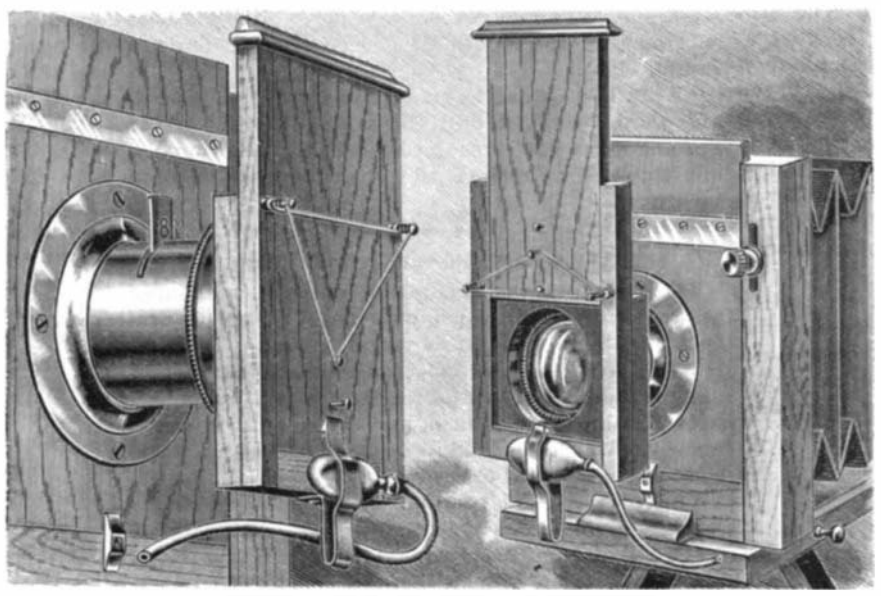
nuts and the tapering ends of the plugs are firmly clamped in place by tightening the nuts.

Further information relative to this invention may be obtained of Mr. J. G. Patton, No. 285 River Street, Troy, N. Y.

### A SIMPLE CAMERA SHUTTER.

It would be difficult to say who invented the simple shutter shown in the annexed engraving. It has been made and used by amateur photographers, and seems to answer the purpose very well indeed. Although it is crude when compared with some of the perfected shutters, the results secured by it are not inferior to those of better instruments.

The block forming the support for the working parts is bored to receive the outer end of the camera tube. To this are attached two grooved uprights and a cleat extending across the block at its lower edge. To the grooves of the uprights is fitted the shutter, which consists of a piece of thin board blackened on its inner surface, and provided on its outer surface with three escutcheon pins, all arranged on the median line of the shutter. The lower pin, which is without a head, is engaged by a spring catch. The second pin projects the farthest, while the third projects only a short distance. In each grooved side strip is inserted a pin, which projects some distance from the surface of the strip. An ordinary rubber band is stretched around these pins, and the outer strand is wound several times around each pin, to separate it from the inner strand. The spring catch, which is attached to the bottom of the block, is bent outwardly to permit of placing under it a small pneumatic bulb similar to those used on pen fillers. With the bulb is connected a flexible rubber tube, having on its free end a larger bulb, by means of which the smaller bulb is inflated when the shutter is to be released.



HOME-MADE CAMERA SHUTTER.

The shutter is held normally in a closed position by the spring catch, which engages the lower pin. In another form of the shutter an ordinary hook is used in lieu of the spring and pneumatic bulb.

To prepare the shutter for operation, the outer strand of the rubber band is placed around the upper and shorter pin, as shown in the left hand figure. When the exposure is to be made, the shutter is operated by compressing the large bulb, which inflates the smaller bulb, thus pressing outwardly the spring catch and disconnecting it from the pin. The elasticity of the rubber band forces the shutter upward until the pin passes above the inner strand of the rubber band. The momentum of the shutter carries it upward, and bringing the longer pin into engagement with the inner strand of the rubber band, stretches the band, as shown in the right hand figure, thus arresting the movement of the shutter and storing power for closing it. The elasticity of the inner strand of the rubber band is sufficient to cause the shutter to drop quickly and regain its original position.

### Draining the Zuyder Zee.

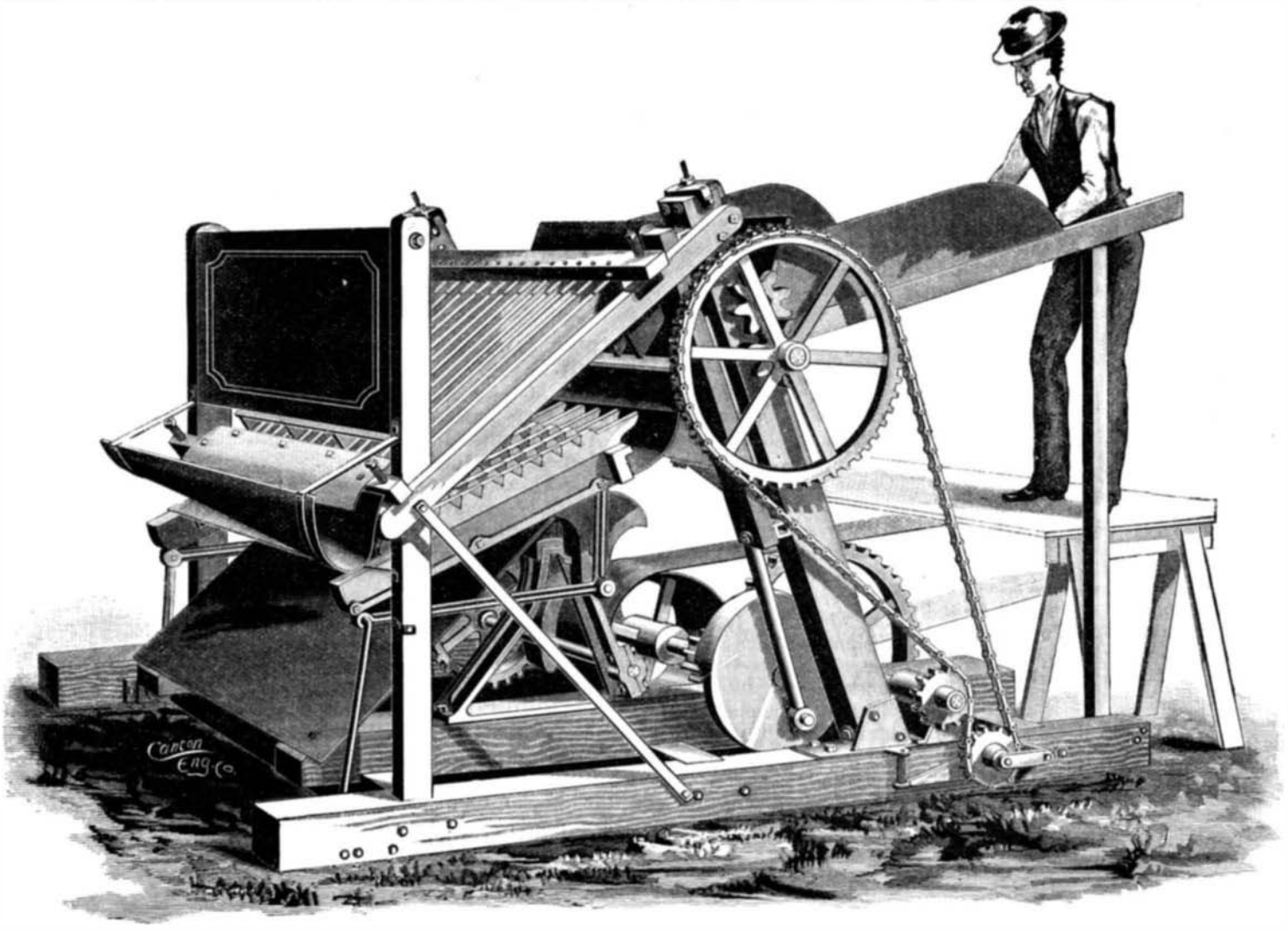
The government of Holland has for a long time past had under consideration a project for draining the vast lagoon known as the Zuyder Zee. This sheet of water is almost useless for purposes of navigation, and large vessels can only find their way to Amsterdam by means of the North Sea Canal. As agricultural land, however, it would be exceedingly valuable, since it is estimated that more than two-thirds of it is very fertile. The Zuyder Zee was formerly a lake, but in the twelfth and thirteenth centuries it was united to the North Sea by inundation. A commission was appointed some time ago to examine into the question of draining this territory, which has a superficial area of 760 square miles. A report on this subject has now been issued. It proposes to close the Zuyder Zee by means of a dam that shall be constructed from the mainland, on either side of the island of Wieringen. The water thus cut off from the sea would be divided into four parts, in each of which the work of draining would be carried out successively. The cost of constructing the dam is estimated at £3,675,000, and the draining would involve an expenditure of £13,000,000.

### THE SHELY FIBER BREAKER.

The machine shown in the illustration is designed to break six to eight thousand pounds of hemp or similar fiber per day, with a ten h. p. engine and about nine hands—an engineer, a water hauler, a buncher, one feeder and assistant, three to receive and remove fiber, and one to take care of hurds. It is manufactured by Messrs. C. Aultman & Co., of Canton, O., and is reported to have been successfully used in breaking hemp in Kentucky, and to have given great satisfaction in an experimental test upon jute furnished for the purpose by the Commissioner of Agriculture, the machine being likewise adapted for work upon ramie, flax, and all similar fibers. There are at present three of these machines for use in breaking hemp in central Kentucky, one in Bourbon and one in Clark County, one on the farm of the inventor, Mr. J. D. Shely, near Lexington, and one also at Trenton, O.

From the top and back of the machine the fiber is fed through two feed rollers which adjust themselves automatically to any sized bunch, passing thence through the break, which is composed of a sash and four stationary feed bars. The sash passes between these stationary bars, breaking the hemp on both the up and down strokes, the bars being so arranged that they break alternately first on one side and then on the other, making each revolution equivalent to four strokes. Passing into the cleaner, the fiber is separated from the hurds—its coarse or hard part. The cleaner is composed of two bars, one stationary and the other vibratory, being longitudinally placed slats, the upper stationary one of which is smooth, while the lower vibratory one is grooved or notched. The vibratory bar or riddle runs by a compound elliptical motion, forcing the fiber between the slats of the stationary riddle and thence out of the machine. In breaking rough hemp stationary dividers are preferably placed between the break and the cleaner to split the hemp and better prepare it for the cleaner.

GLYCERINE, $C_3H_53HO$, is the hydrate of the trivalent radical glyceryl. It is a sweet, sirupy liquid, obtained by the decomposition of fats and oils, principally as a by-product in the manufacture of candles and soaps. The fatty acids are used to make candles and soaps, when combined with soda or potash. Pure glycerine is colorless and odorless, freely miscible with water and alcohol in all proportions; but with oils it only emulsifies, and does not perfectly blend. It is a solvent of many alkaloids and their salts, as well as resins. The purest is prepared by distillation; although not volatile without decomposition, yet it passes over undecomposed in the vapor of water, and may be concentrated by careful evaporation. This mode of preparing it was patented by Price's Candle Company, but now much distilled glycerine is imported from Germany. Glycerines of inferior quality have a disagreeable smell, and are sometimes colored. Good glycerine should not be colored after being subjected for two hours to the action of an added solution of the nitrate of silver.—*Cole.*




AN IMPROVED HEMP AND FIBER BREAKING MACHINE.