

RECENTLY PATENTED INVENTIONS.

Of Interest to Farmers.

GRAIN-SHOCKER.—E. COWIN, York, N. D. The shocker is adapted to be used in connection with a binder, and has means for receiving the bundles of grain from the binder and arranging them upon a carrier to form a shock, and has means for releasing the carrier, whereby the shock is positioned upon the ground and the carrier withdrawn from under the same by the forward movement of the machine. Used in connection with the binder, it has actuating machinery operable from the driving mechanism of the binder.

Of General Interest.

AMALGAMATOR.—W. F. BEDELL, North Yakima, Wash. The amalgamator is designed for treating placer material, dredge material, and mill and slime material, and is arranged to insure the complete separation of the heavy valuable particles, such as platinum, coated gold and the richer parts of amalgam, from the tailings. The invention relates to amalgamators such as shown and described in Letters Patent of the U. S., formerly granted to Mr. Bedell.

STRINGED MUSICAL INSTRUMENT.—S. W. BUECKLIN, Prague, Oklahoma. The instrument may be arranged to be picked in the manner of a guitar, mandolin, etc., or played with a bow in the manner of violins, violas, etc. The sound is amplified by the body when a hollow body is used, and is transmitted by the bridge to sound boxes and amplified by horns. These horns are arranged low enough not to interfere with the bow, and one horn may be put out of the way when the instrument is used in the manner of a guitar.

MOVABLE BARRAGE HAVING ROTARY SLUICE-PONTOONS.—E. M. AUDOUIN, 12 Rue du Jardin des Plantes, Poitiers, Vienne, France. The following requirements are met by this invention. Ease and rapidity of working in opening and closing the barrage. Security of the movable parts, especially during floods and frost. Perfect barrage (i. e., freedom from leakage). Possibility of varying at will the level of the water held back. Cheapness of construction. The barrage is constituted by pontoons in the form of closed tanks capable of being floated or sunk to the bottom according to the quantity of water let into them.

WRITING-TABLET.—M. A. DREES, Peshigo, Wis. The invention relates to letter sheets and tablets therefor, the more particular object being to provide a device in which one or any larger number of sheets of paper may be kept temporarily together, and arranged in connection with suitable parts for facilitating the folding and pasting of the letter sheets.

MOLD.—F. B. HARDING and J. J. BRUBECK, Rockville, Ind. In the present patent the invention has reference to the manufacture of concrete fence posts and like articles, and the object in view is to provide a new and improved mold which is simple and durable in construction and readily adjusted for making posts of different sizes.

FIRE-TANK.—J. W. KANE, New York, N. Y. This invention relates to improvements in fire tanks as are ordinarily located at the top of large buildings for fire extinguishing purposes, the invention being directed to a novel heating arrangement acting to prevent the water in the tank from freezing in extreme cold weather.

ADJUSTABLE SKID.—W. McCADDIN and G. SUTHERLAND, New York, N. Y. The invention relates to skids designed to be used in unloading heavy rolls of paper. The invention has for its object the provision of means adapted to permit rolls of paper of different length to be readily up-ended from a skid without damage or injury to the paper.

Hardware.

FAUCET.—P. F. CAVANAUGH, La Crosse, Wis. The invention relates to faucets used for plumbing or other purposes, and is especially useful in connection with faucets which automatically shut off the flow of liquid when released. It will not permit the leakage of water when it is not in use, and which is closed by the pressure of the water.

Heating and Lighting.

GAS-LIGHTER.—J. PASTERNAK, New York, N. Y. The object in this case is to produce a device which can be readily attached to an ordinary gas lighter, and which will operate as a shield or cover for the flame so as to protect the chandelier or fixture from the flame in the act of lighting the gas.

COMBINATION GAS AND GASOLINE BURNER.—G. A. MANSHARDT, Naperville, Ill. In this patent the object is to provide a combination gas and gasoline burner arranged to permit of burning gas or gasoline in such a manner that it requires no tedious waiting for producing the desired flame when gasoline is used as the fuel.

Machines and Mechanical Devices.

TIMEPIECE-REGULATOR.—R. G. NORTON, Madison, Wis. The invention relates to chronometers, watches, and like timepieces, and its aim is to provide an improved regulator, arranged to permit easy and accurate adjustment of the hair spring of the balance, with

a view to accurately regulate the vibrations of the balance of the time-piece.

DRILL.—J. D. TULLY, Pearl, Colo. The inventor provides means for operating a plurality of drills from a single source of power, means being such that a gang of drills may be placed along in a row in a straight or crooked line at the same or different levels, and connected to each other and to a single source of power, the particular connecting means being shafts and tumbling joints, to transmit power. Clutches are provided at each drill, so that one or more drills may be stopped as desired, and friction clutches are used, so that if one drill becomes caught its clutch will slip and the others continue to operate.

SHAFT-COUPPLING.—W. A. PERRY, New York, N. Y. The invention relates more particularly to that type of coupling which includes a casing surrounding the adjacent ends of the shafts to be coupled, and including a wedge forced into position by the action of a key. The coupling operates with the same efficiency irrespective of the direction of rotation of the shaft, which is easily applied, and cannot possibly work loose.

THERMOSTATIC CONTROLLER.—C. A. DUNHAM, Marshalltown, Iowa. The invention has reference more particularly to means whereby a thermostatic device disposed in one conduit or passage may be operated not only by a variation in the temperature of the fluid in that conduit, but also by a variation in the temperature of a fluid flowing in a conduit separate and distinct therefrom.

Railways and Their Accessories.

CAR-TRUCK.—G. ROUX, New York, N. Y. The invention provides a truck for railway or other cars having the inventor's special truck mechanism applied thereto, and so constructed that the parts of the truck mechanism are rigidly held and braced. Screw posts controlling the brake beams which carry the brake shoes, cross frames and transoms forming supports for the posts, the transoms serving rigidly to brace the frame, and a bolster resiliently supported by the longitudinal frame members of the truck and cross frames are provided.

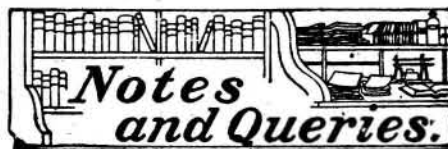
Pertaining to Recreation.

SCORE-BOARD.—J. P. KEENAN, Waterbury, Conn. The invention relates to games played on bowling alleys. The board is arranged to permit the use of a continuous sheet of plain paper, and allows of cutting off and removing a filled-in portion after the game is finished, thus providing a permanent record of the game and presenting a clean portion of the paper, for scoring the next game.

Pertaining to Vehicles.

MEANS FOR AUTOMATIC CLOSING OF PUNCTURES IN PNEUMATIC TIRES.—J. LINDHART, Aaboulevarden 6, Copenhagen, Denmark. The invention has for its object an arrangement and method for the automatic closing of punctures in pneumatic tires of cycles, automobiles and other vehicles, and the like, caused either by involuntary damage during the riding or by willful injury. This is accomplished by introducing into the tube an adhesive fluid of suitable composition and consistency and enveloping the tube by a loosely fitting bandage consisting of a soft, non-elastic and fibrous substance.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.



Full hints to correspondents were printed at the head of this column in the issue of November 14 or will be sent by mail on request.

(11076) C. M. G. writes: A remark was made about a local drunkard, and it was stated he had consumed enough whisky to "float a battleship." A bystander said that would not be much, as he could float the "Dreadnought" with one gallon of water. By making a skin exact shape of ship under-water body and 1/100 inch larger, he could support ship with one gallon of water. Others claimed that at least the weight of ship in water must be in tank before ship would leave the bottom, and cited the law of gravity, where a floating body displaces exactly its own weight of water. The other "school" claims that if ship was set in dry tank and water was poured in, when water level rose in containing tank to her normal waterline that ship would rise, citing the fact that the head of water, say 26 feet, would exert hydraulic pressure on bottom as per Pascal law and support ship. Personally, I am as much at sea as the alleged ship ever was, and think that the ship and water will act the same one place as another. It is evident that ship in free water of ocean must bear down upon water under bottom with exactly same force as water at head in feet of bottom below surface forces up, else ship would either sink lower or rise higher until such would be the case. Another view is this: Take the 10,000-ton ship, set her down in free water, and she

displaces 10,000 tons of water. Place ship in a balance, and the displaced water at other end of balance beam at same distance from fulcrum, and the two will balance. Put the gallon of water in place of 10,000 tons and set ship on, and as party stated it, "the water would be thrown clear over the moon." I have strung this out further than a concise statement of problem would require, but do it to give you the spirit of the argument, and hope you can show us where we are both wrong, as I certainly think we are. A. The argument is not at all an uncommon one, and was discussed at some length in our Notes and Queries some months ago; the question came to us in terms almost identical to those of your letter and the "school" among your friends which discredits the possibility of a ship's being supported by so small a quantity of liquid, may be consoled to hear that it created a somewhat heated argument among some of our specialists, who are at least practised controversialists in such problems as well as trained in physics. All your reasoning on the subject is entirely sound, except where (perhaps quoting another) you refer to the hypothetical conditions arising if the ship could be placed on one side of a balance and the gallon of water on the other. It is unquestionably the case that if a "Dreadnought" were placed in a drydock of so nearly the same shape and size that it were at no place more than 1/100 of an inch away from the hull, and that 1/100 of an inch thick space filled with water up to the load waterline of the ship, the ship would actually float (a gallon of water would not begin to fill such a space in the case of the "Dreadnought," it would take 50 gallons at the very least, but the amount is beside the point, and may be referred to as a gallon). The gallon of water does not balance the ship; it is the difficulty of getting away from the idea of balanced weights that causes so much controversy on the subject. One is inclined to think that the enormous weight of the ship must squeeze out the thin film of water and rest on the bottom, forgetting the pressure due to head, which is independent of the thickness of the film. It is of course true that the weight of water displaced by a floating ship is equal to the total weight of the ship, i. e., the ship weighs as much as the quantity of water which would fill the space occupied by its submerged part were the ship not there. What would balance the ship in your case is not the gallon of water in which it floats, but something that is not there, namely, the quantity of water which would fill the same space were the ship removed, and which would have to be there filling the imaginary dock up to the same level in order to create at the bottom of the dock the same hydrostatic pressure as is caused in the 1/100-inch film by the weight of the ship. That such a pressure may be present in so thin a film to balance the weight of the ship is unquestionable; it is an absolute axiom of physics that the pressure of water is directly proportionate to its depth entirely regardless of the shape or size of the containing vessel. If you have a closed box a foot square and a foot high, full of water, and a pipe of only 1/4 inch diameter projecting from the top to a height of 233 feet (the "head" corresponding to 100 pounds per square inch pressure) there will be 14,400 pounds pressure on the bottom of the box, exactly as if the box were a foot square all the way up to 233 feet; and in exactly the same way sufficient hydrostatic pressure to support the ship may be transmitted in your 1/100-inch film. You may therefore tell your friend that as far as purely hydrostatic principles are concerned, he may safely claim that he can drink—not, we hope, at a sitting, but in a month or two—"enough whisky to float a battleship."

(11077) J. M. asks: Am I correct in thinking that the Mitchell lifeboat (a rough sketch of which has been sent you under separate cover) should pull easier against a heavy wind than the lifeboat at present in use on both sides of the Atlantic? This boat, being covered and smooth, pulls fast with only four oars, draws very little water and easily steered, weight 1,400 pounds, seated for 24 persons. It seems to me that a boat made on this plan, large enough to require 8 or 10 oars to propel, that the open boat must be the hardest to pull against a heavy wind with all the men offering resistance to the wind as they sit in their positions; the open boat must also offer a good deal of resistance, especially in descending a wave. I would like to know how the weight of this covered boat compares with the open boat of the same capacity. A. We should certainly say that a lifeboat as shown in your sketch would pull more easily against a head wind than the ordinary lifeboat, supposing it to be submerged to the same depth. Whereas, for the purposes of comparison, it may be considered roughly as an ordinary lifeboat with a lid on, one would at first sight suppose that a boat of that structure would be heavier than an ordinary lifeboat of equal capacity, but on account of the cigar-like shape lending itself to greatest rigidity with least material, we should say that your boat could be built with no more, and possibly even less, weight of material than an equivalent boat of older pattern.

(11078) J. T. asks: Will you kindly explain through your columns a phenomenon observed while looking at moving pictures? The wheels of rapidly-moving vehicles sometimes revolve in one direction, sometimes in another, and sometimes are stationary relative to their axes. I explain this as follows: If the in-

terval from the moment the spoke of a wheel leaves any certain position till the following spoke occupies that position coincides exactly with the interval between each successive photograph, then the wheel will appear not to revolve. If the interval is shorter for the wheel, it will seem to revolve in a contrary direction; if longer, it will revolve in the direction of the vehicle. As this apparent absurdity detracts from the realism of certain pictures, perhaps a discussion of the laws involved may lead to improvements. A. Your explanation of the phenomenon of a revolving wheel on a vehicle in a moving picture is, we think, the correct one. There does not appear to be any way in which it can be remedied. It is inherent in the nature of the motions of the apparatus.

(11079) W. W. S. asks: Will you kindly inform me what causes the compass to point north? Is it the influence of the North Star or the North Pole? Has the North Star any influence or control over the compass? A. The magnetic needle comes to rest pointing north and south because the earth acts as if it were a great magnet. A compass needle would come to rest pointing lengthwise of a bar magnet placed under the compass needle, just as it does under the influence of the earth. For this reason we think of the earth as a great magnet. The North Pole and the North Star have no influence over the compass needle.

(11080) L. G. McCa. asks: Kindly advise me in your Notes and Queries column if it is possible to intensify a thin negative which has fairly good details but is in such a condition because taken in such strong light, such cases as happen at the seashore in most amateur photographing. If you can give me a solution with operation for same, your kindness will be appreciated by a reader. A. The best intensifier we have ever used is prepared as follows:

Solution No. 1.

Mercuric bichloride..... 240 grains
Ammonium chloride..... 240 grains
Water, distilled..... 20 ounces

Solution No. 2.

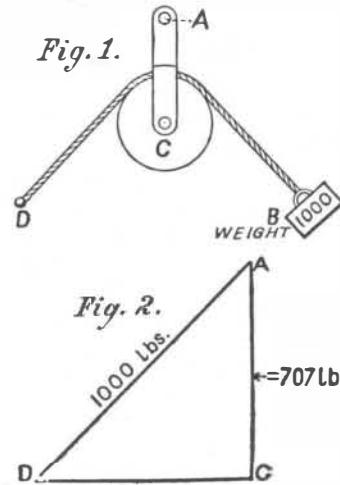
Ammonium chloride..... 240 grains
Water, distilled..... 20 ounces

Solution No. 3.

Part A.
Potassium cyanide..... 120 grains
Water, distilled..... 12 ounces
Part B.
Silver nitrate 120 grains
Water, distilled 4 ounces

Add B to A, pouring in a little at a time, with stirring, to dissolve precipitate, as long as the precipitates dissolve. To intensify a plate, soak it in Solution 1 according to increase of density desired. For full intensification soak till completely whitened on the back side. Rinse and soak in No. 2 for a minute. Rinse again. Soak in No. 3 till the film is blackened and all whiteness disappears. Wash thoroughly and dry. Some of the best printing negatives we have seen have been made by intensifying with these solutions. No. 2 may be used repeatedly, filtering when necessary. Nos. 1 and 2 had better not be used more than once for best results. Be very careful with the potassium cyanide. It is one of the most deadly poisons. On no account put the fingers into the mouth after having them in the solution, until they have been washed with soap and water. Mercuric bichloride is popularly called corrosive sublimate. It too should be handled with care. These solutions should both be kept where children and prospective suicides cannot have access to them.

(11081) A. J. B. says: 1. What would be the force in pounds exerted at point A in Fig. 1, with the end of the rope fastened at point D and a force of 1,000 pounds pulling at point B, the other end of the rope? The direction of the two parts of the rope is such as to make the angles between A and D, A and B, and B and D 120 degrees each. A. The force exerted at point A is the resultant force of D and B, or 1,000 pounds.



2. Please explain the term "triangle of forces." A. If three forces acting at the same point balance each other, they are proportional to the sides of the triangle formed by any three straight lines parallel to their directions. Example: In triangle ADC of Fig. 2 we have angle C equal to 90 degrees and angles A and D each equal to 45 degrees. Let side AD or the hypotenuse of the triangle represent a force of 1,000 pounds. Then, by