

two formidable competitors. Besides the professionals, there are the specialized workmen in the various industries. For instance, in a large automobile factory it is safe to assume that a respectable number of competent workmen are constantly evolving improvements. These men have a peculiar advantage, being on the spot where the latest types are made, and having most excellent opportunities of getting acquainted with the models of their company's rivals, as well as with the minutest details of the models which they make.

What chance, other than a gambler's chance, have unskilled inventors to compete with these two bodies of competitors? Very little chance, indeed, in a few lines of manufacture; but elsewhere, all the wide world in which to roam or to explore. But more of this later.

The first and chief handicap which offers an obstacle to the untrained inventor's success, lies not so much in his lack of brains or opportunity, as in his application of brains to abstract or even visionary projects. For example, if the brains which have been wasted on perpetual motion and on other delusions of like ilk, had been given to homely and every-day necessities, the mechanical achievements of the race would probably be noticeably in excess of what they are. And strange as it may sound in the ears of many people of education, the perpetual motion chim-

era is very much alive this very day. Men who are afflicted with that disorder of the judgment, usually maintain a rare secrecy about their experiments. This reticence is due partly to shame; for although they firmly believe the possibility of a machine being constructed which, once started, shall run until worn out, they very sensibly perceive the hostility of the public to that form of experiment; but this silence is also, and very likely, more instigated by the thought of the abnormal wealth which they conceive will inevitably be the reward of the inventor of a perpetual motion engine.

Nor are these men universally the cranks which a superficial reader may be induced to call them, as they are commonly very useful citizens, and in other respects practical and hard-headed to a degree. Yet by this delusion are they held in an iron obsession. Education is the foe which will drive delusion to cover, and here education may be hopefully sought, as much of mechanics may be self-taught. Many of these sorry day-dreamers, who are poor to-day, would have an excellent chance of being independent tomorrow, if they would but become awake to the real.

A patent attorney of large practice recently wrote, in a letter to a friend, that the bicycle, the rifle, the sewing machine, have been about abandoned by the amateur, who is at present more favorably impressed with the wealth-creating possibilities of the automo-

bile and aeroplane. This is a humorous way of stating that amateurs would rather follow than lead, rather try to invent things about which they know little, than to try their talents where they really might succeed.

Mere industry backed by crude knowledge accomplishes barren results in mechanics, whereas original research in lines well understood is prolific of inventions of merit.

Another hindrance to achievement which impedes the man who does not engage in invention as a regular and gainful occupation—who, for instance, becomes a mechanic only for the purpose of developing an invention or two—is that he is frequently led astray from the inventing of simple articles to try for the solution of the most difficult and complicated mechanisms, which require, for proper solving, like intricate mathematical problems, a thorough training, much experience, and considerable time. Such a man soon feels discouraged as the tasks prove to be unconquerable without skill, money, and extensive shop facilities. To essay certain kinds of invention, a man must be peculiarly talented, or very rich, or probably both talented and rich; for machines, other than simple, often necessitate a model-making plant quite as extensive as an ordinary, fair-sized machine and foundry shop.

(To be continued.)

RECENTLY PATENTED INVENTIONS.
Pertaining to Apparel.

GARMENT-FITTING DEVICE.—ROXANNA A. HAMPTON, New York, N. Y. The device is more especially designed for enabling a dressmaker or other person to accurately and quickly determine the length of a skirt from the waistband down to the bottom edge and the distance the latter is from the floor, with a view to insure a proper hang of the skirt and to have the bottom edge thereof all around an even distance from the floor.

SIZE-REDUCING DEVICE FOR HATS.—R. H. CURTIS, Long Branch, and H. D. CURTIS, Red Bank, N. J. One purpose of the invention is to provide a device whereby the size of the hat, cap, or other article of headwear may be reduced at will from the normal size to any fraction of a size provided for by the construction of the device—a half-size for example. The interior of the hat at the brim may be reduced in size all around or only at the front, back, and sides, or at any desirable single or multiple points. The device is applicable to the crown of any hat.

CLASP.—DORA O. MCHUGH, Lorain, Ohio. The invention relates to clasps, and particularly those applicable to the securing of shoeties. Its principal objects are to provide a neat, convenient, and secure clasp for such purposes. It is symmetrical and inconspicuous and, if desired, may be made of more or less ornamental appearance and of precious metals.

Electrical Devices.

ELECTRIC SIGNAL FOR WEIGHING-SCALES.—S. J. DERBES, New Orleans, La. The invention refers more especially to electric alarm-signals for association with some part of a weighing scale or machine to be operated by the scale-beam for indicating to a salesman or attendant of a store or other establishment that goods being weighed on the scale are approaching the weight at which a balance will be established therebetween and the poise or the poises on the scale beam.

Of Interest to Farmers.

SEEDER AND PLANTER.—G. G. GILBERTSON, St. Ansgar, Iowa. The device is mounted upon wheels and is provided with handles projecting to the rear by which the machine is pushed along in front of the operator, its special purpose being to plant such small seeds as onion-seed, peas, and the like. It may in many of the features be applied to team-drawn seeders and be adapted for planting any kind of seed.

THRESHING-MACHINE.—D. STILL, Milton, Ore. Mr. Still's invention relates to threshing-machines; and the object is to provide an improved apparatus of this class which shall be efficient in separating the heads of grain from the straw and chaff. The invention concerns itself especially with the shoe and the manner of handling the threshed grain and subjecting the same to air-currents.

Of General Interest.

TICKET-BOX FOR THEATERS.—P. H. BREHMER, Rutland, Vt. One purpose here is to provide an arrangement of a box especially adapted for use in theaters and other amusement places, which box can be located in an opening in the wall adjacent to the ticket-window and which is constructed to contain all tickets to be offered for sale on a given date placed under designations of the various parts of the house to which the tickets afford access, the arrangement being visible to the purchaser but protected from him.

DRUM.—A. D. CONVERSE, Winchendon, Mass. The purpose of the improvement is to construct the drum entirely of sheet metal, so that the heads can be securely attached to the

shell without any intermediate props or supports being employed, the sole supports for the heads being at the edges of the chimes of the shell and from uniform contact the inner face of the shell. It relates particularly to metal toy drums.

LOADING APPARATUS.—J. J. ROBINSON, Bloomsburg, Pa. The invention relates to the loading and unloading of trucks used for transporting goods. It is especially applicable in shops and mills for the purpose of facilitating the moving of loads of material in bulk. The object is to produce a construction of truck and platform for the load which will facilitate the moving of the load from the truck to the platform, or vice versa, and to transfer without breaking the bulk.

ATTACHMENT FOR HAND-OPERATED BRUSHES.—J. GRAP, Paterson, N. J. This invention relates more particularly to an attachment for hand-operated brushes of the kind used for spreading paint and varnish, the attachment being flexibly connected with the brush in such manner that the operator while using the brush may move the shield relatively to the same within certain limits.

ORE-SEPARATOR.—P. A. HARDWICK, Colorado City, Col. In this patentee's invention the improvement relates to apparatus for separating and securing the values of the ore, and the inventor has for his principal purpose the provision of an effective apparatus of this character. In use the lightness of the apparatus greatly facilitates its conveyance to the deposit to be operated upon.

FASTENER FOR EYEGLASSES.—D. W. KOLLE, Portland, Ore. In the present patent the improvement has reference to fasteners for eyeglasses or spectacles, and it is intended to be especially useful in connection with the construction of eyeglasses for making a simple connection between the lens, the bow or spring, and the nose-guard.

Heating and Lighting.

ACETYLENE-GAS GENERATOR.—T. S. HOLT, Federalsburg, Md. The invention relates to a generator of that class in which a quantity of calcium carbide is discharged into a mass of water, generating the gas, which is subsequently conducted to the gas-holder, the gas-holder being connected with devices by which the carbide supply is automatically regulated according to the amount of water in the holder.

Household Utilities.

DEVICE FOR ROASTING MEATS AND THE LIKE.—D. G. WALKER, Lindsay, Neb. The improvement relates to culinary vessels, and has reference more especially to devices for roasting meats and the like, being substantially of the type of device for similar purposes described in Mr. Walker's former patent. It is effective and reliable, simple in construction and practically self-controlling. The structure may be readily taken apart for cleaning or repair or other purpose and again put together.

IRONING-BOARD.—A. N. MARSDEN, Trenton, Mo. The improvement is particularly adapted for use in laundries, and the object is to rotatably mount on a center support or standard a plurality of boards of different sizes for convenience in ironing various articles, the boards being so mounted that the ones not in use may be swung downward out of the way.

Machines and Mechanical Devices.

WINDMILL.—F. M. ESPINOSA, New York, N. Y. The object of the inventor is to produce a mechanism of this kind which, having folding arms, may be extended at will and, further, to provide improved means for controlling the position of the vanes and governing the power developed by the mill.

MACHINE FOR FORMING PLASTIC MATERIAL INTO LUMPS.—C. BRISTOW, Christchurch, Canterbury, New Zealand. The machine forms butter and other plastic materials into lumps ready for table use, the machine being more especially designed for use in restaurants, hotels, and like establishments and arranged to permit an operator to quickly and conveniently form lumps of any desired shape in a very convenient and sanitary manner without much exertion.

HACKSAW-FRAME.—A. ADAMKIEWITZ, Chicago, Ill. The improvement is in hacksaw frames and handles, and has for its aim to produce a saw for use by machinists and others in which the blade can be readily and quickly removed for sharpening and one in which the blade when not in use can be relieved of all the strain.

POWER-TRANSMITTING MECHANISM.—W. H. SAUNDERS, Philadelphia, Pa. The principal objects of the invention are to provide a belt-driven anti-friction variable-speed counter-shaft drive which will have many advantages over those heretofore invented. The device may be constructed without great cost, to greatly reduce friction and to provide means for tightening the belt without stopping the machinery.

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.

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- Inquiry No. 8437.**—Wanted, to communicate with a party making a composition such as buttons are made of.
- Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.
- Inquiry No. 8438.**—Wanted, an oil well boring outfit.
- I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.
- Inquiry No. 8439.**—Wanted, a small smelter for ores and fuel oil.
- The celebrated "Hornsby-Akroyd" safety oil engine. Koerting gas engine and producer. Ice machines. Built by De La Vergne Mch. Co., Ft. E. 138th St., N. Y. C.
- Inquiry No. 8440.**—Wanted, patented articles suitable for the mail order business.
- Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machine work and special size washers. Quadriga Manufacturing Company, 18 South Canal St., Chicago.
- Inquiry No. 8441.**—Wanted, parties to make metal specialties.
- Headquarters for new and slightly used machinery. Liberty Machinery Mart, 138 Liberty Street, New York.
- Inquiry No. 8442.**—Wanted, names of dealers in grains and seeds, such as Kafir corn, hemp seed, sunflower seed, barley, Canada peas, millet seed, rape seed, flax seed, sorghum seed, cotton seed, broom corn and rye.
- Inquiry No. 8443.**—Wanted, manufacturers of meat meal and meat scraps for poultry.
- Inquiry No. 8444.**—Wanted, makers of mechanical bands and musical machines.
- Inquiry No. 8445.**—Wanted, makers of pulp board, such as used for milk bottle caps.
- Inquiry No. 8446.**—Wanted, a furnace for burning the solder and tin from old tin cans.
- Inquiry No. 8447.**—Wanted, to communicate with parties placing household articles or novelties on the market, suitable for canvass by children.



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. Special Written Information on matters of personal rather than general interest cannot be expected without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(10188) D. E. W. says: Will you please tell me if it is a fact that there is a total eclipse of the sun every 18 years and 10 days? A. Eclipses, solar and lunar alike, occur in a period of 18 years and 11 1/3 days, very nearly. It will be 10 1/3 days if there happen to have been five leap years in the period. No one knows when this fact was discovered, but it is certain that the Chaldeans knew it and predicted eclipses by its aid. About 70 eclipses occur in this period, varying somewhat because new eclipses come in at the eastern limit and old ones disappear at the western limit. The name of this period is the Saros. Of the 70 eclipses in a Saros, there are usually 29 lunar and 41 solar eclipses; and of the 41 solar eclipses, 10 are usually total.

(10189) F. B. asks: Why do not the equal days and nights occur when the sun crosses the celestial equator? For example, in one almanac calculated for latitude 40 deg. N., on March 21 last the sun entered Aries and spring began, but the nearest equal day occurred on March 18, three days before, while in September the nearest equal day occurs on September 27, four days after. A. Equal days and nights do occur every time the sun crosses the equator. The day is just twelve hours and the night twelve hours long. But because of the equation of time the clock time of sunrise and sunset varies from six. The true sun is east of the mean or clock sun by about seven minutes in March and a little more than seven minutes to the west in September. See any good textbook of astronomy for a full explanation of this. Todd's, price \$1.75, or Young's "General Astronomy," price \$3, are recommended and can be supplied by us. 2. What causes the synodic revolution of the nodes of the moon, and why does the line of apsides change? A. The synodic revolutions of the moon's line of apsides and the regression of the nodes of the moon's orbit are caused by the disturbing action of the sun upon the moon. The discussion of these effects constitutes the problem of the three bodies. A good elementary presentation of the problem may be found in Young's "General Astronomy."

(10190) P. Y. asks: Suppose recording maximum and minimum pressure gage is lowered below the disturbing influence of the waves, in the open sea, during a calm, what effect will the ebb and flow of the waves have on the gages during a storm, we will say at the time when the difference is 10 feet from the normal, or 20 feet from the crest to trough? A. A pressure gage under water will show the change of pressure due to change of depth of water. It can make no difference whether the depth changes because of a wave or because of a change of depth of the gage.

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(10191) G. R. M. asks: Please answer through your paper the following questions: On a direct-current system a 16-candle-power incandescent lamp consumes 1/2 ampere current per hour at 110 volts = 55 watts. Does the same lamp operating on alternating current of same voltage consume an equal amount of current; that is, is lamp consumption of current equal in both cases? Why do wires carrying alternating current heat if both are not placed in same iron conduit or not concentrically wound? A. A 55-watt 16-candle-power lamp uses 55 watts on any form of current on which it can be raised so as to give 16 candles. It uses a half ampere all the time, and 55 watt-hours per hour. Wires carrying any form of current are heated by the current, producing 0.24C²Rt calories, in which C is amperes, R is ohms and t is the time in seconds. This cannot be avoided by any arrangement of the wires. It is the price in calories which must be paid to get a current over a line.

NEW BOOKS, ETC.
THE NEW AGRICULTURE. By T. Byard Collins. New York: Munn & Co., 1906. 12mo.; 374 pages; 106 illustrations; cloth. Price, \$2.

This new and authoritative work deals with the subject in a scientific way and from a new viewpoint. Dr. Collins has devoted his lifetime to the study of changing economic agricultural conditions. "Back to the soil" was never a more attractive proposition and never so worthy of being heeded as during these opening years of the twentieth century. Farm life to-day offers more inducements than at any previous period in the world's history, and it is calling millions from the desk. The reason for this is not at first obvious, and for this reason Dr. Collins has prepared the present work, which demonstrates conclusively the debt which agriculture owes to modern science and the painstaking government and State officials. Much of the drudgery of the old farm life has been done away with by the use of improved methods, improved stock and varieties. All this tends to create wealth by increased value of the product and decreased cost of production. Irrigation, the new fertilization, the new transportation, the new creations, the new machinery, all come in for a share of attention. The illustrations are of special value, and are unique. All who are in any way interested in agriculture should obtain a copy of this most timely addition to the literature of agriculture.

AN ELEMENTARY TEXTBOOK OF THEORETICAL MECHANICS. By George A. Merrill, B.S. New York: American Book Company, 1906. 12mo.; pp. 267. Price, \$1.50.

Prof. Merrill's well-illustrated and concise volume is intended for the upper classes in secondary schools and for the two lower classes in college. American publications upon this subject have been decidedly limited in number, and this book will probably be found to provide a long-felt want in many educational departments in this country. Each of the topics treated in the text is followed by a few examples, not many; for these examples, as in the case of the laboratory exercises, can easily be supplied by any intelligent teacher. Beyond giving due attention to the fundamental principles of teaching, no one method of presentation has been used to the exclusion of others.

BRAZING AND SOLDERING. No. 5 of a Series of Practical Papers. By James F. Hobart. New York: The Derry-Collard Company, 1906. Pp. 33. Price, 25 cents.

WIRING A HOUSE. No. 6 of a Series of Practical Papers. By Herbert Pratt. New York: The Derry-Collard Company. Pp. 21. Price, 25 cents.

A SUPPLEMENT TO THE BOOKS "THE MILKY WAY" AND "THE INFINITY OF THE STARRY UNIVERSE." By John Lowry Adams. Sydney: Turner & Henderson, 1906. Pp. 17.

ILLINOIS STATE GEOLOGICAL SURVEY. Bulletin No. 1. The Geological Map of Illinois. By Stuart Weller. Urbana: University of Illinois, 1906. 8vo.; pp. 26.

HOW TO DO MORE BUSINESS. By the Author of "What a Business Man Ought to Know." London: Guilbert Pitman, 1906. 24mo.; pp. 184. Price, 40 cents.

INDEX OF INVENTIONS
For which Letters Patent of the United States were Issued for the Week Ending October 23, 1906, AND EACH BEARING THAT DATE [See note at end of list about copies of these patents.]

| | |
|---|---------|
| Adding and multiplication machine, S. de Goulla | 833,960 |
| Adding machine cabinet, A. Hendricks | 833,927 |
| Alley, G. F. Allen | 834,055 |
| Amusement apparatus, L. B. May | 834,016 |
| Amusement apparatus, public, B. de Mantz | 833,821 |
| Amusement device, O. Henriksen | 834,055 |

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