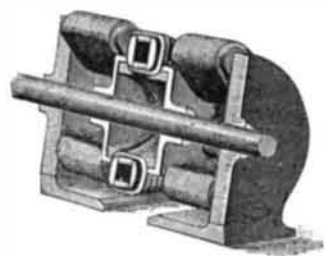


RECENT INVENTIONS.

Dynamo Electric Machine.

The object of the invention shown in the annexed engraving is to produce dynamo electric machines so constructed that the current induced in the armature will be without wide breaks, and nearly continuous. The invention has been patented by Mr. Henry B. Sheridan, of Cleveland, O.



The machine has field-magnets oblong in cross section and arranged in two series in a circle around the armature shaft, with the poles of the opposing series facing each other, and arranged a sufficient distance apart to receive the armature between

them, the poles of each series nearly overlapping each other laterally and forming a nearly continuous magnetic field. With this arrangement the face of the pole of each magnet is arranged diagonally across the path of the armature ring, in the plane of its rotation. This brings the magnets into such positions that each section coil of the armature will pass upon the pole of each magnet at the instant it leaves the pole of the preceding magnet, so that the current induced in the armature will be nearly continuous.

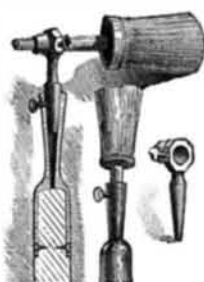
Milk Can Lock.

This invention is designed to prevent unauthorized persons from taking milk from the cans. The lock consists of a small, compact casing secured to the neck of the can and containing a socket for receiving a ratchet bar which is inserted through a hole in the can cover and pressed down into the lock casing, where the teeth of its ratchet are engaged by a spring pressed bolt. The can cannot be opened except by using the proper key to withdraw the spring bolt from the teeth of the ratchet bar. The engraving shows the construction of the lock and the manner of applying it to the can. This invention was recently patented by Mr. Seymour Horton 622 Sixth avenue, New York city.



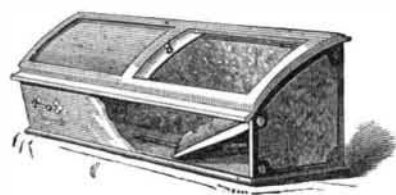
Extension Handle for Paint Brushes.

In painting surfaces, such as the roofs and outer walls of buildings, the painter often finds it convenient to use an extension handle to his brush, so that he can, while painting a horizontal surface, apply the paint while standing, or when painting a vertical surface extend the space over which he can apply the paint without moving his support. The engraving shows a cheap and efficient device for connecting brushes of various sizes to an extension handle, and is capable of holding the brush either in a vertical or horizontal position as may be desired. The device consists of a socket adapted to receive the brush handle in one end and the extension handle in the other. There is also a socket for receiving the brush handle, which is provided with a side shank adapted to the socket at the end of the extension handle. This useful invention has been patented by Mr. George W. Smith, of 81 Middagh St., Brooklyn, N. Y.



Improved Burial Casket.

This invention consists in a coffin or burial casket in which provision is made for raising or arranging in a more or less elevated position the head and upper portion of the dead body, and of adjusting its inclination, so as to give



the corpse a more natural and life-like position. The body may be laid on its side, and will have the appearance of reclining in an attitude of repose, as if on a couch or sofa, and may be readily viewed from a considerable distance. This invention has been patented by Mr. John J. Tickner, of Sand Beach, Mich.

M. ZENGER ("Ciel et Terre") maintains that the hurricanes of the West Indies and the typhoons of the Chinese Sea have a period of twelve days, equal to that of the rotation of the sun.

Explosion of an Accumulator.

An accident lately occurred at the Locan Shaft of the Eureka Consolidated Mining Company, Eureka, Nev., the accumulator of the new pumping machinery bursting into fragments and doing considerable damage to property, but injuring no one.

These pumping works are on the hydraulic system, now so successfully operating at the Combination Shaft, on the Comstock. The new machinery has only been in operation a couple of months and was working smoothly. It was started up and kept running some time under the personal supervision of Mr. Joseph Moore, Superintendent of the Risdon Iron Works, acknowledged to be one of the very best mechanics on the coast.

The explosion is a very curious one and deserves more than passing mention. As the mining community is interested in the hydraulic system of pumping, and as it may be thought that this accident is due to a fault of the system, a brief explanation will be necessary. Suppose the mine is 1,000 feet deep, and that the water is to be raised that distance. Upon the 1,000 feet level is erected a pair of hydraulic pumping engines, which receive their pressure water through supply pipes from the surface. By these two pumps the drain water is raised through the discharge column, and the water used in doing the pumping is sent back through the return pipe to the reservoir on the surface. On the surface is a cast iron accumulator partly filled with water, the remainder of the space being filled with air. This air is kept constantly at a certain pressure by means of plunger pumps, which in turn are operated by a steam engine. These pumps supply the accumulator with water and keep it on a pressure great enough to move the two underground pumps. This in brief is the principle.

It was this accumulator which exploded. The accumulator had been tested up to 2,000 pounds to the inch, but was only carrying 1,150 when it exploded. From the local paper, the Eureka Sentinel, we take the following concerning the disaster:

The accumulator burst about 30 feet below the cap, two sections of 10 feet each and the base below remaining intact. The theory is that the explosion took place at the line where the air and water met. About 20 feet of the accumulator went into pieces, varying in weight from some 1,800 pounds to an ounce or half ounce avoirdupois. The eastern portion of the works, as mentioned, was broken down and completely wrecked. Eight large missiles went through the building, the two principal of which through the south and east ends. The loss to the woodwork is estimated at \$3,000. The cost to replace the part of the accumulator destroyed will be probably somewhat between \$10,000 and \$15,000. The total loss, to put everything back in smooth running order again, will not exceed, and will not be likely to reach \$20,000.

The cause of the explosion is totally unaccountable; it is a mystery. Each separate section of the accumulator had been tested up to 2,000 pounds to the square inch. It had been run before for weeks at a time under a pressure varying from 1,150 to 1,200 pounds, and it has been subjected to a pressure of 1,400 pounds. At the time of the explosion the pressure was 1,030 pounds, according to the testimony of the engineer, Mr. Boston, who is a remarkably careful man, and his statement is doubtless correct, for there was no occasion for any greater pressure than was on. As mentioned, the point of explosion was in the second and third sections from the top, above the water line. This is evident from the fact that these were torn to pieces and hurled to great distances, while the four lower sections and the top section merely fell off, and were found near the base of the accumulator. What renders the explosion difficult to account for is that the material of which the accumulator was manufactured was of the very best—cast out of 25 per cent steel and 75 per cent of the first quality of pig iron, the breaking strain of which mixture was 33,000 pounds to the square inch.

The fragments thrown off were found upon close inspection to be of the best quality, without defect or flaw anywhere. Tested with the chisel, the mixture cuts as wrought iron, and being struck with the hammer, leaves a smooth, polished impression. The only defective place discovered was near one of the flanges, and was not broken by the explosion, but the fall. This accumulator, according to relative pressure, is 25 per cent stronger than the one in use at the Combination Shaft on the Comstock, the latter being of iron entirely. This statement makes it clear that the explosion was caused by some unknown force, the agency of which is yet to be determined.—Min. and Sci. Press.

Mr. Stanley's Discoveries.

A correspondent of the London Globe who has interviewed Mr. H. M. Stanley, says that gentleman has had practically unlimited means at his command, through the generosity of the King of the Belgians, who, moreover, has been the main supporter of several of the so-called International African Expeditions; as Mr. Stanley puts it, he has been in a position to pay for every cubic inch of air he and his men breathed, and every square foot of ground they trod upon. The object of the King of the Belgians appears to have been entirely disinterested—simply to do what he could to render accessible to commerce and civilization, and thereby develop the resources of the great interior of Africa. For this purpose the Congo formed a splendid channel of communication, only unfortunately its lower course for many miles is obstructed by impassable cataracts. To surmount this obstruction has been the object of Mr. Stanley's work. He states that already he has carried a well made road, 15

feet wide on an average, from below the cataracts, 230 miles along the north bank of the river, far beyond Stanley Pool, and therefore well into the navigable upper waters. To assist him in this undertaking he has not only had native workers, but relays of young Europeans as superintendents; and for this work he finds Englishmen better than any others, and would be glad to have a fresh supply to send out. So substantially has this road been constructed, that it has stood the deluges of rain that break down upon it from the mountain sides, and has borne the heavy traffic which the transport of engineering plant to the upper reaches has rendered necessary. Causeways have been laid where necessary and bridges built, and the road has, by means of excavations, embankments of stone, and layers of earth, been carried right round the face of a mountain which comes sheer down to the river at one place. On rounding the mountain, Mr. Stanley states that the road enters an avenue of exquisite beauty and coolness which has been cleared through the forest. So thickly timbered is the country in some parts that thousands of trees have had to be felled, and their roots either grubbed up or leveled. At intervals along the road, stations have been planted, and already there is a regular service of couriers between the stations, and by them a growing trade is being established. As to what are the possibilities of commerce along this route, he states that during the progress of his work a million yards of Manchester goods have been distributed through the country in payment for labor and other services performed by the natives. One of the articles of transport along the new road was a fine steam launch, with which Mr. Stanley has done some good exploring work some 400 miles above Stanley Pool, quite 700 miles above the mouth of the river. When he feels at liberty to publish an account of his work (at present his first duty is to his employer, the King of the Belgians), it will be shown, the correspondent believes, that some first rate exploring work has been done. The launch, for example, was taken up a new river, opening from the south bank of the Congo, some distance above Stanley Pool, and which, it was found, led into a fine lake. The lake was covered with fishermen's canoes, whose occupants looked aghast at the snorting monster puffing out smoke, and fled in dismay. One, however, was caught, and after being soothed down and kindly treated, was sent off loaded with presents to his wondering fellows peering from among the bushes on the shore. In Mr. Stanley's opinion, the soil is capable of unlimited development for crops of all kinds, and, by judicious use, the supply of caoutchouc in the forests is inexhaustible. The greatest difficulty to the utilization of the river throughout its navigable length is the almost untamable cannibal tribes who inhabit the upper reaches between Stanley's furthest point and the neighborhood of Nyanginé.

The Longest Coil Spring in the World.

Probably the greatest feat in metal working ever performed, says the American Manufacturer, was that of the rolling of a steel strip six inches wide, one-quarter inch thick, and three hundred and ten feet long, at the Superior Mill, Allegheny, operated by the Messrs. A. C. and C. H. Kroman, of that city. This was performed at the first effort, and the product, coiled and tempered, was, on October 25, exhibited in the Penn Bicentennial parade, Philadelphia, and was much admired and wondered at by the masses there assembled. The Messrs. Kroman have contracted with the United States Spring Car Motor Construction Company, of Philadelphia, to furnish them with an unlimited number of these steel-springs, which are designed to enter into the construction of their new car motor. The blooms, of 0.55 per cent carbon open hearth steel, were made by the Spang Steel and Iron Company, and measured six inches wide, four inches thick, and twenty-four feet long, weighing seventeen hundred pounds. They were heated in a special heating furnace thirty feet long, built for this purpose, and the blooms were in one operation rolled down to one-half inch in thickness and one hundred and fifty long. This strip was then taken back to the heating furnace and by successive heating and rolling operations, involving the use of the hydraulic attachment to the Kroman universal mill, was reduced in sections of thirty feet of the one half inch strip to one-quarter inch in thickness, and thus in five reheating and rerolling operations was finally rolled out to the desired length and thickness. It was then taken back to the furnace, and slowly drawn through the same and wound on a four-foot drum, thus putting it in shape for shipment on a railroad car.

Local Intensification during Development.

A plan I have adopted during the development of interiors, and which is equally useful for bringing out the dark shadows of trees, etc., will be acceptable to many, especially to those who invariably under-expose their plates.

While allowing the developer to act, take a solution of ammonia a little stronger than the latter, and, with a brush steeped in this, apply it to the undeveloped portions of the plate, keeping the brush in motion and freshening it with more and stronger ammonia as required. This will frequently bring out details which, under ordinary circumstances, would be lost. The body of the developer prevents the formation of hard lines by diffusing the strength of ammonia. The same principle can be applied to an over-exposed plate, using pyro instead of ammonia.—J. H. T. Ellerbeck, in British Journal of Photography.