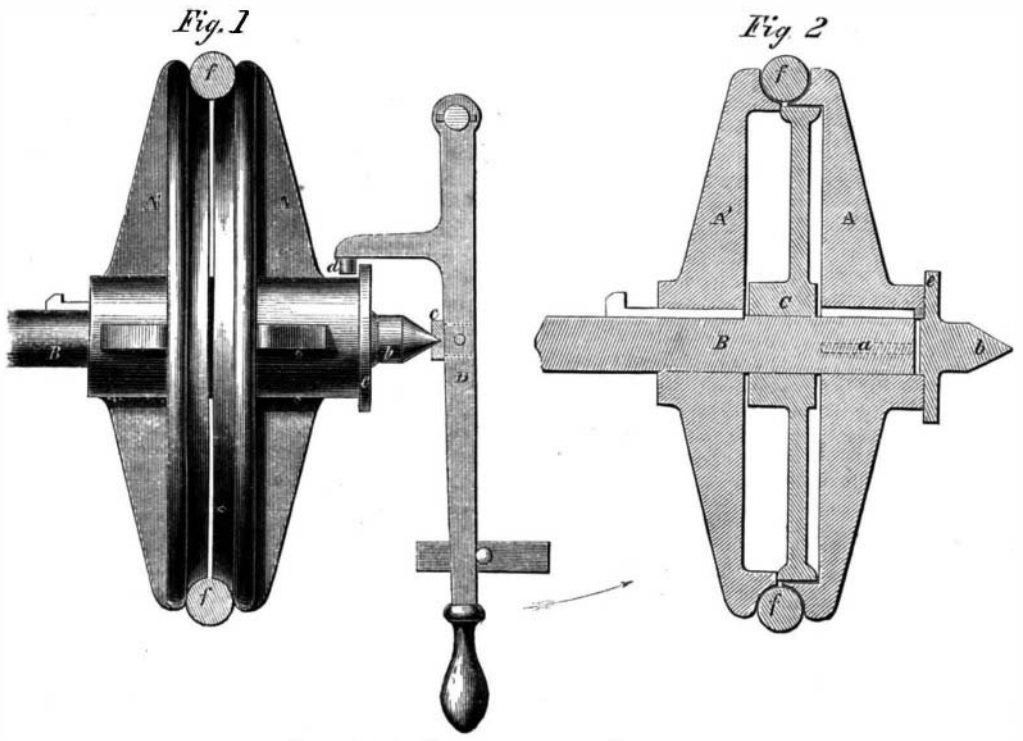
Improved Patent Clutch Pulley.

We illustrate herewith an ingenious device for shifting a belt from a fast to a loose pulley, as also for obtaining in a slight degree, a variable speed. Fig. 1 represents the invention; in it A A^1 are two pulleys. The one marked A^1 is keyed fast to the shaft, B; the other wheel, A, slides upon a feather, as shown in Fig. 2 by the dotted lines, *a*. Between the two wheels, A A^1, in Fig. 2, runs another pulley, C, which is fitted to revolve loosely upon the shaft. Attached to one end of the wheel, A, is a steel center, *b*, the point of which takes against a depression, *c*, in the lever, D. At right angles with the main part of the lever an arm extends which has a small pin, *d*, fitted with a friction roller projecting downward; this works against the collar, *e*, on the center beforementioned. The other end of the lever is secured at the top to the framing of the machine, or to the floor as desired. These constitute the working parts of the invention. The operation of it is simple. When it is desired to stop the lathe or any other tool that is driven by the belt, *f*, the handle is thrown over in the direction indicated by the arrow; the small pin, *d*, then strikes against the collar, *e*, and lets the belt down on the wheel, C, which, being loose, of course transmits no motion. Or, if it is necessary to run quite slowly or to start easily, the driving surfaces opposed to the belt upon the wheels, A A^1, may be lessened by increasing their relative distances apart to any required degree. The inventor states that this has been found a very excellent pulley for driving knitting machinery or other tools of that class.

Patented Sept. 15, 1861, by John Shinn, of Roxborough, Pa., and further information may be obtained by addressing him or Mr. Wm. Adamson, of Philadelphia.



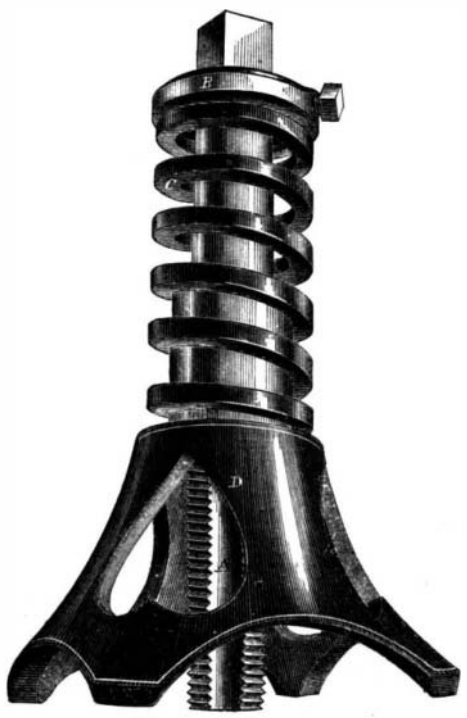
SHINN'S PATENT CLUTCH PULLEY.

"ARGYLLITE"—A NEW MINERAL.

A very interesting description of a new mineral is given in the November number of *Newton's London Journal of Arts*, by Lewis Thompson, M.R.C.S. For some years past a nickel mine has been worked on the estate of the Duke of Argyll, at Inverary, Scotland, and during its working several holes or borings were made to discover the extent of the vein. From these borings different kinds of minerals have been obtained and submitted to analyses, and were found to consist of sulphurets of copper, nickel, lead and arsenic, with the exception of one sample, which was detected by the Duke of Argyll himself, while on a visit to the mine, and who noticed that it possessed the power of reflecting light. It was found in very small quantities, but curiosity being excited to discover what it was, a portion of it was sent to Mr. Thompson for analysis, who discovered that it was composed of lead, vanadium and sulphur—a combination which, he says, was never before noticed. The crystals are very small, but by the aid of the microscope they were found to be twelve-sided or dodecahedrons. This discovery recalled a circumstance to Mr. Thompson, of a peculiar kind of copper ore which he had noticed twenty years before, and which was obtained near Fowey, in Cornwall. This ore had always to be smelted by itself at Swansea, and the copper obtained from it could not be rolled in sheets. The cause of this was not examined into at the time, but as the ore contained well-formed crystals, resembling galena, mixed with the copper, the thought occurred to Mr. Thompson that it might be the same kind of ore as that obtained at Inverary. Specimens of this ore were now subjected to careful analysis, and were found to contain lead, 60.8; vanadium, 20.5; sulphur, 18.7=100. The specific gravity is 6.04; the color is a dark lead-gray, with considerable luster. The form of the crystals is a rhombic dodecahedron. Before the blowpipe it decripitates slightly; with borax it affords a beautiful bluish-green bead in the reducing flame. It is acted upon with boiling nitric acid, and affords a bright blue solution. Very small quantities of it have as yet been obtained, but mineralogists may now be led to search for large deposits of it, which, if obtained, will prove valuable to those who may own the mines. Vanadium forms a beautiful dark blue color on silk, with tannogallic acid, and it is stated to be very permament. A sufficient supply of this metal has not yet been obtained to introduce it into the useful arts.

HADLEY'S PATENT TAP GUIDE.

We present our readers this week with an illustration of a device for guiding taps, patented through the Scientific American Patent Agency. It is, we think,



quite an original idea, nothing of the kind ever having come under our notice before. We have, however, often seen the want of such an apparatus, and can cheerfully recommend it as being a very useful tool. It is very light and simple in its action. A cast-iron stand, D, having a hole through its center to admit the tap, A, is provided witha spring, C, and a collar, B. When a hole is to be tapped, the stand is placed upon the work and the tap screwed as usual into the metal; as it is drawn in it presses against the collar, C, and this, through the spring beforementioned, throws the stand square up against the job, thus preventing any variation from a direct line. This invention is especially applicable to cylindrical surfaces, such as steam boilers, where it is impossible to get a square up to the shank of the tap, and it would be found useful in almost every operation for which taps are used, aside from machine-work. The inventor assures us that a very great saving of time—as we can readily imagine to be the case—is effected by this simple but efficient device. Further information can be had of the patentee, Mr. William Swain Hadley, at the office of the *Ledger*, Philadelphia, Pa.

Effects of Frost on Iron.

Mr. David Kirkaldy, of Glasgow, in a recently-published work detailing his experiments in testing the strength of iron and steel, also describes some experiments to test the effects of frost upon metal. A bar of Glasgow best bar iron, of $\frac{3}{4}$-inch diameter, was forged into ten bolts, and six of them were exposed all night to intense frost, in the month of December, 1860, then tested next morning when the thermometer stood at 23° Fah. The other four belts were kept warm all night and protected during testing. Three of the ten bolts were tested with gradual, and seven of them with sudden strains. With gradual strains the bolts exposed to frost gave way with 54,385 lbs. strain; the unfrozen bolts stood a strain of 55,717 lbs.—a difference of 2.3 per cent in favor of the latter. When submitted to sudden strains the difference was 3.6 per cent in favor of the unfrozen bolts. The frozen bolts had been covered with a layer of ice, but their temperature was much higher than that experienced in America. In Canada, where the temperature is very low during winter, one of the chief machinists on the Grand Trunk Railroad informed us that the effects of frost were destructive, almost beyond comprehension, upon their locomotives. Fine fibrous iron is the least affected in its strength by frost.

SIR DAVID BREWSTER ON THE PATENT LAWS.

We would direct attention to the elegant address of the venerable Scottish philosopher, Sir David Brewster, on another page. He points out in a graphic manner the absurdities of Sir William Armstrong in advocating free trade in inventions as compared with free trade in manufactures and natural products. The latter is free trade with the consent of the producers, the former is trading in the products of others against their consent. The one principle may be in perfect accordance with equity, the other certainly is not. The scientific attainments of Sir David Brewster have gained for him a world-wide reputation. He has always been a friend of the mechanic and inventor, and his object in bringing this subject before the University of Edinburgh was to enlist the judgment of educated persons on the side of right. He informed his audience that it was his firm belief that "every educated man has a substantial interest in a due protection to inventors." This sentence deserves to be written in "letters of gold."

A Hint to Oyster-eaters.—When too many oysters have been incautiously eaten, and are felt lying cold and heavy in the stomach, we have an infallible remedy in hot milk, of which half a pint may be drank, and it will quickly dissolve the oysters into a bland, cream jelly.—*Exchange.*