

lights, forbidding them at the same time to look out of their windows or doors, on pain of death, after which, the unfortunate prisoners were conducted, gagged, just behind the upper barracks and hung without ceremony, and there buried by the black Pioneer of the Provost."

This "dying confession" bears the marks of palpable fabrication, and has been branded as such by cautious writers. So far from having been executed as a forger, Cunningham is said to have died peacefully in a country home.

After the Revolution the "Provost" was promoted in dignity. All common criminals were sent to the Bridewell, and the "Provost," now called the "Debtors' Prison," was reserved for genteel prisoners, who had forgotten to pay their debts.

In 1830, at the urgent request of the Register for a fireproof building in which to house the city records, the "Debtors' Prison" was remodeled. By New Yorkers of a half century ago the structure was considered an uncommonly good reproduction of the temple of Diana of Ephesus.

For the last sixty years the building has remained unchanged, at least so far as its exterior is concerned. The thousands of people that daily climb the stairs leading from City Hall Park to the Brooklyn Bridge probably never realize that the time-worn, insignificant structure which they pass was at one time considered an architectural masterpiece, a building which New York proudly regarded as its most beautiful public edifice.

The First Wireless Message from the United States to England.

On the night of January 18, Marconi succeeded in outdoing himself when he transmitted a message of greeting from President Roosevelt to King Edward directly from the Cape Cod station to Poldhu, England. The distance covered is greater by 600 miles than that over which messages have previously been sent.

The performance is all the more remarkable when it is considered that the message was sent without any previous attempt to establish communication by preliminary signals.

It was on Sunday, January 18, that President Roosevelt sent to Marconi, by the ordinary telegraph, a message for King Edward. The message read as follows:

"His Majesty King Edward VII., London, by Marconi Transatlantic Wireless Telegraphy:

"In taking advantage of the wonderful triumph of scientific research and ingenuity which has been

achieved in perfecting a system of wireless telegraphy, I extend, on behalf of the American people, most cordial greetings and good wishes to you and to all the people of the British Empire.

WASHINGTON, D. C.

Marconi's success came unexpectedly. After having busied himself all day in preparing his sending apparatus, he began to practise sending President Roosevelt's message without calling either the Poldhu or the Glace Bay station, contrary to the arrangements which he had made. Thinking that he might not be able to get the English station for a day or two, he decided to send the President's message by way of the Glace Bay station. Calling up the operator there he gave him the message with instructions to forward it to England. To Marconi's astonishment he received a reply from Glace Bay that the operator had been informed by the station at Poldhu that the message had been received directly from Cape Cod. There was not the slightest hitch in the process of sending. About four minutes were required to transmit the entire message.

King Edward replied to the message which he received from the President by cable as follows:

SANDRINGHAM, January 19, 1903.

The President, White House, Washington, D. C., America:

"I thank you most sincerely for the kind message which I have just received from you through Marconi's transatlantic wireless telegraphy. I sincerely reciprocate in the name of the people of the British Empire the cordial greetings and friendly sentiment expressed by you on behalf of the American nation, and I heartily wish you and your country every possible prosperity.

EDWARD, R. AND I."

The King sent his message by cable for the reason that Marconi was adjusting his instrument for sending tests to England and did not wish to upset his plans by making any attempt at receiving from the other side of the ocean.

Severe and successful tests were recently made by the Fire Department in New York city of the 6-inch standpipe in the new "Flatiron" building in New York. The purpose of the test was to determine if the 6-inch pipe would stand the great pressure of twenty-three stories of water, and to find out how much force could be given to a stream from a hose attached to a standpipe at so great an altitude. Were there no standpipe, the upper stories of the building would be practically

unprotected from fire. Two tests were made: First a 1½-inch nozzle was attached to a 3-inch hose on the roof, and the hose to the standpipe. The roof of the building is 304 feet above the street level. After the connections had been made, the full force of a fire engine in the street was turned on; in two seconds a strong stream spurting from the nozzle on the roof. A gage showed that there was a nozzle pressure of 120 pounds even at that great elevation. The second trial consisted in playing nine streams of water, one from each of the eight floors above the twelfth story and one from the roof; ¾-inch nozzles were used; a pressure of 200 pounds was obtained upon each. The Chief of the Fire Department of New York considers the test eminently satisfactory.

The Current Supplement.

The current SUPPLEMENT, No. 1413, contains a great variety of interesting articles. It opens with an account of the making of pins, illustrated by photographic views. Mr. John Joseph Flather continues his discussion of the modern tendencies in the utilization of power. In the present installment of the series of the Naval War Game, by Mr. Fred. T. Jane, an account of an interesting battle off Manila between the German and American fleets is given. The American fleet is crushingly defeated. The present state of wireless telegraphy is made the subject of a good article by Mr. Maurice Solomon. Not so long ago, there was published in the SUPPLEMENT a full description of Prof. S. P. Langley's aerodrome. Some account of the pterodactyl, the greatest of flying creatures, and therefore the greatest of flying machines, should not be without interest. Valuable comparisons are made between this creature and the modern flying machine and modern products. Mr. E. O. Hovey summarizes the proceedings of the American Geological Society at the convention of the American Association for the Advancement of Science. Mr. James Francis Le Baron discusses a new method of dam construction. Oil as fuel in warships is made the subject of an extensive article.

Ira F. Gilmore, of Bloomington, Ill., has perfected and patented a wireless piano which he has been working on for thirteen years. Being unable to get the reed made satisfactorily in this country, he set about this task himself, and from a piece of steel he fashioned with drill and file a five-octave comb reed from which, it is said, combined with a bridge and sounding board, he secures a fine, sharp tone.

RECENTLY PATENTED INVENTIONS

Engineering Improvements.

NOZZLE-TIP FOR LOCOMOTIVES.—D. GRATTAN, Anaconda, Mont. In its general construction Mr. Grattan's nozzle tip tapers inwardly from the bottom and flares at the top. This is secured by means of the inwardly-tapering form of the bore of the nozzle tip and by means of an inverted cone supported concentrically with the tube at the top by V-shaped bridge strips. The strips and cone both serve to spread the steam and provide a greater area than is secured by the ordinary tip. Consequently the stack is filled at all points with exhaust steam, thus removing the back pressure on the piston head, greatly reducing the consumption of fuel and increasing the power and speed of locomotives by permitting the steam to escape freely to the atmosphere the instant release takes place.

ROTARY ENGINE.—T. W. NEELY, Marshall, Ill. This is an improvement in that class of rotary engines which are supplied with abutments adapted to slide radially in the casing and with a cylindrical piston arranged concentrically in this casing, and having a series of radial wings between which and the abutments the steam acts expansively to cause rotation of the piston. The invention consists particularly in the construction and arrangement of the steam-induction valves and their operating mechanism, the governor and cut off, and the relation of the piston-wings to the abutments for working steam expansively and obtaining regular rotation of the piston.

ROTARY ENGINE.—E. H. WERNER, Somerset, Penn. This contrivance is useful as an engine, pump, or compressor. It involves the combination, with an oval-shaped or elongated piston-chamber or casing, of a piston formed of jointed sections so disposed with respect to the casing that as the piston turns, its parts move relatively. Thus it is always in contact with the inner walls of the casing at a plurality of points. The motive force acting on this piston, causes it to turn continuously, and its movement is thus transmitted to the shaft of the engine.

CUT-OFF-VALVE CONTROLLER.—G. H. CLOVER, Chicago, Ill. This contrivance pertains to compound steam-engines; and the intention of the inventor is to provide a new and improved cut-off-controller arranged to govern the cut-off valve of the low-pressure cylinder according to the load, so that the engine runs with great regularity and without shock or jar. The object of the invention is also to have this simply and durably constructed controller readily applied to the engine and not liable to get out of order. Mr. Clover does not limit

his invention to the particular application of improvement to the low-pressure cylinder of the Corliss engine. The device may be used for other purposes.

AUTOMATIC HORSE-POWER AND PRESSURE INDICATOR AND RECORDER.—EDMOND FORTER, Kankakee, Ill. This automatic device is an improvement in steam-pressure and horse-power indicators for use on steam engines, and has for an especial object to provide improvements upon the construction illustrated in a former patent. In the present invention, the steam-pressure and horse-power indicators are combined to secure an accurate indication upon the same dial of both, and the horse-power indicator is arranged to operate the recording device and also to connect with the means for operating the horse-power-indicator devices, by which to show the different points at which steam is cut off in the cylinder.

Hardware.

PIPE-WRENCH.—L. W. JOHNSON, Jerome, Ariz. Ty. The object of this invention is to provide an improved pipe wrench which is arranged to permit of conveniently and accurately adjusting the movable jaw relative to the fixed jaw according to the diameter of the work under treatment, and to securely grip the work for turning the same without danger of the jaws slipping from the work.

SHEARING ATTACHMENT FOR ANVILS.—C. A. CHRISTENSON, Viroqua, Wis. Mr. Christenson provides in this invention a readily attachable shearing device of novel construction for an ordinary anvil, thus affording convenient means for shearing plate or bar metal into form, as the case may require. An improved gage is also employed as a co-acting detail for the shearing device that greatly facilitates subdividing the material into pieces of equal length when this is required.

PERMUTATION-PADLOCK.—T. KING, Glenocoe, Mich. This permutation-padlock relates to a class of padlocks having rotatable locking-rings that by adjustment secure the inserted leg of a bowed shackle-bar within the lock-body and by a proper change of adjustment release the shackle-bar, permitting its withdrawal from the locking-rings. The object of the improvement, is to provide novel features that are simple, easy to manufacture, and convenient to manipulate.

WRENCH.—MARTIN MAHLEN, Osakis, Minn. This tool belongs to a class of lever-wrenches employed to screw or unscrew pipes into or from their fittings or bolts and studs which need adjustment by turning their bodies. The aim of the inventor is to produce a lever-wrench of the class indicated which embodies a

multiple linked chain as an element, the chain having a roughened surface for engagement with a pipe or bolt body and also novel co-acting forms of construction, which serve to bind the chain on the object to be turned when the lever is moved in one direction, and release the chain by an opposite movement of the lever.

Heating and Lighting.

HYDROCARBON BURNER.—F. M. BAKER, Fond du Lac, Wis. The present invention relates to a hydrocarbon burner analogous in some respects to one previously patented by Mr. Baker. In this burner the oil is fed from a reservoir into a retort by capillary attraction, and is there heated by a rod protruding into a flame from an oil cup. Gas is thus generated and flows through a small orifice into the mixing chamber of the burner, where it is ignited.

FURNACE.—H. E. KENT, Buffalo, N. Y. This improved furnace is arranged to insure complete combustion of the fuel and the extraction of all the heat units contained in the fuel. An extremely high heat is thereby produced for use in steam-generation, smelting operations, and for various other purposes. When the furnace is in action all the smoke and gases arising from the burning of solid or hard fuel in the chamber are completely burned. Consequently chimneys and draft-tubes are dispensed with. At the same time, great temperature is developed, which insures a quick generation of steam or smelting of ores and other materials.

Electrical Apparatus.

ELECTRICAL REGULATOR.—C. P. PHILBRICK, Wymore, Neb. The present invention relates to pressure-controlled electric mechanism for regulating the flow of fuel to a furnace located beneath the boiler. The boiler is provided with a pressure motor consisting briefly of a diaphragm so held within a casing as to buckle outwardly when the boiler becomes heated above its normal temperature. This motion is communicated by means of a movable plunger to a bell crank which acts to close the circuit of a pair of electro-magnets. These, in turn, attract an armature, which is directly connected to the valve controlling the flow of fuel. The flow of fuel is thus cut off and the heat of the boiler is gradually checked, causing the pressure to drop to its normal degree.

TROLLEY-HARP.—F. J. CASWELL and C. C. WOOD, Woodville, Mass. The object of the inventors in this contrivance is to insure the proper engagement of the trolley with the wire, notwithstanding that the course may be devious, and the road irregular. The invention comprises certain novel forms involving a

spring-sustained trolley. An important feature is in the arms allowing the trolley-wheel to make turning movements on the pole, but not great enough to impair the proper engagement of the trolley-wheel with the wire, while at the same time permitting the freedom of movement necessary for the wheel in turning curves and other irregular portions of the road. By this swivel motion a wheel is kept on in very sharp curves and on all curves, with proper tension on top of the car. Another valuable feature is that by means of the construction employed, the trolley-wheel is allowed to move freely within the necessary scope, while other movements are effectively prevented. In these movements the running of the trolley-wheel is designed so as to avoid any marked wear in the groove or the hub. The arms also prevent the trolley-harp from catching against crossing wires, brackets and other obstructions, the device easily riding under.

Mechanical Devices.

LATHE.—C. SEYMOUR, Defiance, Ohio. The invention pertains to wood-working machinery, and more particularly to lathes for turning irregular forms. The purpose of the mechanism is to furnish a new and improved lathe especially designed for turning irregular forms—such as handles used in brushes, tools, and other implements—the lathe being arranged to turn the rough blank from end to end to form the handle complete and oval in cross-section. The design is also to finish the handle with great and symmetrical accuracy, without the aid of skilled labor.

MILL.—G. M. KEMP, Williamsport, Md. The mechanism designed by Mr. Kemp is an improvement in mills, having for its objects, among others, to furnish improvements in the grinding devices, in the means for feeding the material to the grinding-surfaces, and in the means for controlling the grinding by regulating the discharge of the ground material from the grinding surfaces.

WASHING MACHINE.—S. HAYES, Ellensburg, Wash. The novel features of this apparatus were designed to provide a new and improved washing machine, simple and durable in construction, very effective in operation, easily manipulated, and arranged to insure a constant turning over of the clothes while the machine is in action to effect a thorough washing of the articles to be cleaned. Very little physical exertion on the part of the worker is called into play while operating this washer.

MECHANICAL MOVEMENT.—H. THEISSEN, Davenport, Iowa. The improved mechanical movement developed by this invention, through a novel construction, provides for the

