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Inverted Images on the Eye.

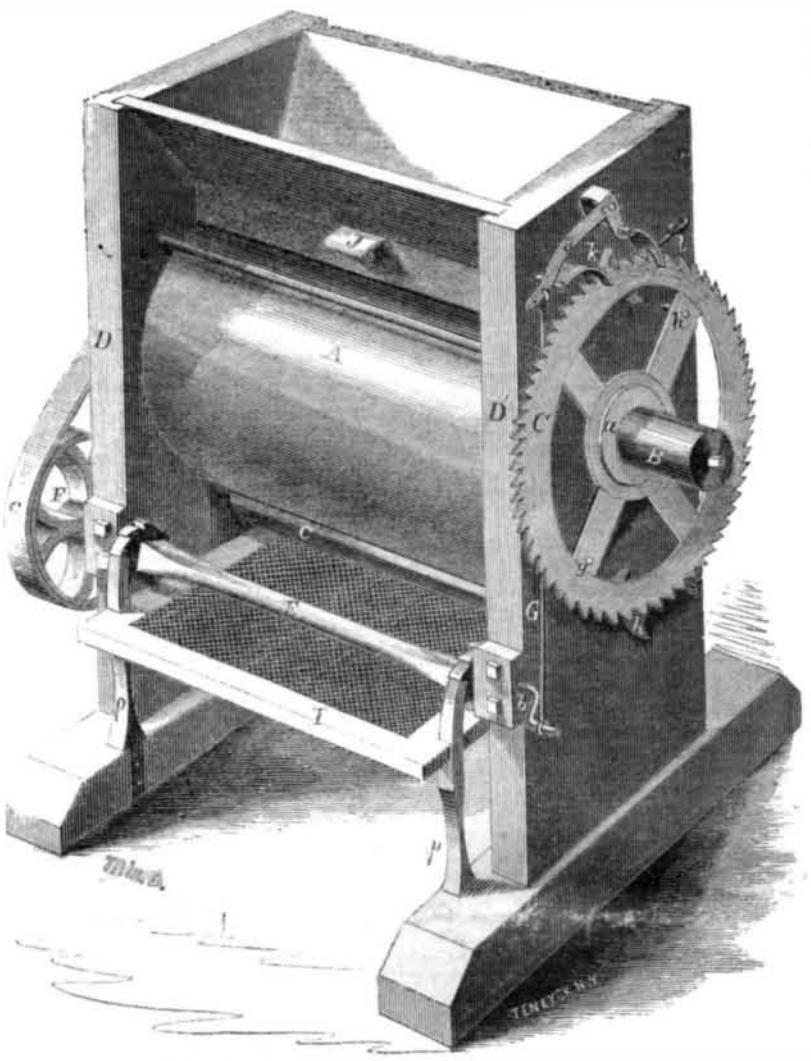
A writer in the *Journal of the Franklin Institute*, for this month, alludes to the above-named intricate question in optics, and endeavors to render it perfectly transparent, but, to our view, he utterly fails. When we look into a camera set for taking a photographic picture, we see that the image which is to be copied is turned upside down, and the pictures of all objects appear in a similar position on the retina of the eye; hence it has always been a mysterious question among philosophers, to account for the human mind appreciating them in a right position. One set of philosophers have gone so far as to assert that practice alone gives us power to discern objects correctly, and that an infant beholds them inverted until it has learned the truth by experience in handling things. If this view of the case were correct, we should be driven to the ridiculous conclusion that in viewing a clown standing on his head, we really see him standing on his feet.

The writer above referred to endeavors to explain the phenomena as follows:—"Nature has so associated impressions upon the retina with impressions on the brain, that an inverted image on the former is evidence of an erect image on the latter."

This is a mere statement of the fact, which its author mistakes for an explanation of the phenomenon. The eye must possess the mechanical property of transmitting objects in correct position to the mind, or we must accept the absurd conclusions of those philosophers who contend that the sense of vision and that of touch or feeling—as in the case of infants cited—are opposed to each other. About two years ago, Mr. S. Downs, of Newark, N. J., exhibited to us the eye of a recently slaughtered ox, to prove the existence of power in the eye to transmit images correctly to the mind. By removing a small portion of the anterior coating of the eye, and placing the page of a book close to it, then looking through from the exterior of the organ, the words appeared in correct position, and could be read with facility. This experiment affords some help to the solution of a most puzzling and controversial optical question, by presenting proof that images are resolved from an inverted position on the retina to a correct position in passing from the eye to the brain.

QUANTITY OF BLOOD IN A HORSE.—If we assume the weight of a horse to be 12 cwt., says the *American Veterinary Journal*, the whole quantity of blood will amount to 84 quarts, or 168 pounds, of which about 45 quarts, or 90 pounds, will flow from the jugular vein previous to death; although the loss of a much smaller quantity will sometimes deprive the animal of life.

FAHRNEY'S HOMINY MILL.



The manufacture of hominy is one of the regular employments of corn or grist mills; hominy itself is an article of such large consumption as to render every improvement in the contrivances for its production, of value to the community. Our illustration shows that of Ezra Fahrney, of Deep River, Iowa, who has assigned it to John Donaldson, of Mt. Morris, Ill. The invention is chiefly designed to dispense with slides for feeding and discharging hominy, and also to simplify the mechanism for operating the parts.

A is a cylinder, that has a shaft, B, placed longitudinally in it, carrrying beaters, the inside of A being also provided with corrugations of the usual construction. C is a ratchet wheel, which is placed loosely on a hub, *a*, attached to one of the two uprights, D D′, that support A. E is a shaft placed between D and D′, and having a pulley, F, at one end, and a crank pin, *b*, at the other. The belt, *c*, gives E motion from B. To the crank, *b*, a rod, G, is attached, its upper end being connected with a bent lever, *d*, that works on a fulcrum pin, *e*, attached to D′. *d* has a pawl, *f*, attached to it, that catches into the ratchet, C. On the inside of C two pins, *g h*, are attached.

On the cylinder, A, a hopper, H, is placed, provided with a door fitted in its bottom, the axle of which is attached to a rod having an arm, *k*, on its end, which is pressed by a spring, *l*, that keeps the door closed. A door or flap is also placed on the under side of A, the axle of which has an arm, *p*, on its end likewise pressed by a spring which keeps the flap closed. I is a screen, operated by the rods, *p p*, and ratchets on E. The piece, J, regulates the size of the feed hole.

The operation is as follows:—The corn is placed in the hopper, H, and motion given to the shaft, B, which by the belt, *c*, moves F and E, and the ratchet, C, by the train of motion described. Every revolution of C opens first the flap door at the top of A, and admits a certain quantity of corn to pass into the mill, and the same quantity after it is cracked and made into hominy, to fall on to the screen, I. It will be understood that the difference between the rotations of B, and the rotation of C, the former being much oftener than that of the latter, gives the corn plenty of time in the beater to be cracked, and the moment the hominy is let out, fresh corn is instantly supplied. A large hopper being provided, it does not require so much attention; and the feeding and discharging device is so simple as not to be likely to get out of order; and both operations will be steadily performed.

The invention was patented January 5th, 1858. Any further particulars can be obtained from the assignee, by addressing him as above.

Lithography.—What it is.

The engravings which appear weekly in the columns of the SCIENTIFIC AMERICAN are first drawn, and then engraved on wood, and cannot, as many seem to imagine, be lithographed. We often have letters from inventors, requesting us to lithograph and publish their machines; but lithography is not an engraving or cutting process, but simply the reproduction of a drawing. Again, a common printing press would not produce anything like an impression from a lithograph, but a modification of the copper-plate printing press needs to be used. The name is derived from two Greek words: *lithos*, a stone, and the verb *grapho*, to write.

Lithography was discovered in the year 1800, in Munich, by a German named Alois Senefelder, who, after suffering a life of poverty and deprivation, gave to the world a process by which many have made princely fortunes. The stone used is a calcareous slate, and is imported from Solen Hofen, in Germany. All limestones absorb grease or oil, more or less, and this simple fact is the base of all lithography.

To make what is called a "crayon" drawing—such as those artistic designs by Jullien, of Paris, seen in every printsellers' window—the stone is first prepared by grinding it with fine sand, and then washed clean with water. When dry, the drawing is made on the stone precisely as on paper, with (instead of a lead-pencil) a greasy crayon composed of beeswax, tallow, shellac, lampblack, &c., and, of course, is of a greasy nature. Every mark made on the stone with it, being greasy, cannot be removed unless by removing the surface of the stone with it. The drawing, when finished, is covered with a weak solution of nitric acid and gum arabic, which entirely changes the properties of the surface of the stone, so that grease will not be absorbed by it, but the solution does not affect the greasy drawing. The surface of the stone is then moistened with a sponge and water, and a fine leather roller covered with a greasy ink is passed over it; the printing ink being greasy adheres to the drawing, because the drawing is greasy, but cannot adhere anywhere else on the stone, because the stone is wet; and as water and grease will not mix, the ink sticks to the drawing only. A sheet of paper is then laid over it, and pressure of a rubbing character being applied, the paper takes up the extra ink from the original drawing, and so carries away upon its surface a perfect "proof" or printing of the illustration or design.

Portable lithographic presses can be made suitable for merchants and others, who wish to issue circulars and the like in their own handwriting, as they can write an original with a greasy ink upon paper, and then transfer it to the stone.

Air as a Stimulant.

The exciting and stimulating properties of pure oxygen are well known, and every one has felt the invigorating influence of fresh air, yet no practical application has been made of these beneficial properties of a substance so cheap and universal. When the body is weak, the brain fatigued, and the whole system in a state of lassitude, just go into the open air, take a few vigorous inspirations and expirations, and the effect will be instantly perceived. The individual trying the experiment will feel invigorated and stimulated, the blood will course with freshness, the lungs will work with increased activity, the whole frame will feel revivified, and nature's stimulant will be found the best.

Manufacturing Prospects.

The Worcester (Mass.) *Spy* states that there are decisive indications of a revival of manufacturing business in that city. Several establishments have increased the number of their mechanics, in order to fulfill the orders which they have lately received.