



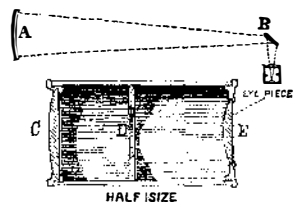
(25) E. C. R. writes: I have a Cleveland study lamp, the principle of which is similar to the German student lamp, and I am troubled with having the flame, after burning a short time, gradually go lower and lower, and then, if I raise and lower the tank or oil receptacle several times in quick succession, which I imagine forces the oil through the apparently partly impeded passage leading from the tank to the wick, the flame will again assume its regular height and perhaps not grow smaller again for the remainder of the evening. Now I suppose that the pipe leading from the tank to the wick is lined with grease or something similar, thus preventing the oil from readily flowing to the wick, and what I wish to know is what can I clean this channel or pipe with (some liquid) that will not eat the metal, and yet destroy the grease sufficiently to clear the pipe? A. If the feed tube of your lamp is obstructed, put a solution of potash and water into the tank holder after washing out the lamp with hot water. Let it stand for a day, then clean out with hot water. See that it runs a free stream when the tank holder is full of water. It is possible that the nipple at the bottom of the tank is too low and seals itself. It should not be below the top of the tube that feeds the lamp.

(26) T. M. asks: 1. What size leather belt would you advise to transmit 125 horse power; shafts 50 feet from center to center, small pulley 42 inches diameter? Belt speed 2200 feet per minute. A. Your pulley is too small to transmit 125 horse power. It will require a belt or a number of belts equal to 60 inches in width upon 42 inch pulleys. Better use 4 foot pulleys and 2 belts 24 inches wide running at the speed you give. 2. What size shaft would you recommend for main shaft in mill? A. The size of the shaft depends upon whether you distribute the power upon both sides of the receiving pulleys. A 4 1/4 inch shaft if for one way, a 4 inch shaft if both ways. 3. Give me the best method for making engine foundations. A. A brick foundation with granite cap stones with anchor bolts from the bottom is the best.

(27) H. M. W. writes: I have a large saw mill run by steam. We run the engine by burning sawdust, but we cannot get rid of more than one-eighth of it in this way. Now, is there no way in which the sawdust can be utilized without a great outlay for machinery? A. Sawdust can be used in the manufacture of pyroligneous acid and methylic spirit. It also makes good manure, but is slow in rotting. It should be thickly spread and plowed in; two years will be required for effect.

(28) G. M. S. asks: 1. What can I use to waterproof coat a large canvas used as shed for portable saw mill? Would like to make it fireproof also. A. See SUPPLEMENT, No. 159. 2. Can I run a 1 inch by 40 inch steel shaft and disk 100,000 revolutions per minute? Boxes are very long, hollow, and a cold stream of water is forced through, also a jet of oil under great pressure. A. It is improbable a 1 inch shaft can be given a speed of 100,000 revolutions per minute. 3. Could not water, powder, or dynamite be made red hot without burning, if so powerfully confined that it could not expand? Would it not be impossible to freeze water under the same condition? A. If powder or dynamite is confined in a chamber that is strong enough to prevent bursting, it will not prevent the chemical combination, when brought to the proper condition for explosion, whether by heat or otherwise. The pressure will last until reduced by cooling, new combinations, or waste. These experiments have been made by firing a confined charge and allowing it to waste through a small vent. Water will freeze if confined, and put the vessel holding it under immense pressure. We think that great pressure will not prevent it from freezing. 4. Could not steam be heated to such a degree that it would not return to a fluid state? A. Yes. Could be heated under pressure, until its chemical constituents are dissociated. 5. If it was possible to so powerfully compress wood or other substance as to make it as dense as iron, would it not be as heavy, as hard, and as strong as iron? Has extreme pressure of such substances ever been experimented upon? A. Wood compressed would become no heavier than its chemical constituents considered as solid bodies. Wood has been put under great pressures, but we do not know of any profitable results.

(29) A. R. H. writes: I am attempting to make a Newtonian telescope, described in SUPPLEMENT, No. 179, but there are some points I don't understand, and I have concluded to write and ask a few questions, hoping that you could enlighten me. Is the mirror glass or metal, and what is its size? The writer does not give the number or kind of lenses used in the eyepiece. How are the rays thrown through the eyepiece? What is meant by the flat which is mounted on the sliding piece? Is it necessary to have copper bars or any bars at all, and why is the mirror supporting base composed of layers of wood glued together? Are the reflected rays of the mirror thrown up through the center of the tube, and how are the lenses arranged? A.



For your Newtonian telescope a mirror of speculum metal is to be preferred, although fine glass specula are now made with a silvered surface. The size of the mirror should be about one-twelfth the focal length of the telescope that you wish to make. The flat is the small oval plane mirror used near the focal end to reflect the image forming rays through the side of the tube or frame, so that in viewing an object your head will not interrupt the incident light. The details of the construction need not be followed strictly, as the mirror support may be made of a solid piece. The above sketch may answer some of the other questions. A, speculum; B, flat; C, field lens; D, diaphragm; E, eye lens. The eye piece is Huygenian.

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted May 22, 1883, AND EACH BEARING THAT DATE.

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

Table listing inventions such as Agricultural machine, Air and gas engines, Amalgamator, Amalgamator and settler, Ammonia apparatus, Anvil, Auger, Axle and box, Baluster, Bed, Bed or pillow, Bed sofa, Belt joint, Bench, Blackboard, Block, Board, Book, Boot, Boot insole, Box opener, Brace, Brake, Brick kiln, Brick mold, Brush, Buckle, Buckle harness, Buffer, Buildings, Bung, Burial case, Butter holder, Button, Button fastener, Button hole cutter, Buttons, Calipers, Can, Can and making the same, Can capping machine, Car brake, Car coupling, Car coupling, Car coupling, Car door fastening, Car signal light, Car steps, Car ventilator, Carbuuretor, Carriage standard, Carriage top prop, Carrier, Case, Cash carrier, Caster, Caster, Castings, Centrifugal machine, Chain, Chair, Chart, Check row cord, Chimney funnels, Chuck, Churn, Cigar mold press, Clamp, Cleaner, Clock case, Clock repeating, Clock system, Clutch, Coal hod, Cock, Coffee roaster, Compressing engine, Condenser and cooler, Convertible chair, Copying press, Cooling board, Corn of the cob, Cultivator, Cultivator blade, Cultivator wheel, Cup, Curtain roller, Cutter, Cutter beads, Dental jaw brace, Denture, Desk, Door, Dredging bucket, Drinking vessel, Duplex direct acting engine, Duplex writing table, Easel, Electric cables, Electric machine, Electric machine, Electric wire duct, Electric wire, Lamp burner, Lamp electric arc, Lamp regulator, Lard, Latch, Lathe, Lathing, Leather, Locomotive, Locomotive brake, Locomotive steam brake, Log roller, Loom picker stick holder, Lubricating and cooling compound, Malt drying apparatus, Mattress, Mechanical movement, Mechanical movement, Metal surfaces, Metals from their ores, Micrometer gage, Microscopic illuminator, Middlings purifier, Mill, Mill, Mold, Mortising tool, Motor, Mowing machine, Nail, Nail tack, Nail driving machine, Necktie holder, Nut lock, Nut lock, Nut lock, Nut lock, Oil can, Oil stone, Oils and fats, Orange clipper, Ore separator, Ores, Overall, Padlock, Pan, Paper pulp, Paper roofing, Parcel carrier, Pavement stone, Pedicycle, Pen and holder, Pen fountain, Percolator, Piano music rack, Pin, Pinchers, Pipe joint, Planter check row, Planter seed, Platform elevator, Plow, Plow fender, Plow sulky, Plumber's trap, Post, Powder duster, Power transmitting apparatus, Press, Pressure gage, Printed designs, Printing machine, Printing presses, Propeller, Protector, Pulley, Pump, Pumpiston, Pumping apparatus, Rack, Rack for graduated glass measures, Railway signal, Railway track joint, Railway wire rope, Ratchet wrench, Reel, Refrigerator, Refrigerator car, Regulator, Rice hulling and polishing machine, Rifles, Ring, Roaster, Rocking chair, Rod, Rolled bars, Roller, Roller mill, Rolling pin, Rope clamp, Rope boats, Rubber apparatus, Rubber fabrics, Running gear, Rust spots, Sack fastener, Sash balance, Sash fastener, Saw guard, Saw handle, Saw mill, Saw mill dog, Scaffold, Scale, Scourer, Screen, Screw driver.

Table listing inventions such as Elevator, Elliptic spring, Embossing upon plastered walls, End gate, Endless carrier and elevator, Engine, Gas motor engine, Steam engine, Extractor, Fabrics, Fan, Feed water heater, Feed water regulator, Fence, Fence combined wire and picket, Fences, Fence post, Fence wire, Fender, Fertilizer distributor, File blanks, Filter, Filtering and refrigerating water, Fire alarms, Fire arm, Fire escape, Fire escape, Fire escape, Fire escape, Fire escape, Fire extinguisher, Fire water, Flour dressing machine, Flour packer, Fly paper, Foot rest, Fountain, Fracture apparatus, Frame, Fruit gatherer, Fruit jar heating case, Furnace, Furnace water jacket, Furnaces, Gage, Gage, Gas apparatus, Gas burners, Gas engine, Gas engine and air compressor, Gas for illuminating, Gas furnace, Gas generator, Gas motor engine, Gas process, Gate, Geering for changing speed, Governor cut off valve gear, Grading machine, Grain binder, Grain decorticator, Grain scourer, Grain separator, Grappling ring, Grate, Grease cup, Grindstone tool holder, Grindstone tool holder, Guard, Hair to the action of heated vapors, Handle, Harness pad block, Harrow, Harrow seed planter, Harrow tooth, Harvester grain elevator, Harvester rake arm, Harvester reel, Hat and making the same, Hats on finishing blocks, Hatchway, Heater, Heel burnishing machine, Hinge, Hoes, Holder, Holder, Horse blanket, Horseshoe, Hose pipe nozzle, Hot air and gas engine, Hub for traction wheels, Huller, Hydrocarbon engine, Ice apparatus, Ice cream freezer, Insulating underground electric wires, Iron, Iron into cast steel, Iron, Jack, Joint, Kiln, Knives and forks, Lacing studs, Ladder, Ladder, Ladder, Lamp burner, Lamp electric arc, Lamp regulator, Lard, Latch, Lathe, Lathing, Leather, Locomotive, Locomotive brake, Locomotive steam brake, Log roller, Loom picker stick holder, Lubricating and cooling compound, Malt drying apparatus, Mattress, Mechanical movement, Mechanical movement, Metal surfaces, Metals from their ores, Micrometer gage, Microscopic illuminator, Middlings purifier, Mill, Mill, Mold, Mortising tool, Motor, Mowing machine, Nail, Nail tack, Nail driving machine, Necktie holder, Nut lock, Nut lock, Nut lock, Nut lock, Oil can, Oil stone, Oils and fats, Orange clipper, Ore separator, Ores, Overall, Padlock, Pan, Paper pulp, Paper roofing, Parcel carrier, Pavement stone, Pedicycle, Pen and holder, Pen fountain, Percolator, Piano music rack, Pin, Pinchers, Pipe joint, Planter check row, Planter seed, Platform elevator, Plow, Plow fender, Plow sulky, Plumber's trap, Post, Powder duster, Power transmitting apparatus, Press, Pressure gage, Printed designs, Printing machine, Printing presses, Propeller, Protector, Pulley, Pump, Pumpiston, Pumping apparatus, Rack, Rack for graduated glass measures, Railway signal, Railway track joint, Railway wire rope, Ratchet wrench, Reel, Refrigerator, Refrigerator car, Regulator, Rice hulling and polishing machine, Rifles, Ring, Roaster, Rocking chair, Rod, Rolled bars, Roller, Roller mill, Rolling pin, Rope clamp, Rope boats, Rubber apparatus, Rubber fabrics, Running gear, Rust spots, Sack fastener, Sash balance, Sash fastener, Saw guard, Saw handle, Saw mill, Saw mill dog, Scaffold, Scale, Scourer, Screen, Screw driver.

Table listing inventions such as Latch, Lathe, Lathing, Leather, Locomotive, Locomotive brake, Locomotive steam brake, Log roller, Loom picker stick holder, Lubricating and cooling compound, Malt drying apparatus, Mattress, Mechanical movement, Mechanical movement, Metal surfaces, Metals from their ores, Micrometer gage, Microscopic illuminator, Middlings purifier, Mill, Mill, Mold, Mortising tool, Motor, Mowing machine, Nail, Nail tack, Nail driving machine, Necktie holder, Nut lock, Nut lock, Nut lock, Nut lock, Oil can, Oil stone, Oils and fats, Orange clipper, Ore separator, Ores, Overall, Padlock, Pan, Paper pulp, Paper roofing, Parcel carrier, Pavement stone, Pedicycle, Pen and holder, Pen fountain, Percolator, Piano music rack, Pin, Pinchers, Pipe joint, Planter check row, Planter seed, Platform elevator, Plow, Plow fender, Plow sulky, Plumber's trap, Post, Powder duster, Power transmitting apparatus, Press, Pressure gage, Printed designs, Printing machine, Printing presses, Propeller, Protector, Pulley, Pump, Pumpiston, Pumping apparatus, Rack, Rack for graduated glass measures, Railway signal, Railway track joint, Railway wire rope, Ratchet wrench, Reel, Refrigerator, Refrigerator car, Regulator, Rice hulling and polishing machine, Rifles, Ring, Roaster, Rocking chair, Rod, Rolled bars, Roller, Roller mill, Rolling pin, Rope clamp, Rope boats, Rubber apparatus, Rubber fabrics, Running gear, Rust spots, Sack fastener, Sash balance, Sash fastener, Saw guard, Saw handle, Saw mill, Saw mill dog, Scaffold, Scale, Scourer, Screen, Screw driver.