RECENTLY PATENTED INVENTIONS.

Engineering.

MOTOR VEHICLE.—Henry W. Heaton, Olneyville, R. I. This is a four-wheeled vehicle, in which oil or gas may be used to actuate the motor, the vehicle being easily started, stopped and steered. The motor comprises a revoluble combustion chamber fastened on a main driving shaft, between which and the rear axle is a transmitting device, cylinders opening into the combustion chamber, and there being an intermediate mechanism between the pistons of the cylinders and a series of gear wheels rolling off on a fixed gear wheel. In the combustion chamber is an electric igniting device, which is actuated by the rotation of the chamber.

DESULPHURIZING MATTE OR OTHER FURNACE PRODUCTS.—James L. Wells, El Paso, Texas. An apparatus for reducing low grade matte and other furnace products, producing high grade matte or metal in a very simple and economical manner, has been devised by this inventor. The furnace is provided with the usual stack, having a water jacket, and tuyeres are arranged on opposite sides to open into the molten metal, the tuyeres being connected with an air blast with a high pressure air supply. The tuyere consists of a tubular shell, in which a longitudinally divided plug having recesses in its sections forms a longitudinal bore, the sections also having abutting projections engaging a corresponding recess of the shell to prevent the plug from turning.

Electrical.

LOCK CIRCUIT CLOSER.—Charles E. Pierce, New York City. In an electric alarm to be operated when an attempt is made to force the lock of a door, according to this invention, a frame piece is employed carrying two normally disconnected contact points and a lever movable to engage them and thus close the circuit, the device being placed in such position that the lever will be rocked by the bolt of the lock when excessive pressure is applied to the lock, as when the door is sprung by a jimmy or otherwise. Several forms of the device are shown in the patent.

Bicycles, Etc.

HANDLE BAR.—Henry W. Heaton, Olneyville, R. I. To reduce to a minimum the transmission of vibration through the handle bar from the frame of the bicycle, in riding over rough places, is the object of this invention, according to which a clamp engages the handle bar and the handle bar stem has a head made in sections inclosing the clamp, there being an elastic material between the clamp and the head and means for drawing the head sections together and clamping the several parts firmly in place, the elastic material taking up the vibrations of the stem. By having the surface of the handle bar roughened, a very firm contact is obtained between the elastic material and the handle bar, preventing possible turning of the latter in the head.

DIFFERENTIAL BICYCLE GEAR.—Guy R. Balloch, Centerville, Canada. To allow a rider to readily and conveniently change from a high gear to a low gear, and vice versa, this invention comprises principally a hollow drive wheel hub provided with differential gear wheels, a double gear wheel being laterally slidable to mesh with either of the hub gear wheels, while a driven sprocket wheel is in gear with the double gear wheel to rotate the latter within the hub and permit its lateral movement. The entire device for transmitting motion to the drive wheel is completely inclosed within the hollow hub, and is thus thoroughly protected from dust and other impurities, and is not liable to get out of order.

DETACHABLE CARRIER FOR BICYCLES.—William M. Tegart, Moosomin, Canada. To facilitate carrying a camera, baggage, etc., on a bicycle, this inventor has devised a carrier which may be conveniently attached to or removed from a bicycle. It comprises a back frame adapted to be clamped to the steering head, and a supporting bracket or bottom frame formed of two sections having a hinged and sliding connection with each other, the inner section being hinged to the back frame. The device is not in the way of the handle bar or the fork for the front wheel, directly above which the load is supported.

Agricultural.

REAPING MACHINE.—Mihail Alexandrescu, Bucharest, Roumania. This is a machine adapted to be pushed along by a draught animal, when it grasps the corn to be cut, bends it down and conveys it to the knives, the cutter bar having motion imparted thereto from the axle. The corn falls upon an endless apron passing over rollers rotated from the axle and is conveyed onto a rack where it collects until it falls to the ground, when the rack is moved inward.

Miscellaneous.

RACE STARTING MACHINE.—Victor Carandini, Calcutta, India. According to this invention a fence or barrier is mounted transversely to the track, in connection with means for raising and lowering it quickly, so that upon raising the barrier the horses may pass. The barrier is formed of two bars with flexible connections and slight independent movement, there being a restraining device for each bar and means tending to lift the bars, while a flexible connection is capable of tripping the restraining device for the second bar when the first bars moves upon being released. The barrier moves upward on the drawing of a cord by the starter.

NECKTIE FASTENER.—Gustave Selowsky, New York City. This is a simple and inexpensive device to be applied to any neckstrap necktie, and which can be quickly and accurately adjusted to fit the tie to any size of neck. It comprises hook and eye straps and a connecting device having at one end a loop embracing the hook strap and at the other end a hook to engage the eye of the eye strap.

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Notes & Queries

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

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(7242) E. E. S. asks: Will the galvanometer, described in "Experimental Science," show how many volts and amperes of a current, with proper scales? If it will, will you give me proper instructions how to make proper scales? A. The tangent galvanometer of "Experimental Science" will measure amperes; but no permanent scale reaching amperes could be attached to it. Any change in the strength of the needle would change the value of one ampere on the scale. Any good text book of electricity or of physics will explain the tangent galvanometer, but you will not understand it easily unless you have a knowledge of trigonometry. To measure volts with a galvanometer, you require a coil with a large number of ohms resistance. The Deprez-D'Arsonval galvanometer, of "Experimental Science," has hardly resistance enough—150 ohms. Here the scale is an ordinary scale. If you have one volt and can find how far the spot of light moves for it, you can then measure volts. The Daniell's cell gives nearly 1·1 volts. All voltmeters and ammeters are graduated where volts and amperes are at hand with which to make the graduation. You may be unable to do it. All voltmeters and ammeters with scales reading volts and amperes directly are made without magnetic needles, since these easily change their magnetic strength, which would change the value of a given deflection on a scale.

(7243) W. F. R. ask: Is there any direct way, that is, by means of converters and the like, of changing an alternating current into a continuous one? A. The only way to transform an alternating current into a direct current is to run a motor with the alternating current, and with this motor drive a direct current dynamo, which will give the voltage and amperes required. These two machines are sometimes wound on same shaft and called a motor dynamo.

(7244) H. C. C. writes: Please explain how nitrate of gold may be separated? A. It is very doubtful if there be a nitrate of gold. If there be, it is an unstable compound which is reduced at once to oxide of gold or to metallic gold. Fuming nitric acid will dissolve fine gold leaf, but even by shaking the solution with water, the precipitation of gold oxide takes place.

(7245) E. Y. M. writes: I am making the tangent galvanometer described in "Experimental Science." Please inform me what size and kind of wire, also length, to use for the different coils of same? A. For the coils of the tangent galvanometer, as described in "Experimental Science," use No. 27 Am. wire gage copper wire (cotton-covered magnet wire will answer).

	Ohms.	Ft.	In.
For coil b	1	19	5
For coil c	9	174	7
For coil d	40	776	0
For coil e	100	1940	0
Total		2900	0

The weight required is a little more than 1¾ lb.

(7246) J. G. B. asks: What is the difference between an incandescent light of 100 volts, 16 candle power, at $3\frac{3}{16}$ watts per candle power, and one of the same voltage and candle power but of 2½ watts per candle power? I understand the difference in horse power, but not in the lamp or light. Why not use 2½ watt lights in the place of $3\frac{3}{16}$ watt, because there could be more lights used per horse power? A. You can light more lamps per horse power at 2½ watts per candle than at any higher rate of power, but you will burn your lamps out a great deal faster than the decrease of power at 2½ watts will balance. It is more economical to consume three or more watts per candle than to consume the carbon filament so fast and thus shorten the life of the lamp. It is the interest of the lighting company to prolong the life of the lamp, but it is the interest of the user to obtain a large amount of light. There must be a compromise somewhere, and it is made at about 3½ watts per candle.

(7247) W. H. F. writes: I have come across a substance that I think is a componnd of acids. If you put a drop of water on this substance, it ignites immediately. Will you please tell me the name of this substance and how it is made? A. We cannot tell the name of a substance we have never seen simply by knowing one property of it. If a drop of water be put on potassium, it will be decomposed and the gas which results will be set on fire. So also sodium will set fire to a drop of hot water. Both these metals are soft, silvery in color when freshly cut, and are kept under kerosene oil for safety. It may be one of these which you have.

(7248) W. M. M. asks: Is there any chemical that will cause the silver on an electric print to disappear? We know that the chloride of lime will do it, but it will not remain away. I want something that will be permanent. These prints are those which are used for crayon work. A. The disappearance of the print when treated with solution of chloride of lime is due to the fact that the chloride of lime changes the silver of the print into chloride of silver, which is white and does not show. To prevent this from turning black again by the light, it must be dissolved and washed out. Prepare the following bath:

Water, distilled	50 parts.
Cyanide of potash	1 "

Soak the print in this for 15 minutes. Wash for one hour in running water and dry. In other words, treat the print as you would any photographic print in fixing, washing and drying. Hyposulphite of soda, 1 in 8 of water, will dissolve the chloride of silver, but is not so powerful as the cyanide. It must never be forgotten that cyanides are most violent poisons, and great care must be exercised in their use, lest they get into the system by the mouth or through a cut in the skin.

(7249) V. W. writes: In your SUPPLEMENT there is a description of a Wimshurst electrical machine, with directions to make it, and in the directions it says to use for the accumulating Leyden jars the hock bottle, and I do not know where to procure these, cannot get them here and do not know to whom to send for them. Will you please inform me as to the closest point here that I can get them; also give name of dealer? I am making one of these machines and would like to have the bottle at once. A. All the glass parts of a Wimshurst or similar electric machine, and all glass apparatus to be charged with electricity, should be free from lead. Glass which contains no lead is called "crown" glass. It is impossible to recognize this glass by its appearance. The best you can do is to get a good window glass for the plates. To test the bottles for the Leyden jars, wash them and dry them thoroughly. When cold, rub them with a dry and warm silk handkerchief or other piece of silk. A suitable bottle will show strong signs of electricity, crackling or even yielding a spark when the finger is presented to it. It is more convenient if these bottles have a wide mouth. You need not be particular to get "hock" bottle; any bottle which will stand test as above is good. A greenish bottle is likely to prove to be of good glass for electrical uses.

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NOVEMBER 16, 1897,

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