WELL PIPE CUTTER.

In the lower end of the forked piece is pivoted a sharp edged cutting roller, the pintle of which passes through inclined slots in the shanks of a forked piece held between the shanks of the upper piece. (This construction is plainly shown in Fig. 2, in which the front fork of the upper piece is removed.) Projecting upward from the top of the lower piece is a screw passing through an internally threaded sleeve held to turn in a ring formed on the upper end of the upper forked piece. On the upper end of the sleeve is screwed and fastened a swivel piece, on whose upper end is a screw for attaching the working rod. In the edge of the lower forked piece are pivoted anti-friction rollers, and to its lower end two bow springs are fastened.

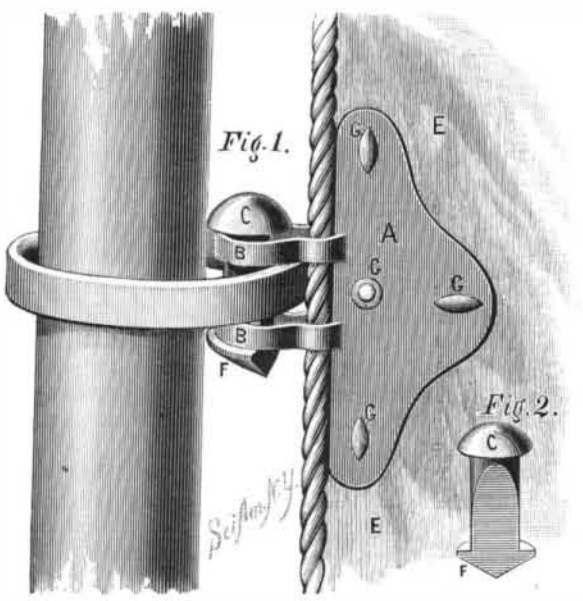
The instrument is forced down in the well pipe, the springs preventing the loose part from turning. If the swivel part is turned, the sleeve is turned with it and the lower forked piece is moved upward, thereby causing the cutting roller to project from the edge of the other part. The device is then worked up and down, causing the roller to cut a vertical slot in the pipe; by turning the device more or less, the slot may be made of any desired width. After the slot has been cut the swivel part is turned in the opposite direction, when the roller is drawn in between the shanks.

This invention has been patented by Mr. A. W. Benson, of San Bernardino, Cal.

SAIL CLAMP.

A clip formed of two end plates, A, connected by two loops, B, is attached to the edge of the sail by rivets, G, or in any other suitable manner, with the edges of the plates inside of the leech rope. The edges of the clip next to the rope are bent outward to fit closely against the rope, thereby distributing the strain over a large surface. The loops are separated a sufficient distance to receive between them a mast hoop, which touches the rope and is retained in place by a pin, C, upon one end of which is the head, C, and upon the other end a conical head, F. A portion of one side of the pin and the conical head is cut away (Fig. 2), giving the pin a wedge shape. The pin passes through the loops, and binds the hoop against the leech rope, and the conical head engages the lower loop and prevents the pin from accidentally escaping.

Although this invention, which was recently patented by Mr. G. W. Idner is applicable to sails of all vessels, it is designed more particularly for yachts and light sailing



IDNER'S SAIL CLAMP.

vessels, in which it is often necessary to quickly shift the sails, and with it the sail will sit better and lie flat to the wind. Additional particulars regarding this invention may be obtained by addressing Messrs. Idner & Rike, P. O. box 19, Thomasville, Ga.

FOR a waterproof paper which will shine in the dark, the *Papier Zeitung* gives the following mixture: Forty parts paper stock, ten parts of phosphorescent powder, ten parts water, one part gelatine, and one part bichromate of potash.

The Obstruction of Water Pipes.

At a recent meeting of the Academy of Natural Sciences in Philadelphia, the obstruction of water pipes was the subject discussed. Mr. Ed. Potts, a well known authority on sponges, had examined water pipes that had become useless from some obstruction, in order that he might ascertain whether the obstruction was due to sponge growth. Mr. Potts announced that he could find no sponge growth in the obstructed water pipes, the blocking of which was argillaceous, with iron impregnation. At the same time Mr. Potts stated that in all water pipes he had examined there was a growth of sponge, and that the sponge was often strongly impregnated with iron.

To the writer it appears probable that the obstruction of the water pipes takes place in the following way: The sponge statoblasts carried by the running water attach themselves to asperities of the interior of the pipes, and there, well supplied with food by the current, soon develop into a flourishing growth of sponge. The sponge substance, full, like all sponges, of small openings through which water enters, and large ones from which it is expelled, acts as a filter to remove from the water the particles of sand and mud held in suspension, while at the same time the iron in the water probably retards the growth of the spicules which form the sponge skeleton, and thus endangers the stability of the sponge. This goes on until the sediment accumulated by the living sponges becomes too much for their fragile structure, and the result is that mud and sponge are torn away in masses which, finally accumulating in the smaller pipes, obstruct them completely.

By the time this occurs the only evidence of sponge structure likely to be found would be, not spicules, themselves microscopic objects, but the still more minute fragments of spicules which had never been able, according to the observations made, to properly develop. At certain seasons of the year the quantity of earthy material in the water is much larger than at others, and the obstruction would therefore take place more rapidly. Although the sponge growth may thus be the cause of the obstruction of small pipes, its action while growing would be to remove deleterious organic matter, both by actually feeding upon it and by mechanically filtering it out.

To Clean Marble.

A person who has tried many ways for accomplishing the above object thinks the following plan, which he came across in some newspaper, quite the best: Brush the dust off with a piece of chamois, then apply with a brush a good coat of gum arabic, about the consistency of thick mucilage; expose it to the sun or wind to dry. In a short time it will peel off; wash it with clean water and a clean cloth. If the first application does not have the desired effect, it should be tried again. Another method is to rub the marble with the following solution: One-quarter of a pound of soft soap, one-quarter of a pound of whiting, and one ounce of soda and a piece of stone blue the size of a walnut; rub it over the marble with a piece of flannel, and leave it on for twenty-four hours; then wash it off with clean water, and polish the marble with a piece of flannel or an old piece of felt, or take two parts of common soda, one part of pumice stone, and one part of finely powdered chalk, sift it through a fine sieve, and mix it with water, then rub it well over the marble, then wash the marble over with soap and water.

To take stains out of white marble, take one ounce of oxgall, one gill of lye, one and a half tablespoonfuls of turpentine; mix and make into a paste with pipe clay; put on the paste over the stain, and let it remain for several days. To remove oil stains, apply common clay saturated with benzine. If the grease has remained in long, the polish will be injured; but the stain will be removed. Iron mould or ink spots may be taken out in the following manner: Take half an ounce of butter of antimony, and one ounce of oxalic acid, and dissolve them in one pint of rain water; add enough flour to bring the mixture to a proper consistency. Lay it evenly on the stained part with a brush, and, after it has remained for a few days, wash it off, and repeat the process, if the stain be not wholly removed.

WAGON END GATE.

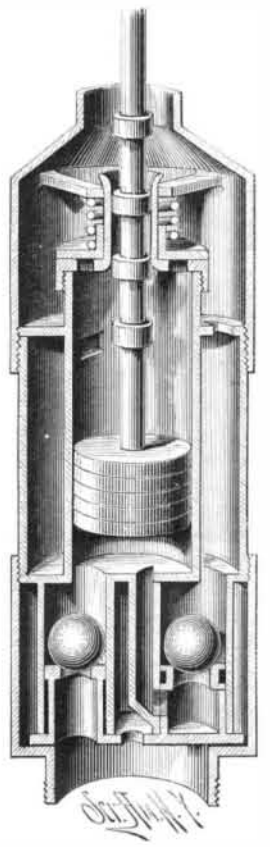
The end gate consists of two similar parts, A, provided with cleats and connected by hinges placed upon the inside. The inner cleat of each half has a small bracket placed in such a position as to be engaged by the hooked rod, B, which extends across the wagon box and is permanently linked at one end to an eye bolt. The hooked end of the rod engages an eye bolt projecting through the opposite side of the box. Each eye bolt is provided with hand nuts, C, by means of which the sides of the box can be drawn tightly against the ends of the end gate, which is prevented from lifting or opening outward by the rod. The ends of the gate are received between cleats in the usual way. By loosening one of the hand nuts and removing the hooked end of the rod, the hinges yield and the end board opens outward. The rod cannot become misplaced or lost, as it is retained by the other eye bolt. If the load cannot be conveniently removed from the end of the box without removing the eye bolts, they may be easily taken out after the nuts have been unscrewed. To facilitate the outward movement of the end board, the inner corners of its outer end are rounded, as shown clearly in Fig. 2.

This invention has been recently patented by Mr. David B. Keagy, of Yankton, D. T., who will furnish further particulars.

DOUBLE ACTING PUMP.

The pump herewith illustrated has been patented by Mr. James McGwin, of Fulton, Missouri, and is constructed with an inner and outer cylinder. The piston, working in the inner cylinder, is attached to a piston rod provided with a series of packing collars fitting in a tube which is flared slightly at top and bottom. The top of the cylinder is provided with a series of apertures arranged in a circle. An annular valve plate rests on the top, between which and a cross piece held in the upper part of the cap, which is contracted toward its upper end, and provided with a neck to which the lower end of the stand pipe is secured, is a spring.

Surrounding this cylinder is a larger one on which the cap is screwed. An opening forms a communication between the upper part of the inner cylinder and the channel between the two cylinders. Two vertical radial partitions form channels between the cylinders, and at the upper end of one is an opening. Secured to the bottoms of the cylinders are three tubes, each of which contains a ball valve.

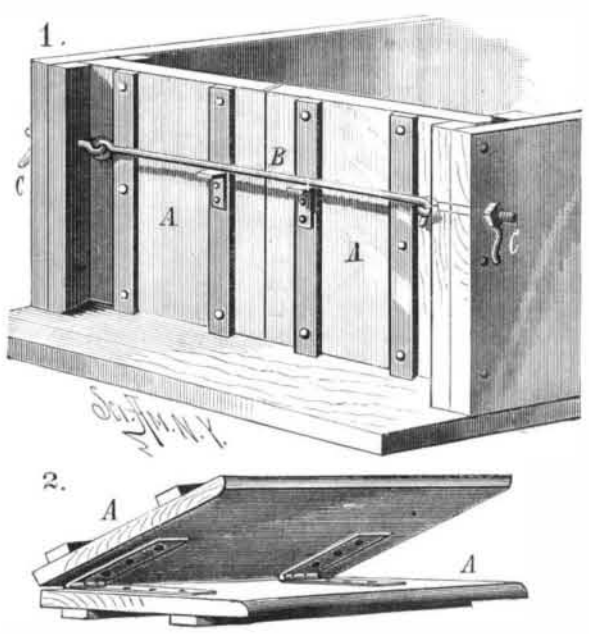


The upper end of the tube shown at the right of the engraving communicates with the bottom of the channel; the second tube communicates with the inner cylinder; and the third one with the other channel. A duct leads from the inner cylinder to the bottom of the first tube. A cap, open at the bottom, is screwed to the lower end of the outer cylinder. If desired, the pump can be inserted in the tube of an artesian well, and in that case no stand pipe need be secured to the top.

As the piston ascends, water is drawn into the bottom of the inner cylinder through the second valve. The water above the piston is forced out through the apertures into the cap, the valve being raised by the pressure. When the piston descends, the water is drawn into the upper part of the cylinder, through the third tube (not shown in drawing), the channel, and the opening. The water below the piston is forced out through the duct, the right tube, and channel into the cap. The water rises from the cap into the stand pipe attached to the neck.

Cornell's Mummy.

Cornell University has lately received what must after all be regarded as the most wonderful of the products of the land of the Pyramids—a mummy. It was procured from the necropolis in Upper Egypt about a year ago. From the hieroglyphic inscriptions of this mummy it appears that the name was Reupi, and that he belonged to the Twenty-third Dynasty. The body was, therefore, laid away eight hundred years before Christ, or nearly three thousand years ago. Prof. Tyler, in connection with the reception of the mummy, called attention to these facts. Reupi lived before the first Olympiad, nearly fifty years before the legendary



KEAGY'S WAGON END GATE.

founding of Rome. He was contemporary with the founding of Carthage, two hundred years before Cyrus, three hundred years before Confucius, and seven hundred and fifty years before Julius Cæsar invaded Britain, four hundred years after the Trojan War, three hundred years before the battle of Marathon, or in Jewish chronology, five hundred years after the Exodus, and only one hundred and seventy-five years after Solomon. He was a contemporary of Elijah and Ahab.—*N. Y. Observer.*