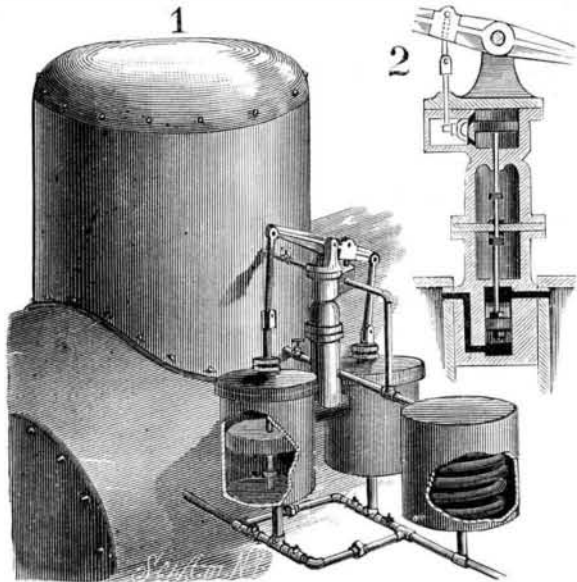


IMPROVED BOILER FEEDER.

The engraving illustrates an invention that relates to the use of water cylinders which are alternately filled and their contents run into the boiler in succession. The two vertical water cylinders shown in Fig. 1 are placed contiguously in any convenient position, with their bottoms slightly below the water level of the boiler. In each cylinder is a substantially made float placed loosely upon rods stepped in the lower ends of the cylinders, and extended through stuffing glands in the upper heads up to links connected with the ends of a piv-



HAIGH'S IMPROVED BOILER FEEDER.

oted beam. Between the cylinders is a steam chest (Fig. 2), fed from the boiler, and containing a slide valve moving on a seat having two steam ports leading to the cylinders and an exhaust opening leading to the condenser. Above the steam chest is a steam cylinder whose piston rod extends downward and connects with the valve in the chest. Steam is admitted to the cylinder by a valve actuated by a rod connected with the beam. The movement of the piston rod is limited by collars which come in contact with rubber buffers on a guide bar, as shown in the sectional view. The water cylinders have each a pipe connected in their lower heads for inlet of water from an elevated supply, and also for outlet of water to the boiler.

A stop cock in the pipe from the feed tank being opened, the water fills the cylinder that is not open to the boiler, the other cylinder being already filled. As the water level in the boiler lowers, the water in the cylinder open to the boiler by one of the ports will be gradually run out until the float, falling, comes in contact with a collar on its rod, which is moved down, the beam being thus moved to shift the upper valve to admit steam to its cylinder; the valve connected with the piston rod is shifted to close one port and to open the other, to admit steam into the filled water cylinder, which will empty as soon as the pressure has equalized. The steam in the cylinder just emptied now exhausts into the condenser, and the vacuum created starts the flow of water, so that it again refills. This operation is repeated so long as the water supply continues. This invention has been patented by Mr. Samuel Haigh, of Coquitlam, New Westminster, British Columbia, Canada.

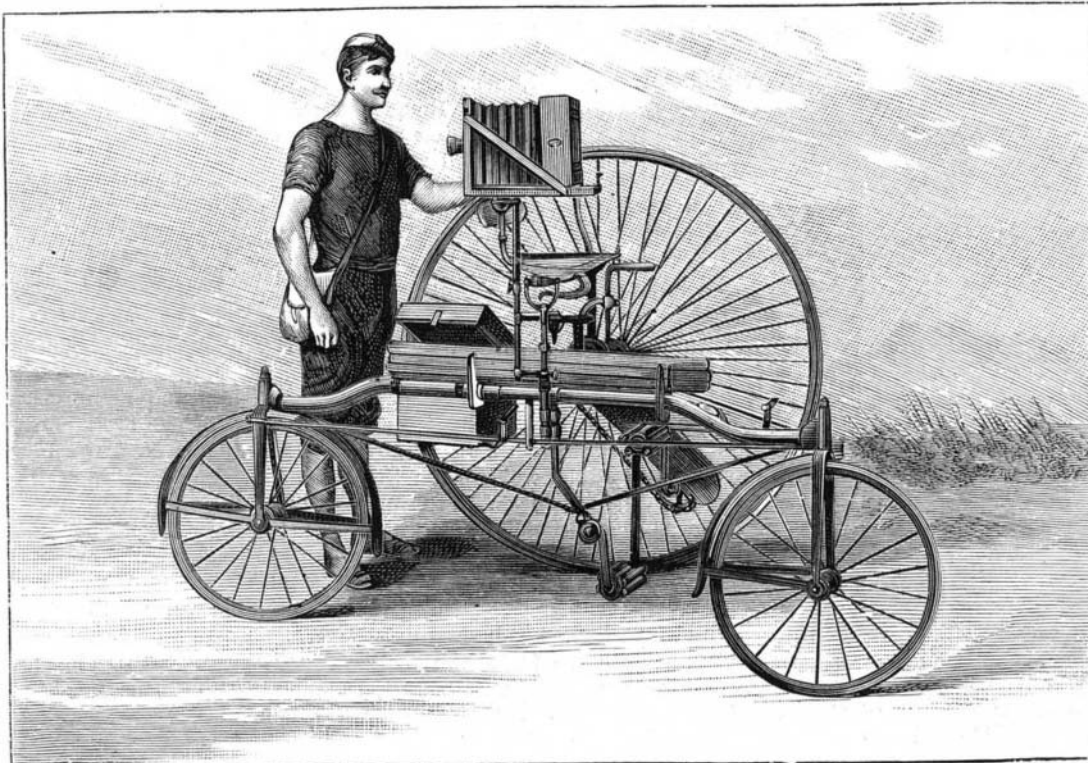
Strophanthin, the New Diuretic.

Professor Fraser's paper on *Strophanthus hispidus*, read in the section of Pharmacology and Therapeutics, at the meeting of the Association at Cardiff, places us in the possession of a new and valuable heart remedy and diuretic. It appears that the drug is extensively used in many parts of Africa as an arrow poison. In the Mangua district, near the Zambesi, it is called "kombe," while in Senegambia and Guinea the name "inee" is more commonly employed. Dr. Livingstone, in his "Narrative of an Expedition to the Zambesi," refers to this poison, and says the arrows are usually made in two parts. "An iron barb is firmly fastened to one end of a small wand of wood, ten inches or a foot long, the other end of which, fined down to a long point, is nicely fitted, though not otherwise secured,

in the hollow of the reed which forms the arrow shaft. The wood immediately below the iron head is smeared with the poison. When the arrow is shot into an animal, the reed either falls to the ground at once, or is very soon brushed off by the bushes, but the iron barb and poisoned upper part of the wood remain in the wound. If made in one piece, the arrow would often be torn out, head and all, by the long shaft catching in the underwood, and striking against trees." The plant which yields the poison belongs to the Apocynaceæ, and has been described and figured by Professor Oliver, of Kew, under the name of *Strophanthus Kombe*. It is a woody climber, and flowers in October and November. The follicles vary in length from 10 to 12 inches, and contain from 150 to 200 seeds, each weighing about half a grain, and bearing a beautiful plumose tuft, placed at the extremity of a delicate stalk. They contain no alkaloid, but are rich in an active principle, which Dr. Fraser calls "strophanthin." This is a crystalline substance of intense activity, which seems destined to play an active part in our list of heart remedies. In physiological action it is allied to digitalin and other members of the digitalis group. It has been used, both experimentally on animals and clinically in the wards, at the infirmary at Edinburgh. The dose for hypodermic use is from 1-120 to 1-60 of a grain. In the discussion which followed the reading of Dr. Fraser's paper, Dr. Murrell pointed out that the introduction of strophanthin would serve to commemorate, in a way which would otherwise be impossible, the centenary of the publication of Withering's classical work on "The Foxglove and Some of Its Medical Uses."—*British Medical Journal*.

A PHOTO-TRICYCLE.

Velocipede riding is now much indulged in, especially in England, where the tricycle is an object of both utility and pleasure. The improvement that we shall herewith make known relates more particularly to the pleasurable side of the exercise. How many times has it not happened that the excursionist has regretted his inability to fix the landscapes and curious scenes that were unveiling themselves to his eyes? What was impossible with the slow and complicated processes of dry and wet collodion has now become a simple thing, thanks to gelatino-bromide. It was necessary, however, to give a form to the alliance of the new photographic processes with locomotion, and so Messrs. Rudge & Co. have brought out the photo-tricycle which we illustrate herewith, and which they style the "Coventry Rotary." The camera is mounted upon a universal



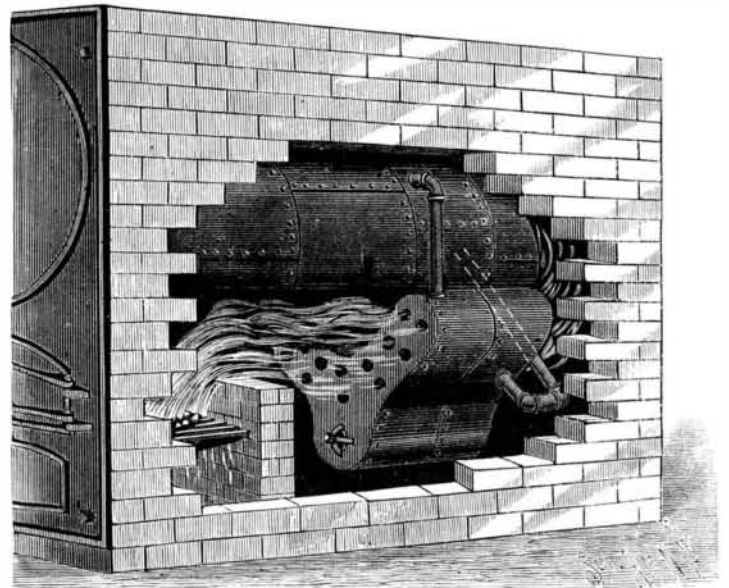
PHOTOGRAPHIC TRICYCLE.

joint that allows it to assume any position and take in the subject to be reproduced, in a few instants. Three boxes, each containing six plates, $6\frac{1}{2} \times 4\frac{1}{4}$ inches, are within reach of the hand, and can be quickly substituted for each other in measure as they are needed. The photographic apparatus may be either left upon the tricycle itself or be placed upon a tripod when the best point of view is not otherwise accessible. This is an innovation that will be highly appreciated by amateurs who cultivate both the arts of tricycling and photo-

graphy, and this is why we make known to our readers a combination which is of a nature to render them some service.—*La Nature*.

IMPROVED STEAM BOILER.

The accompanying engraving represents an improved steam boiler—the invention of Mr. George Fox, of 509 West 34th St., New York city—that effects economy in fuel by means of a supplementary boiler placed in the fire-box, and suitably connected by pipes



FOX'S IMPROVED STEAM BOILER.

with the main boiler. This is fitted in the furnace, which is preferably of the reverberatory kind, in the ordinary way, and beneath it is placed the supplementary boiler, made concave in form with a downwardly projecting pocket, and provided with fire tubes through which the flames from the fuel pass for heating the water in the boiler. The pocket is to receive any sediment that may be deposited in the supplementary boiler, a hand hole at one end permitting cleaning. Water is supplied to the supplementary boiler from the main one through inlet pipes, which pass from the lower part of the main boiler down below the other, which they enter at the bottom, so that the water will be considerably heated in the pipes. Return pipes entering the main boiler above the water line conduct the water back from the lower boiler. A space is left between the two boilers, through which the heat can pass. The lower part of the supplementary boiler is at the point of intensest heat in the furnace, thus utilizing the maximum amount of heat. When the boilers are filled with water and the fire started, a continuous flow will take place from the main boiler to and from the supplementary boiler.

A Hurricane at Charleston, S. C.

A storm of wind and rain which probably has not had its equal in the same section in a hundred years past, broke over our southeast Atlantic coast at daylight on the morning of Aug. 25. It was most severely felt at Charleston, S. C., but did considerable damage also at Savannah, Ga., and Jacksonville, Fla. At 7 o'clock in the morning the apparatus in the roof of the signal office at Charleston was demolished, and the last observation then denoted a wind of 68 miles an hour. The storm did not, however, reach its height until about 9 o'clock, when, from the additional destruction it had caused, it was estimated that the wind had attained a velocity of 75 to 80 miles an hour.

The latter pressure is styled in aerodynamics a hurricane, with a 100 mile an hour rate as a cyclone. The wind pressure per square foot, when blowing at 70 miles an hour, is 24.1 lb.; at 75 miles, it is 27.7 lb.; and at 80 miles it is 31.49 lb.; so that it is easy to compute the force that was exerted in tearing down buildings, destroying wharfs, etc., the ground in many places having been described as cleaned off as though its structures had been sheared off by a razor. The damage at Charleston is computed at over one million dollars.