



BUTTERS' PATENT BRICK AND TILE MACHINE.

The cut gives a view of the external appearance of one of the most perfect labour-saving machines of modern invention. Like all really valuable inventions, it was not completed in a day or in a year. Mr. Butters, with the courage and confidence of true genius, has made it the study of his days and nights for the last ten years; and struggling against another difficulty that has obstructed and defeated so many inventors, to wit: small means—has at last the satisfaction to see his machine, almost, if not quite perfect; exciting the admiration of all who behold it: his patent secured; and a fair prospect of realizing a fortune. The expression that escapes from most persons, on examining this machine is, "How simple—why has this not been found out before!"

We refer the reader to Mr. Butters' advertisement for particulars. We may mention here, that from a fair trial of this machine, it is estimated that from 15 to 20,000 stock brick can be made in a day, with the labour of one horse and six men. It requires a strong horse, and if worked continuously for a whole day, two horses would be needed, to relieve each other. The machine could easily be adapted for making common tiles, and we believe pipe drain tiles of the most approved construction could be made by it. This machine will introduce a new era in Brick-making. We expect before long to get drawings illustrative of the internal arrangements, when we will give a full description of the *modus operandi*. In the meantime we would recommend all brick-makers to "call and examine for themselves." The price, we are informed, will be about £62 10s.

SHOT MAKING.—Some of our young readers perhaps are not familiar with the process of manufacturing shot, and wonder how so many little globes are turned out of various sizes. Baltimore is a city of shot towers as well as monuments, and the manufacture of shot has become quite an item of business in St. Louis. Mr. Kennett, of St. Louis, has recently constructed a new tower, and the *Republican* thus describes it and the process of shot making.

The tower is thirty one feet in diameter at the base, seventeen feet at the top and one hundred and seventy-five feet high. The lead is conveyed by an endless chain into the upper story, where it is melted, and whilst in a liquid form, is passed through a small hole of the size of shot intended to be made, and falls the distance of one hundred and fifty feet, into a cistern of cold water. This gives the globular form to the drops, which are chilled before reaching the water, and entirely cooled by the time they get to the bottom of the cistern. From this cistern they are conveyed into a heated drum, in which a spiral wheel brings them all in contact with heated air, and thus dries them. They are then passed into a revolving cylinder, in which they are polished, and from thence passed over a succession of inclined planes or tables about six inches apart. In passing over these tables, the imperfect shot drop between the tables, and those which are perfect, roll over into the receptacle below. They are then passed into a hopper, and by a succession of sieves, or gauges, worked also by machinery, the various sizes are separated. Each sieve is then emptied into the appropriate receptacle. The whole process is more simple than would be supposed by those who have not witnessed it.

ANCIENT METALS.—It is stated in Jacobs' Essay on the Precious Metals, that in the ruins of Herculaneum and Pompeii, which were destroyed by an eruption of Vesuvius more than seventeen centuries ago, no ornaments of gold and silver have been found.

STREET SWEEPING MACHINE.—Mr. C. S. Bishop, of Easton, Pa. has invented a machine for sweeping streets. It is so constructed as to sweep along the street carrying up all the dirt into a wagon. In fact it is simply a wagon street cleaning machine, which by the simple motion of itself through the street will sweep up and carry off all the dirt speedier and better than can be done by hand.

COVERING FOR ROOFS.—The Albany Evening Journal says that immense quantities of straw paste-board are manufactured in this country, and sent to England to be used, after preparation, as a substitute for tiles and shingles. It is laid on the roof, then saturated with tar and coated with sand. This forms a perfect roofing, and is more enduring than any other article used.

Blowing Logs.—The Petersburg, N. Y. Messenger says that Dr. Jewett has planned a good thing for blowing logs. It is a screw with a hole just large enough for the fire to communicate with the powder, through the middle. This being screwed into the hole after the powder is placed, confines it so closely, that there is no escape. Every charge splits its log.

CAUSES OF EPIDEMICS.—Little is known of the immediate chemical or vital causes of epidemics; but in given circumstances, where many are immersed in an atmosphere of decaying organic matter, some disease is invariably produced; where there is starvation, it is most frequently typhus; cold, influenza; heat, is cholera; yellow fever, plague. At the mouths of the Ganges, of the Nile, of the Niger; in London, particularly up to the seventeenth century; in camps; barracks, in ships, in prison, formerly; in Ireland, in Liverpool, in all our towns now, the circumstances in which zymotic diseases become epidemic may be witnessed. A city breathing an atmosphere perfectly pure may not be exempt from every epidemic; but observation has shown that such irruptions are unfrequent; and fatal to few persons of strength or vigour. Internal sanitary arrangements, and not quarantine or sanitary lines, are the safeguards of a nation. A salubrious city in an epidemic—like a city built of stone in conflagration—is exposed to danger and injury, but not to the same extent as the present cities of Europe, which are left without any adequate provision for the health and security of their inhabitants. The great historical epidemics have diminished in intensity; and there appears to be no reason why they should not be ultimately suppressed, with the advance of the population among which they take their rise. Their origin is obscure, but influenza appears generally to become first epidemic in Russia—cholera in India, that the source of the latter must be attacked. If the health of India becomes sound, Europe might be safe, and hear no more of the epidemic which is traversing Russia. The attention of the Indian authorities has for some time been directed to the subject. The other nations of Europe are beginning to take an interest in public sanitary improvements; and any found in England will no doubt, be carried out as speedily as possible in all parts of her Majesty's dominions; for the vast population that owns sway is intimately united. Asiatic cholera has taught us that the lives of thousands in England may depend on the condition of the Pariahs of Jessoro.—*Report of the Registrar General.*

CAOUTCHOUC FROM DRYING OILS.—In the forty-sixth volume of the *Archives de Pharmacie*, Paris, M. Jones has an essay on this subject. Linseed oil, boiled for a long time, yields a brownish varnish; this is to be boiled for a long time in water containing nitric acid; the loss by evaporation must be supplied, and the acid not allowed to act too violently. At last a substance is obtained which gradually solidifies; this is to be washed to free it from acid. This substance does not adhere to the fingers, is plastic, does not melt by itself, and when heated strikingly resembles caoutchouc. It dissolves partially in ether and sulphurate of carbon, entirely in oil of turpentine.

CURIOUS.—It has lately been discovered that the flesh of animals which are killed in the middle of the night, will keep much longer than when they are killed in the middle of the day. The flesh is fittest for keeping when the respiration is lowest, and the temperature of the animal lowest.