

(59) J. K. asks how to make a composition for small printing press rollers? A. Take of Cooper's best glue 8 1/2 pounds, extra sirup 2 gallons, glycerine 1 pint, Venice turpentine 2 ounces. Steep the glue in rain water until pliant, and drain it well. Then melt it over a moderate fire, but do not "cook it." Next put in the sirup and boil three-quarters of an hour, stirring it occasionally and skimming off impurities arising to the surface. Add the glycerine and turpentine a few minutes before removing from the fire, and pour slowly. Slightly reduce or increase the glue as the weather becomes colder or warmer.

(60) H. E. asks (1) if the inclosed sample contains anything but lead. If so, what? A. The sample is not lead, but an alloy, probably Britanniametal, consisting of copper 1 part, zinc 2 parts, tin 81 parts, and antimony 16 parts. 2. In making a casting with this metal, 6 1/2 by 3 inches, one-sixteenth inch thick, do the brass moulds have to be hot or warm to give the face a smooth look, like inclosed sample? A. Brass moulds cannot be used, but they must be cast in well polished iron moulds under pressure. 3. What is the best etching fluid to use on this metal? A. Use nitric acid (aqua fortis).

(61) C. I. asks: 1. What is the best wood for ebonizing? A. Cherry. 2. Give full directions for ebonizing. A. Dissolve 4 ounces shellac with 2 ounces borax in 1/2 gallon water. Boil until a perfect solution is obtained, then add 1/2 ounce glycerine, of aniline black soluble in water a sufficient quantity, and it is ready for use. See also SCIENTIFIC AMERICAN for August 1, 1885, page 72.

(62) A. E. H. desires a receipt for glycerine jelly, used for mounting microscopic objects. A. Take a quantity of Nelson's gelatine, soak it for 2 or 3 hours in cold water, pour off the superfluous liquid, and heat the soaked gelatine until melted. To each fluid ounce of the gelatine, while it is fluid but cool, a fluid drachm of the white of an egg is added. Boil this until the albumen coagulates and the gelatine is quite clear, then filter it through fine flannel, and to each ounce of the clarified solution add 6 drachms of a mixture composed of 1 part glycerine to 2 parts of camphor water.

(63) J. T. asks: What is the composition and nature of "agate," used for coating kitchen utensils, and will it bear heat and cold under pressure? A. The following produces a white and harmless coating: Powdered flints, calcined borax, pure clay, and a little feldspar are finely ground together and made into a paste with water. The iron ware being cleaned with dilute sulphuric acid, and well washed with water, the paste is applied to it with a brush. While this is still moist, it is dusted over with a glaze composed of feldspar, carbonate of soda, borax, barium sulphate, and a little tin oxide. The utensils are allowed to dry gradually, and are lastly heated in a muffle at a bright red heat until the glaze is fused in a uniform manner. They will stand considerable heat and cold under pressure.

(64) A. B. J. asks (1) how to clean kid gloves. A. For cleaning, see answer to query 18, contained in SCIENTIFIC AMERICAN for October 24, 1885. 2. How to dye old kid gloves black? A. The glove is washed in alcohol, and three times brushed over with a decoction of logwood, allowing between each brushing ten minutes for drying, afterward dipping into a solution of iron sulphate and then brushing with warm water. Should the color not prove sufficiently dark, a decoction of quercitron may be added to the logwood decoction. Instead of the sulphate of iron, some nitrate of iron may be used. As the leather begins to dry, it is rubbed over with talc powder and some olive oil and pressed between flannel. The treatment with talc and oil is repeated, and the glue allowed to dry on the stretch wood. 3. Where could I get the wood hands or forms used to draw the gloves on to dye? A. They are to be had from all dealers in glover's materials.

(65) R. H. asks if there is any means of discovering gold by its attracting powers. A. There are no means known except regular miners' methods by which the presence of metal can be satisfactorily determined. Magnets are attracted by iron ore. 2. What books are the best on physiognomy? A. We can send you "Indications of Character," price 25 cents; "Heads and Faces, and How to Study Them," price \$1.00; "New Physiognomy," by S. R. Wells, price \$5.00.

(66) J. P. O. asks what process to put parchment documents through, that have been steamed in a safe, and have drawn up and become stiff, in the late fire at Galveston. I have some land patents that formerly were 4x10 inches, and now they are about 1 1/2 inches diameter and 4 inches long. They were in a large safe, and although the fire burnt away from the safe in less than an hour, everything of a leathery nature, such as backs of books, was entirely destroyed. A. We do not believe you can more than partially restore them, but would advise you to heat them with steam until they become pliable and then stretch them out as well as possible, taking care to prevent their becoming saturated with moisture, or they will pulp.

(67) H. S. desires a remedy for the removal of spots on the face resembling freckles. A. The following treatment, which is used for moles, may be found effective: Take tartar emetic in impalpable powder 15 grains, soap plaster 1 drachm, and beat them to a paste. Apply this paste to nearly a line in thickness (not more), and cover the whole with strips of gummed paper. In 4 or 5 days, eruption or suppuration will set in, and in a few days after leave only a very slight scar.

(68) J. P. R. asks why he failed to make platinum chloride adhere to a silver deposit in trying to get a black with it. A. We would advise you to use a solution of silver nitrate instead of platinum chloride. The article is dipped in the solution mentioned, then heated in the flame of a Bunsen burner until black, and finally all superfluous black removed by means of a rag dipped in sweet oil. This method will be found more economical and fully as satisfactory as the one used by you.

(69) G. M. M. writes: A white marble bust was discolored by smoke and water. Inform me the best mode of cleaning it. A. Take 2 parts of common soda, 1 part of pumice stone, and 1 part of finely powdered chalk; sift it through a fine sieve, and mix it with water; then rub it well all over the marble, and the stains will be removed; then wash the marble all over with soap and water, and it will be as clean as it was at first.

(70) E. S. A. S. asks: What is the cause of the Gulf Stream? A. The Gulf Stream is but a single portion of the great system of oceanic currents; the explanation of the phenomena would require too much space for this department. Text books on geography or geology will explain the details of the theory. 2. What will take ink spots out of marble? A. Take 1/4 ounce antimony chloride and 1 ounce oxalic acid, and dissolve them in 1 pint rain water; add flour, and bring the composition to a proper consistence. Then lay it evenly on the stained part with a brush, and after it has remained for a few days wash it off, and repeat the process, if the stain is not quite removed. 3. Is there any cure for flesh worms? A. See answer to query 8 given in SCIENTIFIC AMERICAN for February 21, 1885.

(71) J. Z. S. desires a few rules for a very lean person to increase his weight to a much larger amount—diet, etc. A. Much depends upon individual temperament, but by refraining largely from exercise, avoiding care and worry, and following a diet liberally composed of sugary and starchy elements, with milk and butter and yolk of eggs, fat meat, etc., one can generally largely increase his weight.

(72) W. H. R. asks: How is the high polish put on gilt frames? Is it gold leaf or a composition? One part a high polish, while on a strip alongside of it the gold is dead. How is the composition made that the flowered wood is made of on frames? A. The high polish referred to is obtained by burnishing a portion of the gold leaf. The moulding may be prepared as follows: Mix 14 pounds of glue, 7 pounds of resin, 1/2 pound of pitch, 2 1/2 pints linseed oil, spirits of water, more or less, according to the quantity required.

(73) J. H. W.—Steam at 5 pounds pressure is about 224° temperature, and may be estimated at 8 per cent more effective than water at 212° for the same area of radiating surface. You will require nearly 2 1/2 feet 1 1/2 inch pipe with steam at 5 pounds to equal a foot of 4 inch hot water pipe at 212°.

(74) H. G. A. writes: I am transmitting about 2 horse power through a set of gears that make 50 revolutions a minute, and they wear out in a short time. Will they last longer, and about how much, if I transmit the same power through them, but increase their speed to 150 revolutions per minute? A. You will gain nothing in wear on your gear by increasing the speed. The contact of the teeth, although with less strain, will have three times the quantity of contact, with an increase of back lash or vibration which adds to the wear, and also to the noise.

(75) G. P. T. speaks of a fire starting in a mattress stuffed with fine shavings, and asks if the mattress could have become ignited by spontaneous combustion. A. Very probably, if the mattress has been wet.

(76) C. H. B. writes: I have a polyopticon, with lens 1 1/4 inches diameter and 4 inches focus. Owing to size of lens, my pictures must not be larger than 1 1/2 inches diameter, and, unless they are perfect pictures, the result is not what I would like. I want to get a larger and clearer image. If I use lens 2 inches diameter and about 3 1/4 inches focus, shall I attain the desired end? A. Your single lens 2 inches diameter and 3 1/4 inches focus will not give a satisfactory image, nor cover the required field; two plano-convex lenses of 2 inches diameter, 8 inches focus, placed from 2 to 3 inches apart, with their convex faces next to each other, set so as to adjust their distances for the best effect, will enable you to project a picture 2 inches to 2 1/4 inches diameter.

(77) F. J. W.—If you are handy at tinkering, and really ambitious to learn a regular trade, it is now time (age 18) to make a start in earnest by going into the nearest machine shop, beginning, if necessary clear down at the bottom, a mere laborer or blacksmith's helper, it matters not which, if you are only there to see how things are done, industrious, and lose no opportunity to make yourself useful.

(78) G. L. C.—With the best rams now made on the same principle, water can be raised 150 feet or more, and in quantity from one-fifth to one-fiftieth the quantity used, according to the available conditions of feed pipe and height. A siphon cannot be relied on for more than 25 feet lift.

(79) G. K. asks: Which are the most powerful reflectors in use? A. The parabolic reflectors of our locomotives are the most powerful form that has yet been devised.

(80) C. H. I. asks the best receipt for keeping auger bits of cast steel from rusting. A. Wipe them with tallow; warm the bit, using the tallow on a rag. Vaseline or oil on a rag in the tool box is a ready means of preventing rust.

(81) M. G. F. & F. L. W.—Wind has no effect upon a thermometer, if otherwise protected from radiation from the ground or buildings. A thermometer, to indicate the temperature of the air, uniform with the regulations as issued by the Smithsonian Institution, should be sheltered from the sun, and from radiation, by being placed in a latticed cage of about a cubic foot space, so much open on one side as to admit of observation, the cage to be sheltered from the direct rays of the sun, and thermometer protected from rain.

(82) D. D. J. asks how to make a compound used for coating small pieces of steel intended to cast into iron. Where nothing is used, the iron does not lie to the steel, and blow holes are formed, which spoil the castings. I have seen a compound used, of which one of the ingredients is nitric acid, which entirely prevents blowing, and the iron and

steel in the casting seem to be almost fused together. A. The pieces of steel are cleaned free from scale by mixture of hydrochloric acid 1 part, water 3 parts, then washed in hot water, then dipped in muriate of zinc (ordinary soldering acid) and dried. Put the pieces into the mould as hot as can be handled.

(83) A. C. L. asks (1) how to remove machine oil and gasoline from the floor and siding of a frame building which some tenants have so completely saturated as to increase the fire risk and injure the appearance. A. It will not be possible to remove the oil, but the appearance of the wood may be improved by coating it with shellac and then painting the surface. 2. How is paper such as is used to wrap butter or candy coated with paraffine? A. Unsized paper is dipped in a solution of paraffine, or else the paper is waxed by means of heat being applied to beeswax, which is then absorbed by the paper. There are several patented machines for the purpose. 3. How can I make a paste which will unite such paper? A. Use a rubber cement. See recipe given in article on "Cements" in SCIENTIFIC AMERICAN SUPPLEMENT, No. 158. 4. How can I transfer a gold leaf sign from the glass of one store window to that of another? A. We know of no means by which this can be done.

(84) A. M. H.—The injector is considered the most economical for feeding boilers, and is no doubt economical for raising water. It is not in use for that purpose, because it heats the water. For a regular water supply, it is not reliable. There is no work on steam jets and injectors. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 212, on the theory of Giffard injector, and No. 356 for illustrations of various kinds of injectors.

(85) W. H. asks how to brown gun barrels. A. Rub the clean barrel with chloride of antimony mixed with a little olive oil; leave a thin coat on the barrel until the required degree of browning is reached. Then wash in hot water and soda, dry, and oil with boiled linseed oil. Varnish with shellac.

(86) C. S., Jr., asks: 1. What is the reason that the recoil in a pistol is greater than in a rifle chambered to use the same cartridge? A. Because the rifle is heavier, and absorbs the recoil. 2. Why is it that the penetration is greater in the latter than in the former? A. Because by the greater length of the barrel of the rifle the cartridge gives its full effect; also the recoil of the pistol is so much lost power in the bullet by lessening its velocity. 3. What good are the grooves in the bullet of the rifle cartridge? A. The rifling of a gun adds to the accuracy of the flight of the bullet by causing it to spin.

(87) G. A. W. asks: What is the cause of the humming, buzzing sound which is sometimes heard around telegraph poles and wires? A. The humming is caused by the vibration of the wires by the action of the wind, on the principle of the Aeolian harp. A very slight breeze will set the wires into active vibration.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined with the results stated.

T. H.—No. 1 is a silicious mineral containing carbonate of lime, and is of no apparent value. No. 2 is a clay slightly colored with iron oxide. It resembles ocher, and might be used as a paint if ground and mixed with oil.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted, February 2, 1886, AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Accordion, F. Wittstadt..... 335,552
Adding machine, T. W. Maxey..... 335,374
Air brake valve, T. H. Haberkorn..... 335,446
Air moistening apparatus for factories, W. V. Wallace..... 335,403
Alarm. See Low water alarm.
Album stand, T. M. Hass..... 335,450
Animal trap, L. F. Dunn..... 335,512
Artificial mother, P. Beuerlein..... 335,422
Atomizer, W. A. Turner..... 335,550
Awning, hop box, Dillenbeck & Neahr..... 335,115
Axle lubricator, car, Thurber & Brockway..... 335,163
Bag or satchel fastening, L. B. Prahar..... 335,307
Bags and other articles, fastening for hand, L. Sanders..... 335,311
Baking pan, A. B. Sparrow..... 335,251
Baling press, J. La Dow..... 335,290
Bar. See Pinch bar.
Bark shaving machine, B. Ott..... 335,532, 335,533
Barrels, device for raising, J. E. Mitchell..... 335,376
Basins, dirt collector and remover for wash, T. Keach..... 335,363
Beams or rails, splice for metal, J. F. Ward..... 335,165
Bearing, anti-friction, W. Kratzer..... 335,527
Bed bottoms, fastening, W. S. Seymour..... 335,542
Bed, folding, W. H. Dell..... 335,434
Bed for invalids, adjustable, M. G. Farmer..... 335,441
Bed rest, W. H. Aldrich..... 335,412
Bedstead, adjustable, C. A. Jenkins..... 335,360
Bedstead, invalid, Fillebrown & Chandler..... 335,218
Beehives, device for inverting, J. M. Shuck..... 335,153
Bell attachment, sleigh, D. W. Sexton..... 335,151
Belt, galvanic, H. M. Beidler..... 335,417
Belting, T. Gingras..... 335,187
Bench hook, J. B. Boyce..... 335,423
Bicycle leg, J. F. Morgan..... 335,297
Bicycle saddle, G. Rothgiesser..... 335,246
Blind slat, etc., G. Hayes..... 335,353
Blind stapling machine, N. P. Peterson..... 335,304
Boat. See Hunting boat. Ice boat.
Boiler furnace, E. Boileau..... 335,207
Bolt. See Flour bolt.
Bolt heading machine, A. B. Glover..... 335,280
Bolting cloth, device for tightening, G. T. Smith..... 335,155
Boneblack, process of and apparatus for drying, S. M. Lillie..... 335,137
Book, copy, A. Agar..... 335,103

Boat, rubber, J. L. Tyler, Jr..... 335,256
Boots and shoes, applying wear points to rubber, J. L. Thomson..... 335,323
Boots, device for pulling on, H. W. Benham..... 335,415
Boring tool, J. Birkenhead..... 335,206
Bottle, mullage, G. R. Wight..... 335,329
Bottle, nursing, F. E. Forster..... 335,347
Box. See Fare box. Lunch box. Paper box. Tobacco box. Wagon box.
Box covering and land trimming machine, C. E. Clute..... 335,429
Bracket. See Lamp bracket.
Brake. See Car brake.
Brush, dental plate, A. C. Estabrook..... 335,345
Buckle, F. B. Spooner..... 335,252
Buckle, B. S. Wash..... 335,490
Burnishing tool holder, G. A. Fullerton..... 335,185
Bush moulding machine, bung, A. G. Anderson..... 335,331
Button, J. C. W. Jefferys..... 335,226
Button attaching machine, C. J. Brosnan..... 335,211
Button fastener, E. D. Steele..... 335,333
Button fastener, J. F. Thornton..... 335,162
Button feeding device, C. J. Brosnan..... 335,212
Cable conduit, W. A. Wright..... 335,553
Calipers, S. Taylor..... 335,437
Calipers, micrometer, E. S. Cobb..... 335,214
Can. See Oil can.
Cane juice defecator, J. F. Hauptman..... 335,352
Canvas stretcher, keyless, J. L. Rawbone..... 335,480
Car brake, G. T. Horton..... 335,521
Car brake, F. H. D. Newhard..... 335,378 to 335,380
Car brake, automatic, F. H. D. Newhard..... 335,377
Car coupling, J. O'Riordan..... 335,381
Car door, Williamson & Pries..... 335,169
Car starter, Muller & Ruter..... 335,472
Car starter and brake, J. C. Elliott..... 335,217
Car, stock, G. D. Burton..... 335,109
Car ventilator, railway, A. B. Harris..... 335,448
Card or sheet transferring apparatus, T. M. Kenney..... 335,204
Carpet stretcher, M. A. Higgins..... 335,356
Carriage top, S. M. Chester..... 335,426
Cartridge decapper, recapper, and reloader, S. McNeill..... 335,231
Caster, G. M. Patten..... 335,301
Caster, trunk, A. V. Romadka..... 335,145, 335,149
Chain clasp, C. Schlag..... 335,247
Chair. See Convertible chair. Nursery chair. Rocking chair. Window cleaning chair.
Chair seat and back, F. Latulip..... 335,461
Check bar for bridles, H. Lowe..... 335,465
Chenille ornament, C. A. Schmidt..... 335,315
Chimney cap and ventilator, W. J. & C. Kayser..... 335,382
Cigar rolling table and wrapper cutter, combined, J. R. Williams..... 335,263
Clasp. See Chain clasp.
Clothes hook, E. W. Philbrook..... 335,237
Clothespin, J. K. P. Nourse..... 335,299
Clutch, friction, W. P. Brett..... 335,106
Clutch, friction, J. R. Little..... 335,468
Coal bucket, J. Smith..... 335,249
Coffin, W. R. Hassard..... 335,451
Collar pad, horse, A. Ortmyer..... 335,143
Collar pad, horse, W. H. Osmer..... 335,332
Combination lock, J. A. J. Calhoun..... 335,387
Convertible chair, C. M. Hamilton..... 335,283
Convertible chair, A. P. Yarnall..... 335,410
Cotton, etc., metallic wrapping for, A. H. Douglass..... 335,216
Cotton press, C. A. Hege..... 335,194
Cotton scraper, J. R. Cooper..... 335,507
Cotton thinner, S. C. Dickson..... 335,180
Coupling. See Car coupling. Pipe coupling. Thill coupling.
Cradle, folding, C. P. Kenna..... 335,203
Crate, fruit, C. W. Lloyd..... 335,369
Creamer, centrifugal, G. De Laval..... 335,344
Cultivator, F. M. Helms..... 335,222
Cut-off or waste valve, Walsh & Martin..... 335,404
Cut-off valve, G. W. Anderson..... 335,172
Cutter. See Key seat cutter. Vegetable cutter.
Cutter head, W. G. Rendall..... 335,309
Desk and seat, school, J. F. Coulter..... 335,508
Desk, office, C. N. Dalzell..... 335,432
Dies, making, J. Brady..... 335,334
Dishes, machine for cutting oval shell, S. B. Conover..... 335,431
Distilling ammoniacal waters, apparatus for, B. P. Clapp..... 335,427
Doll, walking, F. W. Peloubet..... 335,302
Doorhanger, H. T. Moody..... 335,232
Dovetailing machine, E. M. Byrkit..... 335,335
Dress shield, J. Janowitz..... 335,225
Drier. See Fruit drier.
Drill. See Rock drill.
Drilling machine, W. Evans..... 335,184
Dustpan holder, W. W. Squier..... 335,545
Ear knob, Adams & Dodge..... 335,100
Educational device for the illustration of longitude and time, D. C. Young (r)..... 10,883
Electric circuits, switch or turn-off for, E. Thomson..... 335,548
Electric distribution system, of E. Thomson..... 335,159
Electric machine and motor, dynamo, W. L. Voelker..... 335,326
Electric machine, dynamo, C. Hering..... 335,855
Electric machine or motor, dynamo, W. L. Voelker..... 335,325
Electric machines, armature for dynamo, H. R. Boissier..... 335,107
Electric motor, E. Thomson..... 335,545
Electric motors, device for transmitting power from, E. H. Johnson..... 335,285
Electrical switch, C. F. Brush..... 335,269
Elevator, F. H. Prince..... 335,239
Elevator, J. H. Wisheart..... 335,403
Engine. See Gas engine. Pumping engine. Rotary engine. Rotary steam engine. Steam engine. Traction engine. Wind engine.
Envelope counting machinery, A. A. Rheutan..... 335,245
Envelope machine presser, A. A. Rheutan..... 335,244
Ethers, manufacture of resin acid, E. Schaal..... 335,485
Excavator, inclined wheel, S. M. Lockwood..... 335,230
Excavator, inclined wheel earth, S. M. Lockwood..... 335,229
Extension table, T. B. Hennessy..... 335,453
Eyeglass nose guard, W. Freeman..... 335,277
Fan, toilet, J. Silbernik..... 335,318
Fare box and lantern, combined, H. D. Clark..... 335,410
Feather sorter, H. Penner..... 335,144
Feed water heater, F. Shickle..... 335,177
Feeding rack, sheep, D. Phillips..... 335,384
Fence making machine, J. B. Thies..... 335,399
Fence post, Myers & Anderson..... 335,298
Fences, machine for manufacturing, R. B. Stapp..... 335,253
Fertilizer distributor, Sheldon & Patterson..... 335,152
Filing prescriptions, machine for, J. S. Jarnagin..... 335,457
Firearm, magazine, Franklin & Ehbets..... 335,417
Fire escape, W. H. Bailey..... 335,514
Fire escape, W. Brown..... 335,103
Fire escape, electric, Marcus & Epsteyn..... 335,372
Fishing fly book, T. J. Conroy..... 335,603
Fishing fly book, H. P. Wells..... 335,491
Flatiron heater, G. Bennis..... 335,42

