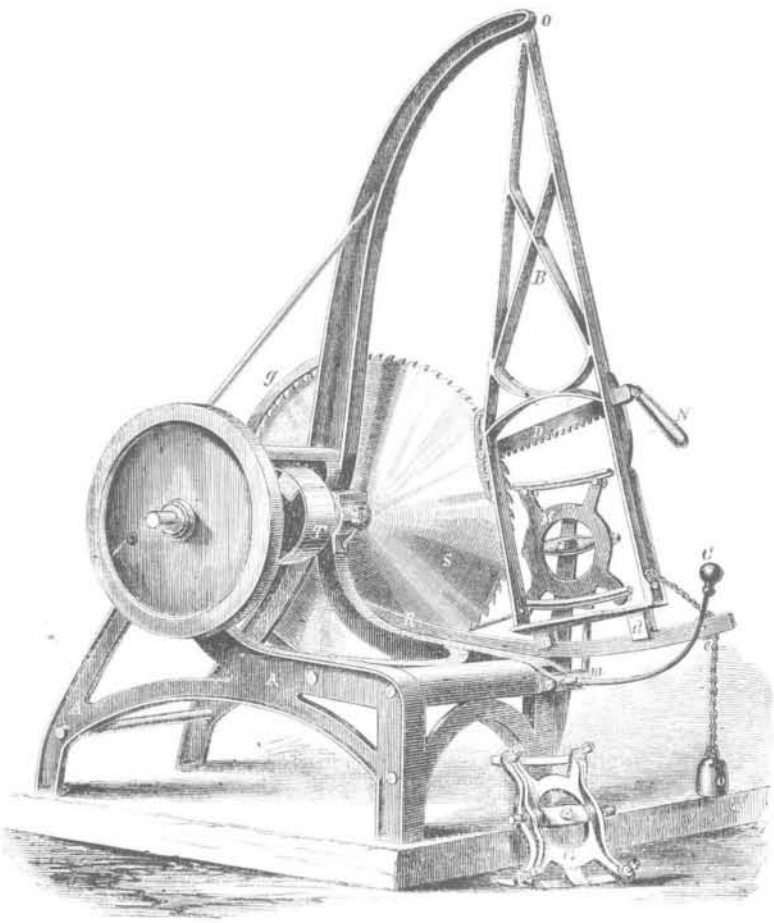
Improved Shingle and Heading Machine.

The accompanying engraving represents a machine which will saw either shingles or headings, cutting the timber with the grain, and thus materially obviating the objection which is brought against sawed shingles.

The bolt or block being placed on end upon a sort of shelf at the bottom of the swing, at *d*, is fastened by bringing the dog, D, down upon it by means of the handle, N. Continuing to push upon the handle, N, the swing carrying the bolt is vibrated past the



TREVOR & CO.'S COMBINED SHINGLE AND HEADING MACHINE.

saw and a slab piece cut off; returning, the dog is raised, and with the left hand the bolt is pushed against the gage, M, which determines the thickness and shape of the shingle; the dog is again brought down and the operation repeated. The saw, when properly filed, draws the bolt forward almost without effort on the part of the sawyer, and a small weight attached by a chain or cord to the swing, and passing over the sheave in the end of the slide, at *e*, assists in returning it.

The gage, M, is vibrated to cut shingles, alternately points up and down, by the handle, C, placed conveniently for use by the left hand, while the right is pushing the swing forward and returning it. When sawing heading the gage remains stationary. The thickness and shape of the shingles are altered in any degree necessary by set screws in the gage, M, which is more distinctly shown, detached and turned round at G.

The change from shingles to heading is made without the addition or removal of any part, by a simple adjustment of set screws. The frame, A A, is of cast iron, thoroughly bolted and braced. At its highest point, O, is a wrist, upon which is hung the swing, B, which is guided in its vibrations toward and from the saw, S, by the slide, R, without, however, resting upon it.

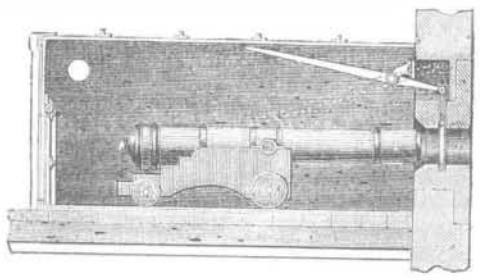
The manufacturers of these machines say the arbor upon which is the saw, S, pulley, T, and balance wheel, E, is of cast steel, finished in the best manner, and supported in babbetted boxes of long bearing, firmly bolted to the frame. The pulley, if desired, can be placed outside of the flywheel. The saw is supported and stiffened by a collar on the outside not shown. The guard, G, with an arrangement below, not shown, for separating the shingles and saw dust, renders it perfectly safe to the operator.

The saws are made to order, and ground down to No. 16 gage, thus consuming but little power and effecting a great saving of timber. The sawdust being in long fibers burns rapidly, so that with a good boiler the dust will furnish steam enough to run the machine if cutting pine. The power is not consumed in the operation of small contrivances, which are always getting out of order, but is applied directly to the work.

The patent for this invention was granted through the Scientific American Patent Agency, to the inventor, Robert Law, of Portage City, Wis., January 5, 1858, and further information in relation to it may be obtained by addressing the manufacturers of the machines, Trevor & Co., at Lockport, N. Y., to whom the patent has been assigned. [See advertisement on another page.]

SUBMARINE GUNS.

As the part of a war vessel most dangerous to be struck is under the water line, several plans have been proposed for guns to fire under the water into the hull of an enemy's vessel when ranged alongside The accompanying engraving represents a gun pro-



posed to be operated for this purpose, by Thomas Page, C. E., London, and described in the *Mechanics' Magazine*. Each gun is to be placed in a chamber below the water level. This chamber is made watertight, and air is forced into it by a pump through a tube. The air pressure is greater than that of the water at the depth at which the gun is placed below the water level. Each gun chamber is connected with a reservoir in which a plentiful supply of condensed air is maintained. The gun being loaded, placed and trained in position by suitable apparatus, a port is opened in the ship's side below the water level, and the gun is fired through such port, which is again immediately closed. The pressure of air in the chamber causes a rush of air outward, and prevents the ingress of water to any extent while firing. Mr. Page proposes to bring the guns into sufficient proximity to an enemy's ship and fire it below the water level; the projectile will therefore pass through the water, strike and enter the enemy's ship below the water line and so contribute to its destruction. Guns so situated may be worked by the men in the ordinary way, they being in the pressure chamber.

Guns worked and discharged in compressed air chambers, according to this invention, would in most cases, be fired point blank, and would not in any case require to be elevated, but in very close quarters with an enemy they might be depressed with advantage. In practice, however, the gun might always be maintained at a uniform level, in which case the port or hole in the ship's side may be made of a size to correspond somewhat in diameter to the muzzle of the gun. The gun having been loaded and brought into position, the supply of compressed air is admitted to the gun chamber, the port is opened by the lever and the gun discharged.

FROM THE STEAM PRESS OF JOHN A. GRAY.