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## THE SCIENTIFIC AMERICAN,

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### Depressions of the Earth.

Surprise has been manifested and inquiries have been made as to the cause of mountains, but the cause which produced the valleys or depressions of the earth is just as much a matter of wonder. Some suppose—indeed, it is a very general opinion—that all the lower parts of the earth's surface are covered with water, but this is not exactly so. Seas, lakes and rivers are only lower than surrounding lands, but there are many inhabited portions of our globe which are much lower than some great seas and lakes. Thus the waters of Lake Erie are about two hundred feet higher than the rich cultivated plains surrounding Lake Ontario, but the latter lake is some feet lower than these plains, and is the receptacle of their drainage waters. The most extensive and wonderful depression of the earth is in Asia. It is a vast region of about 18,000 leagues square; it is occupied, to be sure, mostly by the Caspian Sea, but it also contains populous cities and extensive cultivated districts situated in a depression of three hundred and twenty feet below the level of the Black Sea.

It is an opinion pretty generally admitted by scientific men at the present day, that the mountains have been formed by the upheaving of their materials, and that they have issued from the bosom of the earth. The necessary consequence of a vast upheaval would be the depression of another portion of the earth. Asia abounds in lofty mountains, and the vast depression of the Caspian Sea and its adjacent plains is surrounded with great mountain chains, hence it is supposed that the elevation of these masses caused a consequent depression of the Caspian valleys.

### Invention of the Microscope.

It was in 1664, when John Milton's "chief of men," who had wielded the power of England with a firm and vigorous hand, strongly contrasted with the royal but feeble fingers which previously and subsequently endeavored to direct it, had gone to his account, and just after the rupture of the close union which had endured, almost without interruption, for nearly seventy years, between England and Holland, that a Dutch youth of eighteen, holding a glass thread in the flame of a candle, perceived that the melted extremity assumed a spherical form. The intelligent lad instantly seized on the happy accident. He had seen Leuwenhoek manufacture lenses, such as they were, and went on burning his glass threads, and attempted to place his little spheres between two pieces of lead, through which he made an aperture with a pin's point. Placing a hair before this simply-constructed instrument, he found to his great joy that he was the maker and possessor of a capital microscope for those times, and he secured to the micrographers of the day what they had so long sought.—*American Druggists' Circular.*

## DAKE'S IMPROVED SUGAR MILL.



The accompanying engraving represents a most valuable mill for crushing sugar cane, patented April 27, 1858, by Frederick E. Dake and Thomas E. Hunt, (assignees of Frederick E. Dake, of Indianapolis, Ind.,) which from its power and simplicity recommends itself to all who use sugar mills and crushing apparatus.

The peculiar advantages of this mill are its cheapness of construction, requiring no gearing, and such compactness of form as insures its portability, and easy management by a single operator. It is also so arranged as to secure a uniform pressure upon stalks of various sizes.

A is a bed plate, firmly attached to the platform, B. C C are rollers in the frame, J,

which is allowed to oscillate upon journals. The lever frame, D, at E, increases the pressure to any extent desired. The contact of the rollers, C C, with the bed plate, A, is regulated, securing the required pressure by adjusting the set screw, K.

The cane is fed into the hopper, F, and as the lever frame, D, is revolved, it passes under the rollers, C C. The juice is expressed upon the bed plate, A, in front of the rollers, C C, and running into the groove, G, is discharged at the spout, H. The crushed cane is scraped from the bed plate A, by the scraper I, as the rollers pass over it.

Communications desiring further information may be addressed to Hunt, Dake & Co., Indianapolis, Ind.

chine. This frame is composed of two parallel metal bars connected at one end by a bolt passing through a block that determines the distance apart between the parallel bars. B B represent two bars, each of which is provided with friction rollers, d d, running in grooves, a, of the frame, A. The front end of the bars are connected by a curved traverse bar, f, in which the end of a screw rod, C, is fitted and allowed to turn freely. A spiral spring is placed on the end of this rod and confined between the bar, f, and a plate, h, attached to the bar, the curve of the bar forming a place to receive the spring. The rod, C, passes through a nut, D, placed on the end of the frame, and the outer end of the screw rod is provided with a hand wheel, E.

F is a shaft which is placed transversely on the bars, B B, and it carries the cutter, G. This cutter is cylindrical, and the cutting edges are of a zig-zag form, or are placed spirally around it. A crank, H, is used to rotate the wheel, E, the bars, B B, and cutter, G, may be moved back and forth on the frame, A. To the inner side of one of the frame bars is attached a plate, I, and at the outside is a lever, J, provided with a cam so arranged that by pulling out the lever, J, the cam will force the saw against the plate, I, and hold it firm in the frame between the bars. a' a' are grooves in bars of the frame to lighten it, and at the same time not to interfere with the grip. K is the saw.

The implement is used as follows:—The frame is passed on the saw, and the bed is firmly clamped to the saw by turning the lever, J, so that it will be pressed against the plate, I. The gummer is then rotated with one hand by the crank, H, while the other hand is employed in operating the wheel, E, which keeps the cutters against the saw which operate on the upper and under surfaces of the teeth, thus making them of uniform size, and the spaces between are also made uniform. By this mode of constructing the frame the gummer is applicable to reciprocating as well as circular saws, for the back being open, it can be fixed on a saw of any width.

Any further information concerning this gummer can be obtained by addressing the assignees as above.

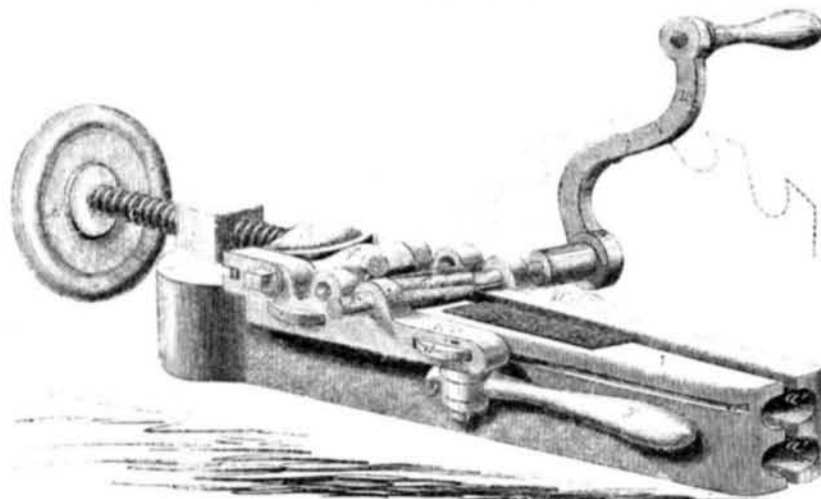
### New Remedy for Consumption.

Ergot of rye, or spurred rye, has received the approval of the Academy of Medicine at Turin, as one of the most active remedies for consumption. Dr. Parola, the author, describes its action as infallible, if not in curing the disease, at least in staying the pulmonary inflammation which constantly accompanies the formation of the tubercle. He administers thirty-one grains of the powder per day, and suspends it every four or five days for forty-eight hours. When the stomach is too weak, the resinous extract may be administered in pills instead of the powder, to the amount of one and a quarter grains, or else a portion in a solution of gum. Quinine, fox-glove, and even opium, may sometimes be administered together with it. By this treatment Dr. Parola has cured sixteen cases out of thirty-one of alleged confirmed consumption in an advanced stage.

### Hot Air Engine for Egypt.

A very neat and well-made hot air engine was shipped for Egypt from this city by the Ericsson Co., on the 9th inst. It is designed to pump water from the famous river Nile, to supply one of the palaces of the Pasha.

## ELMER'S MACHINE FOR GUMMING SAWS.



A saw when it is to be gummed should be held perfectly firm that it may be cut quite true, and the cutting tool should be of such construction that it will fairly cut away the metal and not tear it. The machine for filing, gumming and jointing saws (of which

our illustration is a perspective view) is the invention of H. O. Elmer, of Mexico, N. Y., and was patented by him Feb. 2, 1858, and assigned to J. P. Slack and P. J. Babcock, of the same place.

A represents the bed or frame of the ma-