake occurred at the Patent Office; I wrote to the Commissioner who told me that he would have it altered if I would send him three dollars. But I thought it would not pay, from the fact that I had, in the mean time, invented a better plan, namely, that of gluing one end of the block before splitting it. I applied for a patent on this in 1839, but unfortunately had let it run too long, and was rejected on that ground.

I find at the present day the same old match splitter, in all of the small shops, which I first invented and used. But to give you but a short history of the "little blessings," would require more time and patience than I am able to bestow at present. In all my experiments I was associated with Mr. Joel Farnam (now deceased,) of Mechanicsville, and Martin Day, of Westfield, Mass., who can attest to the above facts.

I would say that if any other man will step forward and give better evidence of his being the first American inventor and manufacturer, then "I'll give up the skates."

JEHU HATFIELD.

Troy, N. Y., 1856.

Artesian Well Sinking.

MESSRS. EDITORS—I have seen a paragraph going the usual newspaper routine, stating that an eminent French engineer had adopted the use of wooden rods instead of iron ones, for connecting the auger, and other tools used in sinking artesian wells, with the power above. This plan has been used in this country for more than twenty years.

We always use the wooden rods, and apply what weight is necessary at the bottom, next to the drill; and while drilling a hard rock we use a link connection between the iron and wooden rods, to prevent the shattering of the latter. The American plan I consider better in every respect than the European methods formerly practiced.

We hear much about the Paris artesian well, and it was a great and successful undertaking; but there are many wells in this country quite as efficient, if not so expensive and renowned. I. H. S.

Augusta, Ga., 1856.

Recent Foreign Inventions.

Dressing Cloth.—G. Collier and J. W. Crossley, Eng., patentees.—A common method of pressing many fabrics, to take out wrinkles in them, and give their surface a smooth beautiful appearance, is by folding the cloth—broadcloth or soft merino twill—and placing sheets of pasteboard between the folds, then placing the folded fabrics on hot metal plates in a pile, in a press, and submitting all to pressure. Another method of finishing cloth is to wind it around a cylinder—the laps being laid with the nap—and then covering it with a blanket, and submitting the roll to steam heat. The improvement claimed by the above patentees consists in the using of hollow plates for flat pressure, as substitutes for the solid plates now employed in the press. The hollow plates are to be heated by steam through flexible tubes, instead of being heated by placing them in the usual way on the top of a furnace. The method of heating the plates by steam is the most convenient, and is the best method of regulating the heat of the plates, and keeping up their heat. The use of thin plates of polished tin are also claimed as substitutes for sheets of pasteboard between the folds of the cloth.

Anti-Bilious Powder.—J. B. Lopez, Eng., patentee.—This powder is simply composed of 1 1-1 lbs. of calcined magnesia, and the same quantity of white sugar, all reduced to a fine powder in a mortar, and to which is added 25 drops of the essence of anniseed, and all thoroughly incorporated together. A tea spoonful is sufficient for a powder. Except in cases of urgent necessity, the use of magnesia should be carefully avoided.

Paint for small Iron Articles, to Prevent them Rusting.—B. Rosenburg, London, patentee.—The iron is first well cleaned and smoothed, then it receives two or more coats of a paint-varnish composed of 100 lbs. of triturated white lead, mixed with 2 1-2 gallons of copal varnish and 1 1-8 gallons of turpentine, and the same quantity of linseed oil—a small quantity of red lead may be added to color it. This paint-varnish is laid on very thin for the first coat, then the articles are placed in an oven at 250° Fah. for 6 hours, then transferred for 3 days to a warm room, at 70° Fah. The articles then receive a second coat, which may be thicker, and contain a little less turpentine; and then they are dried in a similar manner. This method of preventing the corrosion of iron articles is stated to be an excellent one for protecting sugar molds. The molds must be scoured with sand and emery paper before the first coat is put on.

Pressing Hay for Transportation.—J. Gardner, of London, has applied for a patent for using heat in pressing hay into bales, for the purpose of enabling him to reduce the bulk of the bales in proportion to their weight. The increased reduction of the size of hay bales by the use of heat in the press will not pay for the expense of heating the hay.

A Lung Gas and Steam Engine.—T. Tuckey, Eng., has secured a patent for a new and droll kind of engine, which, he declares, is better adapted for locomotives than those now in use. For the metal cylinders and pistons, now employed, he substitutes air-tight strong flexible chambers, to be constantly dilated and contracted by the entrance and exit of steam or gas. This engine will, no doubt, achieve for itself the distinction of being buried in forgetfulness.

Self-Acting Egg Hatching Machine.—J. Martin, Eng., patentee.—In this egg-hatching apparatus water is poured into one of certain cylinders or water vessels, and flows through hollow shelves beneath the egg trays, and into a cylinder on the opposite side. When the cylinders are nearly full, lamps are lighted underneath.

As the temperature of the water rises, the air within a glass expands, and depresses mercury contained within a chamber; this causes a float to rise, and act upon a lever attached to a chain or wire of a valve. Should the heat of the lamps cause the temperature to rise above 105° Fah., the float will be sufficiently elevated to act upon the lever of the valve, and raise it from its seat; this causes a quantity of cold water to flow down the pipe into the cylinders, which immediately reduces the temperature to the proper degree.

Notes on Patented Inventions.—No. 18.

Manufacture of Soap.—Pure white soap is composed of fatty acid, an alkali, and water In 100 parts of soap there are 63 of fatty acid, 6 5-10 of alkali, and 30 5-10 of water. The process of making hard soap is not so simple as that of soft soap. White or curd soap is made of the finest tallow or suet only, and boiled to a thicker consistency than other soaps, upon a stronger alkaline lye, and before it is put into the frame to cool it requires *crutching*. This consists in stirring it about in an intermediate vessel between the boiler and the cooling frame, to break and mix the curd. Nothing but the best materials are used for this soap.

All our common brown soaps contain resin. Colophane or resin is soluble in a caustic alkali, hence its adaptability to increase the quantity of our common soaps. Its use is so common, and as it produces a lather with water it is not generally held to be an adulteration, still it does not produce proper saponification. The quantity of fatty matter required to make a tun of perfect soap is 1540 lbs. From eight to ten per cent. of this fatty acid is converted into glycerine, and owing to the limited use made of this substance it may be called waste.

The most convenient and cheap alkali for manufacturing soap is sal soda—the carbonate of soda manufactured from common salt. It will not make soap by boiling it direct with grease, as it contains too much carbonic acid; it must be prepared for use by dissolving it in about five times its weight of water, then adding half its weight of fresh slacked lime. The carbonic acid leaves the soda, unites with the lime and forms chalk, which sinks to the bottom of the vessel. The clear liquor is caustic soda lye, fit to be boiled with tallow, oil, or fat, to make soap. In soap works, the soda lye is deprived of its carbonic acid in vats prepared for the purpose; but any person may make hard soap from soda lye by a very simple apparatus, viz., a wash tub, and a small tin or iron boiler.

It is not our intention to give a full description of the processes for manufacturing soaps on a large scale; our "Notes" are general on points where information can easily be obtained, but *particular* respecting some things that are not so well known.

The most recent work published in our country on Soap and Soap Making is that of Campbell Morfitt, by Parry and McMillan, of Philadelphia,—a good treatise. Another work, and a very excellent one also, is that of Kurten, being a translation from the German, published by Lindsay & Blakiston, Philadelphia. Different soap makers employ different methods of working; and we know one not many miles from New York City, who pursues the methods described in Dr. Ure's old Dictionary of Chemistry, published in 1823. Soap making is not an art which has undergone much improvement for many years. Tallow, suet, lard, oils, resin, fat from deceased animals, and boiled bones, are the most common materials employed in soap making. It has been proposed to make soap from cotton seed oil, and we have a sample of such soap in our possession; Edgar Conklin, of Cincinnati, has made soap direct from the seed, and there are some prospects of his being successful in its manufacture on a large scale.

In England palm oil is now extensively employed for making soap; 40,000 tuns of this substance is consumed annually for this purpose, and the consumption of it is increasing rapidly. It is obtained from Africa, and is an economical material. Fish oil and vegetable oils of every description can make soap by being boiled with caustic alkali, and thickened, if required, with salt. A grand discovery in the manufacture of hard soap would be the saving of the glycerine by combining it with the soap.

Fancy Soaps.—Those small cakes of perfumed soaps used for the toilet can easily be manufactured by dissolving common bar soap of any kind, and adding perfumed ingredients and coloring matters—if the latter are desired. The bar soap is cut up into thin slices placed with a small quantity of water in a pan over a fire, and is stirred until it is reduced into a paste. The perfumes are then added, well stirred, and the soap run off into a flat frame or dish, and set in a cool place. In the course of three days it is fit to be cut into cakes, and stamped with any ornamental figure or name. In establishments for conducting the manufacture of these soaps, the heating is performed in a steam bath, and machinery and apparatus are employed for conducting the business with facility and economy.

Almond Soap.—This is perfumed with 2 lbs. of the otto of almonds added to 128 lbs. of dissolved bar soap. The heat should be as low as possible.

Camphor Soap.—This is made by adding 1 1-4 lbs. of otto of rosemary and the same amount of otto of camphor to 28 lbs. of dissolved bar soap.

Brown Windsor Soap.—This soap has a distinguished reputation, and sells at retail for 25 cents per pound. It is made by adding half a pound each of otto of caraway, cloves, thyme, cassia, and lavender to 168 lbs. of dissolved bar soap. Its brown color is produced by roasted sugar—caramel.

Perfumed soaps of endless variety can be produced, according to the perfumes employed to give them their peculiar odor. Some of the fragrance, however, is always lost by adding the volatile perfumes warm; therefore another method to produce scented soaps is to add the odoriferous ingredients cold. This is done by shaving bar soap in very thin slices, pounding them in a mortar with a very small quantity of cold soft water, adding the perfumes, and triturating well with the pestle. When well triturated, the soap is taken out and pressed into any desired form of cakes in molds, and then set to dry in a cool place.

A very fine fancy soap is thus made by adding to 6 lbs. of soap shavings, 8 ounces of oil of citron, half an ounce of verbena, 4 oz. of the oil of bergamot, and 2 oz. of the oil of lemons. This is an expensive, but excellent toilet soap.

Transparent soap is made by dissolving pure tallow or oil soap in alcohol, then allowing it to dry in a warm situation. The soap is added to the alcohol in fine shavings, and after being dissolved it is formed into cakes or balls, as may be desired. Any kind of perfume may also be added to transparent soaps in the alcohol.

Medicated Soaps.—Septimius Piesse has stated that he made a series of experiments with soaps, by medicating them with sulphur, iodine, bromine, creosote, &c. These substances were added to the soap while cold. He believes they might be of service in the treatment of some diseases, but does not speak of their effects positively. Sulphur combined with soap has been found very useful for skin diseases caused by insectoria. It is employed in the warm bath, and is found to be very effectual.