

A New British War Ship.

The Pique, recently launched, is one of the protected second-class twin-screw cruisers provided for by the Naval Defense Act of last year, and is the first of three of the same class that Palmer & Co. are at present building for her Majesty's government. Her dimensions are as follows: Length between perpendiculars, 300 feet; breadth extreme, 43 feet 8 inches; depth moulded, 22 feet 9 inches; displacement, 3,600 tons on a mean draught of 17 feet 6 inches; I. H. P., 9,000; speed, 20 knots. The vessel has two funnels and two pole masts, with a light fore and aft rig. The hull throughout is built of steel, and the bottom of the ship is sheathed with teak $3\frac{1}{2}$ inches in thickness to 2 feet above the water line. The stem, sternpost, rudder, and shaft brackets are of phosphor bronze. There is a steel protective deck, which extends the whole length of the vessel. The transverse section of this deck is in the form of a flat arch, the crown of which rises 1 foot above the water line at center of vessel, and slopes down toward the sides to a point 4 feet below the load line. The thickness on the sloping part is 2 inches, and 1 inch on the crown, where are placed under the protective deck the engines and boilers, magazines, steering gear, and other vital parts of the ship. Vertical engines are adopted in the Pique, and, in order to insure protection to the cylinders which project above the protective deck, a belt of armor of solid steel 5 inches in thickness, with 7 inches of teak backing, is fitted round the engine hatchways, between the protective and upper decks. The vessel is divided into a large number of water-tight compartments, and has a double bottom the full extent of engine and boiler space, the continuity of which is carried forward and aft by the water-tight flats forming the magazines, shell rooms, and store rooms of the ship. The bunkers are placed alongside the engines and boilers, and extend to the upper deck. There are two separate engine and boiler rooms.

The armament consists of two 6 inch breech-loading guns, one mounted on the poop and the other on the fore-castle, both placed on the middle line; six 4.7 inch quick-firing guns, three on each broadside; eight six-pounder quick-firing guns, one three-pounder gun, and four five-barrel Nordenfelt guns mounted on suitable stations along the sides of the vessel. A nine-pounder gun for boat and field purposes is also secured on deck. In addition to this, four torpedo tubes are fitted—one forward, one aft, and one on each broadside. For controlling the ship in action a conning tower of steel 3 inches thick is fitted on the aft end of the fore-castle, inside of which the various telegraph instruments, steering wheel, voice pipes, etc., are placed.

A complete installation of electric light is fitted, including three powerful search lights. The crew numbers 250 hands all told. The propelling machinery consists of two sets of vertical triple expansion engines, having cylinders $33\frac{1}{2}$ inch, 49 inch, 74 inch, and 39 inch stroke. The boilers are five in number. The close stoke hole system of forced draught is introduced, each stoke hole being fitted with two powerful fans worked by separate engines for the supply of air. The coal supply on 17 feet 6 inches draught is 400 tons.

The solid old ironclad Thunderer, which has just been fitted by Messrs. Maudslay, Sons & Field, of Lambeth, with new triple expansion engines of 7,000 horse power, and is now on the eve of undergoing her trials, has received the first four specimens of a gun from which great things are expected.

The new guns, two of which are mounted in each turret—and the turrets are clothed with 14 inch armor plates, which, though only of old fashioned wrought iron, would stand a great deal of hammering—are of 10 inches caliber and 29 tons weight. The total length is 26 feet 10 inches, the projectile weighs 500 pounds, and the full charge of powder is, as is now usual, just half that weight. At a range of 1,000 yards it is calculated to pierce 21 inches of wrought iron plate, while the 12 inch 45 ton gun is only credited with power to perforate a plate thinner by four-tenths of an inch. Besides the Thunderer, the Devastation and the two new second-class battleships, Barfleur and Centurion, are all to be armed with a quartet each of these weapons. They are the heaviest guns yet constructed to be worked by hand power, and it is probable that in their case the extreme limit of size and weight has been reached in this direction. They are mounted on ordinary Vavasseur slides with hydraulic buffers for

taking the recoil. The trunnions are accurately balanced on knife edge bearings, but an arrangement is fitted whereby the shock of the gun on the trunnions—should it be fired with sufficient elevation to cause a downward thrust on the excessively delicate knife edge bearings—is transferred to the broad main bearings themselves. This plan facilitates elevating or depressing the gun. The training is done by causing the turrets to revolve, a double set of racks or toothed wheels being fitted round the base of each turret, into which a vertical shaft with pinion is geared. This shaft is worked by a steam engine well down below out of the reach of shot. The turret is also capable of being revolved by hand gear in the event of the turret-turning engine being disabled, but the operation would naturally be slow.

INVENTION IN 1889 A. D. VS. INVENTION B. C.

At the railway stations, ferry houses, and even upon the street corners, there may be found in almost every city and village in the United States automatic vending machines, which, for a nickel, or more or less, will deliver the various goods which they are adapted to sell. The purchaser may procure a newspaper and a cigar to smoke, or, if averse to the use of the weed, he may secure a tablet of chewing gum or a package of sweets. If entertainment is desired, it may be found in the "nickel in the slot" phonograph.

In Europe and America, machines of this class are provided for dealing out potable liquors; bouquets are also furnished in a similar way; and if you desire to know how much you have increased in weight since yesterday, all that need be done is to mount the platform of the nickel in the slot scales, and drop in your coin, and the thing is done. One of the latest achieve-

ments in this line is the automatic photographic apparatus, which takes your picture for a nickel, while you wait.

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The craze has even gone so far as to apply the principle to the distribution of perfumery. In the railway stations and ferry houses may be found machines which, for a penny, will dole out a drop or two of liquid which passes for perfumery, and which, in many cases, serves as a thin mask for bodily uncleanness.

These various devices, and many others which we might mention, are regarded as very clever inventions, and have certainly proved successful in many cases in a pecuniary sense.

The last automatic vending machine alluded to is shown in Fig. 2. The perfume reservoir is located in the upper portion of the vase; the tube communicating with the lower part of the reservoir extends through the side of the vase, and is closed at its upper end by a valve attached to one end of the lever, O. The other end of the lever, O, is connected by a rod with the lever, E, the longer arm of this lever being provided with a pan, R, for receiving coin, while the shorter arm of the lever is furnished with a weight for counterbalancing the pan and closing the valve. A curved piece of metal is arranged concentric with the path of the pan, R, and serves to retain the coin dropped into it through the slot in the top of the vase until the pan, R, is carried down beyond the end of the curved plate, when the coin is discharged into the lower part of the vase; the counterweight on the short arm of the lever then returns the lever to the point of starting, and closes the valve, thus stopping the flow of the perfume.

This very clever device was patented by Mr. Lewis C. Noble, of Boston, Mass., on November 19, 1889. Our illustration is prepared directly from the patent drawings. This and other machines for analogous purposes are regarded as the peculiar product of our inventive age, but in turning back the pages of history we find that in Egypt, something more than two

thousand years ago, when a worshiper was about to enter the temple, he sprinkled himself with lustral water, taken from a vase near the entrance. The priests made the distribution of holy water a source of revenue by the employment of the automatic vending machine which is illustrated in Fig. 1. This apparatus would not release a single drop of the purifying liquid until coin to the amount required had been deposited in the vase.

A comparison of the ancient lustral water vase and the modern perfumery vending machine will show that they are substantially alike. The ancient machine has a lever, O, fulcrumed in the standard, N, and connected with the valve in the reservoir, H. The lever is furnished with the pan, R, for receiving the coins dropped through the slot, A, at the top of the vase. An enlarged view of the valve belonging to the vase is shown at the left of the engraving.

The mechanism is almost identical with that shown in the modern device, illustrated in Fig. 2; in fact, this ancient vase described by Heron, more than two thousand years ago, is the prototype of all modern automatic vending machines, and simply serves as another proof of the truth of the saying "There is nothing new under the sun."

It is a curious fact that this ancient invention escaped the notice of the Patent Office until long after patents were granted for the earlier automatic vending machines. It was only a comparatively short time ago that the Patent Office began to cite the vase of Heron as a reference. It was discovered in an ancient work on natural philosophy, and it is a matter of considerable interest to us now to know that this device was well known to the Patent Office during the middle of this century. The vase of Heron is illustrated and described in a work on hydraulics and mechanics published in 1850, by Thomas Ewbank, who was at that time Commissioner of Patents.

Identity by the Thumb.

At a recent meeting of the Anthropological Institute, Mr. Francis Galton, F.R.S., exhibited a large number of impressions of the bulbs of the thumb and fingers of human hands, showing the curves of the capillary ridges on the skin. These impressions are an unfailing mark of the identity of a person, since they do not vary from youth to age, and are different in different individuals. There is a statement that the Chinese—who seem to be credited with every new discovery—had used thumb impressions as

proofs of identity for a long time, but Mr. Galton pronounced it to be an egregious error. Impressions of the thumb formed, indeed, a kind of oath or signature among the Chinese, but nothing more. Sir W. J. Herschell, however, when in the Civil Service of India, introduced the practice of imprinting finger marks as a check on personation. Mr. Galton's impressions were taken from over 2,000 persons by spreading a thin film of printers' ink on a plate of glass, then pressing the thumb or finger carefully on the plate to ink the papillary ridges, and afterward printing the latter on a sheet of white paper. Typical forms can be discerned and traced, of which the individual forms are mere varieties. Wide departures from the typical form are very rare.

Our Navy to Aid the Exposition.

Several army and navy officers who have been detailed as special commissioners to carry invitations from the government of the United States to the other American republics and the West Indian colonies have left for their destinations. It will be part of their duties, *Bradstreet's* says, to explain the plan and scope of the exhibition, to secure the appointment of commissioners by the several governments, to give information regarding the regulations for foreign exhibitors and for the admission of goods through the custom house, and to secure characteristic exhibits. The commissioners are particularly instructed to secure exhibits for a commercial section of the Latin-American Department, for the information and instruction of the merchants and manufacturers of the United States, showing the various classes of merchandise consumed and desired by the people of the countries to which they are assigned; the patterns and designs most preferred; the best methods of preparing and packing them; practical illustrations of the obstacles in the way of extending trade, and the advantages that are secured and enjoyed by European merchants in competition with those of the United States.

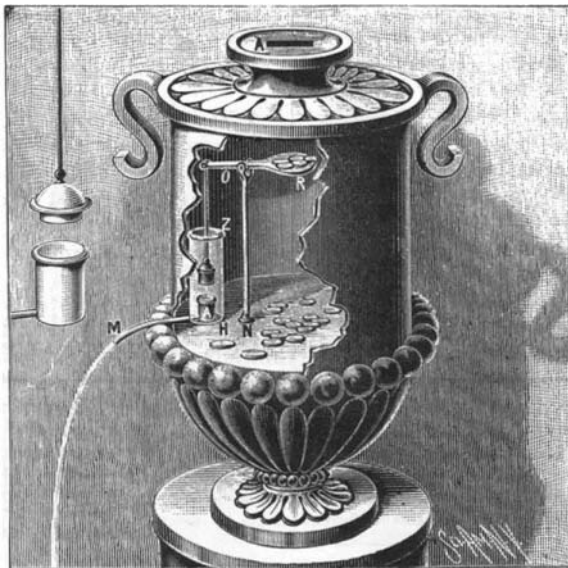


Fig. 1.—LUSTRAL WATER VASE DESCRIBED BY HERON. ABOUT 100 B.C.



Fig. 2.—NOBLE'S AUTOMATIC PERFUME DISTRIBUTOR. PATENTED IN 1889.

How Sugar is Made in Cuba.

The Soledad, Cuba, sugar plantation has the reputation of being the best managed sugar plantation in Cuba. It produced in 1890, 12,000,000 pounds of sugar, and this year it will probably send to market 14,000,000 pounds. Other plantations largely exceed it in cultivated area and mechanical resources, the Consuelo having a product of 40,000,000 pounds, but Soledad is conducted on scientific principles and with American thoroughness, system and organization, so that there is the greatest saving in the cost of production and the largest margin for profit on the investment. All the improved machinery is here; every time-saving and labor-dispensing device is employed, and the maximum amount of sugar is obtained from the cane at the lowest possible cost. Soledad is largely owned by Mr. Atkins, of Boston, but Mr. Murray, the manager, holds a large interest in it. H. J. Abbott, who was formerly years a United States government expert and chemist, and who has been most successful in operating plantations here and in Santo Domingo, and in supplying new and improved machinery for them, pronounces Soledad incomparably the best conducted sugar estate in the West Indies.

At Soledad the cane is carried to the works by long trains running on narrow gauge railways through the estate. It is unloaded from the cars by negroes and thrown upon a broad carrier traveling up a long incline to the rollers of the first mill. As many as fifteen men are employed in handling this moving mass of cane. When it reaches the first mill, it is ground by rollers weighing fifteen tons and set close together. The cane is broken up and about 60 per cent of the liquor which it contains is drawn off underneath the mill. Under the old process there was only one grinding, and much of the liquor was wasted. Now the cane is ground twice and an additional 15 per cent of the juice is obtained. Streams of liquor from the vats of the two mills unite and pass through a strainer, one workman being employed in raking off floating refuse and preventing obstructions. The liquor is then ready to be pumped into the boiling works.

The refuse of the cane after the two grindings is the only fuel used in the works. It is carried by moving conductors to the furnaces and dumped automatically, being dried by the intense heat and consumed as rapidly as it is fed. Wood was used as fuel when the steam engine was introduced in sugar works, and subsequently bagasse, or refuse cane, was put with it. Boilers have been invented to facilitate the employment of bagasse as fuel. Those used here are the Por-

cupine boilers of the Stillwater pattern. The cane, when fed to the conductors, serves to keep all the complex machinery of the works in operation; the broken and crushed fragments of bagasse are carried to the furnaces and furnish the power by which not only the grinding but also the pumping and boiling are done; all that is not juice, but sheer waste, goes into the production of force by which the mills are kept grinding and the liquor clarified, boiled and crystallized into sugar.

From the grinding mill the cane juice is pumped into defecators, or large tanks, in the upper story of the boiling works. In these tanks it is treated with lime, which neutralizes the acid. The albumen coagulates when the cells are broken by steam and brought to the boiling point. From the defecators the liquid is pumped into the first of three great boilers, or vacuum pans. In order that boiling may take place at low temperatures the air in the pans is exhausted by steam pumps. In the first boiler the temperature is 200 degrees, in the second 180 degrees, and in the third 150 degrees, with corresponding vacuums in each, the heat from the boiling liquor being an agency in the process. This is known as the triple effect of boiling. The liquor is boiled to a sirup containing 50 per cent of water and 50 per cent of sugar. The sugar crystallizes in two large strike pans, where the most delicate work of the factory is done. The most expert operatives are in charge of the strike pans, from which the contents are constantly sampled and tested in the laboratory, conducted here by a most intelligent American, J. G. Lumelius. The sugar is rapidly cooled and carried into a series of centrifugals. In these the sugar is separated from the molasses by the centrifugal process. As the contents revolve about the center, the sugar gradually begins to whiten and the molasses is expelled through holes in the sides. When the process is completed, 85 per cent is sugar and 15 per cent molasses as the result of two boilings. The sugar is collected by machinery, carried to the bagging and weighing rooms, and transported by railroad and steam lighter to the wharves of Cienfuegos for shipment to New York.

The works are in operation at Soledad day and night from December to May, and are then closed until the next grinding season. This is the period when the cane is ripe, and when the juice must be expressed with the least possible delay. Cane that is left too long in the field deteriorates in quality and yields less juices. The cane bears one crop a year, and stands for twelve years. When it is ready for harvest it is cut close to the ground with knives and carried to the

tramway cars. The next season the cornlike stalk grows to its full height, and is ready to be cut again and to have its juice expressed. The grinding season is a short one, and there is great danger lest the cane be spoiled by heat or rain. The most intelligent supervision is required in the fields, and the most rapid transportation of the cane to the mills. Both of these conditions are supplied at Soledad. The cane is cut when it is ripe and carried by train to the mills, where it is converted into sugar in a single day.—N. Y. Tribune.

The Electric Current.

There are but few people who ever stop to think of the great benefits which they enjoy in this world, says *Modern Light and Heat*. We are all too apt to think our own particular case is a hard one, without realizing that no matter how badly off we are, we have a great many things for which we ought to be thankful. And there are few who realize that the electric current plays the important role that it does in our every-day life. Our streets are lighted by electric lamps, which are discouragers of crime and wantonness and protectors of life and property; we have our police signal and our fire alarm systems, to the latter of which we owe a great deal more than is ordinarily realized. We all know to what great risks our property is always exposed from fire, and how great the need is that every precaution should be taken to secure its immediate extinguishment. For this purpose electricity has furnished the most satisfactory solution of the problem. Our cities are covered with a vast network of wires, signal boxes are located at frequent intervals, from which, when need arises, the warning, and the approximate location of the fire is instantaneously transmitted to the places where the fire apparatus is located. In this field the electric current, with human skill and intelligence, and the assistance of trained animals, affords a protection which no other agent could do.

What Horses Die of.

A New York horse life insurance company, insuring only sound and generally young animals, worth between \$100 and \$400 each, reports that, of 704 horses dying within the past five years, 183 died of colic, 77 of inflammation of the bowels, 74 of kidney trouble, 51 of pneumonia, 52 of sunstroke, 30 of pinkeye, 37 of lockjaw, 23 of broken legs, 12 of epizootic, 10 of heart disease, 4 of blind staggers, 9 killed by runaways, 4 were drowned, 2 were killed by lightning, 128 died of unknown diseases, and only 8 were burned.

RECENTLY PATENTED INVENTIONS.

Engineering.

BOILER.—Charles E. Marston, Dover, N. H. This is a boiler designed to take up but little room, while presenting large heating surface and adapted to generate steam very rapidly, being composed of a series of tubes, each connected with the water supply and steam dome, a branch pipe extending from each tube and opening into it near the top and bottom.

ALARM FOR BOILERS.—Frank M. Ashley, Brooklyn, N. Y. Connected at the top and bottom with the boiler is a casing in which is a horizontal cock communicating through a pipe with an alarm, there being an inclosed float attached to a rod having at the top a valve working in a seat in the inclosed horizontal body of the cock, the construction being designed to obviate any sticking or failure of the valve.

ELECTRIC MOTOR.—William M. Dresskell, Brainerd, Minn. Combined with the armature coils is an insulating disk carrying series of contact points connected with the armature coils, two three-armed switch arms being placed on the armature shaft, insulated from each other and from the shaft, and adapted to change the connections of the armature from series to parallel or the reverse for currents of different strength, the motor being adapted for direct or alternating currents.

Railway Appliances.

CAR COUPLING.—Theodore M. Fisher and Alexander Slye, Mecca Mills, Ind. Pivoted in angular braces extending from each side of the drawhead is a lever by means of which the coupling pin may be raised from either side of the car when the link is about to enter the drawhead, springs being arranged to draw the lever downward and cause the pin to engage the link, the device being simple, strong and inexpensive.

CABLE RAILWAY.—George W. Bowman, Denver, Col. By this invention two T-rails are arranged alongside each other to form a cable channel, a swinging drawbar carrying a pilot wheel having a central position fitting between the rails and reduced end portions resting on the rails, in combination with drums and a cable, the pilot wheel serving to steady the car and prevent the cable from being drawn out of the channel before passing around a drum on the car.

Mechanical.

SAW SWAGE.—John Hanchett, Big Rapids, Mich. This is a device of simple and durable construction, in which both ends of the anvil die may be used in swaging, and the die can be readily adjusted toward or from the swage die, whereby all wear on the swage end can be readily taken up, and the die can be taken out at any time for dressing up, the device being well adapted for band saws, circular saws, etc.

SAWING MACHINE.—Benjamin E. and Anderson F. Harrell, Hallowell, Kansas. By this invention a main frame is adapted to carry the operating mechanism and receive and hold the material, while a hinged supplemental frame carries the saws, and is adapted to be elevated to allow the wood to be fed to the machine, which is especially adapted to saw cord wood into pieces of uniform length.

BEVEL.—Alfred M. Brown, Worcester, Mass. This is a tool for carpenters and stair builders, for obtaining a single or double bevel, and also to gauge the length and breadth of the work or as a square, the various adjustments being conveniently and expeditiously made.

FRICITION CLUTCH.—Clarence M. Carhart, Plainfield, N. J. Combined with a pulley having a hub flange is a clamping collar engaging the hub and adapted for contact with the flange, there being a fixed sleeve which is engaged by a cam lever pivoted to the collar, and a shifting mechanism connected with the cam lever, whereby a pulley may be expeditiously and effectively connected with and disconnected from a shaft.

TICKET PRINTING MACHINE.—Gideon B. Massey, Mamaroneck, N. Y. (deceased, Sarah R. Massey and Stanley A. Bryant, administrators). This is a machine specially designed to print railway tickets, and has a wheel to receive a number of destination plates, provides for the consecutive numbering of tickets sold, for the keeping of a record thereof, and the printing of a corresponding report, giving the tickets sold to each line station, the machine being quickly and easily adjusted, and positive in its action.

CAN CAPPING MACHINE.—Fernand Saunier, Nantes, France. This is a compact and simple machine, of low cost and economically operated, for quickly attaching caps to the bodies of cans without the use of solder or its equivalent, a perfectly air-tight connection being effected, the invention covering a novel construction and combination of parts.

Agricultural.

PRUNING IMPLEMENT.—John Siebel, Oskaloosa, Iowa. A suitable pole is provided with a removable stock carrying a sliding knife, the stock having a toothed spur through which a shear-cutting blade may slide, with other novel features, designed to form a simple, compact implement, which may be effectively operated with ease and rapidity to remove branches or small limbs without injury to the tree.

FRUIT PICKER'S LADDER.—Whiting Arnold, New York City. The ladder is pivoted upon a truck having a windlass, guide pulleys and cables, whereby the ladder may be readily conveyed from tree to tree and conveniently raised and held at any desired inclination without resting against the boughs, the ladder being detachable, so that a longer or shorter ladder may be used, and the picker may work to the best advantage.

INSECT POWDER DISTRIBUTER.—Andy M. Waddill, Jr., Thomastown, La. This invention consists of a handled frame, with a powder box extending through and supported in the frame by springs, the device being specially designed to facilitate the dusting of cotton or other plants to prevent ravages by insects.

Miscellaneous.

SHEARS.—Emil Krusius, Solingen, Germany. By this invention a spring plate is inserted between the members of the shears, the pivot screw passing through an aperture in the plate, to maintain the cutting edges of the blades in proper relation to each other, even when the blades become loose on the pivot.

ICE CREAM FREEZER.—James M. O'Neill, Dallas, Texas. This freezer has a conical outer casing with binged top and feed hopper, in which is a conical ice receptacle adapted to be conveniently revolved, the cream being taken up and frozen by contact with the revolving cone, from which it is readily removed by a spiral screw conveyer.

METAL CLASPS.—Gardner A. Watkins, Gardner, Mass. This invention relates to a device for assembling metal clasps and holding them in position for use in the process of coupling or splicing splints, cane, etc., in the manufacture of furniture and other articles, and the invention provides means by which the clasps may be automatically fed from the receptacle in which they are held.

HYDRAULIC BEER PUMP.—Joseph L. Shiring, Allegheny, Pa. This invention provides a double-acting pump to force air into casks to discharge the liquid, the pump acting automatically to keep the air up to the standard pressure, means being provided whereby the action of the oppositely moving pistons shall be rendered positive, and they will always operate, irrespective of the muddy condition of the water.

JEWEL CASE.—Hinrich Grohbrugge, New York City. This case is open at one end, and has a spring at the bottom and a latch in one side wall, while a drawer is adapted to engage the spring and latch, the locking mechanism being invisible, and a key not being required to lock or unlock the case.

GATE.—James W. Fisher, Palouse, Washington. This invention provides a novel construction and combination of parts whereby the gate may be conveniently and expeditiously raised when occasion may demand to swing inward and outward over any obstruction, such as drifted snow, etc., while it also has a simple, strong and effective spring latch.

HORSESHOE.—Henry S. Briscoe, Morrisville, Ill. This is a shoe to be attached to the hoof without the use of nails, a curved clamping bar extending from the sides of the shoe over the hoof, with which is connected an adjustable locking bar extending upward from a lug on the toe of the shoe.

CALENDAR.—Nathan A. Wheeler, Alpow, Washington. This calendar has the usual

stationary numbers, and upon its face are horizontal or perpendicular slides, grooves, or ridges, to support a slip indicating a day, month, or year, the face also having perforations or other provision for holding an indicator thereon, a particular form of frame being provided to encircle a date and prominently display it.

PENCIL HOLDER.—John S. Shaw, Durango, Col. This is a device to be applied to a slate frame, which is made with a longitudinal recess in which is pivoted a spring-actuated receptacle, forming a convenient pocket in which the pencil may be held, and permitting its convenient insertion or removal.

LETTER BOX.—Francis Catudal and Elzear Drolet, Clyde, Kansas. This box has a drop lid opening outwardly, an interior tray opening downwardly, links connecting the lid and tray, a cam lever acting on the lid to open it, and a detent for the lever adapted to hold the lid open temporarily, the box being designed for use by merchants, etc., to receive mail or other matter and hold it safely until removed.

CASH DRAWER AND RECORDER.—William Assheton, Baltimore, Md. This is an improvement in that class of devices in which a strip of paper is caused to move under a partially glazed opening, and the amount of the sale being first written upon the paper, the paper is fed forward under the glass as the drawer is opened to deposit the money, so that the record of the amount cannot be tampered with.

LOCK.—Benjamin Edwards, New York City. This is a lock to which a key cannot be fitted unless the mechanism is exposed, thus preventing the lock from being skeletoned or picked, the lock being also constructed for a variety of keys, so that the key of one lock will not fit another lock differing therefrom in the slightest degree in any of its operative parts.

SHEATHING VESSELS.—Franklin Ewing, Jr., Atlantic Highlands, N. J. This invention covers an apparatus for applying sheathing to bulls, comprising clamping plates or jaws to secure the apparatus to the beam, a lifting screw, and an arm carrying a pressure screw at right angles to the lifting screw, the arm and pressure screw being adjustable to different positions. The invention is also applicable for joining the timbers of the hull, and otherwise facilitating its construction.

ORE WASHER.—Samuel C. McLanahan and William F. Kirk, Hollidaysburg, Penn. This invention consists in the peculiar construction and arrangement of the journals, journal bearings, and end plates of the washer box, whereby the renewal of the bearing surface, when worn, may be more easily effected, and also in the special construction of a flanged journal, a sleeve for the end of the shaft, and stirring blades attached to the sleeve.

OIL CUP.—Charles H. Baker, New York City. This is a device designed more particularly for wagon hubs, the exterior being screw-threaded to screw into the hub, while in the inner cap is a screw rod with a point adapted to close more or less wholly the feed aperture, and thus control the supply of oil to the axle.