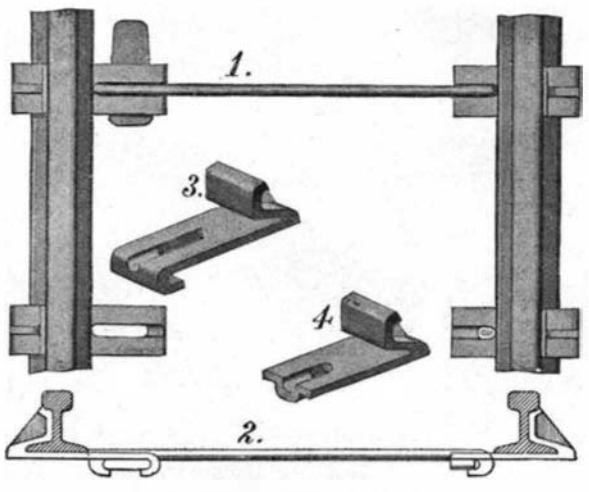
Patent Department

A NOVEL TWO-PART HOOK.

The ordinary hook, used by lumbermen for attaching a cable to a log, is quite liable to become unhooked whenever the cable is slackened. To prevent such annoying occurrences, Mr. Elias Carlson, of Kalama, Cowlitz County, Wash., has invented a two-part hook so designed that it cannot accidentally be unhooked. As shown in the accompanying engraving, the improved device consists of two overlapping hook members mounted to swing upon a bolt to which the usual shackle is secured. Contrary to the common practice, the hook members swing laterally toward each other, that is, the axis is parallel to the general planes of the hook members instead of being at right angles thereto, as in previous two-part hooks. The overlapping portions of the hook members are flattened at their adjacent sides, so that when they are swung to closed position the ends will offer no projecting obstruction to the free movement of a cable within the closed hook. In this position the members form a practically continuous closed ring. In order to keep the members in closed position they are attached to a spring, which is coiled on the bolt in a recess between the members. The extent to which the hooks may be opened is limited by a pin on one member, which engages a slot in the other. One of the principal advantages of the invention is that the hook is free from any projecting parts, which are liable to catch on brush, or the like, in logging operations. Another important feature of the invention is that the ends of the shackle are on the outside of the hook, and thus do not interfere with the cable.

AN IMPROVED TIE-BAR.

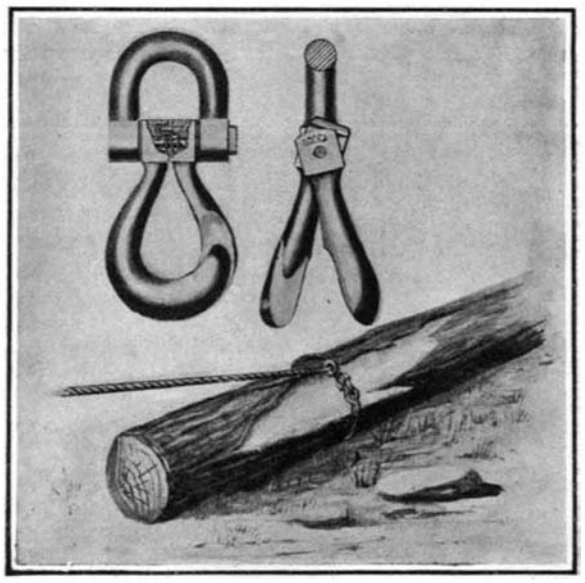
A tie-bar of very simple design has recently been invented by Mr. J. F. McKechnie, of Eleele, Kauai, Hawaii Territory. The device is particularly adapted for connecting the rails of a railway track at curves to prevent the rails from spreading. It may also be used to advantage on such portions of the track as run over soft ground, or at other dangerous spots; for the rails are tied to gage, and cannot be displaced. Furthermore, the tie-bar relieves the ties of undue strain. The chief merits of the improved tie-bar lie in its simplicity of construction; the facility with which it may be attached to the rails, and its absolute fixity when applied. A plan and a side view of the invention are shown in Figs. 1 and 2 of our engraving. It will be observed that the tie-bar comprises a tie-rod with hooked ends, which engage brackets secured to the opposite rails, the members being locked in place by a key driven between one end of the tie-rod and a hook on the adjacent bracket. This bracket is shown in detail in Fig. 3, and it differs from the other bracket, Fig. 4, in having a longer base, which is hooked under at its inner end. Each bracket is formed with a longitudinal slot in the base, and a groove leading from the slot to the inner end of the base. Each bracket is also formed at its outer end with an upright projection of such shape as to closely fit the outer face of the rail which rests on the bracket. This projection is braced by a flange or web. The device can be applied to the rails in a few seconds. First the brackets are slipped under the opposite rails, then the hooked ends of the tie-rod are inserted through the slots in the brackets, after which the key is driven in place between the hooked base of the bracket, Fig. 3, and the rod. It will be noticed that this end of the rod is formed with a heel adapted to bear against the base of the rail. Evidently the rod can easily be removed when desired, by driving out the key; but it is absolutely fixed against accidental misplacement. The grooves in the base fit closely against the rods, and prevent the brackets from creeping along the track. We are informed that the invention has been put to a severe practical test on a railroad for four years, and has given entire satisfaction.



AN IMPROVED TIE-BAR.

Evening Technical Courses at Columbia University.

The Board of Extension Teaching of Columbia University announces a series of nine evening technical courses which will be given at the university this winter, beginning December 3, and lasting twenty



A NOVEL TWO-PART HOOK.

weeks. The courses are under the immediate direction of Prof. Walter Rautenstrauch of the Faculty of Applied Science, and are to be given by professors and instructors of the university and other persons especially qualified. Moderate fees ($7.50 to $15) are charged, and most of the courses are for two evenings a week. The courses are as follows:

ENGINEERING PHYSICS: As illustrated in the mechanical plants of modern buildings. (1) An elementary study of physics; (2) a practical study of steam and electrical machinery, heating, ventilating, water system, wiring, elevators, etc., included in the plant of Columbia University. For two classes of students: those wishing an introductory study of physics as preparation to advanced study in electricity, steam, etc., another winter; those desiring practical training for positions as superintendents of buildings, engineers, janitors, etc.

ELEMENTARY MATHEMATICS: Those parts of arithmetic, algebra, geometry, and trigonometry used in technical work. Practice with engineering handbooks, tables, etc.

DRAFTING: A beginner's course; fits for positions as draftsmen; reading of drawings, etc.

STRENGTH OF MATERIALS: A lecture course for those who design or manufacture machinery or modern structures. With this course should be taken either the first or second of the two following courses in design.

MACHINE DESIGN: Advanced drafting, computations, and designing for persons engaged in the design and manufacture of machinery.

STRUCTURAL DESIGN: Advanced drafting, computations, and designing for those who do structural work.

ELECTRICAL ENGINEERING: A course especially for those engaged in electrical work of any sort.

STEAM ENGINEERING: A course for those engaged in the manufacture or management of steam machinery of any sort.

SPECIAL ENGINEERING PROBLEMS: A study of any special elementary or advanced engineering problems desired by the student. Individual instruction will be arranged for such a period of time as the special problem may demand.

The courses will be given in the buildings of Teachers' College, Columbia University, at West 120th Street and Broadway, which affords necessary lecture rooms, laboratories, drafting rooms, etc. A complete catalogue of these courses will be sent on request by addressing Evening Technical Courses, Extension Teaching, Columbia University. Personal information may be secured Tuesday and Thursday evenings, between 7:30 and 9 o'clock, from Mr. Benjamin R. Andrews, Room 111 Teachers' College.

At the Lick Observatory, says the American Machinist, they have recently spectroscopically determined the distance from us of the nearest fixed star, the result being stated as follows: Light, traveling with a speed of 186,000 miles per second, requires 4¼ years to reach us from that star. And we figure it out like this: Length of sidereal year, 365 days, 6 hours, 9 minutes, and 9.33 seconds, which is 31,558,149.33 seconds, and four and a quarter years are therefore 134,122,134.625 seconds. The distance then (call it mean or magnificent, as you please) is 24,946,717,045,365 miles.

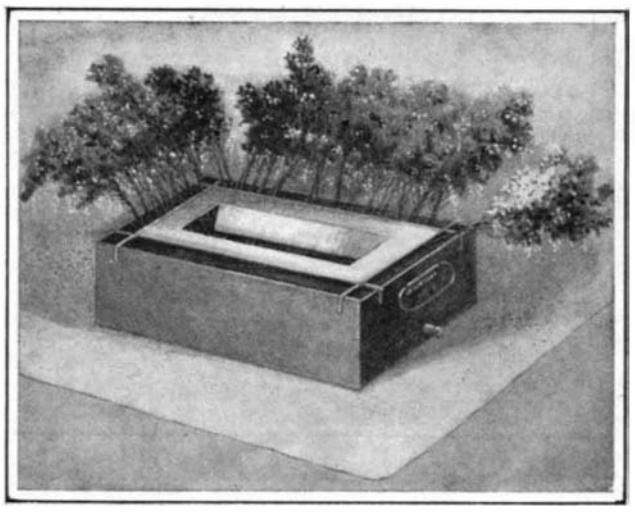
Thirty-one New Variable Stars.

The study of the distribution of variable stars by superposing a negative on a positive of a different date, has been continued this fall by Miss Henrietta S. Leavitt, of Harvard Observatory, with the following results: Five plates taken with the 24-inch Bruce telescope, with centers at about R.A. = 3h. 40m., Dec. = + 23.5 deg., and having exposures of from one to four hours, were examined with the usual care, and only one new variable was discovered. The plates, most of which are of excellent quality, cover a region five degrees square with good definition, and it is estimated that about 150,000 stars were examined. The Pleiades are near the center of the plates. The single variable discovered is in remarkable contrast with the large numbers found in other regions by the same observer, and announced in recent circulars. The only known variable in this region is 032723—Tauri, which is near the edge of the plates. Apparently conditions in the vicinity of the Pleiades favor unusual constancy in light, as no stars were even suspected of variability, though there are many suspected variables in the other regions as yet to be examined in this way.

A plate with the nebula of Orion in the center, R.A. = 5h. 30m., Dec. = — 5.5 deg., exposure 74m., taken last winter, has been compared with an early plate, with the result that two new variables were found, while seventeen known variables were rediscovered. The method used is not adapted to the discovery of variables in regions where nebulosity is strong, unless the variations are large. The region of the Southern Cross and the "Coal-Sack" has been examined on thirteen plates, three of which have centers at about R.A. = 12h. 20m., Dec. = — 62.5 deg., and ten have centers at about R.A. = 12h. 50m., Dec. = — 62.5 deg. Twenty-eight new variables were discovered, and the known variables, 121861, R Crucis, and 131360, —Centauri, were also found.

POLLEN-COLLECTING DEVICE.

We illustrate in the accompanying engraving a simple device by means of which pollen may be collected from certain flowers or blossoms, for use in the manufacture of medicines and the like. In brief, the device consists of a vessel provided with means for holding the slips or twigs bearing blossoms from which the pollen is to be collected. The vessel is filled with water, which keeps the twigs fresh and ripens the blossoms. The latter overhang the edge of the vessel, so that the pollen falls on to a paper on which the vessel is set, and may be easily collected from time to time. As will be observed, the device is the extreme of simplicity. A rectangular tank is used, which is preferably made of sheet metal. Over the top of the tank is a sheet-metal plate supported upon two longitudinal and two transverse rods, the edges of the plate being bent around the rods. This cover plate is of smaller area than the top of the tank, so that a narrow channel or opening is formed around the entire perimeter of the plate. The rods project across this opening, their ends being bent over the rim of the tank. Into the openings around the plate the twigs and branches are inserted, their lower ends being immersed in water. The branches are tilted so that their upper ends project beyond the sides of the tank. To keep them in this position and prevent them from sliding too far into the tank, the cover plate is cut at the center to form a pair of flaps, which are bent downward, as shown, and engage the stems. As stated above, the tank is placed upon a sheet of paper, on which the pollen falls as the blossoms ripen. When desired, the water in the tank may be drawn off, without disturbing the branches, through a tube connected to a stop-cock near the bottom of the tank, and fresh water can be poured through the opening in the cover plate. Handles are provided for the removal of the tank when the pollen is to be collected from the paper. Mr. Eugêne Moulié, of Jacksonville, Fla., has just secured a patent on this pollen-collecting device.



POLLEN-COLLECTING DEVICE.