

ALL WROUGHT STEEL PULLEYS.

The illustration represents the construction of pulleys entirely of what is generally known as mild steel, no castings or forgings of any kind being used. The various parts of the pulley are cut from the material in sheet form, and then pressed into the required shapes and assembled into the finished pulley, all being accomplished by machinery of special design and which, though of great original cost and variety, is most efficient and economical in its operation, producing without turning, boring, grinding, or other machine shop practice and without hand labor, a true running pulley of perfect balance. The high tensile resistance and ductility of the steel used enables the construction of a pulley about one-third the weight of one made of cast iron, and, in fact, the steel pulley is lighter in average weight than the wood pulley commonly used. The pulley shown is what is ordinarily known as a split pulley, clamping firmly on the shaft with sufficient



A WROUGHT STEEL BELT PULLEY.

compression to transmit as much power as is possible to carry with the heaviest belt practicable, and its construction permits of the use of keys when required in special cases. Fig. 1 shows the pulley in side view and Fig. 2 is an interior view of one-half of the pulley, the other half being removed.

This improvement has been patented in the United States and foreign countries by Thomas Corseadon, of New Britain, Conn., and is being introduced by the American Pulley Company, George V. Cresson president, Eighteenth and Hamilton Streets, Philadelphia, who have fitted their factory with the machinery and tools necessary for its manufacture.

The pulley consists of the rim portions rolled at outer edges, which are made round and smooth, avoiding cutting the belt or hands of the mechanic when throwing belts on or off. The middle portion of the rim is formed into a deep flange extending entirely around inner periphery of rim, and, with the rolled edges, making with a minimum thickness of metal an exceedingly strong and true rim. The double spoke arms are greatly stiffened with deep corrugations through their entire length, and in combination with the double arms make the spider of the pulley of great strength and rigidity. The spoke arms are of the same piece of metal with the hub portion thereof, and the hub clamps encircle the hub portion of the arms, binding them firmly to the hub shells which form the bearing for the pulley on the shaft, all being riveted strongly together and making a pulley of excessive strength for its weight and impossible to break accidentally or by running at high speed, certainly many times greater than is practicable or safe with the cast-iron pulley. The steel of which the pulley is made has a smooth surface and is rolled accurately to gage, the rim face being highly polished. The interior surfaces of the pulleys are well painted and rim face lacquered, preventing rust by accidental wetting in shipment or dampness in warehouse. By means of steel bushings the pulleys are made interchangeable to fit different diameters of shafts, and their light weight on warehouse floors and minimum of fire risk make them especially adapted to be carried in stock by dealers.

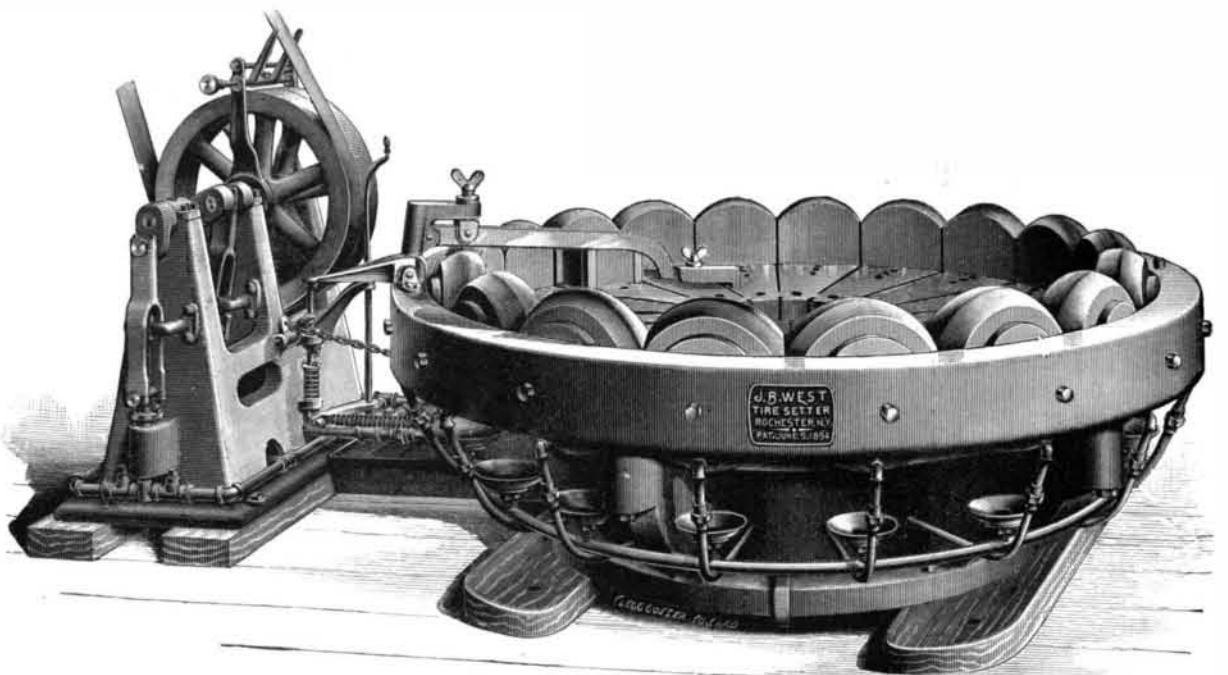
Hunting with a Mirror.

A taxidermist at Northwood, N. Y., says the New York Sun, has been making experiments as to the effect of light reflected in a bird's eyes. A glass seven or eight inches in diameter has been found most serviceable. The antics of blue jays are remarkable when the light strikes them as they sit in the shadow of an

evergreen tree. They jump to another branch and try to look into the light, but they have to turn away, as the light dazzles them. Then they fly around the reflector, but after practice one is able to keep the light always on them, and the birds not infrequently come within reach of a man's hand. A ruffed grouse gives a startled look when the light strikes it. Then up it jumps, and away it goes. Hawks, too, are usually startled or annoyed so that they fly off. Woodpeckers don't seem to mind it at all. Rabbits blink and stare at a glass for a while, then go around a stump, and sit up again, as if waiting for the light to play tag with them.

SETTING NEW TIRES AND RESETTNG LOOSE TIRES COLD WITHOUT TAKING OUT THE TIRE BOLTS.

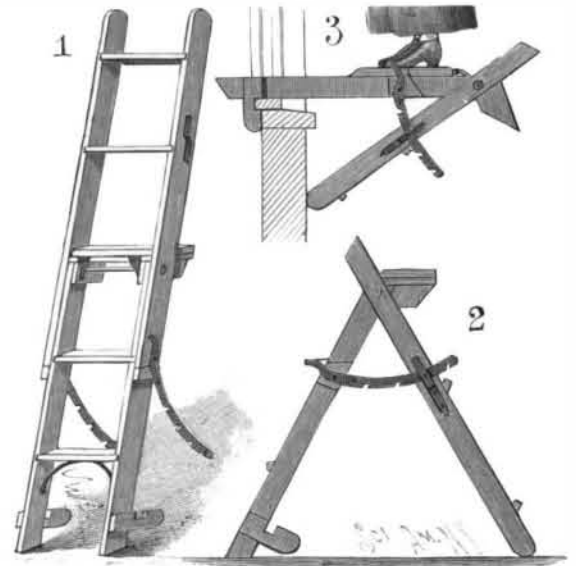
The inventor of the machine represented in the accompanying illustration first conceived the idea of setting tires "cold" in 1867, and his first patent therefor was issued in 1870. The machine had a pliable steel band drawn around the wheel by a screw, much like tightening a girth around a horse, and set light tires very well, many of the machines being still in use. They were manufactured by the Mowry Axle and Machine Co., Norwich, Conn. In 1888 a hub bander was put on the market, having twelve radially moving dies actuated by toggle joint levers and a steam cylinder, and a tire setter was then built on the same principle, which did well for light tires. The inventor, Mr. J. B. West, of Rochester, N. Y., then proceeded to develop the machine shown in the engraving, in which are eighteen hydraulic rams in a circle surrounded by a heavy weldless steel ring, with suitable bed casting, oil being used instead of water in the rams, and a three-throw pump giving a maximum pressure of a thousand tons. The rams act upon a corresponding series of segmental blocks of cast iron for smaller wheels, forcing them in radially as the pressure is applied, the wooden wheel being placed within the rams and the tire passed loosely over it. The pistons are set to work by simply opening a valve, and an automatic trip gage operated by the dishing of the wheel stops the machine when each wheel has just the right dish. A screw can be used to hold the hub down on old wheels that are inclined to dish too much. Hundreds of these machines have been sold, and nearly a dozen patents have been taken out by its inventor since 1890 on various improvements connected therewith, including one hand machine actuated by screws for light and one for heavier tires operated by a hand hydraulic pump. In 1894 permission was reluctantly given to set up a machine for trial in a wagon shop on Camberwell Road, London, England; but after one day's use the proprietors bought the machine, and the English patent was subsequently sold and a plant established to build the machines in London, since which the same syndicate has bought the patents for twenty-four countries. The machines have since been largely sold in most European countries and in South America. It is proved that more durable, truer and rounder wheels, with a stiffer, tougher and better tire, are made by this machine than is possible by any other method. The effects of the compression on Bessemer steel are indicated by two pieces from the same bar that were tested by Riehle Brothers, of Philadelphia, one that had been upset four per cent of its length by the tire setter proving to be about thirty-eight per cent stiffer and fourteen per cent superior in tensile strength to the piece that was not upset. The inventor has recently constructed a much heavier machine that has set steel tires on car wheels which has proved satisfactory on heavy wheels for steam roads. The machine weighs nearly twenty tons and is capable of exerting a maximum pressure of about ten thousand tons.



WEST'S HYDRAULIC TIRE COMPRESSOR.

AN EXTENSION LADDER AND WINDOW JACK.

A device of simple construction which may be used interchangeably as an ordinary step ladder or extension ladder, or as a conveniently arranged bracket platform support, to facilitate cleaning the outside of windows, is shown in the accompanying illustration. The improvement has been patented by John M. Pugh, of Reno, Nevada, Fig. 1 showing it as an extension ladder, Fig. 2 as a step ladder, and Fig. 3 as a window bracket. At the upper end of the bottom



PUGH'S EXTENSION LADDER AND WINDOW JACK.

section is pivoted a brace section, which may be moved up in alignment with the first section to form an extension ladder, the upper section then resting on blocks on the outer faces of the side pieces of the lower section. On these blocks are also pivoted notched curved braces, the notches engaging pins in a guide-way on the brace section, whereby the sections may be adjusted as a step ladder or to form a window bracket. To adapt the ladder to the latter use, there are notched shoes, adapted to engage a window sill, near the lower ends of the lower side pieces, and the upper step is made in two hinged pieces, one folding on the other and pivotally connected by links with braces, whereby the two pieces of the step may be adjusted side by side on the side pieces of the bottom section to form a platform for a person to stand on, the curved braces being adjusted to hold the brace section in proper supporting position.

The Danger of Early Rising.

Yet another venerable superstition has met its doom at the hands of the irrepressible "scientist," says the London World. Until now people have been content to accept, if not to act upon, the theory that early rising—in conjunction, of course, with a correspondingly early habit of going to bed—is conducive not only to wealth and wisdom, but also to health. Indeed, a familiar rhymed adage protests as much in so many words. But, like many another primitive belief, it has been ruthlessly shattered by the scientific iconoclasts, one of whom now claims to have discovered that people who get up early go mad much more readily than others. In support of his theory he points to the undoubted prevalence of insanity among those engaged in agricultural pursuits. Though it is sad to see a time-honored doctrine thus exploded, one is disposed to favor the new opinion at the expense of the old. In any case, there can be no harm in being on the safe side, and, after all, it is so easy not to get up early.