which bears against the frog of the hoof. At its lower face the plate has a bar or shoe constructed and arranged with relation to the plate in such a manner as to protect the hoof more effectively than the devices heretofore provided.

SCREEN FOR STAMP-MILLS.—MARTIN R. DRISCOLL, Frisco, Utah. The mill has an apertured frame above which a roll of screen material is mounted, having a portion extending over the aperture. A clamping-frame extends about the lower and side edges of the aperture and covers the edge of the screen material. The frame has vertically-extending bolt-recesses in its side-bars, clamping-bolts within the recesses and an auxiliary clamping-bar engaging the outer face of the lower side of the clamping-frame. By loosening the clamping frames and bars the screen-cloth can be pulled down to bring an unused portion into use without stopping the battery.

SEWING-MACHINE SHUTTLE.—PERCY H. HEWITT, EDWIN A. COCKLE, and CHARLES MATTHEWS, London, England. An improved construction of shuttle is provided by these inventors, whereby the disadvantages incidental to the use of a special spool of small capacity are avoided. The shuttle has its case divided longitudinally into two parts, which parts are provided at their heels with interlocking projections and recesses engageable by a relative longitudinal movement of the parts and permitting a slight hinging action. One part has a transverse pin at its point and the other a longitudinal slot receiving the pin. On the point end of one part is a spring, engaging a catch on the other and straining the parts longitudinally to hold the interlocking parts in engagement.

WATER-WHEEL.—PATRICK HENRETTY, Belgrade, Minn. The water-wheel comprises pulleys provided at intervals with peripheral sockets. The bucket-chain used consists of a series of buckets equally flared on both sides of a central line and provided at their juncture with eyes. Through the overlapping eyes of adjoining buckets a shaft is passed, provided alongside of the buckets with rollers operating in the sockets of the pulleys. Links connect adjacent shafts outside the rollers.

SHANK FOR CORNETS.—WILLIAM H. HORN, San Francisco, Cal., and CHARLES L. WAIN, Kamloops, Canada. The shank is arranged to permit the performer to set his cornet to different keys without requiring separate shanks. The shank is made in two sections sliding one within the other, the outer section having a head with internal threads and the inner section having two external threads capable each of engaging with the threads of the head to hold the inner section in either one of two positions.

CHIMNEY TOP OR VENTILATOR.—JOSEPH A. HODEL, Baltimore, Md. The novel features of this invention are found in the effective method of securing the base-plate to the chimney by means of anchor-bars, in supporting the top carrying the cowl by means of strong slender standards so that no obstruction is offered to the free outlet of smoke from the flue-pipe, in securing the vane directly to the bearing-piece, while the guard-plate is held thereto by means of arms, and in the novel method of counterbalancing the guard-plate and vane. The merits of the invention lie in the uninterrupted passage provided for the smoke, in the prevention of downdraft, and in the counterbalancing of the moving parts.

Designs.

HAMMER-HEAD.—DANIEL S. WILLIAMS, Salida, and FREDERICK R. WATERS, Ouray, Col. The leading feature of the design is the form of the flared groove or socket in the side of the polygonal hammer-head.

ORNAMENTED STONE FOR JEWELRY.—JOSEPH L. HERZOG, Manhattan, New York city. The design consists of an elk's head produced upon a background of stone.

SHOE-LACE FASTENER.—GEORGE H. RICHARDS, Memphis, Tenn. To prevent the tearing of the shoe-lace and yet to hold the lace securely in place, the inventor forms the head of the fastener on its under side with a spherical surface.

CREAM-SEPARATOR.—CHARLES S. HANNA, West Hebron, N. Y. The design consists of a cylindrical body having a base and an inverted cone-shaped bottom terminating at its apex in a gage with a faucet.

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.

NEW BOOKS, ETC.

THE MANUFACTURE OF SAUSAGES. By James C. Duff, S.B. New York: National Provisioner Publishing Company. 1899. Pp. 131. 16mo. Price $2.

This is the first and only book on sausage making printed in English and there has been a considerable demand for a good book on this subject. The book will pay its cost many times over to even the smallest retail butcher, while to the sausage maker it will prove invaluable. Not only is information regarding meats, spices, casings, stuffings, etc., given in great detail but there are almost endless receipts for all kinds of standard and fancy sausages, some of the names of which recall far-away Strasburg and Nuremberg. It is an admirable book and the literature relating to provisions is so limited that we welcome every addition made to it.

DESCRIPTIVE MENTALITY FROM THE HEAD, FACE AND HAND. By Holmes Merton. Philadelphia: David McKay. 1899. Pp. 220. 8vo. 600 illustrations. Price $1.50.

It is probable that we all use physiognomy more or less to judge of character, and yet it is only reasonable to believe that those who are constantly engaged in studying this subject may carry it out to a remarkable degree. We do not believe that character can be told to any extent by the lines of the hand, but there are many people who think that it can, and to them the latter half of the book will undoubtedly appeal.

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The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, $4. Munn & Co., publishers, 361 Broadway, N. Y.

The Milling Cutter Department of The L. S. Starrett Co. will be continued under the firm name of Gay & Ward, Athol, Mass. Owing to the increased business of the tool department, Mr. Starrett has withdrawn his interest in the milling cutter department, in order to devote his attention exclusively to the manufacture of fine tools. Messrs. Gay & Ward still continue to manufacture milling cutters under the immediate supervision of Mr. Gay, with increased facilities for producing an unsurpassed line of cutters.

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Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated: correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(7703) W. G. B. says: Have you published a formula for making an ink that would do to write on photographic negatives (for numbering them, etc.) with an ordinary pen? If so, kindly advise me the number of the copy in which the above formula can be found. A. To print the name on the photograph, several methods may be adopted. The simplest is to write the title of the subject on a slip of paper with aniline copying ink, or with ordinary copying ink mixed with gamboge or vermilion. Then slightly dampen the surface of the negative near the bottom right or left hand corner in as unobtrusive and unimportant a portion of the picture as possible. Press down the paper with the writing upon it. Leave for a few minutes and then remove the paper, when the writing will be found to have adhered to the negative. When printed, the name will print out white. Another way is to write backward on the negative, while another and better plan is to write the name in Indian ink on the surface of the paper before it is printed on. The ink will wash off in the after operations and leave the name in white where the surface of the paper has been protected by the ink.

(7704) J. W. M. writes: There has been quite a discussion here caused by your article on the 16-inch gun. The question is, "What is the fall of the curve of the water when looking one mile out to sea?" Or rather the ratio. For instance, the first mile view will have a fall of 8 inches. What will the second mile show? A. Allow for refraction of the atmosphere and the earth's curvature when looking out to sea:

For 1 mile	0·57	feet.
" 2 "	2·29	"
" 3 "	5·14	"
" 4 "	11·60	"
" 5 "	14·3	"
" 10 "	57·2	"
" 25 "	357·0	"
" 50 "	1429·0	"
" 100 "	5717·0	"

(7705) D McC. writes: Replying to J. W. B., No. 7689, of Notes and Queries, in SCIENTIFIC AMERICAN of July 22, 1899, would say that the "Magical" or "Mineral" sponge he inquires about is made of 25 pounds common whiting, 4 ounces powdered soap bark and 4 ounces powdered alum, thoroughly mixed and inclosed in a small cotton flannel bag (size to fit the hand), with the "fuzzy" side out and tightly sewed up. To use, thoroughly soak in water and rub article to be polished afterward rubbing dry with another cloth. After using the sponge (?) becomes dry and hard, but can be again used until worn out by pounding the cake inside the cloth to a powder.

(7706) J. J. H. asks: Will you please answer through your paper at what degree does aluminum melt and what metals it will melt with, and oblige a forty-six year reader of your paper. A. Aluminum melts at 625 degrees C. or 1,157 degrees Fah. It can be alloyed with copper, nickel, tungsten, manganese, chronium, zinc, tin, and titanium.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

JULY 25, 1899,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Accumulator plate, H. F. Hobel ... $29,363
Adding machine operating device, J. H. Lovering ... $29,381
Addressing machine, H. R. Grassmann ... $29,443
Aeration of liquids in bottles, means for effecting, K. S. Murray ... 629,752
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Boat detaching apparatus, hook for, C. Mackeprang et al. ... $29,383
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Box fastener and seal, W. C. Rarig ... $29,523
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Brush holder support, R. N. Baylis ... $29,418
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Cameras, multiplying attachment for photographic, T. J. Burfield ... $29,542
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(Continued on page 94)

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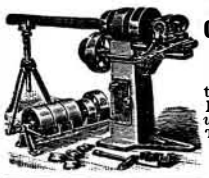

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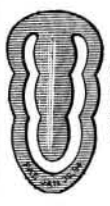

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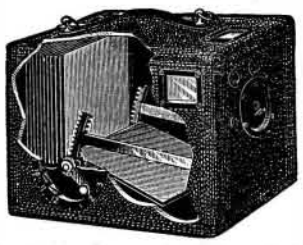

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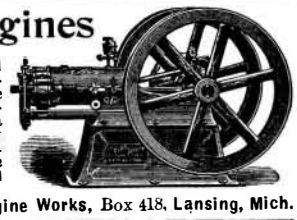

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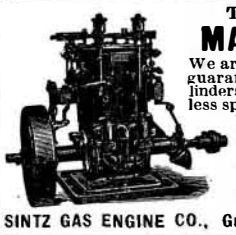

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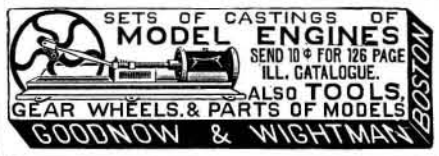

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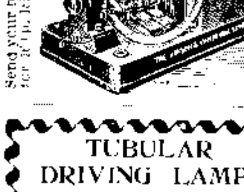

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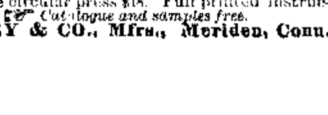

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Water wheel, turbine, W. M. Mills 629,457
Weed and trash cutter for hoe and lister drills, E. W. Griffiths 629,559
Wheel. See Fifth wheel. Water wheel.
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Axes and other edge tools, Supplee Hardware Company 33,28.3
Beer, lager, Pabst Brewing Company 33,264
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Beverages, certain named, H. P. Finlay & Company 33,266
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Clothing, certain named, S. N. Wood & Company 33,261
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Medical compounds and applications for the skin, C. R. Burrage 33,278
Milk, condensed, Wisconsin Condensed Milk Company 33,267, 33,268
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Remedies for certain named diseases, firm of C. Raspe 33,281
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Starch, Starke-Zucker-Fabrik-Actien Gesellschaft, vorm. C. A. Koehlmann & Company 33,270
Underwear, certain named ladies', Worcester Corset Company 33,262

LABELS.

"Cafe Savoy," for canned coffee, C. Biele 7,046
"Dr. Hand's Condensed Milk with Phosphates and Hypophosphites Added," for condensed milk, D. B. Hand 7,047
"Natural Apricots," for canned goods, United States Printing Company 7,048
"Natural Cherries," for canned goods, United States Printing Company 7,050
"Natural Peaches," for canned goods, United States Printing Company 7,049
"Parisian Perfumed Ink," for perfumed inks, National Chemical Company 7,045
"Rocky Ford Cantaloupes," for cantaloupes, H. Woods 7,051
"Yellow Pine Compound," for a medical compound, Yellow Pine Extract Company 7,044

PRINTS.

"Glauber's High Grade Brass Goods," for plumbers' supplies, Glauber Brass Manufacturing Company 155
"Repetti," for confectionery, C. Repetti 154

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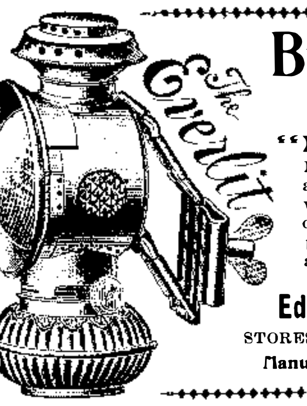

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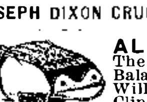

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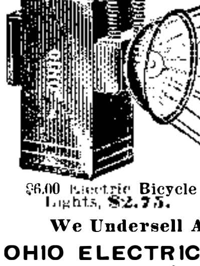

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