

ceive the order from the former, and most usually it will be sent in inclosure by mail. A party who has possession of an order will be required, before payment it made to him, to state the Christian and surname of the party who sends it and his address, and also his own. This regulation is designed to prevent an unauthorized person from obtaining the amount of an order, should it, by accident, fraud, or theft, fall into improper hands. The Post-office Department will use all fair means to prevent dishonesty, but if an order is once paid to the party presenting it, through misrepresentation, the Government will not be liable to any further claim. The public are therefore cautioned as follows:—

1st, To take all means to prevent the loss of a money order.

2d, Never to send the order in the same letter with the information required on payment thereof.

3d, To be careful, on taking out a money order, to state correctly the Christian name, as well as the surname of the person in whose favor it is to be drawn.

4th, To see that the name and address of the person taking out the money order are correctly made known to the person in whose favor it is to be drawn.

Neglect of these instructions will risk the loss of the money, besides leading to delay and trouble in obtaining payment.

Under no circumstances can payment of an order be demanded on the day of its issue.

If the money is not called for within ninety days after the date of the order, there will be difficulty in obtaining it. The regular form of the order must not be clipped or mutilated. When the payee of an order desires the same to be paid to any other person, he must fill up and sign a form of indorsement, and furnish such second party with the information required to obtain payment of his order, who, upon receiving payment, must sign his name upon the face of the order. More than one indorsement is prohibited by law, and will render the order invalid and not payable.

This system, entirely new to our country, is founded upon the English plan. In Great Britain it has been very useful, and is exceedingly popular. Properly managed, it will be in the United States an accommodation which will soon be discovered to be indispensable in the management of business between different sections of the country.—*Philadelphia Inquirer*.

#### A PRACTICAL ICE-MAKING MACHINE.

A paper was recently read before the British Association by Mr. A. C. Kirk, in which after explaining an ether machine for making ice, he said:—

“Such a machine was in use for fully a year, at the works of Messrs. Young & Co., Bathgate, for cooling the paraffin oil of which they are the well-known makers, in order to extract the solid paraffin it contains, a substance of great value in itself, and whose presence in the oil is otherwise desirable. This machine proving too small for the increasing size of the work, and the use of a material so volatile, inflammable, expensive, and in all respects so dangerous as ether, being a serious drawback, I was requested, in the beginning of 1862, to try if some efficient substitute could not be found. Atmospheric air being the substitute which at once suggested itself to me as not only safe but inexpensive, I commenced a series of experiments, which at last resulted in a small model, by which I was able to freeze mercury. A large machine was immediately proceeded with, which worked so satisfactorily that the use of the ether machine was discontinued, and this year at the works a more powerful one has been erected, capable, if applied to such a purpose, of making three tons of ice in twenty-four hours. I shall now proceed to describe the nature of this machine, which, it will be seen, is allied to the air-engine in the same manner as the ether machine is to the steam-engine. If we enclose a quantity of air in a strong vessel, into the top of which we fix a common air-syringe, and force the piston downwards by hand, we shall compress the enclosed air, which, by the power so spent, will be heated; and if we now cool the whole apparatus down to its original temperature, and allow the air to force the piston gradually back, the air by the effort will be cooled; but, inasmuch as the cooled air will not occupy the same space as the air originally did, the piston will not return to the point at which it was when we commenced, and thus less power will be given out during the expansion of the air than was spent in its compression. It is not necessary that the air be at the atmospheric pressure: if air of

greater density be employed, the cooling power of the machine will be increased. We have thus got an elementary cooling machine, and as before power is spent in working it. To render this a practicable machine, the first thing necessary is to perform the compressing or heating operation, and the expansion or cooling operation in separate compartments; the one surrounded by water to abstract the heat generated, and the other surrounded by the substance to be cooled, or from which heat is to be taken. The one compartment being thus very cold and the other comparatively warm, the next thing is to provide means by which the air can be continually transferred from one to the other, without carrying heat from the hot compartment to the cold. Thus, if the temperature of the hot compartment be 70°, and that of the cold zero, the air must enter the cold compartment preparatory to expansion at a temperature as nearly zero as possible, and in returning to the hot compartment must enter it preparatory to compression, at a temperature as nearly 70 degrees as possible. That beautiful invention of Stirling, the regenerator, or respirator, as it is sometimes called, composed ordinarily of a large quantity of wire gauze, through which the air passes, enables us to accomplish this very perfectly. When the machine is fairly a-going, the layers of gauze next the cool compartment become as cold as the compartment itself, and those next the hot compartment as hot, while the layers between those shade off through the intermediate grades of temperature. Thus the air, in passing from the hot to the cold compartment, warms the gauze and is itself cooled, and the cold air in returning is gradually warmed, cooling the gauze in its course; and although the air is continually being passed backwards and forwards from the hot compartment to the cold, and *vice versa*, no heat is conveyed by it from the hot end to warm the cold and interfere with the cooling power of the air during expansion. By the help of the diagrams, Mr. Kirk then explained the arrangements by which this was carried out. He concluded by saying that the advantages attending the use of his machine were, that no expensive or dangerous fluid was employed, involving risk of fire or suffocation to the attendants; that the cooling power might be reduced to any extent when required, the consumption of motive power being similarly reduced; and that cupped leather packings might be employed, which gave so little trouble, that in the first machine one worked for four months without being touched. Mr. Kirk then, at the request of the meeting, gave some explanations of parts of his machine which had not been understood, and those explanations appeared to fully satisfy the meeting of the practical utility of the machine. He further stated that the cost of the machine, without boilers, was £700.

Professor Miller said he was glad to hear that the machine had been practically successful. The inventor had employed a new principle in a new, simple, and effective manner.

Mr. Young said he was able to say that the machine was all that was ever expected. Former machines they had used always kept them in a state of bodily terror, and once they had a slight fire; but by using this new machine there was no longer any cause for fear. The machine was an extraordinary success. It went on day and night, without intermission and without trouble. With one ton of coal, costing 4s., they could produce one ton of ice. He was glad to be able to give his testimony to the perfect working of the machine (applause). All manufacturers must hail such a chemical invention.

Professor Miller—Has it the effect of the ether machine?

Mr. Young—It has just the same effect as the old ether machine, without the loss of ether (applause).

NEW WAY TO SEND A “CIPHER” MESSAGE.—Wrap a strip of paper slanting around a pencil case, ruler, or any round object, making all the edges meet. Write upon it, and then unwrap it; it will be quite a chaos, but when brought back to its old position on the roller, it will be as legible as this print. The roller would have to be the same in both cases, with the sender and recipient, but this could easily be arranged beforehand. The message might also be written zig-zag on the roller, and thus increase the difficulty of reading it.

#### FOREIGN INTELLIGENCE.

SUGAR AND CORPULENCE.—Alderman Mechi writes, “I can confirm personally Mr. Banting’s statement that sugar produces corpulency. Some time before that gentleman published his case, I found myself getting too ‘aldermanic,’ in spite of severe exercise. Hearing casually that a very stout lady had diminished to genteel proportions by leaving off sugar in her tea and coffee, I followed her example, and found that I had lost fourteen pounds weight in six weeks—very much to my comfort. The quantity of sugar I usually consumed was under one ounce and a half daily. As I much prefer my tea and coffee sweetened, I again ventured moderately, and soon gained seven pounds; so now I regulate my weight principally by the use or discontinuance of sugar. The ready solubility of this saccharine matter permits it to be absorbed immediately by the system. I hope that my agricultural friends who wish to farm profitably by the rapid fattening of their cattle and other live stock will take the hint. The scarcity of roots this season will render the use of treacle, sugar pods, linseed and other saccharine and oleaginous substances absolutely necessary, mixed with straw, chaff or bulky substances.”

CAST STEEL IN BOILERS.—The employment of cast steel is every day extending, and often with advantage. In 1859 Herr Kohn, a German engineer, placed in a boiler 40 feet in length, made of plates 11 millimetres thick, a sheet of steel only 5½ millimetres thick. This sheet, which was placed near the furnace, was found, after two years and a half of very sustained work, in a perfect state of preservation, while the neighboring sheets of iron plates had suffered greatly. The steel plate bore, besides, no incrustation, a result which was attributed to the more rapid action of the water on coming in contact with it. Experiments made in this direction have not, however, always proved successful. Thus the Austrian railway company had six locomotives made with boilers of cast steel. The working of these engines was not satisfactory, the fire boxes displaying alarming rents after a short time. The Austrian railway company is, however, determined to persevere with further experiments.

HAY AND HONEY.—It is a common saying that a year in which hay is abundant proves a good one for honey. The present one cannot be called a good year for either hay or grass, but few will deny its goodness for producing honey. The warm weather about the middle of May caused many bees to swarm at that early day, and we have heard of several of those swarms producing 40 lbs. of honey. Those which swarmed at a later period also did well, gaining as much as two pounds a day during the fine days of July. This season has been the best one for honey since the year 1859.

ANOTHER NEW ENGLISH STEAM ENGINE.—A new steam engine has been invented by Messrs. Martin & Hodgson, of Manchester, England, which has two pistons in each cylinder on a vibrating shaft, just as a door swings on its hinges. Motion is communicated from the cylinder shaft to the screw shaft by means of levers and connecting rods. This engine, or its principle, was designed by Captain Ericsson many years ago. The *Princeton* frigate had two, and drawings of them can be found in “Stuart’s Naval and Mail Steamers of the United States.”

THERE are five evening papers issued in London, but before the month has passed another will be added to the number. The *Glow Worm* will be published some hours later than the usual time for issuing the *Evening Standard*. It will contain the latest news from the city, the Houses of Parliament, and the race-course. It will be sold for one penny.

GREASED STEAM.—An advertiser in a foreign mechanical journal makes use of the following language in puffing a new oil cup:—

“The above Lubricators grease every particle of steam previous to its passing through the valves into the cylinders.”

We have heard of greased lightning, but greased steam is a decided novelty.

PATENT-LEATHER belts are used in England for out-door work. They are said to be impervious to damp and retain their length in all weather.