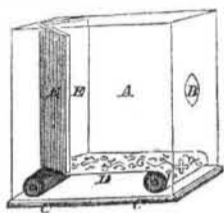




Our first engraving shows one of the prettiest optical illusions that can well be imagined, and it is produced thus: Provide a box, A, having in its front a round hole, B, in which may be fitted an eyeglass or small magnifier; on the bottom of the box, and suspended by axles passing through the sides, place two rollers, C, and roll up on the first a quantity of paper having trees, houses, patterns, pieces of wall paper, pieces of printed muslin and similar articles having colored devices upon them; then paste or gum the other end of the paper to the other roller, so that when turned it will wind it upon itself and unwind it from the other roller. Then place two



pieces of looking-glass in the position shown at E E, leaving them free for the paper to roll under. Now look through the hole, B (having just uncovered the top to admit of light), and by a handle or other means turn the back roller, C, and in the mirrors there will appear to be two endless panoramas ever changing and always advancing; then turn the nearest roller, and the panoramas will appear receding, ever fresh and lively.

Our next is a little experiment illustrating the compressibility of air and water, called the "bottle imp." Take a jar of glass, and fill it with water up to the neck; next provide a little figure having a hole in its center that will contain sufficient air to make it buoyant. Put it in the water, and close the bottle with a piece of parchment or india-rubber tied tightly over the mouth. Now when the hand is pressed on the cover, the figure descends, and when it is removed, the figure quickly ascends, and so it may be kept dancing up



and down for any length of time. The reason is this:—The water in the bottle is incompressible; when, therefore, you press upon the surface, it rises in the interior of the figure, and consequently by compressing the air into less space, renders the figure less buoyant; but no sooner is the hand removed than the inclosed air resumes its former volume, and expels the intruding water; in consequence, the figure regains its former lightness, and reascends.

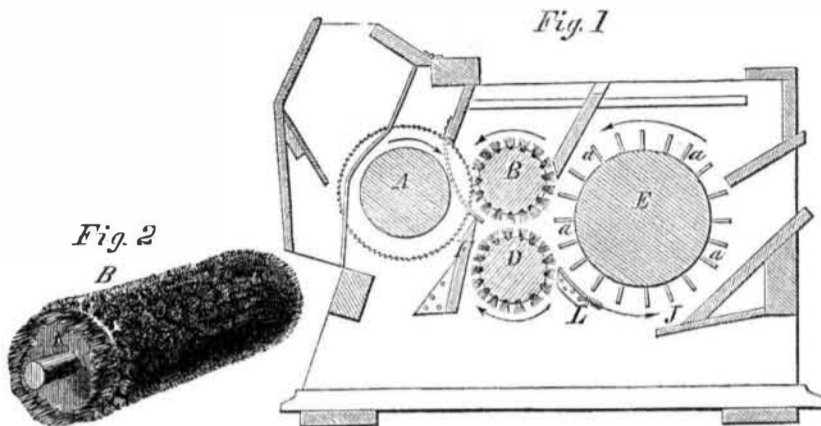
Summer is close at hand, the trees are beginning to wear their livery of green, and the flowers and plants push their small heads into notice from the bosom of mother Earth. It is now no longer healthy or proper to stay indoors, trying experiments, when out-door exercise can be so conveniently and properly had; and so we know that kite flying, marbles and spinning tops will take the place of indoor amusements, and our "Science in Sport" will have but little chance of being read. We

recommend our juvenile readers, to whom this column has been specially addressed, to do all they can to render their bodies strong with fresh air and healthy active exercise, that their minds may also be the stronger, and more able to think for them with vigor and freedom. Hoping that they part with this column, as we do, namely, with some regret; and also hoping that it has been a source of amusement and information to many, for the present, "Science in Sport" bids them Farewell!

Printing from Veneers.

The French journals tell us of a new process of fabric printing from wood. The sheets of veneer or inlaying to be copied are exposed to the vapors of muriatic acid. This novel plate is then laid on the cloth, and the impression struck off with an ordinary printing press; heat must then be applied, and a perfect impression of the veneer, in a wood-like tint, is immediately developed. Oak, walnut and maple answer best.

GULLETT'S COTTON GIN.



The cotton gin, though so much improved since its origin, is yet continually progressing, and the following illustration exhibits several important and novel features of improvement, for which Letters Patent were granted to B. D. Gullett, of Aberdeen, Miss., Feb. 23, 1858.

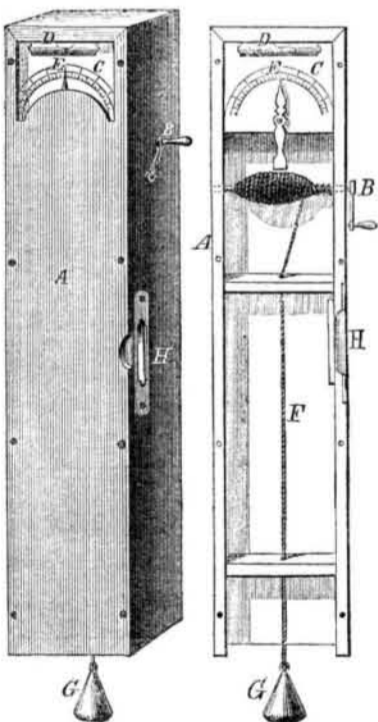
A represents the cylinder of saws, B the gin brush, D a carding brush, E a stripping, carding and distributing cylinder, armed with steel combs, a a. The several arrows indicate the direction of the movements. F represents a blast board for directing the cotton, and preventing its being carried back by the gin, A, and L represents guard pieces on either side of the frame or panel, near the ends of the stripper, E, which prevent "end waste," and direct the lint to the flue, J. On the ends of the brushes, B and D, are end brushes, K, Fig. 2, which prevent the accumulation of lint at these points, which is not unfrequently the

cause of fires in cotton gins, from great friction.

The patent embraces five distinct features of novelty and improvement. The performance of this gin at the State Fair of Mississippi, in November last, is thus noticed by the *Planter and Mechanic*, published at Jackson: "The cotton gin of Gullett, Gladney & Co. excited much wonder among the cotton planters, being capable of turning out sixteen bales a day. The samples of cotton exceeded in beauty, softness, and freedom from nap, any that we ever saw, looking more like smooth bats from a pair of common cotton cards than samples from a cotton gin." A gin of eighty saws readily makes ten bales a day.

For sales of rights or license of manufacture address Professor Charles G. Page, Washington, D C., where samples of the ginned cotton may be seen.

Rowe's Plumb and Level Indicator.



The plumb and level, one of the oldest of instruments used by masons, builders and others, usually consists of a lead weight, (hence its name, from *plumbum*—lead,) placed in a frame of wood, and by placing the side or base of this against or on the structure, the level is taken. The level is made either of water or spirit, enclosed in a sealed glass tube, containing also a bubble of air; it is then mounted in a proper case, and the position of the bubble of air shows the level of the structure or substance against which it is placed.

The subject of our engravings is a combination of a plumb and level, and indicator, invented by J. L. Rowe, of New York, and assigned by him to Frederick Stevens, No. 177 Greenwich street, this city. The claim appears in another column, the patent being granted this week.

The left hand view shows the apparatus in perspective, the other having the front removed, to show the interior arrangement.

A is a rectangular case, made perfectly square at its sides and ends; through the upper part of this runs an axle, and a crank handle, B, is inserted, and on to this is wound the cord, F, having suspended from it the plummet, G. H is a spirit level placed so as to act when the apparatus is placed down horizontally on any stuff, and D is another one, to act when the apparatus is used vertically. At the upper end of A is a plate of brass, C, having on it a graduated arc, divided into degrees otherwise, as convenient, and E is a pointer, that swings freely on an axis, also having its lower end heavier than its upper; so that it will always keep the perpendicular; and when the case, A, is placed against anything, the level of which is desired, the pointer still keeping the perpendicular, will indicate on the divided scale the amount in degrees that it is out of the perpendicular.

It is a most convenient and useful combination, and we have no doubt will be thoroughly appreciated by those whose trade requires its use. Should any more particulars be desired, they can be obtained by addressing the assignee as above.

The Mineral Wealth of Michigan.

The *Detroit Weekly Advertiser* gives some very interesting information on this subject—the result of the patient labors of Dr. Houghton and other gentlemen, who have

been engaged in developing the riches of this State. Michigan contains coal, and in the neighborhood of Sandstone, two hundred and fifty tons have been raised during the past season. The coal is of good quality, and the working is safe and easy. The beds outcrop for a hundred miles or more on the Grand river, and from more recent discoveries would seem to extend to the Straits of Mackinaw. Quantities have been sold in Jackson county at \$3 per ton, and when some system is employed in the mining, it is expected to be much cheaper. The State is working a shaft by convict labor in the prison of Jackson.

Copper occurs frequently in the upper peninsula, and silver has also been found to a considerable extent. Cannel coal has been discovered in Jackson county which makes a most excellent gas.

Hard Times in Texas.

A correspondent—Josiah Bishop, of Austin, Texas—informs us in a letter that the times are very hard in that quarter, and everything is very dear. Here are some samples of prices:—Flour, \$16 per barrel; corn, \$2 50 to \$3 06 per bushel; meal, \$2 60; sweet potatoes, \$2 50; Irish potatoes, \$6 per bushel; lard, 25 to 30 cents a pound; butter, 40 cents; pork, 15 cents; and brown sugar, 16 cents. Eggs are 25 cents per dozen, and have been 40. These are very nearly famine prices; but as the expression *have been* occurs in relation to eggs, we hope that it may shortly apply to all other articles of food.



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