

A Fatal Torpedo Explosion at Newport.

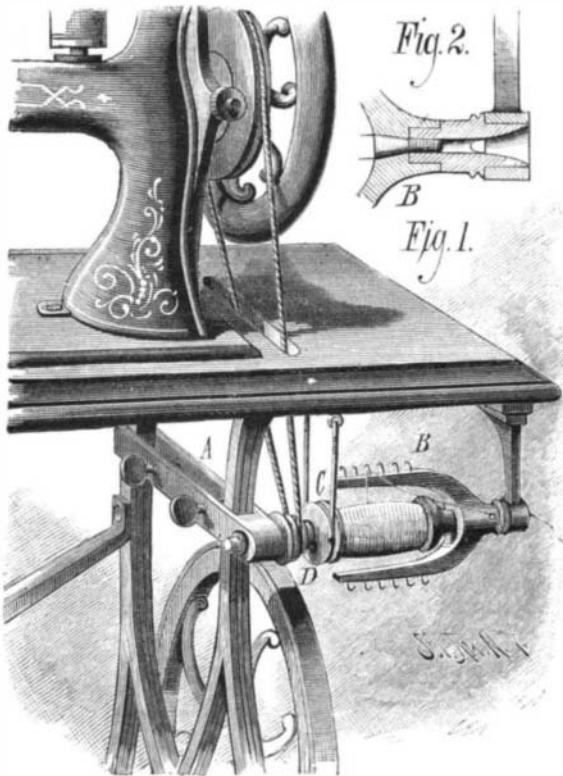
Recently two officers of the torpedo school at Newport, R. I., Lieutenant Commander Edes and Lieutenant Spaulding, were killed by the untimely explosion of a torpedo which they were placing in the harbor. According to the official report of Captain Thomas Selfridge, in charge of the torpedo station, the deceased officers were carrying out a torpedo in a small boat, when it exploded. The class had been previously instructed in all the details of the operation, and a diagram drawn that each one could see how the wires should lead, and special cautions had been given by the instructor, Lieutenant Commander Bradford. The torpedo was first to be planted. Then, of the two wires, one was to be connected to a circuit closing buoy, and the other to a firing circuit on shore. They had been cautioned not to make these connections after the torpedo was dropped until they had come ashore. As a further precaution, the wire connecting the firing battery with the torpedo in the electrical building was also disconnected, making three breaks, any one of which would make it impossible to fire the torpedo. It seems that the first torpedo planted by these officers became leaky, and in taking it up they cut the wires of the old torpedo without breaking the shore connections. In planting the new torpedo, being in a hurry, they pulled out and took up the wires from the water and connected it (the torpedo), supposing the connection in the electrical building was broken. It appears that Lieutenant Commander Caldwell, supposing, as should have been the case, that the connections of the torpedo were broken, joined this connection in the electrical building. The terrible result followed.

SPINNING ATTACHMENT FOR SEWING MACHINES.

The engraving represents a very simple spinning device, which can readily be attached to a sewing machine, and replaces the cumbersome spinning wheel generally used with hand machines for spinning. Fig. 1 is a perspective view of the device applied to a sewing machine, and Fig. 2 is a sectional view of the outer journal of the spindle.

A clamp, A, is secured to the leg of the sewing machine by thumb screws, and supports the spindle, C, flier, B, and the spool. The end of the spindle is furnished with a hollow flaring mouth.

To fit the attachment for operation the clamp, A, is to be attached to the legs beneath the table and directly over the driving wheel, with the spindle projecting in a horizontal direction, with space enough for the flier to clear the table. The bracket which supports the outer end of the spindle is then to be screwed into the table directly over and in line with the mouthpiece of the spindle. A tension band is passed around the grooved pulley of spool and secured to the table. The object of this band is to prevent the spool from turning as fast as the flier, and it can be made to turn as fast as required for taking up the thread by tightening or slack-



BLACKETT'S SPINNING ATTACHMENT FOR SEWING MACHINES.

ening the band by means of screws. The driving band is passed around the driving wheel of the sewing machine and around the cone pulley, D.

This attachment will readily do all the work of the ordinary spinning wheels much faster, and it is much easier to work than spinning wheels. The attachment saves the necessity of having a spinning wheel where there is a sewing machine in use.

In many parts of the country a spinning wheel is just as much a necessity in every family as a sewing machine; but with this attachment to the sewing machine the large wheel will not be required.

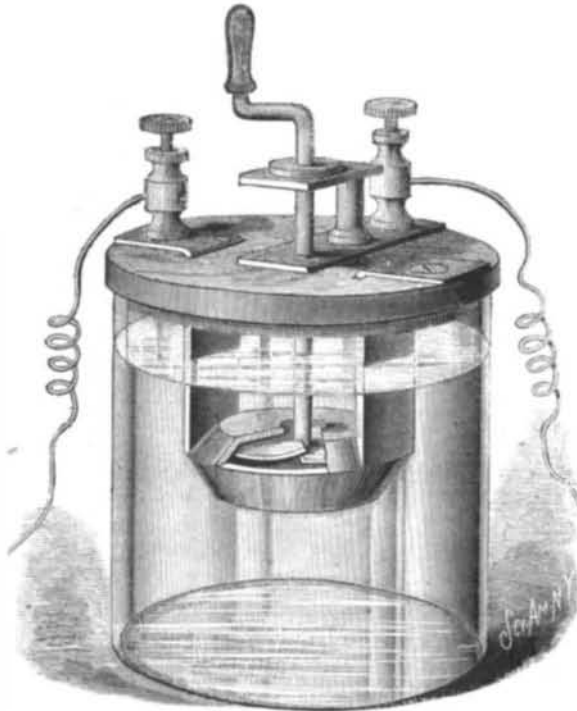
For preparing yarn for crochet work and knitting the spinning and twisting attachment is especially useful.

This invention was recently patented by Mr. J. C. Blackett.

All communications in regard to the invention should be addressed to Mr. J. R. Blackett, Caledonia Mines, Cape Breton, Nova Scotia.

AN IMPROVED BATTERY.

The engraving shows an improved galvanic battery lately patented by Mr. A. Floyd Delafield, of New York city. This battery is provided with means for increasing the strength of the current by producing a more or less rapid circulation of the solution in contact with the elements by mechanical means, operated by hand or by a motor. This is accomplished practically by fitting the negative element upon a shaft for revolution between the zinc plates, and for



DELAFIELD'S GALVANIC BATTERY.

increasing the effect the revolving disk is made in spiral form, something like a screw propeller, so that it creates a circulation of solution in the cell, thus continuously depolarizing the elements.

Pictet's New Steamer.

The Geneva correspondent of the London *Times* gives the following details concerning Professor Raoul Pictet's model steamer, which he expects to drive at the rate of 40 miles an hour:

Her dimensions are 16 meters long and 3.50 meters wide. When lying at anchor she will draw 33 centimeters fore and 44 centimeters aft; at full speed, 1 centimeter forward and 16 centimeters aft. The engine will be placed amidships, from which point to the stern the screw shaft and the keel form an inclined plane; the bows are long, tapering, and wedge-shaped. Professor Pictet reckons that his invention will lead to a great saving of fuel, inasmuch as a steamer built on his plan, after being started with, say, 100 horse power, may be kept up full speed with an expenditure of force equal to 30 horses. The form of the hull, on which the maintenance of the ship's equilibrium will depend, cannot be explained without a diagram. Professor Pictet is quite confident in the success of his invention, and his scientific previous achievements have been so remarkable that many people who cannot follow his reasoning have no hesitation in accepting his conclusions.

The Improvement of the Mississippi River.

The construction committee of the Mississippi River Commission, consisting of General Q. A. Gillmore, Major C. R. Suter, and Mr. B. M. Harrod, has for several months past been holding monthly meetings in St. Louis for the purpose of hastening the preparation of the outfit required for a vigorous prosecution of work under the appropriation of \$1,000,000 made at the last session of Congress, all of which will be expended on the river below the mouth of the Ohio. As bad navigation on that portion of the river is invariably due to excessive widths produced by caving banks in concave bends, the first thing to be done is to stop this caving by suitable works of bank protection, such as a brush mattress weighted with stone or some other species of revetment or covering extending down from the crest of the bank into deep water. The next step will be to narrow the stream to such widths between the high river banks that the current, with the increased velocity produced by the narrowing, will scour out and maintain even during the low river stages, the depths required for navigation. This will be done by contracting the stream, usually at points opposite the concave bends, through the agency of light, permeable dikes, placed either longitudinally or transversely to the shore, or both. These dikes, composed of brush hurdles, or of wire and brush screens, or some similar device, will allow the water to pass through them with more or less freedom, and, by checking without arresting the current, will convert large areas next the shore into stilling or settling basins, within which the river itself is expected, during the flood stage, to build up new banks and establish new and advanced shore lines by constantly depositing the solid matter which it transports, but which the unimpeded

flow would carry down to the Gulf of Mexico. Works of this general character will be begun as soon as the working plant is ready upon nearly seventy miles in length of the worst navigation below Cairo, namely, about forty miles on the Plum Point stretch, above Memphis, and thirty miles in the vicinity of Lake Providence, above Vicksburg. Nothing will be done upon the levees. It is expected that work will begin about October 1.

The National Telephone Exchange Association.

The third semi-annual convention of this association was held in Saratoga, the second week in September. There were present at the first session 250 delegates, of whom 100 represented telephone companies. Among the prominent delegates were:

G. L. Wiley, assistant general superintendent of the Metropolitan Telephone and Telegraph Company; W. A. Childs and Francis Shaw, of the Law Telegraph Company; Henry W. Pope, of the Staten Island Telephone Company; Henry Metzger, general manager of the Pittsburg Telephone Company; William Sargent, the general superintendent and electrician of the Bell Telephone Company, of Philadelphia; Mr. Goodyear, representing L. Tillotson. C. B. Hotchkiss, John A. Roebing, Washburn & Moen, and other firms were represented. Among the subjects for discussion were these: The latest improvements in all the instruments used; underground wires; wire construction and kinds of wires; also a report on electrical disturbances interfering with the telephone service.

IMPROVEMENT IN TELEPHONES.

The engraving shows an improved telephone transmitter and receiver recently patented by Mr. J. A. Lakin, of Westfield, Mass. This instrument is especially intended for mills, railroad offices, and other places wherein much local noise disturbs the successful operation of the common telephone now in general use. This instrument consists of a square box, in which are placed both a transmitting and a receiving diaphragm. From the receiving diaphragm chamber two sound tubes extend to be received one in each ear. They are kept in place by a small spiral spring, tending to draw the tubes together, and thus keep the small rubber caps on the ends of the sound tubes in place in the ear. These caps shut out all extraneous sounds and confine the sounds of the receiving telephone, so that their full effect is felt on the ear.

The lower part of the box, as seen in the drawing, contains the transmitter, which is made very sensitive. It is claimed that this instrument will talk two hundred miles or more.

Pressing the button, as shown in the cut, brings the battery into circuit with the transmitter. The inventor of this instrument has given much time and study to the construction of telephones, beginning as early as 1869, although, as he informs us, most of his attention has been given to acoustics.



LAKIN'S TRANSMITTING AND RECEIVING ELECTRIC TELEPHONE.

For further information address J. A. Lakin, Westfield, Mass.

NEW INVENTIONS.

Mr. Henry Grabach, of Clyde, O., has patented an improvement in the manufacture of boots and shoes, which consists in securing the counter stiffener to the shortened lining by a line of stitches around its edge, the lining of heel portion terminating at the edge connection, so that the friction of the heel of the foot comes upon the stiffener and a portion of the usual lining is saved.

Mr. John Murray, of New York city, has patented a toy savings bank for children, so constructed as to connect amusement with the operation of depositing money in the banks. The invention consists in a toy savings bank having a slotted base with a money receiving compartment at its rear

end, and at its forward end the figure of a tree having a slot in its rear side, the figures of a dog and cat connected with the base and tree by slides and springs, and a trip lever, whereby the weight of a coin dropped upon the said trip lever will release the dog, and the forward movement of the dog will release the cat, which will then run up the tree.

Mr. John S. Powers, of New Burlington, Ind., has patented an improved water gate, consisting of a base frame secured to the bottom of the stream, an inclined frame hinged at its upper stream end to the base frame, and supported at its down stream end by hinged standards having a crossbar attached to their upper ends, and wheels pivoted to their lower ends, and the stops attached to the base frame for the wheels of the supporting standards to rest against, so that the passage of animals will be prevented and the gate will be lowered to the bottom of the stream by a rise of water or an accumulation of rubbish.

An improved horse collar fastening has been patented by Mr Samuel Peters, of Sydney, Nova Scotia, Canada. The object of this invention is to provide the extremities of the horse collar with a fastening whereby the collar can be conveniently opened and closed, and thereby readily adjusted to or removed from the neck of the animal.

Messrs. Frederick H. Hubbard and John J. Ashley, of Brooklyn, N. Y., have patented an electric plaster which is an improvement on that class of healing plasters which are designed to have the curative properties supplemented or increased by electrical currents.

Mr. Hamline Q. French, of New York city, has patented an improvement in the construction of roofs for vaults, mausoleums, and structures of similar character built of stone and intended for burial purposes. The object of this invention is to obtain a building without vertical joints, and one held together and locked at the roof, so that by the locking and the weight of the roof the structure shall be made as enduring as the material of which it is built.

An improvement in window-cleaning chairs has been patented by Mrs. Anna Dormitzer, of New York city. This invention is designed as an improvement on the window-cleaning chair for which Letters Patent of the United States Nos. 200,441, 206,935, 206,936, and 219,234 were granted and issued to the same inventor, respectively, February 19 and August 13, 1878, and September 2, 1879, and its object is to further simplify the construction of the chair, and make it less expensive and more complete and durable.

An improved store counter seat has been patented by Mr. Willis M. Corwin, of Glen Cove, N. Y. The invention consists in a store counter seat in which a bar carrying the seat is provided with a catch recess, a hinged bar pressed forward by a spring to carry the seat beneath the counter, a catch bar to engage with the recess of the seat bar to hold the seat in place when under pressure, and a spring to raise the seat bar from the catch plate when the pressure upon the seat is removed, so that the seat, when released from pressure, will be carried in under the counter automatically.

Mr. Jacob Katzenberg, of New York city, has patented an attachment for button-hole and embroidery sewing machines for use in laying cords along the edges of button holes for the purpose of filling out or raising the stitches that surround it, thus producing more finished and durable work.

An improved baling press has been patented by Mr. Alpeus D. Channell, of Sabetha, Kan. This improvement consists in the combination, with two hoppers and two baling boxes, of hinged doors, hinged connecting bar, and the hand lever, whereby the hay in the hoppers can be forced into the baling boxes to be carried forward by followers.

Messrs. William F. Miller and Charles W. Stover, of Tipton, Iowa, have patented a hog cholera compound consisting of turpentine one pint, spirits of camphor one pint, cayenne pepper one half of an ounce, and carbolic acid one half of an ounce.

The revenue laws extending the bonding of whisky from one to three years make it necessary to increase the number or capacity of bonded warehouses, and it is desirable that the racks in such houses should combine great storage capacity with cheapness of construction. The most approved method of construction at present is to set up rows of upright timbers within the house, about three feet apart in one direction, and brace or hold them together with iron bolts and rods having nuts on each end, and to lay on these bolts and rods the stringers in one tier above another for supporting the barrels of whisky. Mr. Thomas J. Pottinger, of Gethsemane, Ky., has patented an improved whisky rack for bonded warehouses which reduces the cost of bonded warehouses for storing whisky.

Mr. William F. Leach, of St. Clair, Mich., has patented a portable steam auger having a rotary steam engine to operate the boring tool, handles for carrying and holding the engine, a breastplate for forcing the boring tool forward to

its work, and a tool holder or coupling for connecting a boring tool with the engine.

A nail-holding and starting attachment for hammers has been patented by Mr. George C. Peeling, of Lock Haven, Pa. The object of this invention is to facilitate the driving of nails in places where they cannot be conveniently held by the hand.

Mr. Robert Gawne, of Toledo, O., has patented an improvement in propellers for vessels. A hollow cylinder is fitted in the vessel at the stern and extends through the stern post below the water line. A cylinder extends from the stern of the vessel to near the engine, its diameter being proportioned to the extent of rise and fall it is desired to obtain for the propeller. The propeller shaft is placed in line with the central axis of the cylinder, and carries a pinion that meshes with a gear wheel on the engine shaft. The pinion will thus be always engaged in any position to which the cylinder may be turned. By a semi-rotation of the cylinder the propeller is shifted from the highest to the lowest point, and can be thus positioned according to the load or the depth of the water. With a light load the propeller can be brought down into the water to obtain effective action, and with a deep-loaded boat the propeller can be raised in shallow water, as may be necessary.

An improved sand and water break has been patented by Messrs. Charles W. Maxson, of Point Pleasant, and Jacob

Drying Hay by Artificial Means.

The system of drying hay by artificial heat, devised by Mr. W. A. Gibbs, of Gillwell Park, Chingford, Essex, has been before the public several years, and though its adoption has made slow progress, it is now being used by several well known agriculturists. Since the construction of the apparatus was first publicly described it has received several improvements, and it is now constructed with a single vibrating trough, along which the hay gradually traverses; the coke furnaces are combined in one with the trough, and shaking and vibrating mechanism upon two pairs of road wheels for easy transport, and the width has been reduced to seven feet.

A writer in the London *Times* recently saw the machine at work, and says that grass from a water meadow was being put through the apparatus, encountering at first a hot blast of about 400°, which drives off the moisture in steam, following through other streams of less heated air, and being delivered in a condition of finished aromatic hay of rich green color. Each load of more than two tons was put through in fifty-five minutes, or a slightly longer time than it took a man to load it in the field. One feature, he says, in Mr. Gibbs' machine is its value for converting injured hay into good, wholesome hay, the fans blowing out dust and must, while the sulphurous gas from the burning coke is believed to destroy the germs of microscopic life which may be the cause of disease in live stock fed upon foul hay. It is suggested that were these hay driers in the hands of men who let out thrashing machines, and could work them at a time of year when little thrashing remains to be done, they would save an immense acreage of hay every season in splendid condition. Another system, which promises to be of even higher economic value, has recently, however, been described as in successful use for several seasons by Mr. Neilson, and more recently by Mr. Knowles, of Colston Bassett Hall, Bingham, near Nottingham. This system consists in thoroughly tedding and lightly scattering the grass as soon as cut by a machine, and so expose it to the withering action of the air, whether under sunshine or showers. In about two days the green hay, without any turning or other labor expended upon it, and whether wet or not, is, in its half-made condition, carted and stacked. The rick at once begins to ferment and heat, and the heat so generated is employed to finish the process of hay-making. The temperature to which the hay is allowed to rise is regulated, and the means employed for this and for draining off all the superfluous moisture have been thus described:

In the raised base or staddle on which the rick is to stand, whether that is an ironwork structure or raised earth, is laid an airtight pipe, which may be of earthenware, of from three inches to six inches diameter, joined with cement, and this tube or air passage communicates with a vertical one in the center of the staddle, and rising a short distance to the center of the height of the rick. An exhaust fan connected with the horizontal part of the pipe is situated at a short distance from the stack, in a building or otherwise. In case of a long rick, the horizontal pipe is continued along the middle of the staddle, and two vertical pipes are used. Each aperture at the junction of the vertical and horizontal pipes is fitted with a sliding damper, and can be opened or closed by a rod extending outside the bottom of the rick. In stacking the hay a vertical air shaft or chimney is formed over each aperture, by the common method of drawing up a sack of straw or a round chaff basket as the building of the rick

proceeds; but these ventilating flues are carried up to only half the height of the stack. When the exhaust fan is set in motion, drawing air from the underground pipe and rarefying the air in the chimney, the replacement of that air can come only by currents penetrating the rick from the outside walls and roof, and gradually converging into the chimney in the center. By this exhaustion of the hot air and moisture out of the middle of the mass, cold air is induced to enter the stack at all points and to seek the central flue, bearing with it the excess of heat and the moisture, and cooling the whole substance of the rick. Very little power is required to drive a fan of the necessary size, and Mr. Knowles' five horse steam engine drives the fan when giving out a mere fractional part of its power. One horse, working a fan by means of an ordinary horse gear and intermediate motion, will do well; and two men turning a corn-dressing machine fan, arranged in connection with the air tube, have been able to accomplish all that was wanted for cooling a stack. With a gentle exhaust, the atmospheric air is caused to permeate every part of the rick in ample quantity for keeping down the temperature of the fermenting grass.

The writer referred to says: "Mr. Knowles has brought the internal temperature of a large rick from 130° down to 90° in the short period of forty minutes. In the rick while



URN FROM SEVRES.

W. Buck, of Freehold, N. J. The object of this invention is to prevent the bluffs or banks of a sea beach from being washed away by the waves or covered with sand.

SEVRES URN.

The engraving on this page shows a very elaborate urn from the porcelain factory at Sevres. Both design and ornamentation are so well shown in the cut as to require no comment.

The Root of the Cotton Plant.

The value of the cotton plant (*Gossypium herbaceum*) has been increased by the discovery that the bark of the roots yield a promising dyestuff. Mr. W. C. Staehl reports that when the bark of cotton root is exhausted by alcohol of the specific gravity of 0.84, a dark reddish-brown liquid is obtained, which, when distilled to recover the spirit, leaves a resinous matter which amounts to 8 per cent of the original weight of the bark. The new product thus obtained appears black and shining, but when pulverized takes the color of cochineal. It dissolves in 14 parts of alcohol, 15 parts of chloroform, and 122 parts of benzol. It dissolves also in caustic alkalies, and is precipitated from these solutions by acids. Hydrate of potash colors green. Sulphuric acid dissolves it with a red-brown color.