

BARREL MACHINERY.

[Continued from first page.]

and small casks such as are used for lead and other paints, butter, powder, nails, and other similar commodities. The truss hoops are driven by screw power, and the machine does its work rapidly and thoroughly, and when used in conjunction with the other machines which are intended to be used as a part of the plant in the manufacture of kegs, completes a system of machinery that will perform most of the cooper's work on this class of packages.

A machine for turning the heads of kegs is shown in Fig. 3. This machine is capable of making all kinds and sizes of heads, is very rapid in its operation, is readily changed from one size to another, and will work well on any kind of wood.

Fig. 5 shows a machine for leveling and trussing slack barrels. As the production of flour, sugar, cement, salt, and vegetables is very large, and as the greater part of these commodities are put in barrels, it is a matter of great importance to have the barrels made not only as cheap as possible, but strong and capable of bearing rough usage. The machine for leveling and afterward trussing such barrels, and the machines furnished with it for completing the plant, will level and then drive all the truss hoops upon 6,000 barrels per day, and the machines that make up the plant are equal to it in capacity and usefulness; they are as follows: barrel setting up forms, power windlass, and the chamfering and crozing machine. The last named machines will do their portion of the work at the rate of 3,000 barrels per day, and it requires two of each to be equal to keep pace with the trussing machine in making 6,000 per day.

Messrs. E. & B. Holmes manufacture a large number of machines for making kegs, barrels, and casks, which are described in their illustrated catalogue.

Further information respecting this class of machinery may be obtained by addressing E. & B. Holmes, Buffalo, N. Y.

The Glycerine Barometer.

Mr. James B. Jordan, of London, in the course of his experiments on various fluids for the barometer was led to try glycerine, which appears well adapted for the purpose. Its vapor has a very low tension at ordinary temperatures, and as its freezing point is much below zero, it is so far excellently adapted for use in barometers. The mean coefficient of expansion by heat is, according to Professor Reinold, 0.000303 for a degree of Fahrenheit's scale, and a table has been computed on this basis for reducing the observations to 32° Fah. Glycerine possessing the capability of absorbing moisture from the atmosphere, its surface in the cistern is covered by a layer of mineral oil, which has no effect whatever on the glycerine, and which does not evaporate at ordinary temperatures. At sea level the pressure of the atmosphere supports a column of glycerine of a mean height of 27 feet, and accordingly the tube of the barometer is made some 29 feet in length. It is formed of composition gas pipe, five eighths of an inch in diameter, but the upper part, 4 ft. or so in length, is of glass tube, having an internal diameter of 1 inch. The top end, instead of being sealed, is spread out into a cup shape, having a small orifice plugged with a stopper of rubber. The cistern is of tinned copper, 4 inches deep and 10 inches in diameter, and the air is allowed to press on the surface through a small hole leading into a chamber containing a filter of cotton wool. At the bottom of the cistern is a closed channel opening into the center, and to this is attached a projecting vertical tube, to which the main tube is soldered. The object of this channel is apparently to provide a means of closing the tube by a screw plug when refilling is necessary. The quantity of glycerine required for such an instrument is about a gallon, and this being warmed in a water bath and tinted with rosaniline, sufficient is poured into the cistern to cover the orifice of the channel. The plug at the top end is then removed, and the tube completely filled by pouring the glycerine gently down on one side.

After allowing it to rest for some time, the air bubbles will be found collected at the top, when the tube is again filled up to the cup, and the stopper replaced. The screw plug in the cistern being removed, the column will fall until balanced by the pressure of the atmosphere, and the vacuum is as perfect as it is possible to get it, the small quantity of glycerine remaining in the cup above the stopper, hermetically sealing it. The glycerine barometer is, therefore, a simple and easily-managed instrument; but it is not pretended that it can take the place of the standard mercurial instrument for precision.

It is comparatively a new instrument, and its value as a piece of scientific apparatus has yet to be shown.

MISCELLANEOUS INVENTIONS.

Mr. Hiram B. Gray, of Columbus, Texas, has patented an umbrella and sunshade which can be attached to the person, leaving both hands free for driving or other purposes.

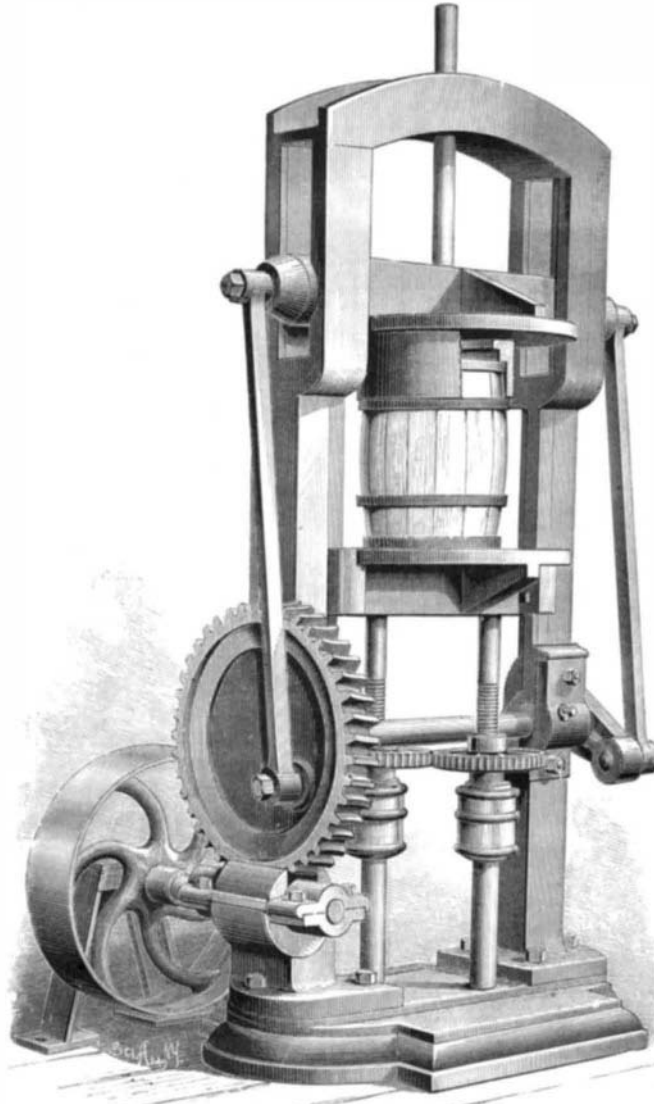


Fig. 4.—MACHINE FOR LEVELING KEGS AND SMALL CASKS.

Mr. George W. Brumm, of Boise City, Idaho Territory, has patented a book protector, which consists of a case for containing a book and securing it from injury, the case being provided with means for fastening it to desk, pew, table, etc. This invention will be found useful in churches, public libraries, schools, etc.

Mr. Alphonse J. Delavigne, of New Orleans, La., has patented a turn-table in which a novel arrangement of parts causes the table to turn in one direction by the action of the weight of the car, and in an opposite direction through the action of a spring.

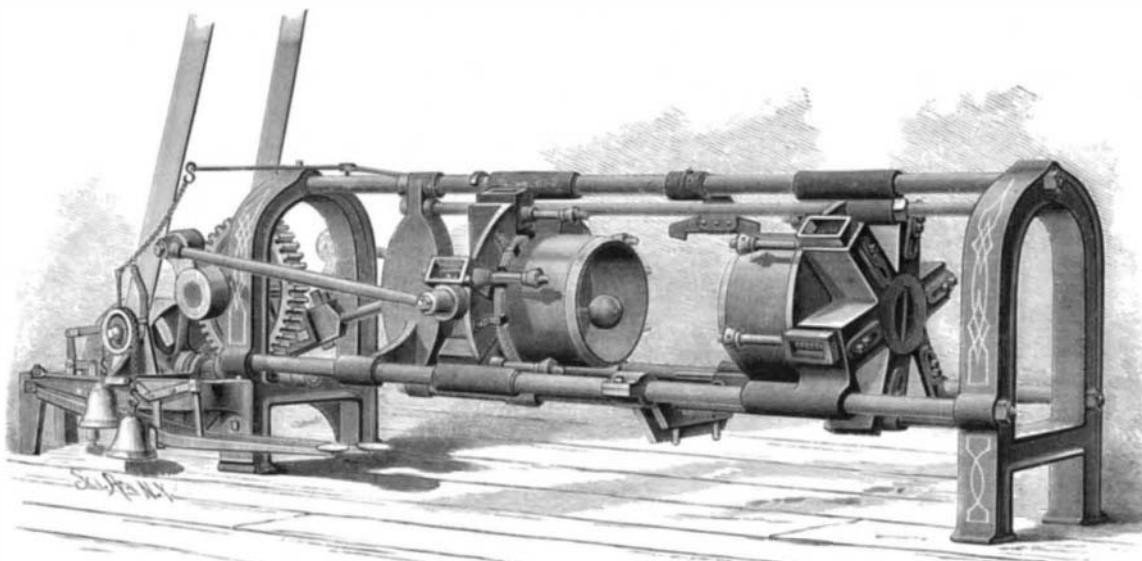


Fig. 5.—MACHINE FOR LEVELING AND TRUSSING SLACK BARRELS.

Mr. David S. Thomas, of North Platte, Nebraska, has patented a windmill which supplies an improved device for controlling or adjusting the sails or vanes. A clutch wheel or spider and a spirally grooved loose sleeve, to which is attached a small vane, are fixed on the axle of the wheel. The sleeve engages with a stud, and when turned in one direction draws the wind wheel into clutch with the spider, whereby the vanes are set to the wind. The vane on the loose sleeve also acts to adjust or throw the vanes flat in a high wind.

Mr. John M. Hastings, of Oskaloosa, Kansas, has patented a windmill water elevator, so constructed that it will automatically stop or start to keep the receiving trough always supplied with water. A valved bucket suspended on the end of a trip-rod which is connected with the wind-wheel, constitutes the simple mechanism by which object is effected.

Mr. Frederick W. Claussen, of New York city, has patented an improved drying-room clip for use in laundries, etc. It has the advantages of spring clips without the disadvantages of the ordinary spring clip. Instead of supporting the articles by the spring itself as heretofore, he suspends them on a rigid hook provided with a retaining spring.

Mr. Pierce B. Anderson, of Brownsville, Tenn., has patented a corn and pea planter, of the kind known as walking planters, which are rolled along on wheels by a person walking. He has supplied novel lever mechanism for operating the seed slide, by which the machine can alternately drop different kinds of seeds, as, say, corn and pease, so that the rows may be planted in the two kinds of seeds alternately deposited.

Mr. Franklin McLellan, of White River, Washington Territory, has patented a potato digger, the invention consisting of a forked and concave plow, an arched standard having holes in its arms, a pin or bolt, a shaft having arms, a lever and catch, a pawl having a handle, and a separator having gudgeons and wheels, whereby, as the machine is drawn forward, the wheels run upon opposite sides of the row to be dug, and the plow passes beneath the hills and raises them with the potatoes embedded in them and delivers the soil and potatoes to the separator, which separates the potatoes from the soil, the soil falling through between the bars and the potatoes falling from the rear end of the separator upon the top of the soil.

Messrs. William Mainzer and John Singer, of New York city, have patented a cask for beer and other liquids so constructed that it can be safely handled and transported without detaching the faucets, and can thus be furnished to the consumer with faucets applied ready for use, and can be returned to be refilled without detaching the faucets. The cask is constructed with two heads at one end, the outer one provided with a hinged door, a folding faucet being inserted in the inner head, and reached for operating it through the hinged door in the outer head.

Messrs. John W. Holdsworth and James C. Pringle, of St. Louis, Mo., have patented an illuminated sign which provides means for giving different colors to the letters and for changing the colors. Movable transparent colored strips are arranged behind the letters and moved by suitable mechanism to effect the result.

Mr. Emil Puchta, of Washington, Mo., has patented an improved table of the class known as "saloon tables," provided with boxes underneath them for holding cards, beer-mugs, etc. The boxes are in this invention arranged at the corners under the top, and intermediate arches, which serve to brace the table and allow a space for the legs of the sitter, are arranged between the boxes.

Mr. Burnett B. Harris, of South Bend, Ind., has patented an improvement in casting bolt-holes in chilled mould-boards, by which in casting such holes with metal dies the contraction of the casting in cooling is prevented from either cracking the mould-boards or breaking off the points of the dies.

Mr. Volney W. Mason, of Providence, R. I., has patented a reversing mechanism for elevators, which consists of a pair of beveled friction wheels attached to the driving shaft, the beveled friction wheel having a rim and being attached to the shaft, with which is connected the machinery to be reversed, the pulleys carrying the reversing cord, the eccentric sleeve for shifting the movable friction wheel, the stationary brake, and the stop-pin.

Mr. Chester C. Clark, of Brownwood, Texas, has patented a folding cradle which is formed of two triangular folding end frames provided with folding braces and connected by longitudinal rods, from which a canvas bottom is supported, which frames are pivoted at their apex on the top of two connected triangular folding standards, and are provided with a crank for swinging the

cradle. A bent rod from which a fan is suspended is attached to the bearings of the cradle in such manner that the fan moves in an opposite direction to that of the motion of the cradle. The fan may be operated independently.

Mr. John H. Sutfin, of Las Vegas, Territory of New Mexico, has patented an improved coupling for earth augers and rock drills, so constructed that the bits can be easily and quickly attached to or detached from the shafts, and thus save much time ordinarily lost in such attachment and detachment.

Fruit Flavorings.

I give instructions by which all confectioners may extract and preserve their own fruit essences, and so guard the health and add to the pleasure of all for whom they provide. Among the juicy fruits are strawberries, raspberries, blackberries, cherries, and currants; among non-juicy fruits are the apple, pears, peaches, quinces, apricots, and plums.

Mash the juicy fruits in a basin to a pulp. Place on the fire and make scalding hot. Now pour into a hair sieve and allow the juice to strain through. Put into bottles and securely tie down. Place these bottles in a caldron of cold water and boil for twenty minutes. Remove from the fire and allow to remain in the caldron until cold. Then set away for use.

In the case of non-juicy fruits, such as apples, pears, peaches, etc., put the fruit into a basin. Cover with water and boil to a pulp. Now place on a hair sieve and allow to drain without any pressing. Observe now that it is only the liquor which passes through the sieve without pressing which is to be used for flavoring purposes. What remains in the form of pulp is not adapted for these uses. Now put the juice obtained as above into bottles, and proceed to treat as already laid down for the juicy fruits.

The foregoing processes are to be gone through with in the case where the extracts are to be kept transparent and clear, as for sirups, cordials, and beverages.

In case where the flavorings are to be used for any purpose where transparency or clearness is not desirable, such as for ice creams, fruit ices, or bonbons, then I would use not only the clear fluid, but the pulp of the fruit also. I would for these opaque purposes save and utilize everything of the fruit except the skins and seeds. This pulp to be treated as already laid down.

As thus obtained and preserved our confectioners can supply themselves with a quantity of perfectly pure extracts of all their favorite fruits, and which can always be at hand, for flavoring every description of pastry, cakes, pies, tarts, puddings, creams, ices, and beverages, and at any season of the year. Especially when there is any one in the house who is sick or feverish, cordials may be flavored with these delightful sub-acids—these remedies and restoratives of kind mother Nature herself—such as will shoot through all the veins of the most debilitated and infirm the most delicious sensations of happiness and hope.—*James W. Parkinson, in Confectioners' Journal.*

NEW FOLDING BATH TUB.

We give an engraving of a very convenient folding bath tub lately patented by Mr. George Damen, of 88 Luqueer street, Brooklyn, N.Y. When closed, as in Fig. 1, this device has the appearance of a chiffonier or bookcase, and forms an ornamental piece of furniture; and when opened for use, as in Fig. 2, it is in every way as convenient as the ordinary stationary bath tub. This construction admits of placing a bath tub in every sleeping room without occupying space valuable for other purposes. The arrangement of pipes by which the water is introduced and removed from the tubs, is shown in Fig. 3.

To the bottom of the tub, A, are attached flanges of the elbows, B, whose horizontal arms extend through stuffing boxes, C, on the hollow supports, D, and form the pivots on which the tub turns. One of the hollow supports, D, has two nipples, E, one on each side, one for cold water and the other for warm water, the two water pipes being provided with stop valves, seen in the back of the case. The outlet is provided with the usual plug and strainer, and a pipe, F, leads to the water or sewer pipe. The overflow at the foot of the tub is connected with the outlet pipe in the usual way. The bath tub has a pair of legs hinged under the head, so that they fold automatically when the tub is raised up. To economize room the wall is recessed to receive the tub when folded up, and, if desired, the tub may be placed in a small wall closet, where it will be concealed by an ordinary closet door. In some cases the inventor attaches to the closet, walls, or door a series of folding doors or screens which may be unfolded to form a temporary bath room.

One of the great advantages of this invention is that it permits of taking a bath in a room that is comfortably warmed and obviates the necessity of warming the bath room.

INSTINCT OF BEES—Here is something new, and whether it exists in fact or not, it forcibly exhibits what most people call the "instinct" of bees. In a hot dry valley in New South Wales, the bees suffered last year from a long-continued drought. This year, says a contemporary of that colony, the wonderful little fellows have made provision against another like trouble, by filling a large number of external cells in each hive with pure water instead of honey.

IMPROVED ROPE-CLAMP.

The engraving shows an improved clamp for fastening ropes and cordage, recently patented by Mr. James C. Covert, of West Troy, N. Y. It consists of a short thimble having a boss on one side, which is threaded internally to receive the pointed clamping screw. There is an opening in the thimble opposite the boss to admit the end of the screw. The clamp is applied to the rope as indicated in the engraving, the thimble being slipped over the rope, the screw pass-



ROPE-CLAMP.

ing transversely through the body of the rope between its strands.

Another New Composition.

The discoverer of celluloid is reported to have composed a new composition for buttons, boot heels, and other like purposes. A foreign contemporary gives the following as the ingredients and the process of manufacture: Leather cuttings are soaked in hot water to remove the oil, and then dried and ground to powder. The powder is afterward subjected to high pressure in suitable moulds, at a temperature of 240° to 250° Fah. This produces surface hardening, leaving the interior of the casting in an elastic state. If the powder is mixed with any other ingredient, a temperature of 290° to 310° Fah. should be employed, so as to secure partial fusion of the leather.

Disinfection with Sulphurous Acid.

At the instance of the Swiss Federal Department of Commerce and Agriculture, Dr. Fatio lately made a number of experiments at Geneva, primarily with reference to the prevention of the spread of phylloxera. He has shown that it

by simply pulverizing anhydrous sulphurous acid in their receivers, in quantity proportioned to the size, and less the more nearly hermetical the closure. Dr. Fatio further considers the method is applicable to removing parasites from furniture or tissues. He advises, *e. g.*, injection of the acid through a small hole and with a siphon into rooms infested with bugs (about 50 cubic centimeters of liquid per cubic meter of air), the rooms to be first well closed and isolated, and not to be occupied or slept in for some hours after the operation.

Oakland Harbor.

Work for the improvement of the harbor at Oakland, in San Francisco bay, is being carried on. Some idea of the extent of this great engineering enterprise may be better realized when we state that the two jetties, which are nearly parallel, extend from the shore line out into San Francisco bay a distance of 12,076 feet. This is 1,000 feet longer than the jetties built by Capt. Eads, at the mouth of the Mississippi river, about which the public has heard so much.

The stone contract now under way at Oakland contemplates raising both existing walls up to high water level, by building a heavy dry-stone coping on its old walls as a foundation. The stones on this coping are being carefully placed in position, the stones weighing frequently from one to two tons each, the spaces between these large stones being carefully filled in with smaller size by hand, so as to make a good compact wall.

Where most exposed to the sea the crest is made eight feet wide and with a slope of two to one, composed of stone carefully laid down to a point two feet below low water.

The total amount of stone required to finish this present contract is estimated to be between 60,000 and 75,000 tons, the price per ton delivered and placed in proper position being \$1 and \$1.19, depending upon size.

The stone now being added to the walls is taken from McNear's quarry at Pedro Point, opposite the Sisters' light-house, at the entrance to San Pablo bay, whence it is brought in large light draught barges, towed by a tug, and delivered at the site of the jetties at the rate of 8,000 tons per month. These barges are drawn up parallel with the walls at high water, and the rock is thrown on to the wall or wheeled down in position, according to the work being done. The men who are doing the contractors' work live in a floating barge, which is moored near by the scene of their labors. Work has gone on pretty rapidly this winter, as we have had smooth water so much of the time, few gales having occurred.

The object of raising the walls up to high water is to confine the ebbing tide from the inner harbor more effectually than has been heretofore done by the low walls built during previous contracts, and which have permitted the best half of the tidal water to escape laterally over their tops. This has, of course, lessened the scouring action of the ebbing waters, as they were not properly confined in the channel between the walls. On the very high tides a vast mass of water sweeps laterally across the jetties, and it is not until the tide has half fallen that the water can do what scouring is necessary to keep the channel clear. This lateral sweep of the water is dangerous for sailing craft during light winds, since, instead of the tide taking them to the mouth of the harbor, it is apt to sweep them on to the north wall with the ebb and south wall with the flood tide.

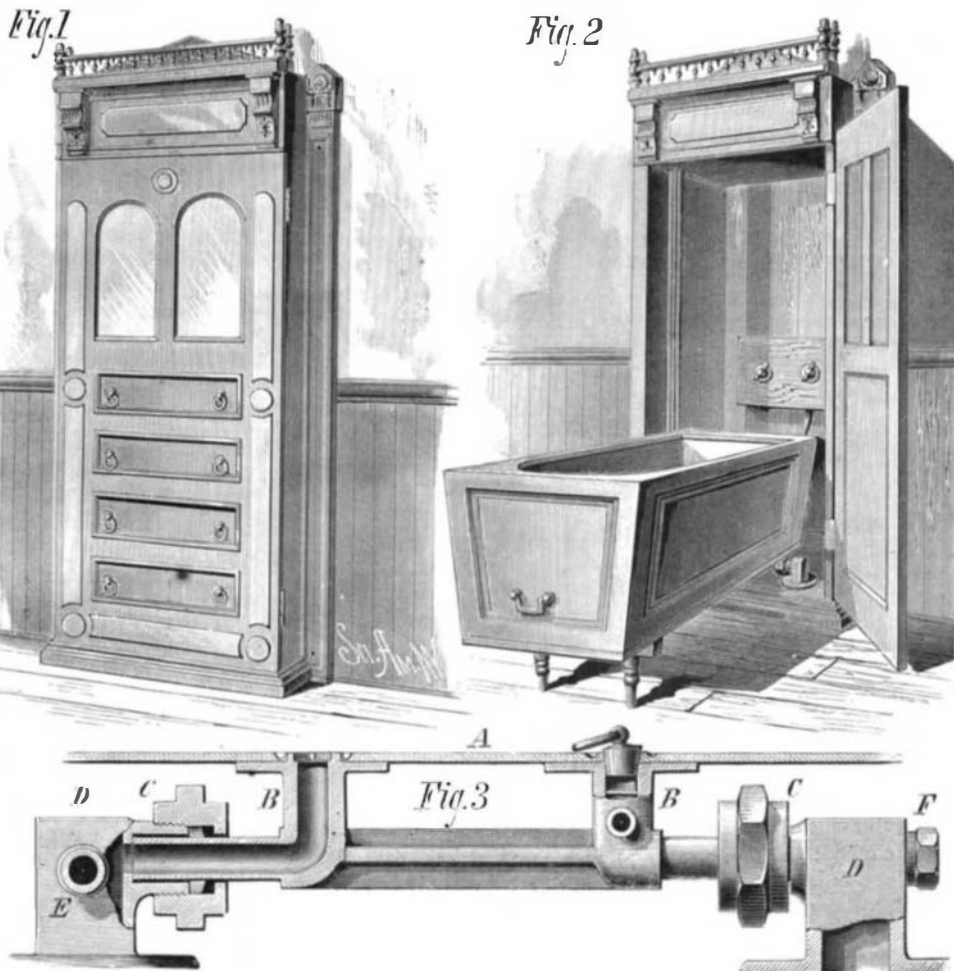
The walls, as they have been for a few years past, might have been considered obstructions rather than aids to navigation. Being out of sight except at half tide, schooner men had to be very careful not to run on to them.

In addition to the stonework now going on, it is contemplated shortly to dredge out and widen the present deep water channel between the jetties, so as to offer better facilities for navigation. The channel dredged out is now so narrow that steamers passing are crowded, and sailing vessels are apt to get ashore. It is confidently expected that the effect of raising the jetties to high water level will be to maintain such a channel free from sandy deposit, no matter whether it comes

from the inner harbor or from the wave action of San Francisco bay.

The work on this harbor has been going on under the direction of Lieut.-Col. G. H. Mendell, U. S. Engineer, ever since its commencement, in 1874, and the results have been very successful in developing the commercial value of this well known sheltered and safe harbor, being one of the few such on the Pacific coast. Mr. L. J. Le Conte is the engineer, under Col. Mendell, in immediate charge of the work. In 1874, boats drawing over 5 or 6 feet of water could hardly bump along over the bar at high water and carry cargoes of not more than 60 to 100 tons.

Since 1878 ships and barks from 1,800 to 2,100 tons bur-



DAMEN'S FOLDING BATH TUB.

is always possible to disinfect vehicles and objects suspected of carrying dangerous germs by means of anhydrous sulphurous acid, either by injecting it in the gaseous state into vehicles that are closed, or by pulverizing the liquid against surfaces directly exposed to the open air. Various degrees of moisture in the surrounding atmosphere require considerably different doses of the acid in the poisonous mixture. With regard to disinfecting plants, he finds they resist the deleterious action of the poison better when they are treated at a stage distinct from that of vegetation; also the more aged, dry, and completely ligneous they are. The various collections of natural history (dry preparations) may be quickly, easily, and without danger freed of their parasites