

IMPROVEMENT IN BAGASSE FURNACES.

When the juice is pressed from sugar cane, the woody fiber remaining is called "bagasse," and this is dried and used as fuel for evaporating the juice. As it difficult to dry the bagasse thoroughly, much ingenuity has been employed in constructing furnaces to burn it when partially dried, and the accompanying engravings illustrate one of the results in this class of furnaces.

Fig. 1 is a plan of the furnace and boilers, and Fig. 2 a vertical section of the boiler; A A being the boilers, B, the furnace, C, the fire chamber, D, a central air chamber for supplying hot-air to the fire, and E E, an air chamber in the walls, partly surrounding the fire, also for the purpose of supplying hot-air. The fuel is introduced, as usual, into the crown of the furnace through the hopper, H, and falls into the chamber, C. The air enters through the flue, α , and fills the skeleton chamber, D, where it is heated; from the chamber, D, a portion of the air passes through the openings, $e e$, directly into the fire, and another portion, passing over into the flue, F, is carried into the chamber, E E, in the walls of the furnace, where it receives a further accession of heat, and is then admitted through openings in the wall into the fire. The chamber, E, is divided by a horizontal partition into two parts, the communication between which is closed by a damper, so that the lower one only need be used when the furnace is partly filled with fuel, and that both may when it is entirely filled. The heated air and gases from the upper air chamber are conducted from the furnace by the flue, g , and those from the lower air chamber by a separate flue, to a mixing chamber on their way to the boilers, in which chamber they are thoroughly blended together, so that any uncombined oxygen in the one may come in contact with any unconsumed gases in the other, and the combustion be thoroughly completed. From the mixing chamber, they pass under the boilers, and, imparting their heat to the juice, evaporate its volatile portions. To regulate the heat, the flue under the boilers is provided with the damper, r ; and a waste flue, Y, also furnished with a damper, s , is constructed to carry off the heated gases and air, when it is desired to diminish or discontinue the heat to the boilers.

The feeding apparatus is illustrated in Figs. 2 and 3. The bagasse is spread upon an endless belt, which passes over the drum of the shaft, b , and receives motion from the machinery of the sugar mill, thus carrying the bagasse over the drum and dropping it upon the valve, e . This valve is connected with a rod which rests upon the cam, d , in such manner that the valve is turned at each revolution of the shaft on which the cam is placed.

The cylinder, c , is hollow, with an opening on one side to receive the bagasse, and the cam is so placed on the shaft as to open the valve and drop the bagasse precisely at the moment when the opening in the cylinder, c , is turned up to receive it; after which the valve instantly closes, and the cylinder, in its revolution, drops the bagasse into the furnace. The object of this arrangement is to prevent the escape of sparks and heat from the furnace during the process of feeding the fire.

The patent for this invention was issued (through the Scientific American Patent Agency) Nov. 22, 1859, to A. J. Chapman, of Bayou Goula, La., to whom inquiries for further information may be addressed.

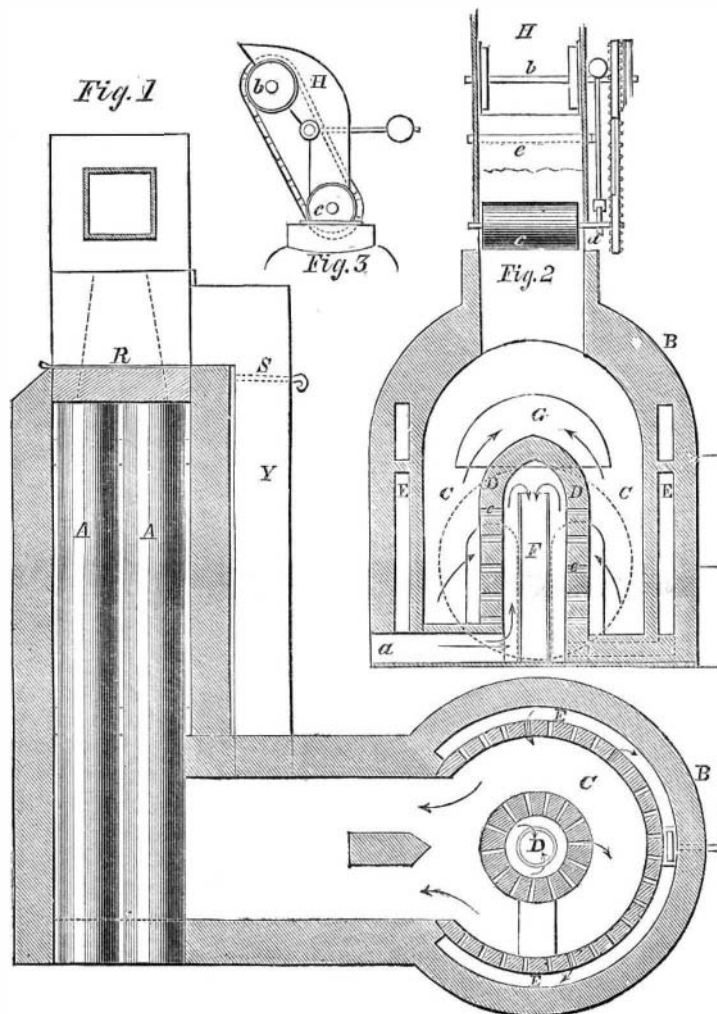
A DELIGHTED INVENTOR.

The writer of the annexed letter visited our office last month, bringing his model with him from Jackson, Tenn. During the few days he remained in this city we prepared his specification and drawings, and forwarded them with the model to the Patent Office. Immediately after the papers were executed, the inventor quitted New York, and we supposed had returned to his home in

Tennessee; but from his letter we learn that he stopped on his way at the Patent Office, to see how his business was being attended to; and the following brief letter relates his experience among the officials:

Messrs. MUNN & Co.—Through your efficient agency the Patent Office has granted all the claims in my application for a patent on improvements in sewing-machines. I have visited the Office every day since I left New York, and have made the acquaintance of a number of the officers. I find them to be dignified, intelligent and honorable gentlemen, seemingly well suited to successfully conduct the various and complex departments of that truly great institution. None can conceive the amount of mechanical genius that is developing in our country, until they visit the Patent Office. I would advise inventors who bring or send on the products of the ingenuity, to employ only those agents who are widely known as talented and experienced men in their profession, for I find much depends on a judicious preparation of papers.

Your obliged friend,
G. W. MITCHELL.
Washington, Dec. 5, 1859.



CHAPMAN'S BAGASSE FURNACE.

SUBTERRANEAN FORESTS.—The Racine (Wis.) *Advocate* states that in digging for water, in sloughs, throughout the whole town of Yorkville, Racine county, traces of dense tamarack forests are found, and generally in a leaning direction, their tops towards the southeast, as though some mighty flood had suddenly overwhelmed them.

INDIA-RUBBER LIQUID—WATERPROOF LEATHER—REMOVING MILDEW, &c.

Messrs. Editors:—I take the opportunity of communicating some information on various subjects suggested by reading the *SCIENTIFIC AMERICAN*. In No. 18, this volume, there are some remarks regarding the removal of mildew from clothes. The best remedy that I have found for mildew is aqua ammonia, diluted with eight times its volume of water. When applied with a sponge it removes the mildew, which is a minute fungus, and it also restores the color to silks and gloves.

If the person noticed in your columns, who denied that india-rubber could be dissolved by turpentine, had made a correct experiment before he challenged your authority,

he would have saved himself from a thrashing by his father. I have used a solution of india-rubber and turpentine for about twenty years, as a waterproof varnish for my boots and shoes. I make the application before blacking is put on, or else remove the blacking by water. When the leather is moist I take the solution of india-rubber and apply it with a rag, taking care to rub it in; then I put the boots in a moderately warm place until the whole is absorbed. The process is repeated twice, or until the pores of the leather are filled, when the surplus is wiped off. In a few days afterwards blacking may be put on, and the leather will polish well. By this method of treating my boots I make them not only water-tight, but also more durable, and the leather is always kept soft and pliable. I treat every pair of new boots in the manner described, and effect a considerable annual saving thereby.

In a recent article which appeared in the *SCIENTIFIC AMERICAN*, on "Chemistry and Street Dirt," it was stated that hydrochloric acid had been used for laying the dust in the city of Lyons, France, by sprinkling the streets with this acid. I am aware that strong acid would not answer to be used for this purpose, but diluted it may be employed, as it is produced in some cities in Europe in great abundance, and is very cheap, almost worthless. When the streets are macadamized with limestone the diluted acid will unite with the dust and form hydrochlorate of lime, which is of a very hygrometric character.

On page 297, there is a short extract about flavoring tobacco, to make the indifferent qualities equal to Havana. It is stated that Professor Liebig has made such a discovery, but a strong doubt is thrown out against the veracity of the statement. Permit me to state that I have succeeded in giving the artificial flavor of pine-apple, strawberry, peach, quince, &c., to tobacco; and why may not the flavor of the genuine Havana be imparted to any kind of tobacco, by similar chemical processes? My method has been to apply the chemical to the tobacco before it is made into cigars; a slight fermentation is induced, which entirely changes the flavor of the smoking weed.

You are correct about lightning-rods being conductors when well arranged, and that they not only conduct surcharges of positive electricity from the atmosphere, but surcharges of negative from the earth upwards. It is generally believed that the beech tree is an excellent non-conductor, and that the Indians seek shelter under them during thunder storms.

T. A. H.

Beardstown, Ill., Dec. 7, 1859.

[We have frequently heard it said that the beech tree possesses the qualities stated by our correspondent, and that the aborigines are in the habit of doing as represented by him; but it would be more wise for them to seek shelter under a good conductor than under a poor one. We believe the beech tree is a good conductor, and for this reason it is seldom struck by disruptive charges; it carries off the lightning silently.—EDS

AMERICAN LOCOMOTIVES.—The Philadelphia *Ledger* states that there is now completed at the works of M. Baldwin & Co., of that city, a splendid passenger locomotive (for the Southern Pacific Railroad Company) which weighs 17½ tons. The track over which the engine is to run is 5½ feet wide. It has been named "Sam. Houston." There are also in the shop, and nearly finished, two eight-wheel freight engines, for the Havana Railroad Company, each weighing 22½ tons, and intended for burning coal; the company having, by experiment, ascertained that the cost of running an engine is about one-half, when coal is used in preference to wood. This result has followed the introduction of all the coal-burners made by this firm. There are also in the shop two fine engines for the Pensacola and Florida Railroad, each weighing 17½ tons, one for the Western Maryland Road, and three for roads in North Carolina.