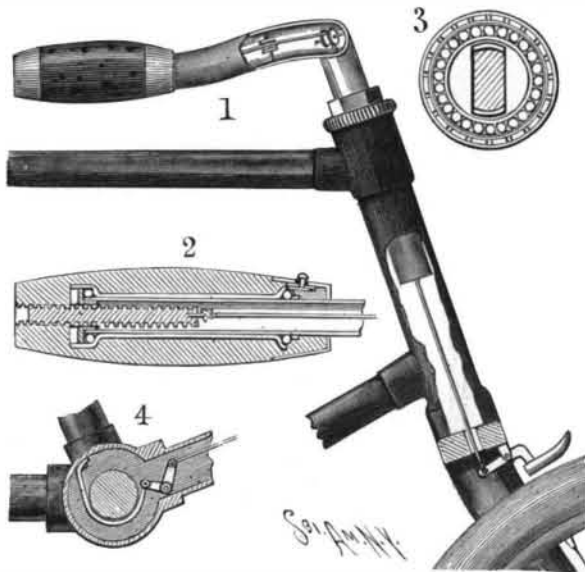


AN IMPROVED BICYCLE BRAKE.

A brake which is operated by merely turning the grip or handle, to force the brake shoe into engagement with the wheel tire, is represented in the accompanying illustration, and has been patented by W. H. Hart, Lieut. 7th Cavalry, U. S. A., Fort Grant, Arizona. Fig. 1 represents the application of the improvement on a bicycle, portions being broken out, and Figs. 2 and 3 show longitudinal and cross sections of the handle. The brake shoe is mounted on the outer end of a brake lever pivoted to a bearing extending across the crown of the forks, the other end of the lever being connected to a cord which extends up through the hollow steer-



HART'S BICYCLE BRAKE.

ing post and over rollers, through the hollow handle bar, its extremity being attached to a screw which has longitudinal movement in the handle. The screw is engaged by a nut which screws on the shouldered end portion of a sleeve in the hollow of the grip, such shouldered portion also forming a cone to receive a series of balls, there being a similar shoulder and series of balls at the opposite end of the sleeve. The nut forms a finish for the extremity of the grip, and the brake is applied by simply turning the grip, whereby endwise movement of the screw is effected and the cord is drawn upon to force the brake sleeve into engagement with the tire. In the inner end of the grip are annular teeth adapted to be engaged by a dog having a projecting operating stem by which the dog may be moved to engage the teeth and hold the grip against rotation on the arm of the handle bar. In Fig. 4 is shown a modified form of this improvement, according to which the brake sleeve is dispensed with, and the brake cord is extended through the lower brace bar to one arm of an elbow lever pivoted adjacent to the crank box, the opposite arm of the lever being connected with a spring brake band adapted to engage the crank shaft.

Photographs Upon Leather.

The leather is prepared by the usual process, and the work finished with pumice stone as though it was intended for varnished leather, then giving it a dressing of linseed oil boiled with litharge, and after drying it is necessary to give it a second rubbing. On this leather is spread a solution of gelatine with an addition of bichromate of ammonia, after which it is allowed to dry in the dark. When thoroughly dry exposure is made as for carbon paper. After this the leather is washed in lukewarm water with a sponge in order to remove the coating not affected by the light. By mixing some colored powders in the gelatinous solution, photographs are obtained of such a character as may be desired. It is also possible to work by transfer—indeed, this is even preferable.

We place upon the leather photo process prints done with a special ink. This ink is composed of a solution of acetate of iron in glycerine mixed with fatty matter. The tannin of the leather coming in contact with the salt of iron gives an indelible black, forming the great feature of the photograph, and with a little skill the production of charming results is possible. Another excellent application of the photographic art, says Helios, is that of imitating fur. Even with a white skin for the purpose of producing designs and markings such as are common upon the skins of tigers, panthers, leopards, etc. Hitherto no absolute method has been used for this purpose.

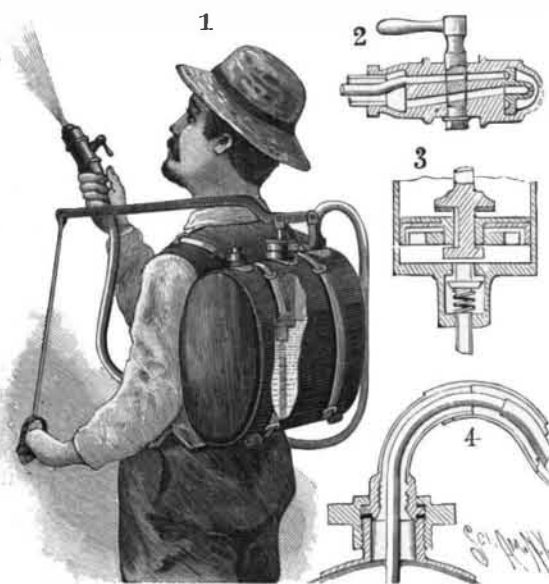
The professional dyer works a good deal by chance and takes "pot luck" (using a popular expression). But photography comes to his assistance in working imitations, and serves to help in reproducing such designs that up to the present Dame Nature alone has held the monopoly. In order to imitate a tiger's skin, for example, it is necessary to possess a model, viz., an original skin. This is moistened with a paste of linseed (seeds of linseed boiled in twenty times their weight of water) on the hairy side of the skin. This is

done by means of a brush, afterward with a sponge. A photograph of the skin is taken and transformed into a lithograph upon zinc about the size of the skin desired to be dyed, and transfer prints placed on it. The tiger's skin is then done over on the hair side with the linseed paste mentioned above, and the hairs are laid smooth in one direction. Then is applied the transfer printed on linen paper with an ink having as its base glycerine and artificial colors. This is allowed to remain in contact for some time in order to permit the hair to imbibe the coloring matter that is wished to be fixed; afterward, the linen paper can be removed by moistening the back.

By using an ink composed of glycerine containing a solution of paraphenylene-diamine, fat, and soap, it only remains (after having detached the paper) to pass oxygen water over the surface of the skin. A simple washing takes away the paste from the hair. The skin is then dressed by the usual methods. If the skin be of a reddish color, it is dyed before stripping it, preserving some portions white, so as to obtain a perfect imitation, copying nature as far as practicable in every detail.—Photography.

A PNEUMATIC SPRAYING APPARATUS.

With the portable apparatus shown herewith for spraying fruit trees, plants, etc., the size of the spray may be regulated or a stream may be ejected instead of a spray, it being also practicable to construct a similar apparatus of larger proportions, adapted to be supported upon wheels and thus drawn over the ground. The improvement has been patented by John Black, of Trafalgar Street, Nelson, New Zealand, and the inventor is represented in this country by Henry W. Peabody & Company, of Boston and New York. Fig. 1 represents the apparatus supported as a knapsack on the back of a person in position for use, Fig. 2 showing the nozzle, Fig. 3 a section of the pump employed, and Fig. 4 a section of the tubing and its connection with the tank. Extended downward in the latter, as shown in the broken away portion (Fig. 1), is the pump cylinder, the screw cap on whose outer end has perforations for the admission of air, while passing through and having a slight longitudinal movement in the piston is a piston rod in which is a port admitting air to the under side of the piston during its upward movement, as may be seen in Fig. 3. In the lower end of the pump cylinder is a spring-pressed valve, and communicating with the interior of the valve casing is a tube extending nearly to the bottom of the tank. Pivoted in lugs on a ring which turns on the upper end of the cylinder is an arm to which is pivoted the pump actuating lever, whose free end, from which depends a handle, may be swung in any direction most convenient to operate. At the top of the tank, on each side of the pump cylinder, is a hollow nipple, with either one of which the air and liquid tubes of the spraying hose may be connected. The exterior air tube has an annular rim designed to be pressed down upon a packing and the inner liquid tube extends down to the bottom of the tank, while an inner and

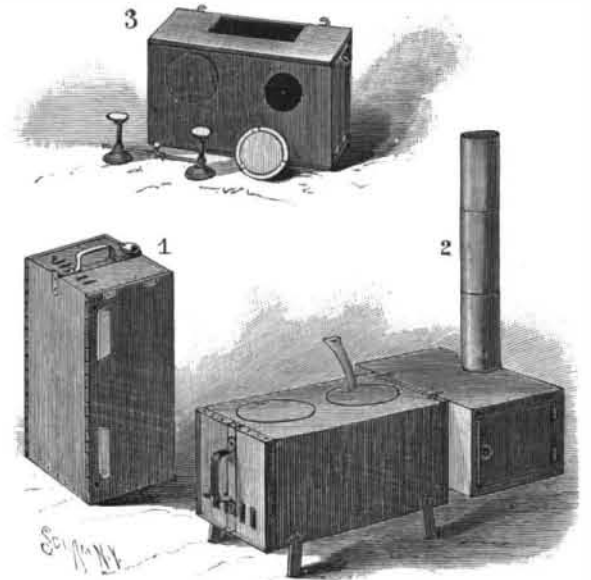


BLACK'S PNEUMATIC SPRAYING APPARATUS.

an outer hose, leading to the spraying nozzle, are connected, respectively, with the outer ends of the tubes. The nozzle has a longitudinal duct for the passage of air and another for the passage of liquid, both controlled by a plug valve so arranged that when one duct is fully open the other is almost closed, the valve being operated by the handle shown. As the operator holds the nozzle in one hand and works the pump with the other, the air forced into the tank agitates the spraying liquid, and the pressure forces out the liquid and a regulated portion of air to mix therewith and form a spray, the entire shutting off of the air, with the use of the proper nozzle, giving a solid stream. The invention provides for the employment of modified forms of the valve and nozzle.

A STOVE AND OVEN FOR "CAMPING OUT" PARTIES, PROSPECTORS, BOATING, HOUSE USE, ETC.

The accompanying illustration represents a portable cooking apparatus especially designed to promote the comfort of parties camping out, and which can be readily packed in small compass, as shown in Fig. 1, for convenient storage or carrying. It has been patented by Dr. W. E. Baxter, of Frankfort, Ky., whose camping outfits, in the line of cooking and service utensils, have attained considerable reputation. Fig. 2 shows the apparatus ready for use, the oven being in place for baking, and Fig. 3 represents the oven sepa-



BAXTER'S PORTABLE STOVE AND OVEN.

ately, its under side turned up to show holes for gas burners, as the stove and oven can be used with any kind of fuel. In camp, fagots or wood will be used, but as a serviceable stove for the house, for summer cooking, gas, wood or charcoal may be most efficiently employed. The stove is approximately 10 x 12 x 18 inches, and is made of 18 gage smooth sheet steel, the oven being made of 24 gage and large enough to accommodate two 9 x 16 inch bread pans or to roast one turkey. The ash pan fits in the bottom of the stove, and a perforated grate has side flanges which fit alongside the pan and rest on the bottom of the stove. The oven has an outer casing and an inner shell, the latter being made smaller than the casing to provide space for the passage around it of the draught, heat and smoke. A damper in the oven controls the passage of the heat, and is made wide enough to close the space between the inner and outer shells. The stove is also efficient as a heater, or for cooking other than baking. The pipe is telescopic, and is made so that any four inch pipe, to be had at the stores, will fit it, and can be adjusted to any tent, boat or house. The oven can be packed with an outfit, cooking and serving (invented by Dr. Baxter) for six people. This invention attracted much attention at the Sportsmen's Exposition, last March, at Madison Square Garden, New York City.

Phosphorescence of Ozone.

M. Marius Otto has just discovered an experimental fact, says La Nature, that was described recently in his name before the Academy of Science by M. Friedel, and that may be productive of important results. This fact relates to the phenomena of luminescence to which ozone gives rise in special conditions. The fact was observed for the first time during the aspiration of ozonized air by means of a water aspirator. The light took its rise at the point of contact of the water and the ozone, and the water remained luminous for five or six seconds after issuing from the aspirator, so that a flask filled with this luminous water and taken into a dark room could be followed distinctly. The experiments were made with ozonized oxygen containing 40 to 50 milligrammes of ozone to the liter [about 1/2 grain to the quart] and made with ozonizers invented by the author. It seems that the luminosity thus produced by the contact of ozone and water is due to the presence, in the latter, of organic matter of animal or vegetable origin, and that most organic substances are able to produce, with ozone, phenomena of phosphorescence. This is, then, a very particular and very interesting case of low temperature combustion, and a new example of the production of cold light.

THE Medical Record says eggs are useful in the following applications: A mustard plaster made with the white of an egg will not leave a blister. A raw egg, taken immediately, will carry down a fishbone that cannot be extracted. The white skin that lines the shell is a useful application to a boil. White of egg, beaten up with loaf sugar and lemon, relieves hoarseness, a teaspoonful taken once every hour. An egg in the morning cup of coffee is a good tonic. A raw egg, with the yolk unbroken, in a glass of wine, is beneficial for convalescents.