RECENTLY PATENTED INVENTIONS.

Engineering.

SCREW PROPELLER. — Benjamin F. and Millard F. Sparr, New York City. According to this invention there are arranged upon the propeller shaft a series of spiral and tapering blades, with larger auxiliary blades at the rear end, whereby it is designed to increase the speed of a vessel, while the improvement can be applied without materially changing present forms of construction.

BLAST FURNACE HOPPER.—Benjamin F. Conner, Columbia, Pa. Combined with the hopper are two bells, an inner bell mounted to turn within an outer one, openings of the two bells registering with each other, and means for operating both bells and rotating the inner one, to facilitate the distribution of the charge within the furnace as desired.

Mechanical.

SAW FILING AND SETTING MACHINE. —William H. Parry, New York City. Combined with a pivoted guideway and a slide carrying a file holder is a vertically adjustable friction roller engaging the guide, the roller being carried by a lever which is given a swinging motion by a cam, with other novel features, whereby the saw is accurately fed and the teeth made uniform, the invention being an improvement on a former patented invention of the same inventor.

DIE FOR ORNAMENTAL WORK. — William Schumacher, Brooklyn, N. Y. This is a die for ornamenting cardboard, leather, or similar material, and is composed of a suitable body of metal, rubber, celluloid, or other substance, formed with apertures in which are fitted glass projections of any desired form, these projections being polished and covered with gold, silver, etc., to form the lining of a socket made in the material when the die is pressed therein.

WINDMILL. — William Palmer, Jr., Rincon, New Mexico. The construction of this wheel is such that as the wind increases it adjusts a crank pin operating a reciprocating pitman to give an increased resistance, and thus accomplish more work, while preventing the wheel from moving at a dangerous speed, the regulation of the speed being thus automatically effected.

TICKET PRINTING MACHINE.—Gideon B. Massey, Mamaroneck, N. Y. (deceased, Sarah R. Massey and Stanley A. Bryant, administrators). This invention provides a machine to print a ticket from one station to any other station on a road, and at the same time date and consecutively number all tickets issued, and keep a record thereof, the invention covering a novel construction and arrangement of parts and combinations of elements.

Agricultural.

CULTIVATOR ATTACHMENT. — Edward S. Bailey and James M. Coons, Orrick, Mo. A shoe is pivoted to the end of the plow standard, and a peculiarly constructed spring is adapted to bear upon the upper end of the shoe and hold it in place, the shovel or plow being secured to the lower end of the shoe, the improvement being designed to prevent accidents to the plow from the striking of rocks, roots and other obstructions.

PLANTER AND FERTILIZER DISTRIBUTER.—Washington S. Jones, Meridian, Miss. This is a box-like reservoir which may be conveniently attached to any plow stock, with a rearwardly and downwardly curved spout, and a stirrer and feeding device, with means for operating the latter from the supporting wheel, while the seed dropped are covered by blades at the rear of the spout.

Miscellaneous.

BREECH LOADING GUN. — Julian Warnant, Creon, Hoignee-Cheratte, Belgium. This gun has a movable breech block with cartridge-receiving aperture, in which slides a bolt to throw the cartridge and form an abutment, a pivoted locking bar engaging the bolt, which also carries a firing pin, the invention embracing other novel features, and the gun being self-loading and self-cocking, and automatically ejecting the empty shell.

VENTILATING APPARATUS.—George H. Burrows, Somerville, Mass. This invention provides an expansible air tank or reservoir constructed on the principle of a gasometer, in connection with an air supply pipe and pump to draw air from an elevation or other desired point, and a delivery pipe connected with the rooms to be ventilated and adapted to pass the air through a heater if desired.

DREDGER. — Hugo Roessler, Erbach-on-the-Rhine, Germany. The vessel carrying this apparatus has offsets on opposite sides, near which are arranged centrifugal pumps provided with suction and delivery pipes, prolonged pipes having a ball and socket connection with the delivery pipes, for removing sand and similar deposits at the bottom of a river or harbor by directing a powerful stream against the material to be removed.

FENDER FOR VESSELS. — Gustave O. Stein, Pioche, Nevada. The bow or cutwater of the vessel is, by this invention, provided with one or more vertical rollers, hung in a frame supported by horizontal arms, whereby the rollers will be canted and tilted in one direction or the other and roll along the sides of a vessel against which they may strike, without doing damage.

DRILLING MACHINE.—Thomas Stanley, Pueblo, Col. Combined with the framing, operating mechanism and drill rope, are levers which support a hanger for the drill devices, and ropes connecting the outer ends of the levers with the operating mechanism, the invention covering a novel construction and arrangement of parts for a machine designed to drill wells or to dig post holes, etc.

BOTTLE FILLING APPARATUS. — Amalia M. Donally, New York City. This invention covers a novel construction and combination of parts in a device whereby bottles may be conveniently and expeditiously filled from a storage tank, keg, etc., while the arrangement is such that the liquid so conveyed to the bottles will be prevented from foaming.

BARREL WASHER. — George A. Bidwell, Pittsfield, Mass. A hollow rotating shaft is adapted for connection at one end with a steam and water supply, its other end being formed as a support for the barrel, while a branch pipe leading from the shaft is adapted to discharge into the barrel, and an adjustable support for the barrel is arranged in line with the shaft.

GRATE SUPPORT. — Charles L. Beers, Scranton, Pa. This is a support for the grates of cooking stoves, furnaces, boilers, etc., designed to be simple and inexpensive in construction, and to be readily attached to or detached from the fire pot, the supporting frames being of such form that they may be cast in the ordinary moulds now in use.

VEHICLE SEAT.—Thomas J. Kerstetter, East Brady, Pa. This invention covers a seat-back support formed from a rod of spring metal bent to form the base part, the side rail, the portion connected with the back, and the upright brace arranged to brace the portion which connects with the back bar, the seat and back bar being of any suitable construction, and the supports being sufficiently yielding to conduce to the comfort of riding.

CLOTHES HANGER. — Emil Sundberg, Eureka, Cal. This is a device of such construction that all the clothes hung thereon may be quickly removed, consisting of a simple and inexpensive rack of novel form, whereby, when the clothes are withdrawn from the rack, they will form into a bundle which may be thrown over the shoulder and conveniently carried.

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Notes & Queries

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References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.
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Scientific American Supplements referred to may be had at the office. Price 10 cents each.
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Minerals sent for examination should be distinctly marked or labeled.

(2832) H. A. B. asks for a liquid stove polish. A. Mix 2 parts copperas, 1 part dry boneblack or drop black, 1 part black lead, with enough water to form a creamy paste. Apply with a dauber. The bone black must be finely ground, and the purer the black lead, the better.

(2833) J. J. L. asks how many grains are intended for one ounce used in photographic formulas? I notice some state particularly 437½ grains to one oz., while others do not mention it. Is 480 grains intended when not otherwise stated? A. Yes; 437½ grains is the standard commercial ounce avoirdupois, at which photographic chemicals are sold by manufacturers. When the number of grains is not mentioned, 480 should be used, which is the troy ounce.

(2834) W. O. D. asks: What can be mixed with plaster of Paris in order to make it harden slowly? A. Three to ten per cent of powdered marshmallow root.

(2835) A. W. R. asks for a recipe for an ink with which to write and draw on glass for lantern slides. A. Use very thick India ink. Also see query No. 2704

(2836) L. L. B. asks: 1. What is the best receipt for laying down eggs from June till December? A. Dipping an instant into melted lard or paraffin, or oiling with linseed oil followed by packing in oats or bran, is recommended. Or make a pickle of 1 bushel of lime, 8 quarts salt, 250 quarts of water. Immerse eggs in it, constantly stirring as they are inserted. 2. What is the best receipt for any person to do up fine shirts and collars, that will polish well and not be yellow when done? A. For laundry work we refer you to our SUPPLEMENT, No. 577, and to the SCIENTIFIC AMERICAN, No. 9, vol. 61. 3. What is the nearest point to the north pole that has been attained by any one yet? A. The highest northerly latitude was reached by Lieut. Lockwood and Sergeant Brainard, in 1883. It was on the northern coast of Greenland, at 83° 24′. 4. Could a pine box be partitioned off, and corners be painted so that it will answer for battery cells? A. Yes; it is often done. Coat with following mixture: 4 parts resin and 1 part gutta percha, with a little boiled oil and enough ground pumice to work well.

(2837) S. E. D. says: 1. Can I make a good stock toning solution, to tone black, one that will keep well, by following formula:

A

Chloride gold	15 grs.
Water	2 oz.

B

Bicarbonate of soda	115 grs.
Water	4 oz.

1 drachm A, 2 drachms B and 8 ounces of water. If not a good formula, please give me one that is. A. The formula is good, but for black tones the borax toning bath described on page 225 of the April 13, 1889, issue of the SCIENTIFIC AMERICAN is considered better. It should be mixed fresh shortly before using. 2. I would like a formula for a stock developer, one that can be used repeatedly, and that will give density. I want it more especially for instantaneous exposures which are rather under-exposed. I have been using an eikonogen developer similar to one of those mentioned in "Development of Dry Plates," by Mr. Burbank, but it gives very thin negatives, with such faint detail that they have to be printed in the shade. Is there no remedy? A. With any developer that may be devised it is impossible to produce an image if the light has had no effect on the sensitive film, as is the case when a plate is described as being rather under-exposed. Generally such exposures only develop on the surface, as the light has not had time to affect the underlying particles of silver. We advise the use of the eikonogen and potash developer. If this fails to produce an effect, no other developer is likely to. Make the eikonogen as follows:

No. 1.

Warm water	40 oz.
Sulphite sodium	2 "
Eikinogen	1 "

No. 2.

Water	3 oz.
Carbonate of potash	1 "

Take two ounces of No. 1, and add from one to two drachms of No. 2, or three drachms if necessary to bring out the details, allow from half to three-quarters of an hour's time for the development of one plate, should it be greatly under-exposed, and see that the temperature of the solutions is 70° Fah. Density is only obtained by a strong eikonogen solution and length of time of development. 3. What is the cause of the bubbles which form between the albumen and the paper in silver prints? How can I avoid them? And if they are not to be avoided, how can I cure them? A. Air bubbles in albumen prints are usually due to the difference in temperature of the different solutions; they should all be kept at 70° Fah. If the prints are put into a weak solution of salt and water prior to toning, their appearance may be prevented.

(2838) T. C. B. asks: Is it not a fact that statistics show that the Indians in the United States are increasing in numbers? That is, has not each reservation a larger population than twenty years ago? A. Indian statistics are not very reliable. The point you make has been advanced before. They are decreasing on the reservations. From 1889 to 1890 there was a decrease of over 1000 out of 133,382 reservation Indians.

(2839) A. B. asks how to make a paste for mounting photograph prints. I have tried starch paste by the formula given in books on photography, but in some cases the corners of prints come loose, so should like to have a formula that you could recommend, both as to quality for holding the print on card mount after reasonably rough usage, without corners becoming loose, and to contain no chemical that could in any manner cause the print to fade. I am using Bradfisch aristotype paper. Should the prints be wet or moistened?

A. Nelson's No. 1 photographic gelatine.... 4 oz.
Water ..... 16 "
Dissolve the gelatine in warm water, then add:
Glycerine ..... 10 oz.
Alcohol ..... 5 "

Another mountant is as follows:

Arrowroot	150 grs.
Water	3½ oz.

Previous to adding the arrowroot dissolve in warmed water 15 grains of gelatine. After boiling them with the arrowroot added, let it cool and add 2½ drachms of alcohol and a few drops of carbolic acid. The prints should be slightly moistened prior to mounting. It is a good plan too to put them in a hand screw copying press for a minute after mounting, which insures even contact of all portions of the picture. 2. Please inform me of a method of producing a good *glace* finish on photographs. A. A *glace* appearance may be given to prints by rubbing over the surface lightly with clean flannel the encaustic paste made by dissolving in 200 grammes of benzole the following ingredients:

Gum elemi	10 grms.
Essence of lavender	300 "
Oil of spike	15 "

Filter and add

Pure virgin wax	500 "

The whole should be set on a water bath, which will aid in dissolving the wax. To make the paste thinner add more of the essence of lavender.

(2840) G. E. asks (1) how to prepare the white that is used by gilders on white and gold frames. A. Soak 4½ ounces fine glue in water, add water to 1½ pints, boil. Mix 8¾ ounces Spanish and 4½ ounces French chalk, triturate with the glue water, and apply by spattering. The mass should be of consistency of sirup. 2. How to make composition ornaments hold to polished shellac surfaces. A. Scrape off the shellac. 3. What is a laminated core? A. A core made of sheet metal in layers. 4. What is vulcanized fiber? A. In general some form of parchmentized paper. Parchmentizing is effected by immersing paper in a cold mixture of 2 volumes oil of vitriol and 1 volume water, washing in water and then with dilute ammonia. 5. How can shellac be dissolved without using alcohol? A. By borax solution, or after long standing by strong ammonia water.

(2841) O. M. says: 1. Will you kindly publish the names of the various photographic printing processes employed at the present time, stating their respective merits, also a brief description of their manipulation? By doing so you will greatly oblige an amateur photographer who is undecided as to the printing method he should adopt. A. We advise you to consult "The Amateur Photographer," by Ellerslie Wallace. Price $1. Also Wilson's "Quarter Century of Photography." Price $4. 2. Is the inhaling of vapors arising from the manufacture of oil varnishes deleterious to health? A. If the manufacture is carried on in a confined apartment, yes. 3. Are the lenses such as used in No. 4 Kodaks made from solid pieces of glass? A. We think they are. 4. In any case how many sections are there? A. Claimed to be achro-