H. Marion, of the Naval Academy, at Annapolis, has given considerable attention to the subject, and in a communication to the writer, dated October 6, says: "The United States have no organized service yet, but it is to be hoped that it will soon be established, as numerous experiments have proved that homing pigeons can fly several hundred miles at sea—if liberated in the morning of course; that birds can be bred and trained on board ship, that they can be accustomed to the noise of the ships, that they can recognize their own ship among others, that they can be relied upon to carry news from the fleet to the shore and under favorable circumstances from the shore to the fleet and from one vessel to another. A service of carrier pigeons for naval purposes could not be improvised at short notice as the birds would require long and careful training before they would be of any use as bearers of dispatches. In war time serious derangement of plans, loss, and discomfiture may be involved by the absence of previously organized provision for the rapid transmission of news. We, therefore, advocate the speedy establishment of a permanent system of naval messenger pigeon lofts at the principal navy yards and stations along the Atlantic coast."

Some very interesting experiments have already been made with homing pigeons at the United States training station at Newport, R. I. One of the birds, according to the report of Commander T. J. Higginson, U. S. N., flew from the Hen and Chickens lightship to the cote at Newport, a distance of twelve miles, in 16 minutes and 35 seconds. Another bird flew from Washington to Fall River, a distance of 365 miles, in 11 hours and 7 minutes. A number of the birds were taken to New York on the Juniata last year, with the intention of liberating them along the coast, but the weather was unfavorable, and they were not flown. While at Brooklyn one of the pigeons escaped from the Juniata, and it was considered lost, as it had never flown a greater distance than from Point Judith, but in a few days the bird arrived at its home safely and in good condition.

War vessels employed in defending a coast are often without the means of transmitting information of the utmost importance to the mainland. By means of carrier pigeons they could send communications ashore over a distance of several hundred miles, signal the approach of the enemy's fleet, and report all his movements.

It would hardly be supposed that homing pigeons would have been called into requisition to aid operations in Wall Street, though such is the case. A well known stock broker purchased a farm in Somerset County, New Jersey; and finding that the telegraph service in the vicinity did not give satisfaction, especially when an excited stock market necessitated quick communication with New York, the broker decided to establish a messenger pigeon service of his own. The distance from his office in New York to his farm is forty-three miles. A hamper with several birds in it is kept in his office, and when the broker is spending a day or two at his farm, and his manager wishes to communicate the condition of the market, it is very quickly done by means of one of the birds. This gentleman went to an isolated point in Buzzard's Bay, Mass., on a fishing excursion, the only communication with the mainland being by a small steamer which arrived about twelve, noon, and departed at one o'clock. One day after the steamer had left the broker opened his mail and found that the stock market had taken an unexpected turn which necessitated immediate communication with his office. There was no telegraph or other means of communicating with the mainland, but fortunately he had brought with him the hamper containing the pigeons. A message was quickly written and attached to a tail feather of one of the birds, while to insure absolute safety a duplicate was attached to another bird. They were released at 3 o'clock in the afternoon, and arrived at the broker's farm early the next morning, so that the order which they transmitted was acted upon at the opening of the Stock Exchange, and resulted in saving a very considerable sum of money for the owner of the pigeons.

A MOUNTAIN RAILWAY NEAR NEW YORK CITY.

Thirty-nine miles above New York, on the west shore of the Hudson, the Dunderberg Mountain rises eleven hundred feet into the clouds, towering above all the other elevations in its neighborhood, and affording from its summit views of such grandeur and magnificence as are hardly to be surpassed anywhere in the world. On the extreme top of this mountain is to be built a great hotel, to be surrounded by a beautifully laid out park, and access thereto is to be provided for by means of a cable railway, whereby the cars will be drawn up in eleven minutes. The enterprise was conceived by Messrs. T. L. and J. H. Mumford, the controllers of the Mauch Chunk switchback railroad, and is being carried out by the Hudson River Improvement Company, of which Mr. James Morgan is president, at an estimated cost of $800,000. The trip to the top of the mountain, however, and the view to be obtained therefrom, will be by no means the principal attraction, for the return journey is to be made by a gravity spiral road, winding in, out, and around the various inequalities of the mountain and adjacent country for a distance of twelve miles, affording a noble panorama of constantly changing views to surprise the passenger at every turn.

Much of the work on this enterprise has already been done, the roadbed being now about ready for the rails, and the machinery and cars in a forward state of construction, so that it is expected the road will be opened to the public early next season. At the main station at the base of the mountain, convenient of access to passengers both by rail and boat, besides the car and engine houses, etc., there will be a large hotel and seven acres of ground to be used as a park for the accommodation of passengers waiting for trains or steamers. From this station runs a double plane about twenty-five hundred feet long, having at its top hauling engines and an electric light and pumping plant. A second double plane runs from this station to the summit. The hoisting machinery and engines, being built especially for this work, will embody all the best features hitherto known in such construction, as well as original plans for the safety of the drawing cables and safety ropes. The lower plane will have a maximum grade of 31 per cent, and the upper one a maximum grade of 28½ per cent. The back or gravity track will have an average grade of 1½ per cent, with a minimum of 1 per cent, and a maximum, on 40 degree curves, of 3 per cent. About one-quarter of the distance down, a dam across a deep gorge forms a beautiful lake or reservoir for the use of the hotels, cottages, and works of the company, and at three different points on the down track will be stations surrounded by grounds laid out for picnic purposes. It is intended to keep the road and grounds open from May until late in October. It seems difficult to make a really conservative estimate of the immense patronage which this most picturesque resort for summer excursionists is likely to attract, it being so easy of access by the great population of New York City and vicinity.

Collapse of a Standpipe at Temple, Texas.

The *Sun* of Temple, Texas, gives a thrilling account of the sudden collapse of the new standpipe pertaining to the water works in that town, which took place at 2½ A. M., in October last, when the inhabitants were wrapped in peaceful slumber. No danger was feared, when all at once, with a shock that shook the town, the 280,000 gallons of water went seething, foaming, and hissing over the doomed portion of the city, and immense sheets of boiler steel, hundreds of pieces of scaffolding, houses, barns, fences, and all the debris of the surrounding neighborhood went floating and crashing in all directions.

Everybody was awakened. The people in the houses near were almost frightened to death. The houses swayed with the rush of waters, and two of the nearest were taken away, one crushed and the other twisted and washed off its blocks.

There were sixteen sections of the pipe, a great hollow cylinder, 20 feet in diameter and of the heaviest boiler steel. Eight sections, or 40 feet, the lower tiers of the pipe, were thrown in a different direction, seven going east and one twisted and torn sheet going north and all lodging from twenty to fifty feet away. They were torn as the power of man might tear tin foil, twisted and crumpled as a seamstress would handle her cloth.

The standpipe was 120 feet high and 20 feet in diameter. It was built recently at a cost of $10,000, by Thomas & Gorman, of Houston, experienced contractors in this kind of structures. The material was the best sheet steel supplied by Ripley & Bronson, St. Louis, Mo.

The failure of this standpipe brings to mind the collapse of a similar pipe, which occurred at Sheepshead Bay, near New York, on October 7, 1886, and which was illustrated in the SCIENTIFIC AMERICAN of December 25, 1886.

Nickel-in-the-Slot Gas Meter.

A new penny-in-the-slot contrivance has been adopted by the gas department of the corporation of Birmingham, for the benefit of small consumers, and, incidentally, its own. The price of gas in Birmingham, as everywhere else in England, is, according to our ideas, low, the regular rate being sixty cents per thousand feet. Small householders, however, often like to enjoy a definite amount of such luxuries, without being bound to any regular contract; while the gas company is glad to make sure of its pay from such consumers, by getting it in advance. To meet the wants of both parties, a sort of meter has been constructed, which, on dropping a penny in a slot, will deliver twenty-five cubic feet of gas. This is at the rate of eighty cents a thousand feet instead of sixty; but the company feels justified in charging a rather higher rate to such small customers. If any of the latter wish for a larger supply, they may drop nine penny pieces at once into the slot, and 225 feet will then be delivered before the valve closes. The accumulated pennies are collected once a week by an official of the gas company. The burners on the house fixtures are regulated to burn five feet per hour, but, of course, they can be turned down, so as to burn more slowly. No direct charge is made for the measuring apparatus, the extra price of the gas delivered through it covering the expense.

Electricity in Paper.

How to control the electricity in stock, or which develops about a press in working, is a problem that still bothers many pressmen. We have given remedies for this trouble several times, and, as far as we have learned, all of them proved efficient.

For those who are only recent readers of the *Art Printer*, and indeed for older ones as well, let us say that the most thoroughly effective method is the use of a copper wire connected at one end with the zinc-covered fly board, and by a second wire with the feed board, and at the other end with the gas pipe at the ceiling or elsewhere, thus establishing electrical communication with the earth, to which the lower end of the gas pipe conducts.

Here is the *modus operandi*: As we have said, the fly board is covered with zinc. Under one side of this zinc, near the press, is thrust a piece of brass about two inches long, half to three-quarters of an inch wide, and an eighth of an inch thick. A thick piece of brass rule would do nicely. In the outer end of this brass rule a hole is made through which one end of the copper wire is passed and fastened. This wire is carried to the framework of the press, wound about the corner post of the framework, then carried along the entire foundation, winding about a pillar to keep it up. Reaching the corner post of the frame at the farther end, the wire winds about it and is then passed up and fastened to the gas piping at the ceiling.

A second wire connects with the first one at the center of the foundation frame, and runs winding round the central post directly under the lower end of the feed board, near the gripper line. Having reached the feed board it is passed through the hole of another piece of brass similar to the one at fly board. This second piece of brass is attached to the iron framework of the gripper or guide motion.

The point is to establish a conducting line between the paper and press, wherein electricity is either stored or generated, and the earth, along which line the fluid has a chance to escape or be drawn. This done, there is no more worry about electricity around a press.

Some pressmen cover the feed board with zinc—or the lower part of it—as well as the fly board, in order to insure the action of the two metals, zinc and copper, upon the electricity in the paper; but the experience of the majority who use the wires is that if the connection is properly made with the metal of the gripper motion, contact is certain, and the electricity is absolutely drawn off and sent through the gas piping.

The wires being wound about the press, as well as being brought into contact with the paper, catch all the electricity generated by the rapid motion of the machine and send it off in the same way.—*Amer. Art Printer.*

Edison Toy Manufacturing Company.

The annual meeting of the Edison Toy Manufacturing Company was held at Clarence Hale's office in Portland, Me., October 30. Mr. Edison was represented by his secretary, Mr. Tate. This was the treasurer's exhibit September 30:

LIABILITIES.	
Capital stock	$1,000,000.00
Working capital	62,871.37
Total	$1,062,871.37
ASSETS.	
Treasury stock	$160,000.00
Licenses and patents	846,894.84
Cash	2,973.03
Cost of dolls' parts and merchandise	35,384.23
Edgar S. Allen, general manager	69,025.00
European expense account	5,699.84
Thomas A. Edison	1,000.00
Office furniture	1,229.18
Total	$1,062,871.37

These officers were elected: Directors, Benjamin F. Stevens, Danield Weld, John W. Mackintosh, Winfield S. Hutchinson, Thomas A. Edison, George Borgfeldt, Oscar E. Madden; clerk, Clarence Hale; treasurer and secretary, Daniel Weld.—*Electric Review.*

A RATHER handsome compliment has recently been paid to the SCIENTIFIC AMERICAN by the well known jewelers Messrs. Benedict Bros., of 171 Broadway, N. Y., who have designed a novel and beautiful match box representing a copy of a newspaper folded in a wrapper. The ends of the paper extend beyond the wrapper and display the familiar heading of the SCIENTIFIC AMERICAN. The wrapper has a blue enameled penny postage stamp and bears the New York postmark, while a blank space is left for the name and address of the owner to be enameled in black on its surface. It was found desirable to select some representative non-political journal, and the SCIENTIFIC AMERICAN was chosen as most appropriately filling the requirement.

We take pleasure in acknowledging the compliment that has been offered us.

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The Patent Sales Agency Business.

Those of our readers who have taken out patents within recent years know something of the extent to which inventors are besieged by various individuals and firms from Maine to the Pacific coast, who are anxious to negotiate the sale of patents, and whose circulars, letters, pamphlets, etc., are many of them skillfully designed to make the unhappy inventor, whose name and address has just appeared in the *Patent Office Gazette*, believe that there are plenty of people who are anxiously waiting for an opportunity to buy his patent and pay fabulous amounts for it, only these persons must be found.

The finding of them is what these patent salesmen propose to do. Their proposition is usually to take the patent in hand and find a purchaser for it, charging a percentage for their services. But the main feature of the business seems to be the fact that the inventor is always required to pay a certain amount of cash, varying with different concerns from five to twenty dollars, as his part of the expense of advertising, traveling, correspondence, etc. It is perfectly safe to say that in a vast majority of cases this payment required of the inventor upon placing his patent in the agent's hands pays not only a part, but all the expenses involved, and leaves a handsome profit to the agent; in most cases probably all the profit he seriously looks for from the transaction.

Sometimes, after a year or so has passed by, the anxious inventor, who has invested some of his cash in "advertising expenses," is informed that the arduous labors of the agent have at last resulted in the finding of a man who wants the right to make and sell the invention in several States, but can only pay for it in land upon which there is some sort of incumbrance to the amount of say fifty to a hundred dollars, varying in different cases. If the inventor will forward the amount to the agent, the sale will be immediately closed.

The significant feature of the whole business is, says the *American Machinist*, and which, from the long experience of the editors of this paper with this class of people, they can verify the truthfulness of, *i. e.*, that the inventor is in every case required to pay something for which he has no assurance of a satisfactory return, and it is easy to see that with the vast number of patents being taken out, many of them by people more or less unused to the ways of the world, the income of these selling (?) agents must be considerable if they succeed in getting payments of small amounts from only a small fraction of the total number of patentees.

A REFRIGERATOR VEHICLE FOR PERISHABLE ARTICLES.

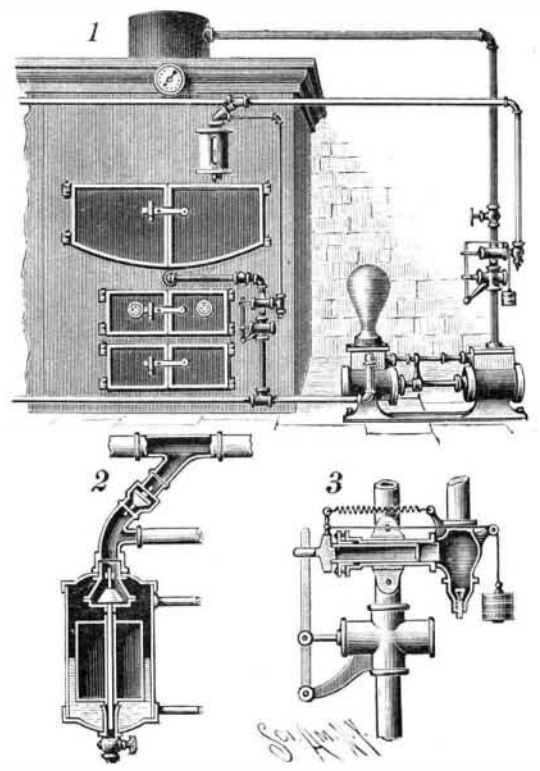
A vehicle provided with refrigerating compartments especially adapted for the storage and conveyance of milk or other perishable articles is represented in the accompanying illustration, and forms the subject of a patent recently issued to Mr. Charles A. Knight, of No. 98 Sterling Place, Brooklyn, N. Y. In the roof of the rear section is a horizontal partition which forms a top chamber, and bars extend from the partition to the floor of the wagon at the sides. Sheets of zinc or other suitable metal or non-conducting material are secured to the inner faces of these bars and the side uprights, these sheets constituting the sides of the refrigerator and, with the uprights, forming side flues through which air passes from bottom apertures into the top chamber, while the latter has front and rear openings, the air passing through which is designed to create a suction and cause currents of air in the direction indicated by the arrows. A second horizontal partition in the top of the refrigerator proper forms a storage compartment, open at its front end and with an upwardly opening hinged door at the rear. In the front end of the refrigerator is a fixed central perpendicular post, to which are hinged two doors closing against the sides of the vehicle, and centrally in the rear is a removable post constituting the rear wall of an ice chamber, at each side of which are arranged compartments for the reception of baskets or boxes containing the milk cans or other articles to be placed in the refrigerator. These compartments have openings on their inner sides, toward the ice-containing chambers, and they are built up in such manner as to have tracks or slideways in their bottom edges, to facilitate the placing and removal of the baskets or boxes, etc.

The bottoms of the ice receptacles have apertures, the drip from the upper one passing into the lower one, and the latter draining through a tube in the bottom of the refrigerator, passing through the wagon bottom.

KNIGHT'S REFRIGERATOR MILK WAGON.

AN AUTOMATIC STEAM BOILER FEEDER.

In the accompanying illustration of a boiler feeder, patented by Mr. Bernard Devlin, of No. 327 Grand St., Jersey City, N. J., Fig. 1 shows a front view of one of two or more steam boilers and feed pumps therefor, with the improvement applied. Fig. 2 is an enlarged sectional view of the valved regulating drum or casing and connected steam pipes, and Fig. 3 is an enlarged



DEVLIN'S AUTOMATIC STEAM BOILER FEEDER.

view of the steam-actuated regulator device shown in connection with the pump. The drum is connected to the steam and water spaces of the boiler by upper and lower pipes, and is fitted with an ordinary gauge glass. Within the drum is a float having a vertical spindle guided in a tubular bearing at the bottom, and in an upper cross bar or bridge piece and a skeleton bearing, both fixed to a hollow fitting flared downward from the top of the drum, and forming a seat for a conical valve fixed to the float spindle. Suitable collars or washers on the spindle hold the float in proper relation to the valve and its seat, causing the float when lifted by rising water in the drum to close the valve and cut off flow of steam from the upper part of the drum to a pipe leading therefrom. Side holes in the spindle guide near the bottom of the drum give outlet to a blow-off cock for cleaning the drum when desired.

To the pipe leading from the top of the drum is coupled another containing a check valve, a pipe from which is connected to a steam pipe leading to a regulator which controls the steam inlet in a steam supply pipe which leads from one of the boilers to the valve chest of the feed pump. To a nipple on the pipe leading from the top of the drum, between its valve and the check valve, is coupled another pipe which leads to a similar regulator bolted or clamped to the feed pipe, and provided with a gate valve. Such a pipe connection and regulator are provided between the drum and each of any number of boilers set up in a battery. These regulators, as well as one to control an injector, are made alike, the regulator in the latter case receiving steam from the drum while a steam pipe connects the steam space of the boiler with the injector, to which is coupled also the feed water supply pipe, which may have a valve controlled by the regulator. A valve may also be fitted into the steam supply pipe from the boiler, near the regulator, to be controlled by the latter simultaneously with its control of the main water inlet valve.

The regulator itself has a hollow rear chamber, from the side of which projects a cylinder, into which is fitted a piston made as a cylinder, closed at its outer end by a head, and surrounded by a packing. One end of the hollow rear chamber is connected to the steam pipe leading from the drum, and to its other end is fitted a check or relief valve, closing by pressure from the pipe, but normally held open by a spring on its stem. A stop device limits the outward movement of the cylindrical piston, and a retracting device is provided, which may be a weight from a cord running over a pulley on the hollow rear chamber and connected to the head of the piston, or a spring connecting the piston head and chamber. By means of certain rod and link connections to the head of the regulator piston, one regulator may operate the main steam and water inlet valves and the steam and water valves of an injector, when the latter is used instead of a pump to feed a boiler.

The operation of this boiler feeder is entirely automatic, and very simple and effective. When applied in connection with two or more boilers, each boiler is fed independently of every other boiler, the check valve of the boiler in which the water stands at the proper level being closed by steam pressure in the pipe leading to the regulator, so as not to prevent the free operation of the drum valve at the boiler, and when all the boilers are filled to the proper water level, the feeding pump will stop, as its valve will remain closed. A similar effect is also produced, through the regulator, in starting and stopping the injector, when the latter is used to force the feed water into the boiler.

The Gypsy Moth.

Mr. J. O. Goodwin writes as follows to the Medford *Mercury*:

"I have had quite a little experience with the pest, as in the rear of my premises are three or four large apple trees which have been wholly uncared for by the owner, and the tent caterpillar and gypsy worm have held high carnival there until every vestige of green has disappeared. After devastating my neighbor's trees they *marched in myriads* for my premises, fairly covering the fences, houses, outbuildings, grass-land, current bushes, and concrete driveways with their trooping battalions. I immediately tacked tarred sheathing paper around every one of my trees and keep the paper well coated with printer's ink. The worms will not go over the printer's ink if care is taken to make frequent application of it. Experience, the best of teachers, proves it. During the past week or ten days I have personally attended to the matter and have killed millions of gypsy worms which have congregated below the paper on my trees. The trees nearest my neighbor's land were the first ones attacked (they will not pass a tree), and five or six times a day the trees below the paper are literally covered with thousands of worms, notwithstanding I take great care to kill every worm seen at each inspection, while not a worm can be found on the tree above the application of printer's ink. The number of worms culitivated on the three or four worthless trees on the premises adjacent to my own is astonishing; numbers fail to convey an adequate idea. The grass-land and the earth seemed to be covered with them. In fifteen minutes after killing every worm to be seen on the trunk of the tree below the tarred paper, hundreds can be found making their way up the trunk, to be stopped by the application of printer's ink."

The "Serve" Boiler Tube.

The "Serve" tube differs from the ordinary boiler tube in having eight internal ribs one-half inch in height, in 3 inch tubes, which have the effect of increasing the efficiency of the tubes as heating surface, by absorbing the surplus heat in the gases, as they pass from the combustion chamber to the funnel. Indeed, the extent of tube surface coming into contact with the gases is nearly double that of a plain tube. The inventor, M. Jean Serve, is a native of France, and in that country the invention has already found considerable favor, as it effects an economy of 10 per cent in fuel.

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