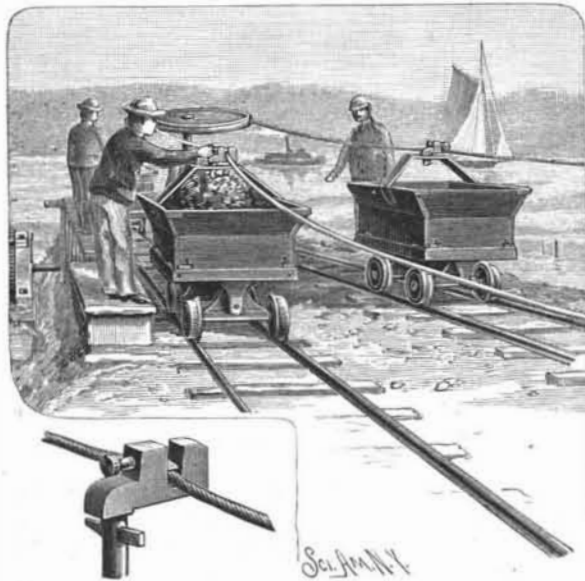


**AN IMPROVED GRIP FOR TRAMWAYS, ETC.**

A device whereby carriages or cars may be readily propelled upon a track from a suspended cable, and affording a simple and effective lock whereby the cars or carriages may be conveniently and expeditiously attached to the cable or detached therefrom, is illustrated herewith, and has been patented by Mr. Elijah Dainty, of Coal Bluff, Penn. The power is furnished at either end of the proposed route of travel of the car by means of a shaft journaled in bearings below



DAINTY'S GRIPPER FOR CABLES.

the track level, this shaft communicating motion to a vertical shaft carrying a horizontal cable pulley, which gives motion to an endless cable. The cars are provided with a transverse yoke or bail, upon the flattened upper surface of which a grip is swiveled, as shown in detail in the small view. This grip is provided with a handle, not shown, and means of locking it in a side-wise position to the line of travel of the cable, whereby the hold or grip is obtained by which the car is drawn along. In the upper part of the recess of the clamp by which the cable is engaged is a spring bolt or latch, to hold the cable in place when the travel is over uneven ground. A modification of this clamp is made, with rounded corners, to pass over rollers or sheaves on the ground when the power is applied by means of a cable running beneath the car.

**AN IMPROVED MOTOR FOR LIGHT WORK.**

A device whereby power may be conveniently transmitted for light running machines, such as sewing machines, etc., is illustrated herewith, and has been patented by Mr. William R. Bell, of No. 422 West Forty-fifth Street, New York City. The sleeve or shaft to be driven has recesses in which are pawls or friction devices, two rings being placed on the sleeve having internal ratchets when pawls are used, while bands are connected to the rings and to a frame, so that when the frame is moved downward one of the rings on the sleeve will move the balance wheel, while as the frame moves upward the other ring drives the balance wheel, the opposite pawls or friction device slipping over their respective rings alternately with the contrary movements. The bands are preferably of metal, and so arranged that any undue slack may be conveniently taken up. With this construction the slightest movement of the frame either way acts to drive the wheel.



BELL'S MOTOR.

**The Fat of Ucuhuba.**

This fat is of a yellowish brown, very consistent, of a peculiar aromatic odor, becoming disagreeable if heated. It is obtained from *Myristica surinamensis*. It contains about 10 per cent of oleic acid; the other ingredients being myristic acid, wax, resins, etc. It is an excellent material for the manufacture of candles.—*E. Valenta, in Zeitschrift für Angewandte Chemie.*

**The New Metal Found in Nickel and Cobalt.**

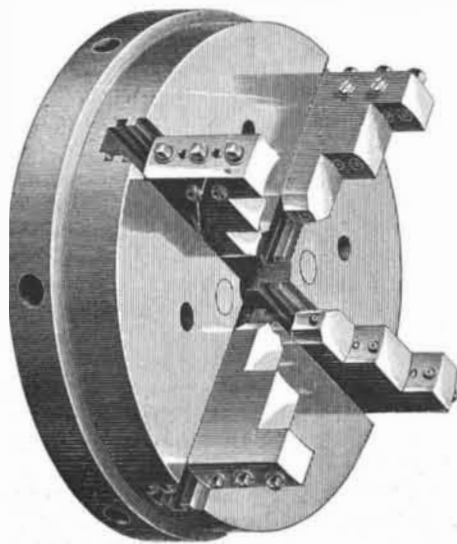
Kruss and Schmidt have discovered a new metal in both nickel and cobalt. These chemists had undertaken to determine the atomic mass of nickel and of cobalt, using for the purpose the pure material prepared by Zimmermann, the method of Winkler, and the atomic mass of gold as corrected by Kruss, 196.64. When the solution of sodium gold chloride was treated with metallic nickel or cobalt, the precipitated gold was found to be mixed with a small quantity of one or the other of these metals thrown down apparently by a secondary action. By dissolving the weighed precipitate in aqua regia, precipitating the gold with sulphur dioxide, subtracting its mass from that of the precipitate, the excess of nickel or cobalt was ascertained and allowed for. But still the method did not give concordant results.

Finally it was noticed that in washing the gold precipitate obtained by sulphur dioxide from a solution of a previous precipitate thrown down by cobalt, the red color of the filtrate, due to cobaltous chloride, became gradually paler, and finally acquired a pale greenish color. This portion of the wash water was collected and evaporated in a platinum dish, and left after ignition a slight residue, which dissolved in concentrated hydrogen chloride solution on warming, with a beautiful green color, the color disappearing on cooling. A similar result was obtained when nickel was used to precipitate the gold. A chloride solution was obtained on evaporating the wash water and dissolving in hydrogen chloride in which no nickel or other known element could be detected. In order to obtain a larger quantity of the new substance, nickel sulphide was treated with ammonium sulphide so long as the solution became brown. The new element became concentrated in the residue. So an increase of the new chloride in the mother liquors was obtained by crystallizing the double chloride of mercury nickel or mercury cobalt from a solution containing equivalent quantities of both chlorides. Finally it was observed that the new oxide was soluble in fused caustic alkali, in which cobalt and nickel oxides are insoluble; and thus it was obtained pure, 50 grammes nickel oxide yielding about 1 gramme of the white oxide.

Its properties are as follows: The acid chloride solution is not precipitable by hydrogen sulphide, but ammonium sulphide produces in neutral solutions a blackish sulphide. Ammonia throws down a voluminous white flocculent precipitate, not soluble in excess. Potassium hydrate acts similarly. On igniting the oxide moistened with cobalt solution, only a weak brown color results. Even after strong ignition, the oxide is soluble in the cold in a 27 per cent hydrogen chloride solution. With excess of acid, the chloride is green, but the neutral chloride is white and gives with water a colorless solution. The oxide does not change its weight when ignited in hydrogen. The metal can be obtained, however, by electrolyzing the chloride solution, or by reducing the chloride in a current of hydrogen. It is black, brownish-black in thin layers, dissolves readily in acids when produced electrolytically, more difficultly when produced at a high temperature. Further researches on the new metal are in progress by the authors.—*Ber. Berl. Chem. Ges.*, xxii., 11, January, 1889; *Amer. Jour. Sci.*

**AN IMPROVED LATHE CHUCK.**

The illustration herewith represents an improvement in centering jaws for lathe chucks, which has been patented by Mr. Samuel Ide, of Medina, Orleans County, N. Y. One of the views is in perspective, and the other in longitudinal section, with the tool represented as cutting on the opposite side of the work from which it would be in practice, for better explaining the operation of the chuck. The chuck has one or more clamping screws with annular biting edges at their inner ends, the jaw having a series of steps or shoulders, and set screws working in threaded openings in the jaw and communicating with the vertical faces of the shoulders, while adjustable rods work in openings of the jaw on a level with the horizontal faces of its steps or shoulders, the set screws retaining the adjustable rods. When the work has to be bored entirely through, the rods are moved outward and interposed between the work and the bottoms of the shoulders, thereby holding the work out of contact, and preventing the point of the boring tool

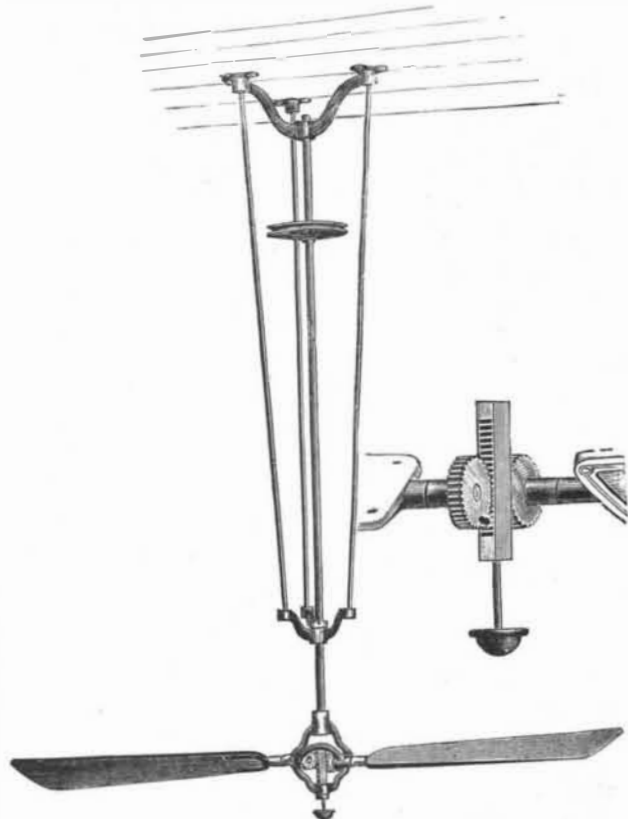


IDE'S LATHE CHUCK.

from defacing the jaws after passing through the work. One of the most valuable advantages of this improvement is that the chuck is designed to hold tapering work that the common chuck will not hold, while it is designed to hold all work more securely while the cutting tool is in operation.

**THE NEW SYRACUSE FAN.**

The accompanying illustration represents a fan, the blades or arms of which can be readily turned so as to displace more or less of the air of a room, or to throw the air upward or downward, as desired. It is manufactured by the Tuerk Water Meter Co., of Syracuse, N. Y. The view shows the fan as in operation suspended from a ceiling. The inner ends of the fans are provided with gears, between which a central bar or rack is interposed, as shown in Fig. 2, by moving which up or down, the angle at which the fans are set can be readily changed. This can be quickly done while the fan is in motion by taking hold of the pendent oil cup



THE NEW SYRACUSE FAN.

and moving the rack as desired. The company also supply these fans to be operated on standards, when they receive their power from beneath the floor, instead of from shafting overhead, in which case there is a small handle projecting from the side of the standard, by means of which the inclination of the fan blades can be regulated. The Syracuse Water Motor, also made by the above company, is recommended as affording a convenient means of running a series of such fans.

**How to Make Ground Glass.**

A writer on this subject says: I desired to have several pieces of ground glass, to use for some purpose. I first bought five cents worth of emery and two plates of glass of the size required. Spoiled negatives will answer, if they are cleaned, which can be done with a strong solution of lye. I placed one of the glasses on a flat board, and sprinkled a small quantity of emery on it, which I wetted with water. Placing the other glass on that, I ground them together, renewing the emery and water whenever necessary. In about one hour I had two of the finest quality of ground glasses, fully as good as those I would have to pay 75 cents for 8 by 10 size.

