

AN IMPROVED WINDOW SCREEN.

The illustration represents a simple and very effective form of window screen, patented by Mr. Henry B. Dodge. The screen frame has rabbeted sides sliding in grooved ways in the sides of the window frame, as shown in the small sectional view, one of these grooved ways being made deeper than the other. A plate



DODGE'S WINDOW SCREEN.

spring attached to one side upright of the frame bears against the back wall of the deeper groove, to hold the screen in any position in which it may be placed, while permitting it to be freely moved up and down as desired, and facilitating its ready insertion and removal. Attached to the depressed portion of the same rabbet, facing the inner side wall of the grooved way, is a smaller supplemental side spring or spring guard, closing the depressed portion of the rabbet, and preventing flies, mosquitoes, or other insects from getting into the room. The screen may be made of wire cloth or netting, and is thus rendered perfectly tight-fitting.

Further information relative to this improvement may be obtained of the Monroe Manufacturing Co., Lima, O.

EXPERIMENTS WITH SOAP BUBBLES.

In addition to the scientific experiments on the superficial tension of liquids, capillary pressure, etc., to which soap bubbles lend themselves, they may be the object of various pastimes, a certain number of which have already been published in *Les Recreations Scientifiques* by Gaston Tissandier. I shall now point out three others that our readers may repeat and modify to their taste.

The liquid that I use, with one-third of glycerine, is a solution of oleate of soda. This permits of obtaining very large bubbles containing as much as 180 cubic inches of air, and which, with more limited dimensions, last for a period varying from half an hour to an hour or more if they are protected against currents of air. Ordinary soap water gives but imperfect results.

As our first experiment with bubbles necessitates the construction of a small rotary apparatus of straw (Fig. 1), we shall give directions for manufacturing it. Take a rye straw 18 inches in length, very straight and free from knots, and bend it four times at right angles, so as to obtain a rectangle 2 inches in width by $6\frac{1}{2}$ inches in length. As the perimeter is $2 \times 6\frac{1}{2} + 2 + 2 = 17$ inches, there remains at the smaller extremity of the straw a length of one inch, which must be inserted into the wider extremity, so as to obtain a closed rectangle. In the same way, construct a second rectangle $6\frac{1}{2}$ inches in length, but twice the thickness of the straw, say $\frac{1}{4}$ inch, wider than the preceding. Then construct a third rectangle $6\frac{1}{2}$ inches in length by $1\frac{1}{4}$ inches in width. Place the narrowest rectangle in the interior of the first, the widest outside, and arrange them upon a table in such a way that they shall make between them six angles of 60 degrees each, like the radii of the regular hexagon inscribed in a circumference. They will constitute what we shall call the wheel of the apparatus. A horizontal rectangle of straw $6\frac{1}{2}$ inches in length by $3\frac{3}{4}$ inches in width will furnish us with a base. At the center of the long sides of this, fix with sealing wax the bases of two uprights 10 inches in height, connected at the

upper part by a cross piece 3 inches in width. Consolidate this assemblage of uprights and base by means of four braces, two on each side, 4 inches in length, the extremities of which are to be fixed in slits made in the straw with a penknife.

By means of a red hot fine wire pierce the uprights at 6 inches from the bottom, and in the same way pierce the centers of the long sides of the rectangles of the wheel, and pass a wire bent at one of its extremities into the form of a winch through the uprights and the axis of the wheel. Fix the radii of the wheel to each other near the axis with sealing wax, and also fix them to the wire axis with the same substance.

In order to increase its solidity, the base may be fixed to cardboard by means of fine wire. A hook fixed to one of the extremities of the cardboard will permit of suspending the base vertically from a wall instead of laying it upon a table.

The straw apparatus being finished, it remains for us to speak of the disks that are to serve to suspend the bubbles. These disks, cut from a visiting card, should have a diameter about that of a ten cent piece. Each of them must be suspended by its center from a cross piece of the wheel by means of a very fine wire surrounding the cross piece after the manner of a ring, and then bent in such a way as to form a suspension rod, which passes through a hole in the center of the disk and is fixed to the latter by means of a drop of sealing wax. Our figure shows very clearly that in order to keep the ring, and consequently the disk, in the center of the cross piece, the straw is traversed on each side of the ring by two wire pins, which prevent all lateral displacement of the disk. As the diameter of the rings is greater than that of the straw, the weight of the disks suffices to keep the suspension wires vertical during the revolution of the wheel.

The apparatus being thus constructed, we have only to blow small bubbles about $1\frac{1}{2}$ in. in diameter and suspend them from the lower surface of the disks, which have been previously moistened with the liquid.

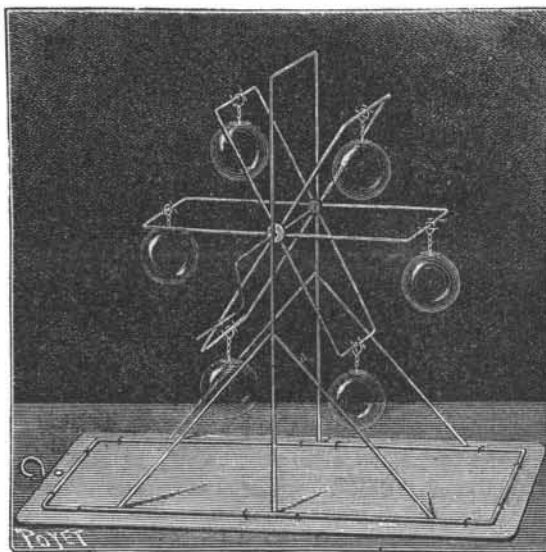


Fig. 1.—ROTARY APPARATUS OF STRAW.

The bubbles will remain suspended, and, when the wheel is turned, the pretty spheres with iridescent colors will follow it in its rotary motion. Nothing could be more elegant than this little apparatus, which I recommend to lovers of delicate work.

For those who desire something simpler, I shall describe a method of imitating an incandescent lamp, in which the globe is nothing else than a soap bubble (Fig. 2).

Take one of those porcelain flowers (a bindweed, for example) that can now be procured anywhere, and, by means of sealing wax, fasten in the interior of it a fine iron or copper wire, bent so as to imitate the filament of an incandescent lamp. Dip this wire and the

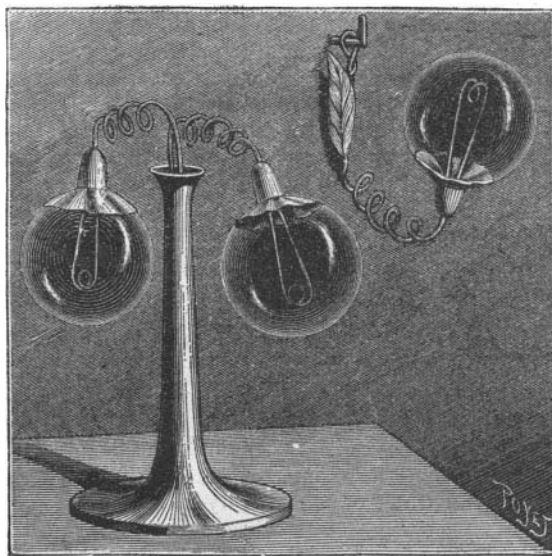
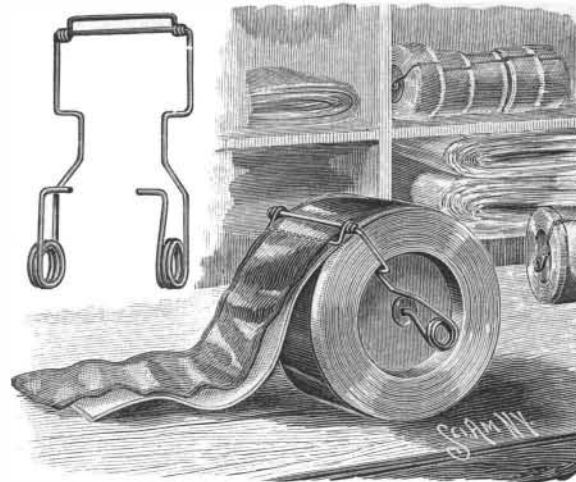


Fig. 2.—IMITATION INCANDESCENT LAMPS.

edge of the flower in the liquid, and then blow a bubble $2\frac{1}{2}$ inches in diameter that the wire will penetrate and that will adhere to the contours of the flower. We shall thus have a reproduction of an incandescent lamp, which, suspended from a hook in the wall, will imitate a parlor lamp, and, placed in a small candlestick, will reproduce the inverted lamp used in offices.



AN IMPROVED RIBBON HOLDER.

Finally, here is an experiment that will greatly please young people, and that may be called fumigation or the vapor bath (Fig. 3). In a glass vessel, such as shown in the figure, place a small statuette, a bath made of porcelain, for example, after having moistened the entire body with the saponaceous liquid. Moisten the edges of the vessel likewise, and blow a large bubble, which, descending along the figure, will fix itself upon the circumference of the vessel and surround the figure. With this arrangement children may be amused by representing to them a mimic vapor bath. Moisten the extremity of the straw that has served to blow the bubble, and apply it against the latter and inject tobacco smoke into it. The statuette will disappear in the cloud thus formed around it. Pretending that the bather complains that her head is too hot, gently suck through the straw a portion of the air that the bubble contains until the latter diminishes sufficiently in volume to allow the head to appear externally, all the rest of the body remaining exposed to the beneficent fumigation.—A. Good, in *La Nature*.

A CONVENIENT RIBBON HOLDER.

The illustration represents a simple and inexpensive device adapted to be secured to the spool of a roll of ribbon, braid, or similar goods, to hold the ribbon with an even tension, and guide it that it may be rewound as evenly as at first. This invention has been patented by Mr. George H. Brown. The spool is made with end recesses, in which lie the body of the holder and springs, whereby the spools may be readily piled one upon another, or arranged in the same way as ordinary spools. The device is made of wire, and is shown detached from the spool in the small view, the ends of the wire having bearings at the spool axis, and the spring portions being sufficiently strong to cause the part which presses against the face of the spool to bear thereon continuously with nearly an equal tension as the ribbon or other fabric is unwound. A guide attachment, to facilitate the rewinding of ribbon upon the spool, is secured by its coiled ends upon the outer face of the holder, this supplementary keeper being also spring-pressed.

This improvement has been patented in the United States and in England, France, and Germany, and further particulars in relation thereto may be obtained of Mr. James H. Tibbits, No. 213 Temple Street, Astoria, Long Island, N. Y.

DR. REDARD, of Geneva, uses chloride of ethyl in producing local anæsthesia by refrigeration. It is a colorless liquid of an agreeable odor, and is contained in a sealed tube of glass. When the point of the tube is broken off with pincers, the liquid is allowed to escape in a jet directed on the part to be cooled. The jet can be readily stopped by the finger or a little wax. Each tube holds ten grammes of the ethyl, a quantity sufficient for most operations. Dr. Redard has found it useful in cases of sciatica, neuralgia and toothache. The new refrigerant is likely to be serviceable in the laboratory. If the jet be directed on a tube containing water, the latter will freeze.



Fig. 3.—IMITATION VAPOR BATH.