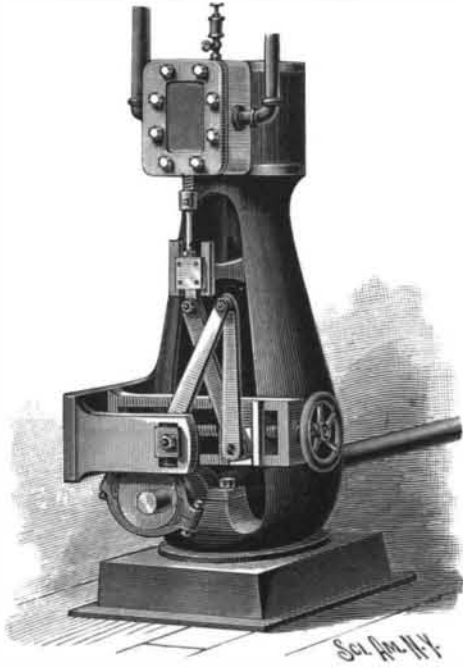


**A SIMPLE AND EFFECTIVE VALVE GEAR.**

The illustration represents a valve gear more especially designed to transmit motion to the valves of reversing steam engines and other engines and machines. It has been patented by William Lowe, a mechanical engineer, of No. 49 Cambridge Street, Paddington, Sydney, New South Wales, Australia. The valve stem of the usual slide valve is pivotally connected with a pin held in the forked end of a link pivotally connected at its lower end with a pin in a block which slides in a vertical guideway, this guideway sliding in a horizontal

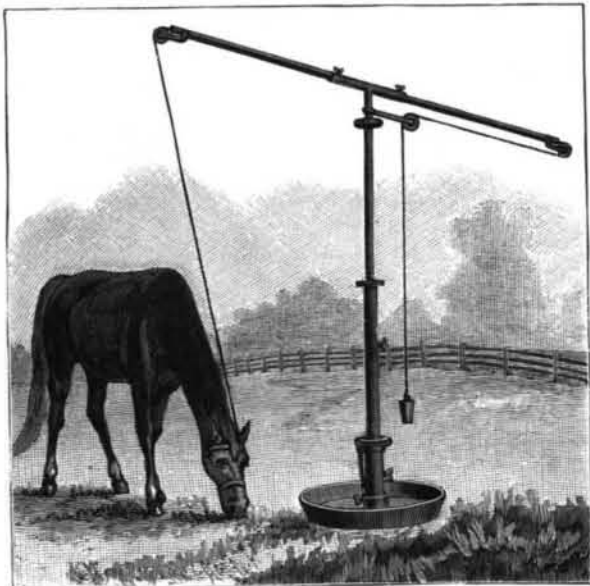


LOWE'S VALVE GEAR.

bearing attached to a stationary part of the engine. By means of a screw having a hand wheel the guideway is movable to either side of the main driving shaft, according to the direction in which the engine is to run. On the pin with which is pivotally connected the link leading to the valve stem is fulcrumed another link, which is pivotally connected at its upper end with the free end of the rod of an eccentric on the main driving shaft, the rod having near its strap a pin which engages a block sliding in a vertical guideway. The two vertical guideways stand parallel, and the eccentric strap is preferably provided with movable side pieces for taking up wear. This valve gear has been found to be accurate in its action, having equal lead, and the steam ports opening an equal distance when the reversing screw or lever is in any position between the lead and a full open port.

**A TETHER FOR ANIMALS.**

The illustration represents a tether made in adjustable sections, designed to contribute to the comfort of an animal feeding, while affording great freedom of movement within prescribed bounds, the movement of the animal in any direction being without danger of entanglement in the tether rope. The improvement has been patented by John Day, of Logansport, Ind.



DAY'S TETHER.

The base section of the standard has a lower pointed end on which is a spiral thread, to facilitate firmly anchoring it in the ground, this section passing through a flanged opening in the center of a pan which may be used as a trough for water or feed, the pan being adjustable in position and held in place by a set-screw. The base section is adapted to receive a second section, and the latter a third section, both held in place by set-screws, and in the top of the upper section is introduced a tubular T-head having a flange on its vertical member, adapting it to turn freely on the top of the standard. A tubular crossarm is held by set-screws in the horizontal member of the tubular T-head, a pulley

being held on a bracket opposite each end of the crossarm, and a bracket near the top of the standard carries another pulley, these three pulleys affording, as will be seen, a guideway for the tether rope or chain, which is attached at one end to the halter of a horse or a stall on an animal's head, a weight being secured to its other end. To facilitate forcing the lower or base portion of the standard into the ground, a ring on which is pivoted a lever with a camhead loosely encircles this section near its top, and by means of this lever the section may be turned to carry this section into or out of the ground, by means of the spiral thread on its pointed portion beneath the surface of the ground. The radius of the circle in which the animal tethered may have movement is regulated by correspondingly adjusting the position of the tubular crossarm in the horizontal member of the T-head. As the weight is designed to be just sufficient to take up the slack of the tether rope, it is evident that the animal will not be inconvenienced to any great extent in feeding.

**Pure Water for Troops on Active Service.**

Now that there seems to be a likelihood of our soldiers engaging in warfare, and in a country too notoriously unhealthy for unacclimatized white men, every regard to the sanitary arrangements of the army should be carefully looked into, and especially so far as a pure water supply is concerned. The prevalence of fever, and the amount of field service performed by the troops, has several times been pointed out as a well-marked coincidence. The reason of this is not far to seek, but must in the large majority of cases be put down to the impurity of the water which the men on active service are compelled to drink. The danger of contracting fever from this cause might be greatly lessened by providing portable water filters for troops operating in the field. At such times the men are dependent upon surface-water supplies, and it may be said that surface-water supplies are always dangerous. Dr. Smart, in a communication to the office of the war department in July last, discussed this subject, and in the course of his remarks said: "I desire to point out that in the early days of the settlement of our Western country fevers were common, both in military commands and in civilian communities. These fevers were of an adynamic type. By some observers they were regarded as malarial remittents, by others as specific typhoid fevers, while others again, among whom was myself, considered that although the majority of the cases were of malarial origin, occasional cases were due to the specific cause of enteric fever, either developed de novo or propagated from some previous cause. Notwithstanding differences of opinion as to the nature of the fevers, there was a general belief that the water supply was concerned in their causation. This belief became strengthened as continued observation showed that these fevers diminished in prevalence both at military stations and in civilian settlements as purer water supplies were obtained. The advisability of providing pure water for troops in the field may be considered evident. The possibility of making this provision seems to have been hitherto an untried experiment, at least in this country." It is impossible to gainsay the truth of these words, and at this juncture they should have special weight, for in the case of hostilities being carried into Cuba, it is more than probable that those engaged in fighting would have as much to fear from disease as from Spanish bullets. Therefore it will be judicious to take every possible precaution.—Medical Record.

**Exports and Imports in March.**

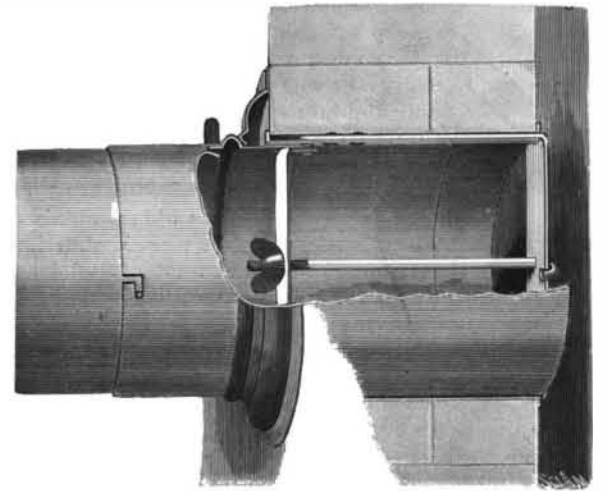
The statement of the exports and imports of the United States issued by the Bureau of Statistics shows that in March last the exports of domestic merchandise amounted to \$110,944,664, an increase of nearly \$25,000,000 as compared with March, 1897. The imports of merchandise in that month were \$61,507,437, of which nearly \$27,000,000 was free of duty. The loss in imports of merchandise was about \$15,000,000. The gold exports in March amounted to \$658,834, and the imports to \$30,200,265. The exports of silver aggregated \$3,995,818, and the imports \$445,352.

For the nine months ended with March there was an increase in the exports of merchandise of nearly \$104,000,000; a decrease in the imports of \$43,667,298; a decrease of \$2,875,808 in the exports of gold, and a decrease of \$13,000,000 in the imports of gold. The exports of silver show a decrease of \$4,241,167, and the imports an increase of \$417,461.

To determine the effect of the vapors of melted asphalt on plant life, experiments have been made by Prof. Sorauer with various plants, shrubs, etc., by subjecting them for a few hours to the action of the vapor. No immediate injury was noticeable, but after a few days changes took place which varied with different plants. Horse chestnut trees and rose bushes showed a shrinking of the epidermis; plants rich in tannin acquired a brown color and coagulation of cell contents took place; others became white, probably from the filling of the interior with air, through breaking down of cell tissue.—Sudd. Ap. Ztg.; Phar. Era.

**AN EFFICIENT STOVEPIPE FASTENER.**

The illustration represents a device designed to facilitate securing a stovepipe in position, and holding the pipe so that there will be no danger of soot blowing through the joints into the room. The improvement has been patented by Jerome Jones, of Kansas City, Mo., (address in care of Egelhoff Shoe Company). Upon the thimble held in the chimney wall, and opening into the flue, is riveted an approximately U-shaped metallic bar, whose middle portion extends across the inner end of the thimble, and forms a support for the hook of a screw rod whose other end is engaged by a cross piece secured to the inside of a short pipe section loosely fitting in the thimble and projecting outwardly to receive the end of the stovepipe. The inward movement of the short section is limited by a bead which abuts against the inner edge of a ring-shaped cover

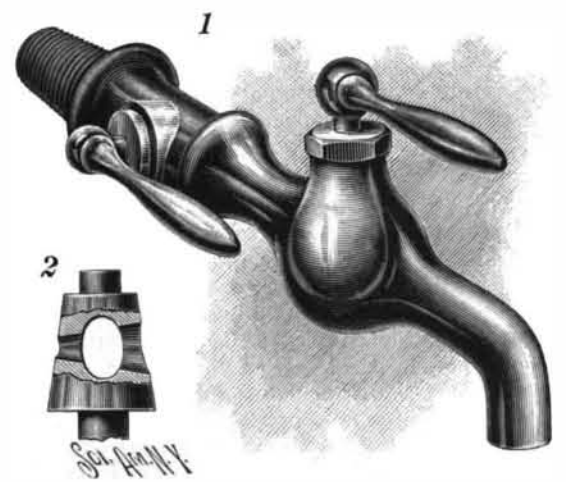


JONES' STOVEPIPE FASTENER.

engaging the outer face of the chimney, thus forming a tight joint, and in the outer end of this section are bayonet slots to be engaged by short pins on the inner end of the stovepipe, there being a handle or thumb-piece on the short section by which the latter may be conveniently turned to bring the parts into engagement. When the stove is taken down, the short section and ring cover, as well as the stovepipe, are removed, and the screw-rod is utilized to hold in place an outer cover, which rests with its edge against a packing on the outer face of the chimney.

**AN IMPROVED FAUCET.**

A faucet which affords means for reducing the flow and force of a stream of water under pressure at the delivery end of the pipe is shown herewith, and has been patented by C. W. Brackett and S. L. Rockwell, of Jordan, N. Y. An auxiliary faucet or stop-cock is attached to the main faucet or is preferably made integral therewith, and the key of the auxiliary faucet is of novel construction, having preferably an oval opening, from one side to the other, adapted to admit of uninterrupted flow of water to the main faucet, and having also one or more auxiliary openings, as shown in the small figure, at an angle to the first named opening. The auxiliary openings are of less diameter than the main opening, and are tapering, their larger ends facing the main outer faucet. By the turning of the auxiliary faucet the pressure of the water may be reduced at the de-



BRACKETT AND ROCKWELL'S FAUCET.

livery or main faucet, so that the water will pass out in a full stream but with a gentle flow.

IMPORTANT experiments dealing with a plague of locusts are reported from South Africa. Mr. Edington, director of the Bacteriological Institute of the Cape Town government, has succeeded in destroying millions of insects by inoculating a few and turning them loose. He makes a sort of toxin by grinding up the bodies of locusts which have perished of disease. The resulting powder is mixed with water and smeared over the bodies of a few hundred locusts which are released. The disease soon spreads and the swarm all perishes.