

The Cost of British Ships of War.

A Parliamentary paper recently issued throws much light upon the cost of warships and their armament, machinery, etc. The prices given are mainly those to contractors, but from other sources the expense of building ships in the public dockyards can be obtained. No real comparison can be drawn between the two, of course, for the maintenance of the public yards is imperative for many sound reasons, and therefore there are items connected with the cost of vessels built in them from which those constructed in the private yards are free. However, when we remember that the private builder has to make a profit, we must not be surprised at the cost of employing them, and it has been fully demonstrated that it is as essential to the efficiency of our resources to give experience to the private contractors as it is to maintain public establishments. Messrs. Thomson, of Clydebank, for the hull and machinery of the battleship Jupiter, are to receive £732,683, and for the cruiser Terrible about £570,000. Messrs. Laird will receive for the battleship Mars, £733,211; and the Barrow Company as much for the cruiser Powerful as Thomson do for her sister ship. Messrs. Maudslay, who are the agents for the Belleville boilers in England, receive in royalties for the French firm, £10,600, but they will not construct the boilers in their shops. The Talbot class of cruiser, of which several are being constructed in Scotland, costs about £210,000 apiece, while the torpedo boat destroyers average about £35,000 apiece.

Rewards for Inventors.

According to an article in Engineering, a very early case in which the work of an inventor was rewarded is recorded by the celebrated Italian philosopher Jerome Cardan. In his work "De Subtilitate," which first appeared in 1550, he speaks of an artificer of Brixelendum who had invented, among other ingenious devices, a machine for sifting or bolting flour, for which he had obtained a privilege from Cæsar. Brixelendum, or, as it appears in some of the later editions of the book, Brixelensem, is probably the same as Brixellum, now Bresello or Bregella, a town in Italy,

on the Po. The Cæsar referred to would appear to have been the Emperor Charles V, who held very enlightened views on government, which, unfortunately, his stormy reign prevented being carried into effect to any considerable extent.

Quoting from the French edition of 1556, Cardan explains that he alludes to the invention "in order that men may understand how it is possible to acquire great riches by little things, provided that they are ingenious. [This sentence reads very like some productions that we come across in our own days.] For now that the bakers have this instrument for their profit, and that the inventor has the privilege of Cæsar that no one can have it without his consent, he is so busy that in a brief time he has built a house." Cardan gives a sketch of the machine, which comprises a casing inclosing an inclined sieve provided with a knocking device operated by a hand-wheel outside the casing.

The earliest authentic cases of the grant of patents in England date from 1560. They are discussed in articles in Engineering, vol. xxxvii, pages 804 and 773, the former treating of the introduction of the manufacture of hard white soap, the latter of saltpeter, into this country. The first recorded instance of reward to an inventor occurs in the same year, when Jacobus Acontius, of Trent, was granted an annuity of £60, apparently as result of his petition in the preceding year for the issue of a prohibition against the usage, without his consent, of his discovery of wheel machines for grinding or bruising, and furnaces for dyers and brewers. It appears that a few years afterward he received a patent also.

In 1565 John Humphry, in the Tower, received a patent for the "sole use of a sieve or instrument for melting of lead, supposing that it was of his own invention." He appears to have brought an action for infringement. In court the question was, as stated by Noy, "whether it was newly invented by him, whereby he might have the sole privilege, or else used before at Mendiff, in the West Country, which, if it were there before, the court was of opinion he should not have the sole use thereof." Emery Molyneux, however, in offering the Queen (Elizabeth), in 1570, his inventions of shot, artillery, etc., appears to have

thought it a sufficient recompense to be allowed to enter her service. Another inventor, in 1575, brought forward "an engine of war whereby 24 bullets can be discharged from one piece at a time;" he wished for a pension. In the same year we have the application of Peter Morrice, a German, for a patent for the sole right of making and employing certain hydraulic engines for the raising of water, draining marshes, etc. A few years afterward this invention was applied at Old London Bridge for the purpose of forcing up river water into the city for drinking purposes.

Do Horses Weep?

Do horses weep? is a question discussed by our contemporary the Admiralty and Horse Guards Gazette. It tells us that there is a well authenticated case of a horse weeping during the Crimean war. On the advance to the heights of Alma, a battery of artillery became exposed to the fire of a concealed Russian battery, and in the course of a few minutes it was nearly destroyed, men and horses killed and wounded, guns dismantled, and limbers broken; a solitary horse, which had apparently escaped unhurt, was observed standing with fixed gaze upon an object close beside him; this turned out to be his late master, quite dead. The poor animal, when a trooper was dispatched to recover him, was found with copious tears flowing from his eyes; and it was only by main force that he could be dragged away from the spot, and his unearthly cries to get back to his master were heartrending. Apropos of the intense love that cavalry horses have for music, a correspondent of the Gazette writes that when the Sixth Dragoons recently changed their quarters a mare belonging to one of the troopers was taken so ill as to be unable to proceed on the journey the following morning. Two days later, another detachment of the same regiment, accompanied by the band, arrived. The sick mare was in a loose box, but hearing the martial strains, kicked a hole through the side of her box, and making her way through the shop of a tradesman, took her place in the troop before she was secured and brought back to the stable. But the excitement had proved too great, and the subsequent exhaustion proved fatal.

RECENTLY PATENTED INVENTIONS.**Agricultural.**

PLANTER.—Walter W. Burchell, Sutherland, Iowa. This inventor has devised a self-dropping attachment operated from one of the ground wheels and connected with the seed drop slide. The attachment may be readily carried into or out of locking engagement with the ground wheel, and may be readily applied to any planter having a reciprocating drop slide, or to a drop slide of any type with a change of coupling.

PLOW STOCK.—Joseph W. Abbott, Lockhart, Texas. A cultivator frame of simple and inexpensive construction is set forth in this patent, the frame admitting of being conveniently changed to facilitate the grouping of the sheaves or plows to be carried by the stock. The frame has a central beam and lateral zigzag beams forming three projections at each side of the central beam, there being adjustably secured to the projections side beams to which are connected handles.

Electrical.

HEATING RUG.—Jesse R. Davis, Parkersburg, West Va. A casing containing a resistance coil, according to this improvement, has two electrodes concentrically arranged therein and a metallic distributing plate extending entirely across both electrodes and properly insulated therefrom. The outer case may be of wood, canvas covered with asbestos, metal, porcelain, etc., and the rug may be of any desired shape most convenient for heating or warming the feet, under desks, in carriages, or on floors anywhere, the heat as it is transformed from electrical energy being retained by the resistance of the heating medium.

Miscellaneous.

REVOLVING AIR PUMP.—Vatslav A. Hlasko, New York City. For readily forming a vacuum in electric light globes and other apparatus this inventor has devised a pump in which a bulb is mounted to turn about an inclined axis passing approximately through the center of the bulb, the latter containing a pumping liquid, while a pipe adapted for connection with the article to be exhausted is connected with the bulb, to turn with it. The pipe is arranged at such an angle to the inclined axis that by turning the bulb with the pipe the liquid will be caused to flow outward from the bulb or return into it. At each revolution of the device an amount of air corresponding to the capacity of the bulb and pipe is drawn from the vessel to be exhausted, trapped and discharged.

WATCHCASE.—William M. Rush, Jr., St. Joseph, Mo. This case has a postage stamp holder in one of its lids, and a corresponding recess or depression in the adjacent lid, the stamps being held against displacement by an overlapping thin piece of spring material.

FISH HOOK.—Frank D. Pettay, Hampshire, Ill. This device comprises a rod with a device for holding bait in connection with self-opening hooks which are closed and concealed at their points, but which are adapted when released to spring in opposite directions, the locking device being released by tension on the line. When the fish is landed it may be readily released from the hook.

DECOMPOSING SUBSTANCES BY AMMONIA SALTS.—Eduard R. Besenfelder, Gross Mochbern, Germany. This invention is for a process of separating metals from ores and other insoluble materials, and for the utilization of certain waste materials, as strontian residues from the desaccharization of molasses, permitting the recovery of the reagents. At the critical pressure and temperature the compound is treated with ammonium chloride in a dry state, the superfluous reagents, with the volatile products, being separated by distillation or sublimation from the non-volatile residue, and from this the soluble part is separated by a solvent.

TYPE AND MATRIX.—Coelestin Skatulla, Brooklyn, N. Y. This invention provides improved means of forming matrices for linotype machines, by first casting short letters and assembling them into words, with space bars between to form the proper length of line, and then casting a backing on the line to unite with the short letters and fill the spaces between the words. The line matrix comprises single short type with a cast backing to make the matrix the proper height, the spaces between the words being filled.

WOVEN CHENILLE FABRIC.—Leedham Binns, Philadelphia, Pa. This invention relates to a formerly patented invention of the same inventor, the fabric comprising a central warp, on opposite sides of which are separate sets of warps some of the warps passing over the central warp and others under it, the warps forming bends where they bind the central warp and the ends of the warps projecting from the outermost warp threads in the several sets, forming tufts or loops.

HASP.—William Firfield, Perth Amboy, N. J. This hasp is so formed in sections that when applied to an object and engaged with a staple or other keeper, the section secured to the support by screws or fastening devices will be completely covered by one of the other sections, which will extend over its face and top and bottom edges, rendering it impossible to remove the fastening devices while the hasp is in locking engagement with its keeper.

STOVE.—James A. Carroll and William Brooks, Brooklyn, N. Y. Above the fire chamber of this stove is suspended a heating drum having its lower wall inclined downward and rearward from the side adjacent to the stove door, there being an air flue communicating with the interior of the drum. The cold air is taken from the floor and carried to the drum, where it is heated without coming in contact with the fuel, and the fire may be reduced and controlled without danger of gas escaping into the room.

DITCHING MACHINE.—Alexander Mann, Berkshire, Mich. To effectively dig up the ground and transport the removed material to a desired dumping place, this machine is made with a pair of winding drums and carrier rope, scrapers being detachably secured in the runs of rope, while a pivoted boom carries a hoisting rope with means for engaging the scrapers. There is a wheel on the pivot of the boom to which is secured a rope having its ends fast to a second pair of winding drums, and means are provided for operating both pairs of drums.

ORE AND COAL LOADER.—Patrick H. Hagoney, Ashtabula, Ohio. This machine comprises a boom adapted to carry a bucket, and bars pivotally connected with the boom have a sliding motion to push the bucket into the material to be raised to fill the bucket. The machine is preferably mounted on a truck on which

turns a cabin or house containing the operative parts, to be manipulated from within the cabin, and is more especially designed to facilitate loading coal, ore, and other material into cars.

DIVING APPARATUS.—Hubert Schon, Allegheny, Pa. This apparatus is more especially designed to properly locate sunken vessels preparatory to raising them. It consists principally of a casing with frames having angular flanges bolted together, panels set and fastened in the frames, a top bolted to the upper end of the casing and adapted for connection with a cable, while a bottom bolted to its lower end carries a weight. It is made of a size to permit two or more persons to occupy the casing several hours without change of air. It has glass panels and is lighted from the inside, to permit the occupants to closely examine sunken objects as the apparatus is lowered.

GRAIN SCALPER.—Adam W. Haag, Fleetwood, Pa. This improvement relates to screens for bolting flour, etc., providing a screen to be supported in horizontal position and have a gyratory motion with quick return. With an uninterrupted motion the screens are rotarily reciprocated in a lateral direction, the movement of the screen rearward or in the direction of its head being much greater than the movement in direction of its tail, causing the material to move in the direction of the tail, whereby the advantages of the gyratory motion are obtained and a feed is provided for the screened material.

BICYCLE.—George B. Thomas, Durango, Col. The driving mechanism of this wheel is designed to give increased power and speed as compared with the ordinary treadle power. The rear or drive wheel of the machine is much larger than the front or steering wheel, and both have supplemental interior rims, the rear wheel having also an inner fly wheel. The main frame has front and rear yoke portions and the pedal axle journaled in the lower end of the front yoke portion has cranks connected by pitmen with cranks of the main axle, the crank motion being thus more directly and uniformly distributed at each side of the drive wheel.

STARTING RACE HORSES.—James T. Andrew, Montgomery, Ala. To facilitate the starting of a number of horses simultaneously this inventor provides stalls, to be operated singly or in sections, with gates all to be raised together on a given signal for the horse and rider to pass out, each animal to be at the same instant struck from behind by a striking arm. The construction is such that the stalls may be conveniently set up and operated on a race track and readily taken out of the way.

PORTABLE KITCHEN CABINET.—Lester Haskill, Fort Meade, Fla. For conveniently keeping, and sifting when required for use, flour, meal, etc., this inventor has devised a neat and compact cabinet which can be made at a low cost, means being provided for stirring the meal or grits as drawn from the bins, so that the sieves may be kept clean and in good order. The cabinet also has drawers for spices, sugar, etc., and is preferably mounted on casters, so that it will be as convenient to move about as a table or other article of furniture.

CHAIR.—William G. Magee, Hudson, N. Y. An invalid chair which combines the functions of a reclining chair, a rocking chair and a wheeled chair is provided by this invention. The position of the chair

in relation to the wheels is shifted by a simple adjusting mechanism, there being other novel devices for changing the chair from one form to another, the chair being automatically converted from a reclining to a roller chair by simply moving the body and rocking the chair forward.

SASH LOCK.—Irving Elting, Saugerties, N. Y. This is an improvement on a formerly patented invention of the same inventor, providing an improved device for positively preventing a rotary movement of the locking plate which engages horizontal grooves on one of the sashes to hold it against vertical movement.

WIRE FASTENER.—Oliver Swift, Aberdeen, South Dakota. This is a device for securing the strands of wire fences to the posts, and consists of a headed stem passing through a perforation in a clamping block having at one side a projecting toe adapted to enter the post, the toe being separated from the perforation through which the stem passes by a space which receives the fence wire. A wire fence can, with this fastener, be built more cheaply, as the posts may be placed farther apart, it being impossible to force the clamps out, the wire breaking rather than pulling out the clamps.

BONBON DIPPING MACHINE.—Leo Hirschfeld, New York City. A table pivotally mounted upon a frame, according to this improvement, has channels upon one of its faces to receive the material to be dipped, there being means for holding one end of the table elevated. Located over the channeled portion of the board is a feed wheel having a series of radiating blades, and the motion of the wheel is controlled by a ratchet and pawl mechanism. This wheel is mounted in adjustable boxes to be raised or lowered to suit different sizes of material, the machine affording a quick and efficient means of dipping candies in making any form of confectionery.

FORK FOR DIPPING BONBONS, ETC.—This is a further invention of the same inventor of a fork adapted to receive any desired number of bonbons or other confectionery, the candies after dipping being simultaneously dropped into the moulds or wherever they are to be deposited. The head of the fork has tines mounted to turn and having receivers to hold the bonbons, there being also in the head a rack and a trigger operated mechanism whereby the tines may be turned without turning the body of the fork.

COFFEE SURROGATE.—Jeremiah B. Drake, Bolivar, Mo. To effect economy in the use of coffee and yet provide a beverage of good quality and flavor, this inventor has devised a compound to be used in connection with a proportion of pure coffee. It consists of sugar, caffeine, cream of tartar, caffeine and corn starch, mixed and roasted in described proportions.

LAMP.—James Forsythe, Pittsburg, Pa. This lamp has valve devices by which, no matter which way the wind blows, the air passages to the windward will be held closed while the others remain open, there being also in the top an inverted cone-like deflector to prevent the currents of air having a counteracting effect on each other. The air valve devices are also designed to prevent the lamp from being smothered by becoming clogged with soot or by the condensations freezing in the bottom and thus closing off the air holes.

HORSE CHECKING OR UNCHECKING.—Felix H. Kittrell, Loco, Tenn. This invention is for an attachment for driving harness to permit of releasing the check rein, to allow the horse to lower his head, and the retightening and fastening of the rein without getting

