

## Notes & Queries.

[We present herewith a series of inquiries embracing a variety of topics of greater or less general interest. The questions are simple, it is true, but we prefer to elicit practical answers from our readers.]

- 1.—ENCKE'S COMET.—Will some of your readers inform me which constellation Encke's comet is in?—W. E.
- 2.—GEARING FOR SAWS.—Is it practicable to run a circular saw, of 48 inches or more diameter, with a bevel gear instead of a belt?—A. K.
- 3.—WATERPROOFING COTTON CLOTH.—I am making a tent of cotton cloth; is there any way in which I can make it waterproof?—H. W. U.
- 4.—FACE WORMS.—Can any of your correspondents give me a remedy for the grubs or face worms, so common about the nose?—H. E. A.
- 5.—EMERY BELTS.—We wish information as to the manner of making and using emery belts, on which to polish the prongs of filing irons or tongs.—S. & B.
- 6.—FIELD GLASS.—Is there any difference in the construction of a day and a night field glass? If not, how can I determine the night adjustment?—F. H.
- 7.—SHELLAC AND LINSEED OIL.—Can I mix shellac varnish with linseed oil, and form a preparation that will give some luster when applied to bare wood?—W. W.
- 8.—CEMENT FOR SHEET IRON AND RUBBER PACKING.—Can any of your readers inform me how to make a cement that will unite firmly Russian sheet iron and thin rubber packing, and remain unaffected by changes of weather?—J. M.
- 9.—VARNISHING PITCH PINE.—I am informed that some process has been discovered, by which varnish can be applied to pitch pine, so as to prevent the wood from turning dark and becoming dingy in appearance. Can any of your readers tell me how it is done?—J. H.
- 10.—COATING IRON WITH QUICKSILVER.—Can iron weights be coated with quicksilver, by using hydrochloric acid to effect the union? Will some one refer me to some work whence I can get a sufficiently clear account of the process to enable me to repeat it, or state the process for the public benefit?—T. H.'s S.
- 11.—DIMENSIONS OF BOILER GRATE.—I have a marine boiler, 7 feet in diameter, 12 feet long, with grate surface 3 x 7 feet inside the boiler, which is cylindrical. The draft returns between two inch tubes. I would like to know if the grate surface is sufficient to burn shavings and cuttings.—B.
- 12.—STEAM BOILERS.—Mr. G. H. Gregory, of Toronto, Canada, in commenting on a letter from Mr. Nicholson, published on page 5 of our current volume, asks how it was that the motion of the steamer, in a sea so rough as that described, did not throw the water into contact with the upper row of tubes, which were red hot, and so cause an explosion.
- 13.—PROPORTIONS OF SAW MILL GEARING.—Supposing the pitman and saw of a Muley saw mill to weigh 200 pounds, and be attached to a crank wrist of 26 inch stroke, and running at a speed of 350 revolutions per minute, how much counterbalance will be required, or, in other words, what proportion of the weight of saw and pitman is necessary as a counterbalance, to make the crank wheel run with the least vibration?—T. B.
- 14.—FRICTIONAL ELECTRICITY.—I have a battery of this kind—turning with a crank, and designed for medical treatment—that I cannot get to work; and I desire to get, from some of your many readers, a possible remedy. It turns freely; the mechanism is all correct. The permanent magnet is strong, and I can observe no derangement of the revolving magnet. I have examined all points of contact, insulation, etc., and have tried it with close contact and none at all, without success. What shall I do?—M. H. K.
- 15.—COMPOUND SCREW GEARING.—You have given an answer, furnished by J. P. N., of New York, to my query in regard to compound gearing; but unfortunately, I am no better off than before, as the rule given by J. P. N. will only apply to simple gearing, as I understand it. In speaking of compound gearing, I refer to those lathes on which the wheels, intermediate between spindle and screw, must be compounded. What I want is a quick method of finding the wheels without making elaborate calculations. As J. P. N.'s rule will only find the spindle and screw wheels, I take it for granted that he did not understand my query. Will he please try again?—R. F. S.
- 16.—APPLICATION OF LIGHT ENGINES TO SAW MILLS.—Since the war, steam threshers are being introduced into this part of the State; but, as most of the threshing is done early in the fall, many of them are idle during the winter. Some attempts have been made to use them for driving saw mills during the winter season, but none that I know of have been successful. Now, in theory it would appear that a ten horse power would saw half as much as a twenty horse power. Thus far, however, we have not been able to do that much with ours; so what we want to know is how to apply such power to get satisfactory results. Timber is scarce, but we frequently have large trees, requiring at least a fifty inch saw; so, to make the proportions more definite, we want to know how to apply a ten horse power engine to a fifty or fifty-six inch saw so as to give the best results.—NEMO.

## Answers to Correspondents.

**SPECIAL NOTE.**—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at 100 a line, under the head of "Business and Personal."

ALL reference to back numbers must be by volume and page.

- J. J. W., of —.—White cedar, placed in the ground for fence posts, is very durable. We know some that has lasted more than sixty years.
- M. M., of Mo.—We see no advantage in constructing boilers as you propose.
- E. M. W.—You will find the subject of ice formation discussed at length in the SCIENTIFIC AMERICAN, Vol. XXII. We do not wish to reopen the discussion at present.
- OIL IN WINTER.—To J. S., query 7, Jan. 1: By mixing kerosene oil with seal or sweet oil in a warm state, it will be prevented from getting stiff in cold weather. The right proportions will be found upon trial.—W. H. R., of N. J.
- ETCHING ON GLASS.—F. H. can etch on his glass vessels as follows: Coat the object to be etched with a thin film of wax; then, with a sharp instrument, draw the desired characters carefully, cleaning the wax off in the figures; go to some chemist and get some fluorine acid, which must be handled very carefully. The acid comes prepared in metal bottles. Pour some of the acid in a small lead pan, which place in a still larger vessel filled with sand; heat the sand and place the glass object over the gas liberated from the heated acid, and it will soon be found to be beautifully etched. Great care must be taken when this is going on, for the gas, as well as the acid, is of a very deleterious character.—E. X., of Mass.

M. H. B., of Ill.—In order to trim a flat boat, would the excess of weight upon the heavy side be precisely double the amount necessary to carry to the light side? Ans. Yes.

**FRICTIONAL ELECTRICITY.**—This can and has been used for telegraphing. It is not as good as chemical electricity for the voltaic arch.—E. X., of Mass.

**PREPARATION OF COTTON SEED OIL.**—Query No. 23, Jan. 6. Treat the oil with ozone or ozonized air; either will accomplish the desired result.—C. F. D., of N. Y.

**CLEANING PAINT BRUSHES.**—J. G. M. should try soaking them in hot rancid grease.—W. H. R., of N. J.

**CLEANING CASTINGS.**—Query No. 15, Jan. 1. I advise L. V. B. to try the sand blast for cleaning his brass castings.—W. H. R., of N. J.

**ROTARY MOTION.**—W. T. V., query 13, Jan. 1, 1872, can impart rotary motion, of any desired speed, to the vertical shaft described, by a suitable train of gearing, actuated by a barrel spring.—J. M., of N. Y.

**BACK PRESSURE.**—To R. R.: The back pressure upon piston will not be materially increased, provided you leave the end of five inch pipe open. Do not use any back pressure valve. The pipe must be laid so that it will not "trap." You should use long round bends instead of elbows.—J. M., of N. Y.

**GUN SCATTERING SHOT.**—H. W., query No. 3, Jan. 1, can prevent his gun from scattering by inserting a ring about half an inch in width in the nozzle of the gun, beveling from the outer edge to nothing at the inward. It can be fastened in with rivets; it should be made of metal about one sixteenth of an inch in thickness, and be fitted very neatly.—W. H. R., of N. J.

**BRONZE PAINT.**—This can be made by mixing chrome green, two pounds, ivory black, one ounce, chrome yellow, one ounce, good Japan varnish, one gill. Grind all together and mix with linseed oil.—E. W., of Mass.

**GUN SCATTERING SHOT.**—If H. W. will inclose his shot in strong, round paper cartridges, just fitting the band, his charge will not scatter very much. Cartridges may be formed over a round wooden stick, and glued with mucilage or any suitable cement.—H. E. A., of Conn.

**BRONZING IRON.**—To bronze iron, J. G. H. should obtain, at any paint store, a bottle of gold size and some bronze powder: mix the articles in a saucer to the proper consistency and apply immediately, as it soon dries hard. Any sort of brush can be used.—H. E. A., of Conn.

**FUSING SULPHUR.**—F. C. A. can fuse his sulphur by a heat of 226° Fah. If the heat is carried above 450° Fah., the sulphur becomes dark colored and thick, like molasses. F. C. A. would do well to consult some book on chemistry.—H. E. A., of Conn.

**CEMENT FOR LEATHER AND IRON.**—E. A., query No. 4, in No. 1, present volume, can make a very good cement for leather and iron by making a compound of glue dissolved in vinegar, heated over a moderate fire; then stir in one third its weight of white pine pitch. This should be done in a gluepot, where it should be kept and heated whenever wanted for use.—J. L. T., of O.

**GUN SCATTERING SHOT.**—E. A., January 1st, asks how his gun can be made to shoot closer. It can only be done by having the gun rebored, so that the bore shall taper towards the muzzle. There is, however, an article on this subject on the 39th page of Vol. XXIII, SCIENTIFIC AMERICAN. The Roper gun, made in Hartford, Conn., has a close shooting attachment, which consists of a ring of steel gradually tapering towards the muzzle (of the cap) which is screwed on at the will of the sportsman.—E. X., of Mass.

**COMPOUND GEARS IN SCREW CUTTING.**—If R. H. S. will follow my example, he will find it both simple and reliable. Let him make a fraction of his leading screw and screw to be cut, with his leading screw for numerator. Now let him split these into factors, and by adding a cipher to each, he will have the gears required; but the numerators are always the driving gears. Suppose he wants to cut twenty-four threads per inch. Example 1: Four twenty-fourths is equal to (2 divided by 6) multiplied by (2 divided by 4). Now by adding a cipher to each, the gears will be (20 divided by 60) multiplied by (20 divided by 40). If he has not two twenties, let him increase one numerator and one denominator, say one fourth, which would be (2 divided by 75) multiplied by (20 divided by 40); if he still has not got these gears, let him alter them again until he finds a right set of gears. Now I will give him another method from the same factors. Example 2: Four twenty-fourths is equal to (2 divided by 3) multiplied by (2 divided by 4). By multiplying the first fraction by 12 and the other by 15, he will have: (24 divided by 36) multiplied by (30 divided by 120); or he can multiply by any numbers to suit his gears. If this is simple and reliable enough for R. F. S., I hope he will acknowledge it, as I have been solicited to write a book on screw cutting.—C. F., of N. J.

**TIGHTENING OF BELTS.**—I notice in Vol. XXV., No. 21, that G. W. F. wants to know whether belts are tighter in wet or dry weather. In Vol. XXV., No. 26, E. O. McC., of S. C., says belts slacken in wet weather, and thinks that what he saw of a few (probably) new belts is a proof of the truth of his statement. Now I fully agree with E. O. McC. in answering the query, but I judge from a much broader observation than E. O. McC. or S. F. (Vol. XXVI., No. 1.) I have worked around leather belting for a number of years, and for the last three years have had belts of the following dimensions under my care: one 142 feet long by 36 inches wide; one 178 feet 6 inches long by 34 inches wide; one 85 feet 6 inches long by 34 inches wide. These belts are all double and made of the best of leather, all running from one fly wheel 30 feet in diameter to 6 and 7 feet driven pulleys. Now I know that on a damp day these belts sag from 6 inches to 18 inches more than they do on a pleasant day. I hear some correspondents say: Your machinery drives harder. Well, I will tell such that we were stopped eight weeks on a spinner's strike in the summer of 1870, and that, during all that time, the belt, halfway between the pulleys, would indicate the state of the atmosphere as well as a barometer.—J. D. C., of Mass.

### Declined.

Communications upon the following subjects have been received and examined by the Editor, but their publication is respectfully declined:

- CEMENTS.**—M. M.
- FIRE KINDLER.**—D. W.
- FLYING MACHINE.**—W. F. W.
- GAS.**—J. S. P.
- GEOMETRICAL PROBLEM.**—W. P. M.
- LATENT HEAT.**—F. of T.
- MASSACHUSETTS INSTITUTE OF TECHNOLOGY.**—W. O. C.
- MECHANICAL MOVEMENT.**—E. N.
- NEW STEAMBOAT ACT.**—T. W. B.
- PSYCHIC FORCE.**—J. C. B.—P. P. H.—J. A. S.
- RUPTURE OF BOILERS.**—T. W. B.
- STRAINS ON TRUSSES.**—J. McR.
- TO SMOKE OR NOT TO SMOKE.**—E. E. S.
- ANSWERS TO CORRESPONDENTS.**—L. E. C.—R. R. R.—C. S.—G. W.—P. L. S.—E. B. R.—O. C. W.—W. J. B.—W. O. B.—C. D. S.—W. Q. & Co.
- QUERIES.**—W. E. H.—W. J. P.—T. B.—C. G.—M. L. D.—W. E.—G. A. L.

## Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

**SHOE FASTENING.**—Samuel P. R. Triscott and George Alfred Wheeler, Worcester, Mass.—This invention has for its object to furnish an improved device for fastening the ends of boot and shoe laces, which shall hold the laces or strings firmly and securely. The device can be readily struck up out of sheet metal, in two pieces, so that it can be very easily and cheaply made, and, at the same time, can be ornamented in any desired style or manner.

**SAW FILER'S VISE.**—Nathan H. Baldwin, Laconia, N. H.—This invention has for its object to furnish an improved vise for saw filer's use, holding the saw firmly, and enabling it to be adjusted in any required position. The foot of the vise rests upon the bench or support, to which it is secured by a hand bolt. The standard of the vise has its lower end jointed and secured to the upper end of the foot by means of a bolt and hand nut. To the upper end of the standard is pivoted the middle part of the rear jaw of the vise. Upon the lower edge of the middle part of the rear jaw is formed a half circle, having a slot formed in it upon the arc of a circle having its center at the pivoting point of the said jaw. A cross head bolt passes through the slot of the half circle, through a hole in the upper end of the standard, and has a hand nut screwed upon it, so that by turning the head of the bolt across the slot in the half circle, and tightening up the nut, the jaws may be securely held in place when adjusted. By a simple adjustment, the jaws may be reversed for holding the saw to joint the teeth.

**CIRCULAR SAW MILL.**—Melancton W. Danks, Fulton, N. Y., assignor to himself and J. E. Harroun, of same place.—The object of this invention is to provide convenient and efficient means for feeding, gigning back, and changing or varying the feed to circular saws, so as to adapt the feed to light or heavy work; and it consists in a series of bevel friction wheels, so arranged that, while the feed motion and the gigning motion of the carriage is produced by means of said bevel friction wheels, the feed may be varied at the will of the attendant, as may be desired or necessary. The inventor does not confine himself to any particular number of bevel friction wheels, nor to any particular diameter or proportion for either the sliding wheels or those on the feed shafts. Neither does he confine himself strictly to saw mill feed work in the application of his bevel friction wheels, as they may, he claims, be applied with great advantage to many other purposes.

**ADJUSTABLE CUT-OFF VALVE.**—George W. Smith, New Haven, Conn.—The valves oscillate in shafts. A combination of adjustable packing with grooved flanges of the ends of the valves, and with the slides, is employed. A combination, of a walking beam provided with spring catches at its ends three armed plates, ropes or chains, and springs, with each other and with the valve shafts and driving shaft, is another of the claims. A combination of pins, spring, bent levers, and connecting rod, with spring toes, walking beam, and governor, constitute the third claim. We judge that the invention is calculated to give a very sensitive and efficient variable cut-off.

**HAIR SWITCH.**—Benjamin Franklin Burgess, Jr., Boston, Mass.—This switch is made so as to be divided into three strands for braiding, composed partly of human hair and partly of thread or silk, or other suitable material. This thread portion is surrounded by the human hair, or forms the central portion of the switch, the arrangement being such that the human hair alone shows, and, being such, the natural hair of the wearer can be perfectly matched, which cannot be done with any dyed material. A switch, made according to this invention, will not get rusty like other artificial switches. It can be combed and braided the same as human hair, and, being composed of human hair and fine thread, keeps perfectly clean, and is entirely unobjectionable for ladies' wear.

**HARVESTER.**—John B. Thomison, Lynchburg, Tenn.—This machine is to be used either as a reaper or mower, and is so constructed as to rake the grain and drop it automatically upon the ground, in such a way as to place it out of the way of the machine on its next passage. As usual in this class of machines, the details are such as require diagrams for their illustration. We can only add, therefore, that the means employed for making the change from mower to reaper, and vice versa, are simple and easily adjusted, while the whole seems to be a substantial structure, capable of doing its work with small waste of power, and with little wear and tear.

**PRUNING KNIFE.**—David Morris, Bartlett, Ohio.—In this invention, pruning is accomplished by a knife that slides toward and away from a stationary hook, said knife moving in guides, and being moved by a rod that runs through the tubular handle of the instrument. The extremity of said handle bears levers with cogged segmental heads, which engage with the serrations on the head of the rod, and enable it to be reciprocated, by working the levers, so as to move the sliding knife.

**SMUT MACHINE.**—John Wernwag, Harper's Ferry, W. Va.—This invention relates to an apparatus which receives grain as it comes from the threshing machine in a hopper whence it is carried through a conveyor trough, wherein it is secured and wherefrom it is discharged into a revolving conical screen, within which it is beaten and separated from refuse grain and from which it is emptied into a fan by whose blast it is winnowed, the dust passing off through a trunk, the good grain falling through a spout, and the refuse grain being charged by a conveyor.

**CAR COUPLINGS.**—Franklin Nalley, of Battle Ground, Ind.—This invention has for its object to furnish an improved car coupling, so constructed as to couple the cars automatically when they are run together. By this construction, as the coupling link enters the bumper head, it pushes a catch back, which releases the coupling pin and allows it to drop into place, securing the link. By inserting the double coupling link in the upper and middle holes, in the middle and lower holes, or in the lower hole and beneath the bottom of the bumper heads, cars of different heights may be coupled with the same facility as if they were all of the same height.

**SPRING BIT FOR CLEANING AND ENLARGING WELLS.**—James H. Boyd, of West Monterey, Pa.—The object of this invention is to produce a convenient tool for cleaning out or enlarging oil wells. The invention consists in the application, to the shank of the bit, of a spring for crowding it against the well, and of a catch for holding the spring close to the bit during its application to the well. When the tool is to be applied to a well, the spring is held close to the shank by the spring catch, so that the insertion of the tool will be facilitated. The projecting outer end of the catch at the same time holds the bit clear from the wall of the well, preventing it from scraping while being let down. As soon as the device is being worked, when in its proper place the catch will release the spring, causing the same to crowd the bit against the wall of the well. For enlarging a well, the bit is used with a long spring. In this case the spring will enter the smaller part of the well and cause the bit to work in the larger part of the same upon the shoulder. For cleaning out wells the short spring is used, which crowds the bit against the wall of the well for properly scraping the same.

**HEAD REST FOR CAR SEAT.**—John C. Giffing, of New York city.—The head rest is attached to a base block, which rests upon the top of the seat when the head rest is attached. The head rest is secured in this position by two metallic straps. The ends of the base block are sawed in a distance equal or about equal to the width of the straps. The straps are bent to form square cornered staples. The front leg of the staple shaped strap extends down on the front side of the back of the seat. The back leg extends down on the back side of the seat, and may be shorter than the other leg. The width of the block is designed to be about equal to the thickness of the back of the seat, so that the legs of the two straps will straddle the back of the seat. In fastening the head rest to the back of the seat, the parts of the strap are slipped into the slots in the ends of the block, where they are fastened by pins. In leaning back or resting against the back of the seat, the person's back will bear against the front legs of the straps, which will keep the head rest in its proper position when the head bears upon the cushion. When not in use the head rest is folded up, in which condition it may be carried in a satchel or overcoat pocket without inconvenience.

**CLOTHES WRINGER.**—John Fox, of Farmersville, Iowa.—This is an improved clothes wringer, which, adjusting itself to the varying thickness of the articles passing through it, and being easily adjusted to operate upon larger or smaller articles, as may be desired, forms a very convenient and useful utensil.