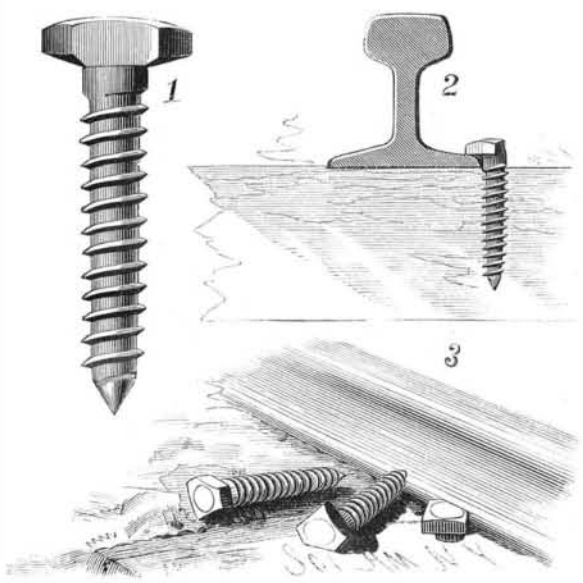
the shank of which slides within the rod. The holder is composed of one or more wires attached to a thimble sliding upon the exterior of the rod; the outer ends of these wires are pivoted between the sides of bars which rest upon and hold the leaves down when the device is in place on the book. The holder proper may be shifted up or down the rod as desired.



HUNTINGTON'S IMPROVED RAILROAD SPIKE.

and manuscript to be copied may be held in convenient position by passing it between one of the holders and the face of the page. By means of the sliding hook, the holder can be adapted for books of different sizes.

Large Vine.

The largest vine in the world is said to be one growing at Oys (Portugal), which has been in bearing since 1802. Its maximum yield was in 1864, in which year it produced a sufficient quantity of grapes to make 165 gallons of wine; in 1874, 146 1-3 gallons; and in 1884 only 79¼ gallons. It covers an area of 5,315 square feet, and the stem at the base measures 6½ feet in circumference.

IMPROVED PLATE ROLLING MACHINE.

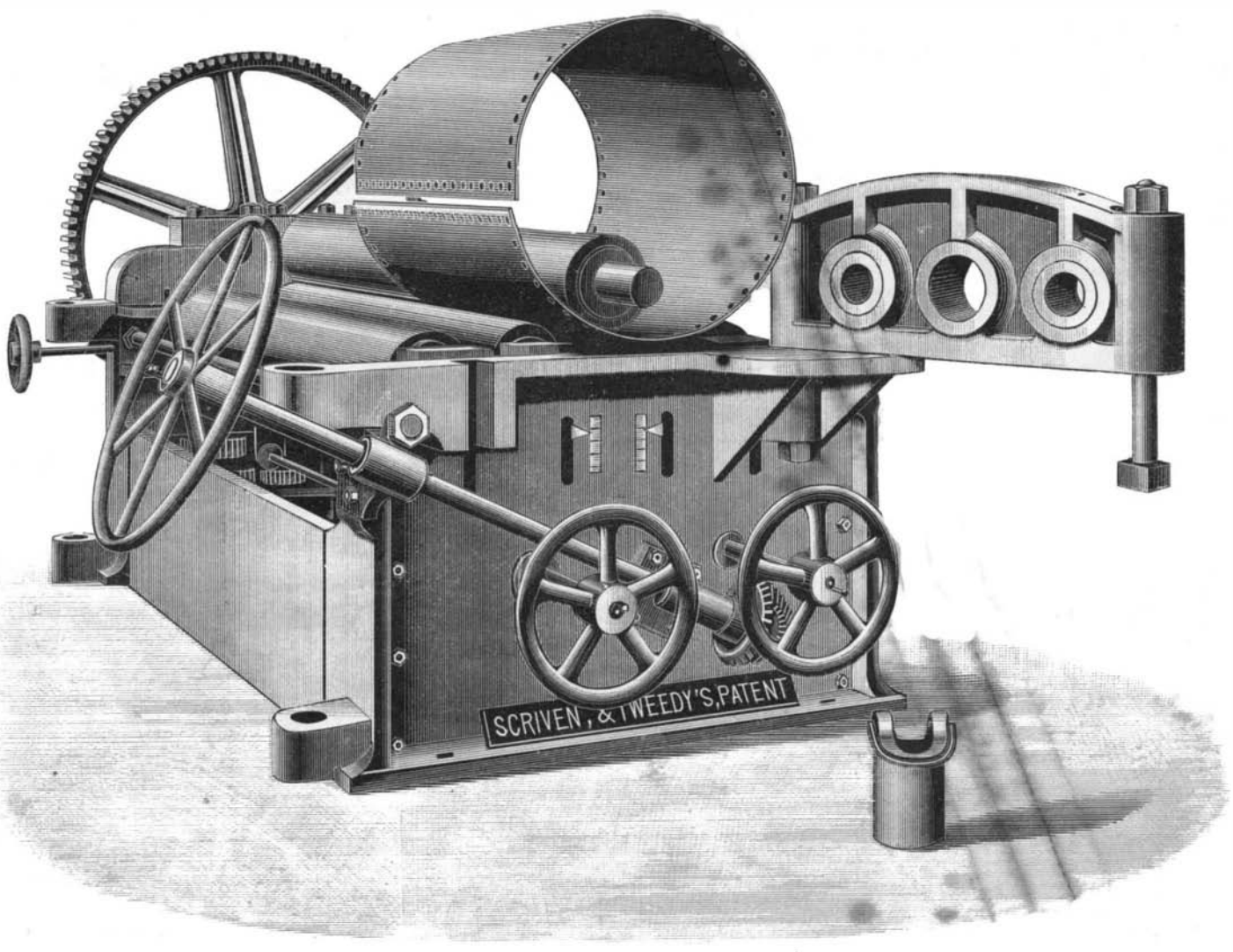
Scriven & Co., of Leeds, are now manufacturing a useful form of plate rolling machine, Scriven and Tweedy's patent. This machine is specially designed for light work and for shops where it is advisable to have a tool which may be adapted to various kinds of work. Its special features are the arrangement of the movable rollers below the fixed ones, and of a pivoted cheek. It may be used either for rolling flat plates or for bending for donkey boilers or masts and spars. It will be observed that any wear in the roller journals tends to bring the rollers together, instead of, as in the ordinary rolls, to let them drop apart. The common tendency to bending the end of the plate is thus obviated, as the lower rolls are adjusted to their level by hand. The general arrangement of the machine will be understood from the illustration.

When the machine is required for bending plates, the two outer top rollers are removed. The bushes of all the top rollers are fitted in sleeves; when these are withdrawn, the cheek is swung round, and the rollers lifted out by the cranes, fixed in snugs at the corners of the machine. It will be seen that tubes of any diameter can be rolled in this machine, and are easily removable by swinging back the cheek as described.

The lower rolls are susceptible of very fine adjustment by the hand wheel and screw gear, and a gauge is placed on the end of the machine to show the exact position of the rolls. The two outer rolls of the lower course are easily removed, if it is desired, to reduce the wear and tear when the machine is being used for small bending work. The guides for the four bottom rollers are so arranged that the bushes can readily be lifted out.

The change of the machine from a flat plate roller to a plate bender can be effected in fifteen minutes. A very important point about this machine is that it is entirely free from any obstruction above the rolls, leaving a clear space for the manipulation of the work. A number of these machines have now been sent out, and all are giving complete satisfaction.

Our illustration shows the machine with the two outer top rollers removed, and the machine prepared for cylindrical bending work.—*Mech. World.*



IMPROVED PLATE ROLLING MACHINE.

IMPROVED RAILROAD SPIKE.

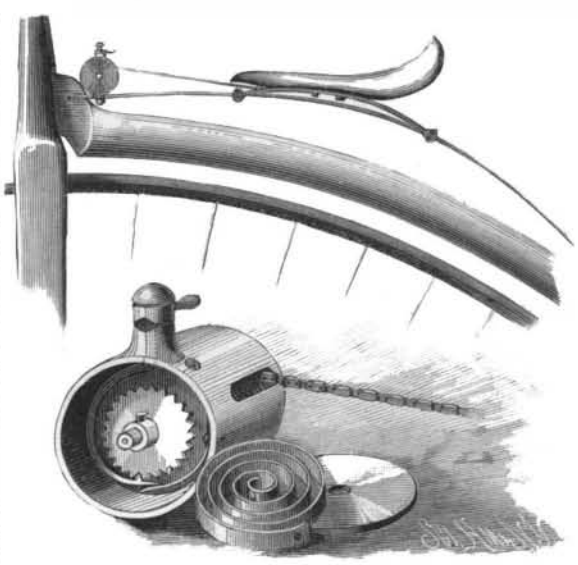
The object of the invention herewith illustrated is to produce a cheap, convenient, and effective rail fastening to take the place of the common spikes, which do not at all times hold the rails from spreading apart or tipping over, and to take the place of other fastenings which are too expensive for general use. The form of the spike is clearly shown in each of the figures. To remove the rails for repairs, etc., it is only necessary to give the screw half a turn to the left in order to bring the blank or flat side of the head to the rail, as shown in Fig. 3. The rail can be readily replaced and fastened by simply turning the screw back to place (as shown in Fig. 2), which operation does not split or lacerate the rail. The screw is also convenient for use at guard rails, frogs, and switches, and where the rails are so near together as to preclude the use of drawbars in drawing spikes. The merits of this device will be readily apparent to experienced railroad men.

This invention has been patented by Mr. William S. Huntington, of 143 Lexington Avenue, New York city.

AT a recent meeting of the Academy of Sciences, of Paris, M. Duclaux detailed the results of some experiments which he had made to determine the effect of sunlight upon the vitality of microbes. He found that a few hours of exposure to the direct rays of the sun were sufficient to weaken, and finally to destroy, the pathogenic micrococci used in the experiments. He argued, therefore, that the sun was the best disinfectant which we possess, the most universal, the most economical, and the most active.

BICYCLE SADDLE.

Mounted upon the bicycle spring is the saddle carriage, which is provided with rollers, arranged one above and the other below the spring at each end of the carriage. A small chain reaches from the carriage to a drum contained within a case secured to the backbone in front of the point where the spring is secured. The drum is loosely mounted on a shaft extending centrally



STARBUCK'S BICYCLE SADDLE.

through the case. Fixed to the drum are a ratchet wheel and an arbor, about which is coiled a spring, so arranged as to wind the chain upon the drum, and thereby draw the saddle forward. Suitable mechanism holds the drum in any desired position. This consists of a curved arm passing down behind the ratchet and then forward, so that a catch tooth it carries may be brought into engagement with the ratchet. The shank of this arm passes up through the center of a standard formed on top of the case, and terminates in a knob. The top of the standard and under side of a locking block through which the shank passes are so formed that by properly turning the block, the shank and its catch tooth may be raised to lock the ratchet or lowered to permit the drum to turn. The locking device prevents all possible chance of the accidental tripping of the parts.

When the rider desires to adjust the saddle toward the drum, he turns the locking block and depresses the knob, thereby releasing the catch tooth from the ratchet, when the spring rotates the drum and winds up the chain. When the saddle has reached the proper position, the knob is released and the locking block turned to hold the parts in place. A spring acts to hold the catch tooth against the ratchet. Since the saddle can be moved to any required position upon the spring, the bicycle may be more easily mounted; and when going down steep grades, the saddle may be moved back, thereby preventing the liability of taking a "header." The backbone may be made longer, thus throwing the forks farther forward, and allowing the rider to get higher up on the wheel when ascending steep grades.

This invention has been patented by Mr. Calvin T. Starbuck, of Wilmington, Ohio.

OIL was struck at Zaleki, O., at a depth of 2,100 feet.