RECENTLY PATENTED INVENTIONS.

Of Interest to Farmers.

EGG-CASE-CARRYING ATTACHMENT FOR VEHICLES.—R. N. Story, Clay Center, Kan. The aim of this improvement is to provide a novel simple case-holder that may be readily and securely mounted and detachably secured upon the rear portion of a buggy or a like vehicle, and thus afford reliable means for conveniently placing and holding an egg-case on the vehicle for transportation of the filled case to a market for the eggs.

BEEHIVE.—J. F. Stills, School, Ill. The aim of this improvement is to produce a moth-deceiver attachment which acts for such purpose and also serves as a rest or support for the frames, and also to produce a separator-board whereby the size of the colony may be accommodated and regulated, and also to produce a beehive the general make-up of which will facilitate the handling of bees.

FENCE-POST.—S. H. Summerscales, Winnipeg, Canada. This invention relates to a supporting device which although capable of general use is especially adapted for use as a fence-post. Among the other uses to which it may be put are the supporting of walls, floors, ceilings, roof materials, and railroad-rails. The principal objects are to provide a support of non-inflammable material which is not subject to decay on account of the action of the elements and which will avoid many well-known difficulties.

BROODER-COOP.—T. O'Brien, Branford, Conn. The coop is arranged to insure proper ventilation and to provide a clean and healthy brooding-compartment for a hen and a separate scratching-compartment for chicks, to allow the latter to readily pass from the brooding to the scratching-compartment, and vice versa, and to allow the chicks to scratch and feed in the scratching-compartment in all kinds of weather without annoyance from the sitting hen or chickens from other coops, and to protect the chicks from attack at night or day from enemies of the chicks.

HARVESTING-MACHINE.—W. Livtschak, Wilna, Russia. In this patent the invention relates to improvements in harvesting-machines whereby the construction of the machine is simplified and a new combination of known devices is produced, so that the usefulness of the machine is considerably increased. The machine is suitable for all kinds of crops, also for grass.

Of General Interest.

WALL-COVERING.—T. Cleary, Schuylerville, N. Y. In this instance the object of the invention is the provision of a new and improved wall-covering which has a highly ornamental plush effect. The invention consists of a new article of manufacture—namely, a wall-covering consisting of a fabric body and coating thereon in plush effect.

HOISTING DEVICE.—P. A. Gould and G. R. Watson, Saranac Lake, N. Y. This device is for facilitating the raising of heavy weights. It is especially useful in lifting transformers to attach them to electric-light poles. One object is to produce a device which may be readily set up temporarily upon an electric light pole for the purpose suggested. A further object is to so construct the device that it readily adapts itself to the construction work at the top of an electric-light pole, enabling the device to be readily applied to poles of different kinds or having cross-arms differently arranged.

COMBINATION-TOOL.—E. Hogan, Portland, Ore. This tool is capable of many uses. It may be used as a level to level in all directions without moving the tool. Difference between low and high points in degrees may also be determined. It may be used as a plumb to plumb at any angle without moving the same and to determine the amount of angular deviation of objects. It levels and plumbs one way and any angle desired at right angles at the same time without moving the tool.

ARCH-FILE.—R. H. Johnson, Jersey City, N. J. This improvement refers to a file for securing loose leaves. The principal object is to provide means whereby the distance from each other of the arches or other holding devices for the file can be varied at will to accommodate different punchings in the sheets to be held. Means provide for easily detaching the arches from the main body of the holder and readily slipping the articles to be held onto them.

HEAD-REST.—F. M. Kandle, Atlantic City, N. J. In the present invention the improvement is in head-rests intended especially for barbers' chairs, being in the nature of a flexible cover for the ordinary head-rest provided with means whereby it may be secured in place upon the head-rest and with openings through which a sheet of paper forming a sanitary cover may be passed and with means for supporting a package of paper.

CONDENSER.—F. Kaiser, New Orleans, La. This improvement is in surface condensers intended especially for condensing and cooling ammonia-gas, but may be used for condensing steam or for use in any other suitable heat-exchanging apparatus. It relates particularly to the sets of condensing-tubes and the construction whereby they are secured within the shell, so the tubes can be readily assembled, can be conveniently inserted or removed from the shell, and can be securely packed in such shell to prevent any leakage, and will compensate, in a measure, for variation in expansion and contraction between such tubes and the shell of the condenser.

ATTACHMENT FOR FRUIT CANS AND JARS.—C. M. Leffingwell, Littlefalls, Minn. Briefly stated the improved attachment invented by Mr. Leffingwell holds fruit submerged below the surface of the juice and also serves as a mold-extractor in case mold forms, since it may be readily lifted out of the jar with the mold adhering thereto.

CHEMICAL CHART.—C. D. Poore, Minneapolis, Minn. Mr. Poore's invention relates to charts, and more particularly to a chart specially arranged for work in chemistry, the arrangement being such as to assist the investigator in determining the composition of certain compounds in formulating appropriate chemical terminology for compounds of known composition and in studying chemical reactions.

Machines and Mechanical Devices.

SHARPENING-MACHINE FOR DRILL-BITS.—T. H. Proske, Denver, Col. The invention relates to sharpening-machines for drill-bits, such as shown and described in the Letters Patent of the United States, formerly granted to Mr. Proske. The object of the present invention is to provide a machine arranged to permit of sharpening various sizes of drills in a single pair of dies by the use of different-sized dollies, the sharpened drills being accurate and regular both in gage and form to insure drilling of straight holes without danger of the drill sticking in the hole.

SOAP-MACHINE.—N. G. Knight, Crestline, Ohio. In this case the improvement refers to machines for effecting saponification, and has for its principal objects the provision of a convenient arrangement of gearing for driving the rotatable elements and means for introducing material during the operation of the machine.

KEY-SEATING DEVICE.—I. W. Jones, Birmingham, Ala. Chief objects of this invention are to so construct a cutter-holder as to permit a straight and readily detachable and replaceable cutter to be employed, to permit the holder to be made practically solid from the cutter to the end, to secure a solid and strong abutment for cutter to bear against while operating, to place the feeding mechanism for cutter above the cutting edge, to provide the feeding-pin with means for increasing tension of relieving action at the time when tension is most needed, to avoid putting strain on the feeding mechanism while cutter is operating, and to make the bar strong and protect all parts from chips.

BELT-GUIDE.—M. E. DeGree and D. C. McAlister, Flaxton, N. D. The principal objects of the invention are to provide means for guiding a belt to or from a pulley, even when the two pulleys over which the belt passes are not of alinement, to provide means for preventing the belt from being thrown from the pulleys under any circumstances, and to guard against any cutting action upon the belt or any unnecessary wear thereof.

Medical Appliances.

RECTUM-SUPPORTER. — E. H. Higbee, Roodhouse, Ill. The purpose of the invention is to provide a practical, light, and simple appliance especially adapted for the relief and cure of prolapsus of the rectum and hemorrhoids or piles and to so construct the appliance that it may be worn with comfort and may be partially removed in an expeditious and convenient manner when occasion demands.

SURGICAL APPLIANCE.—H. T. Foote, New Rochelle, N. Y. The object of this inventor is to provide a device for preventing nocturnal emissions of the male human being, the device being simple and durable in construction, designed for convenient attachment and removal, and arranged to prevent pressure on the dorsal veins of parts, and allowing the wearer to urinate while the device is in position.

Prime Movers and Their Accessories.

ROTARY ENGINE.—G. L. Loper, Norcatur, Kan. In this patent the invention consists in the novel construction and arrangement of parts acting upon the general principle in relation to rotary engines of that class in which the outside casing revolves and the steam is admitted to the same through a central core having steam-ports.

Pertaining to Recreation.

BOW-FACING OAR.—G. M. Kerry, Boyne, Mich. In operation the gunwale-plate is clamped to the gunwale and the thole-pin is passed through the opening in the bottom of the groove and into the gunwale, the body portion of the yoke engaging the groove to prevent rotation of plates. Moving the handle-sections in the usual manner will produce a reverse movement of the blades. Dipping of the blade is permitted by hinging of the plates to the yoke. To convert bow-facing into stern-facing oars, it is only necessary to remove the gunwale-plate and insert cotter-pins.

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.

Notes and 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.

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(9868) J. T. asks: I would like to ask you if you can give me a formula for sensitizing porcelain with a solution and then electroplate it with copper? A. An article of porcelain which is to be plated with copper may first be coated with a tough varnish such as copal, and when the varnish is dry it should be thoroughly covered with plumbago as a basis for the copper plating. Sometimes a flashing of gold is burnt on and the copper is deposited upon the gold. This makes a firmer deposit than is possible with varnish. For details of all such processes see Watt and Philip's "Electroplating,"

(9869) W. A. M. writes: Some time ago you published certain notes showing how to calculate the dates on which Easter will fall, which were very interesting, but obviously incomplete, it being necessary to consult a calendar to find the day of the week corresponding with the date arrived at by the calculation. If you have a calendar for the year, there is no need for your rule, it is easier to turn up March and April and find it all worked out for you. If you have not the said almanac, how do you proceed? The following is my way of finding the day of the week for any date, or conversely the date of any day in any year. I use the following motto, "Queen Woman Wins by Subtlety," because the vowels *a, e, i, o, u, w, y* are incorporated in the order to show the date of the first Thursday in each month of the year 1905; thus, the first vowel used in the motto is *u*, representing the first month, the second vowel *e* stands for the second month, and so on, until the twelfth vowel *y* in the motto stands for the twelfth month. Next the *u* representing the first month is the fifth in the order *a, e, i, o, u, w, y*, and the first Thursday of the first month of 1905 was the fifth. The fourth vowel is *w* for the fourth month; the first Thursday in fourth month was on the 6th, *w* being the sixth in the order *a, e, i*, etc. The ninth and twelfth months are each represented by the ninth and twelfth vowels *y*, which is the seventh in the order *a, e i, o*, etc., showing that the first Thursdays in the ninth and twelfth months fall on the 7th. The motto easily lends itself to division; thus the word "Queen" is the first three months, "Woman" the second three months, "wins by" the third quarter, and "subtlety" the last three months of the year. Example 1. What day of the week will be December 28, 1905? The vowel for the twelfth month is *y*, the seventh in the order *a, e, i*, etc., therefore the 7th, 14th, 21st, and 28th December are all Thursdays. Ex. 2. What day of the week will be September 4, 1905? September is the ninth month. The ninth vowel is *y*, therefore as Thursday is the 7th, Monday will be 4th. Ex. 3. What will be the date of the third Monday in June, 1905? June is the sixth month, the sixth vowel is *a*, showing that Thursday was the first (*a* being the first in the order *a, e, i*, etc.) and Monday the fifth. The third Monday in June, 1905, was the 19th. It must be remembered that the dates given in the motto are Thursdays for 1905. They will be Fridays in 1906, and Saturdays in 1907, in 1908 they will be Sundays, until February 28, after which they will be Mondays, and so on forever, constituting a perpetual calendar. Ex. 4. What day of the week was March 21, 1818 (the day on which your rule for finding the date of Easter shows to be the date of full moon in that year)? Rule. To the difference between the years, add the number of leap years that have intervened, divide by seven, and count back as many days as the number remaining. This will give the day for the year, and proceed as above. Thus, 1818 from 1905 leaves 87, add 21 leap years, making 108, dividing by 7, leaves three of a remainder. Three days back from Thursday (the day for 1905) gives Monday as the day for 1818, that is, the dates given by the motto were Mondays in that year. Now March is the third month, and the third vowel in the motto is *e*, the second in the order *a, e, i*, etc. The first Monday in March, 1818, was the second day of the month, and the 9th, 16th, and 23d were also Mondays, and the 21st was Saturday, next day Sunday—the earliest possible date for Easter. To find the day for any future year, proceed exactly as in Ex. 4, but count forward the number of days shown by the remainder. A. This ingenious scheme is adapted perfectly to all years in which January 1 is Thursday; but for other years some calculation is required. It does not fix Easter day. As we have said before, Easter cannot be fixed by persons not familiar with the motions of the moon. The best way to find Easter for any year is to refer to an Episcopal Prayer Book, which gives the date for several centuries.

NEW BOOKS, ETC.

Oil Colors and Printers' Inks. By Louis Edgar Andés. New York: D. Van Nostrand Company, 1904. 12mo.; pp. 212. Price, $2.50.

This is a practical handbook treating of linseed oil, boiled oil, paints, artists' colors, lampblack and printers' inks, black and colored. In addition to information with regard to linseed oil, the chief raw material, its purification, and bleaching for making varnishes and pigments, the book contains short dissertations on the theory of drying oil, of the pigments that can be used with it, and the chief adulterations. A special chapter is devoted to lampblack. Attention is given to the manufacture of pigments, their mixing and grinding, and to the manufacture of printers' varnishes and colored inks, including all the latest patented products. The section dealing with artists' colors is quite new, and will not be found in any other work of this kind. The author has been engaged for a number of years in the manufacture of varnishes, pigments, and colored printing inks. Fifty-six illustrations accompany the text.

Civil Engineering. A Textbook for a Short Course. By Lieut.-Col. G. J. Fiebeger, U.S.A., New York: John Wiley & Sons, 1905. 8vo.; pp. 573. Price, $5.

This textbook is designed primarily for the cadets of the United States Military Academy, who have been fitted for a profession in which the principles of civil engineering are of daily application. In time of peace the officer in an isolated station finds himself called upon to act as engineer and constructor of buildings, roads, and bridges. If not the engineer charged with the construction of water works and sewerage systems, he finds himself charged with their maintenance and repair. In time of war a knowledge of the construction of buildings and bridges enables him to effect their destruction without loss of time or the aid of skilled workmen. The entire subject of military engineering, including fortification, sapping, mining, pontooneering, etc., is simply the application of principles of civil engineering and tactics to military problems. For the above reasons the faculty of the Military Academy has always provided a short course in civil engineering, and it is for the use of these students that this book was primarily written. The author is Professor of Engineering at the United States Military Academy, and he has produced a most valuable textbook.

An Introduction to the Design of Beams, Girders, and Columns, in Machines and Structures. With examples in graphic statistics. By William H. Atherton, M.Sc. London: Charles Griffin & Co. Philadelphia: J. B. Lippincott Company, 1905. 12mo.; pp. 236. Price, $2.

The design of beams in relation to strength and stiffness and convenience of construction is a study that appeals to all classes of engineers and architects, for in all machines and structures beams appear in one form or another, and little progress can be made in scientific designing without a proper understanding of the principles or fundamental facts underlying their construction. Hence great prominence is rightly given to this subject in a course of applied mechanics, machine and building construction, and naval architecture. As denoted by its title, this book is extremely introductory in its aim and scope. A careful examination of this book shows that the author has produced a conscientious work, which cannot but prove of value to the student.

Earth and Rock Excavation. By Charles Prelini, C.E. New York: D. Van Nostrand Company, 1905. 8vo.; pp. 357. Price, $3.

The author justly states in his preface that there is hardly a class of engineering construction into which the excavation of earth or rock does not enter to some extent, and, in many engineering works, excavation is by far the largest item of labor and expense. Despite these facts English engineering literature is almost barren of books which treat of earth and rock excavation in a concise and comprehensive manner, having regard both for the planning and computation of such work, and for the methods and machines by which it is accomplished. The present book is an attempt to supply this deficiency, and has been written with the following objects chiefly in view: First, to concentrate in a small volume descriptions of the various operations which are required for planning and executing any work of excavation in earth or rock; second, to classify and describe clearly the various implements and machines used for excavating and hauling away the material. So far as the author knows, there is no publication in the English language which gives these facts. An examination of the books shows that the practical side is in no case neglected for the theoretical. It is a good addition to the literature of engineering.