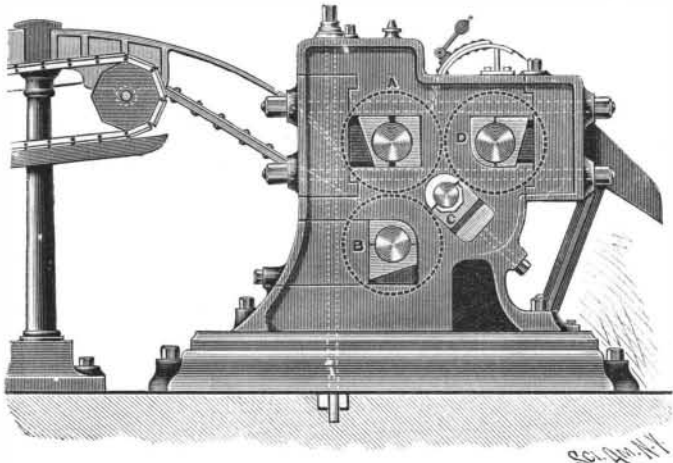


AN IMPROVED SUGAR CANE MILL.

The canemill shown in the illustration is designed to utilize the crushing power to the greatest advantage, without injuring the headstocks, the mill also proving very economical of power in comparison with the work done. It is said that one of these mills recently erected in the island of Barbados has proved a complete success extracting 71 per cent out of 100 pounds of cane, or very nearly equal to that ordinarily obtained by double crushing with two mills of three rollers each. The mill forms the subject of a patent recently granted to Mr. Donald Skekel, of Georgetown, Demerara, British Guiana. The two top rollers, A and D, are secured by horizontal bolts, which may be tight-

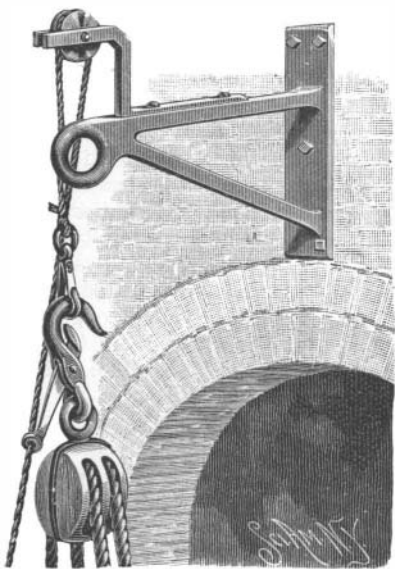


SKEKEL'S SUGAR CANE MILL.

ened up by means of nuts on their ends, and vertical bolts secure the lower roller, B, these bolts having collars on their lower ends and tightening nuts on their upper ends. In the headstock, opposite roller B, is a tongued and jointed removable piece, to facilitate removing the latter roller when desired without taking down the mill. The cane, after passing between the front or entrance rollers, A B, is passed up between the two top rollers, A D, the juice pressed out passing down by its own gravity and being conducted to a suitable receptacle. To guide the cane from the entrance rollers upward between the top rollers, A D, a corrugated roller, C, is driven by suitable gearing to travel at the same velocity as the other rollers, pushing the cane upward to undergo the final crushing. By means of a screw bolt with a nut on its outer end the corrugated roller may be adjusted to give the friction required to pass the partially crushed cane upward. Suitably arranged guides prevent the passing of the cane to the bearings of the rollers, and to prevent the bagasse from being carried over to the feeding side of roller A, a hinged hood is held in contact with the surface of the latter roller by a weighted lever. All parts of the mill are easy of removal, and the bearings may be conveniently lubricated, while the liability of any breakage of the headstock is reduced to a minimum.

A HOISTING DEVICE AND SUPPORT.

The illustration represents a device for conveniently hoisting a tackle or other apparatus from the ground or the deck of a ship to its position of use, and automatically engaging the tackle upon its support. The improvement has been patented by Mr. Henry Sellheim, No. 532 Pearl Street, New York City. A bracket



SELLHEIM'S HOISTING DEVICE.

carrying a pulley is secured upon the top of the tackle support in such a manner that the pulley will be above the ring or eye of the support, both ends of a rope passing over the pulley being in the hands of an operator on the ground. A spring hook attached to one end of the rope is hooked upon the tackle hook, and the other end of the rope is passed through an eye

on the outer end of a lever pivoted on this hook. As the tackle is then raised by pulling upon the rope, the tackle hook is readily manipulated to engage the eye of the support, while the lever pivoted on the hook may be made to close its open end, preventing the disengagement of the spring catch. When the job of hoisting has been finished, the tackle may in like manner be disengaged and lowered to the ground.

Armour's Electric Railroad.

An elevated electric railway has been established at the stock yards at Chicago. It connects all the P. D. Armour warehouses and slaughter houses. There are, says the *Engineering News*, about 6,000 ft. now completed and about two miles of extensions are being built. The track has a gauge of 3 ft. and is 23 ft. above the ground. Where the line runs between the main buildings the structure is of steel; elsewhere it is of Georgia pine. The numerous switches necessary to reach all parts of the buildings made the construction difficult to plan satisfactorily. The ironwork was designed and erected by Mr. John Bouchard, master mechanic for the Armour Company. The electrical work was done by the Thomson-Houston Company, under the supervision of Mr. A. Shillinglaw, electrician for the Armour Company. There are in service two 20 horse power locomotives of the standard Thomson-Houston type. The cars may be run off the rails on to the floors of the different houses. The power house is located about a quarter of a mile from the road, and will be some distance beyond that when the company moves into the new electric station, occupying a building 125 by 150 ft., and comprising three stories, built of steel and brick, with the engines located on the first floor, shafting on the second and dynamos on the third. Current for the present equipment is supplied from a Thomson-Houston 135 horse power generator, and there is also ready for service a National 80 horse power machine.

The World's Cotton Production.

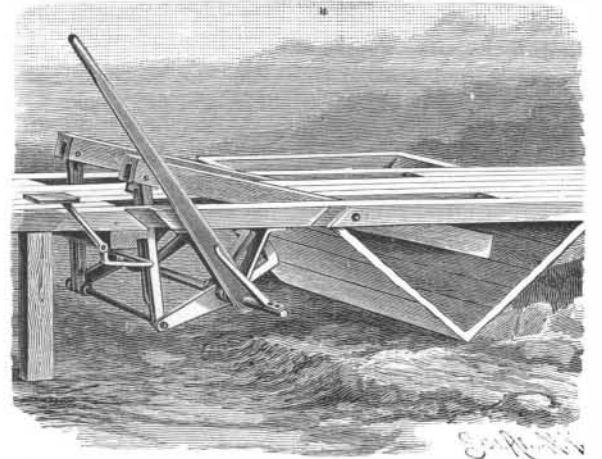
The total crop of the world for 1891 is placed by one statistician at 12,570,000 bales, averaging 400 pounds weight. Of this the United States is credited with having produced 8,652,597 bales, averaging 480 pounds each, or more than three-fourths of the world's entire crop, in pounds. The East Indian product, of considerably less than a million bales, comes next. Egypt is third on the list. The average supply of the world's cotton for six years ending 1891 was 9,928,000 bales, of which the United States produced 7,659,000 bales, all other countries making only 2,269,000 bales. The acreage of culture is increasing more rapidly in the United States than in any other country. Until recently, Florida gave to the world the highest export of the sea island cotton, the most valuable of the cotton fibers, but during the year 1890-91 Georgia went highest, South Carolina coming next—the fruit industry of Florida having doubtless supplanted the cotton industry there.

The staple reaches its highest general price in England and on the Continent of Europe, where it is consumed by manufactures. The rates of freight to Liverpool from the different countries where the fiber grows usually determine the prices paid to the producer of the raw material. Planters living nearest the great shipping ports of our Southern and Gulf States are supposed to receive the very highest of all prices paid for the fiber—the lowest prices for good cotton being seen in South America and Asiatic localities where it is grown.—*Atlanta Constitution*.

AN IMPROVED GRAIN DUMP.

The illustration represents a simple, durable and inexpensive structure, so built that the pit to receive the grain need not be sunk into the ground, or may be sunk only a slight distance, while dust or foreign matter, fluid or solid, will not interfere with the action of the dump timbers in cold weather. The improvement has been patented by Mr. John P. Peterson, Worthington, Minn. The platform is mounted upon standards or other supports at the desired height from the ground, provision being made for readily driving upon and away from it; and in the platform, about the distance apart of ordinary wagon wheels, are lengthwise openings, in each of which a dump timber is pivoted. Beneath the platform are brackets in which is journaled a shaft under the rear ends of the dump timbers, and extending downward and rearward from this shaft are arms connected by a cross rod, the latter being pivotally connected by upwardly extending bars with the dump timbers. Latch links from the cross rod extend upward through the platform, these links being adapted to enter recesses by which the dump timbers are held in horizontal position. The connecting rods, links and dump timbers are practically counterbalanced by counterpoise weights on the shaft, from one end of which a lever extends up within a guard yoke on the edge of the platform, the lever being designed to engage oppositely inclined

recesses in the side of the platform, the dump timbers being closed or in their horizontal position when the lever is in the rear recess and elevated when the lever is in the forward recess, a spring bearing against the outer face of the lever. Before the dump timbers can be elevated, the latch links must be released, which is

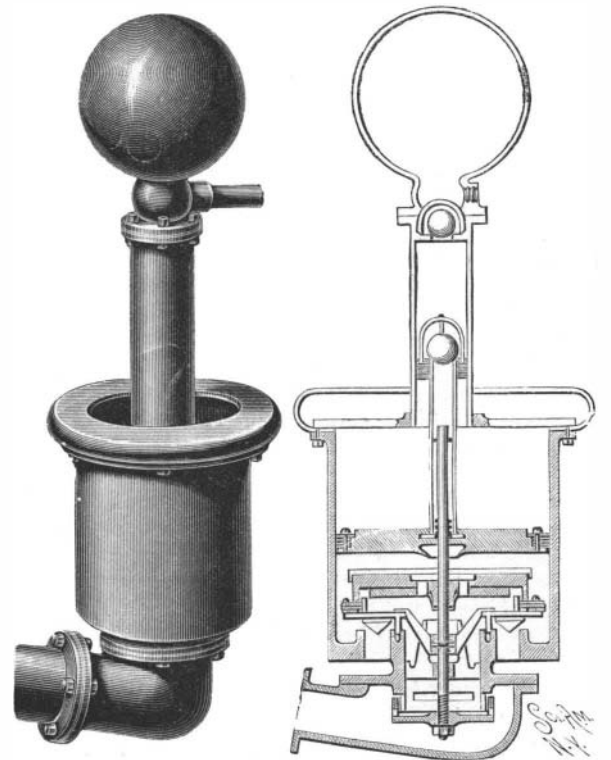


PETERSON'S GRAIN DUMP.

effected by a lever having a foot plate on its upper end, after the vehicle is driven upon the platform, with its wheels on the dump timbers, the hand lever then being operated to incline the dump timbers and the vehicle, so that the contents of the latter will be deposited in the hopper.

AN IMPROVED HYDRAULIC RAM.

A simple and compact ram, by which water may be elevated to a considerable height by a stream having but a small fall, the water being discharged in a continuous flow, is shown in the accompanying illustration. The improvement has been patented by Mr. Lewis T. Webster, of Northfield, Mass. In the lower end of the inlet pipe is a valve with a central hub screwed on the lower end of a piston rod extending upward within a hollow interior piston rod or pipe, the lower end of the latter being screwed or otherwise secured to the top of a piston reciprocating in the large lower cylinder, around the bottom edge of which are the outlet valves. The interior pipe piston working in the central smaller pipe, or pump barrel, has at its upper end a check valve, and a ball valve rests in the passage from this pipe to a hollow casting at the top forming an air chamber, from a lower extension of which leads the outlet pipe. The water entering the ports of the valve at the bottom, both pistons being imperforate, flows up through the piston of the large lower cylinder, and into and through the interior pipe piston, entering also the smaller central pipe, or pump barrel, the water raising the large piston, and its upward movement carrying with it the interior pipe piston, forcing the water past the ball valve and into the discharge chamber. As the large piston reaches a point near the top of its cylinder, the central valve rod is raised, closing the inlet and opening the outlet



WEBSTER'S HYDRAULIC RAM.

ports, until the dropping of the large piston again opens the inlet and closes the outlet ports. Around the central valve rod is a spiral spring to prevent excessive shock in the working of the ram. The combined pressure from beneath and the air pressure from above are designed to cause the water to flow from the discharge pipe in a steady stream.