

(7804) J. L. B. writes: I saw in your paper some weeks ago the statement that you did not know where the energy went to if a watch spring was wound up tight and then burnt. Is it not true that if a piece of wood is bent and ignited it will take less energy to ignite it than if the same piece or at least the same amount of wood was ignited when it was straight? If this is so, is it not possible that it will take less energy to ignite the steel spring, and these might equal each other? I cannot do experiments to prove if this is so and thought I would write and ask you if this is so. A. We do not know whether it is true or not that straight wood burns easier than crooked wood. If it does, it will explain why the crooked stuff we had to work up in boyhood was such poor wood to burn. 'Til however some one can present careful experimental data showing that a spring under strain evolves more heat in combustion than a loose one, we shall continue of the opinion that the matter has not been proved. It is simply a begging of the question to say that the doctrine of the conservation of energy requires a certain result, and therefore that is the result to be required.

(7805) H. C. M. asks the ton burden of the "Kaiser Wilhelm der Grosse" and the number of passengers it will carry. A. The displacement (that is total weight) is 17,500 tons; it accommodates 350 first-class passengers; 370 second-class; 800 steerage, and the crew, etc., number 450. If you will refer to the SCIENTIFIC AMERICAN for October 9, 1899, you will find your query fully answered. This article gives valuable particulars regarding this vessel.

(7806) G. F. M. asks: Will you kindly answer for the benefit of settling a controversy whether this new year (1900) is the beginning of the 19th or 20th century? A. The new century begins January 1, 1901.

(7807) F. K. H. writes: I am making a horseshoe magnet; the iron is 3/4 inch thick and about 7 inches long. Will you please tell me what size wire I shall use, and how much, to make it strong enough to draw small pieces of iron through 1 or 2 inches of wood? Also please state how many cells of battery I should use on same? A. The easiest way to wind the legs of your horseshoe magnet is to make spools which will just slip over each leg. Wind these with No. 12 cotton covered wire, attending very carefully to the insulation and filling the spaces with shellac after each layer is wound. Allow each coat to dry before putting on the next layer of wire. The wire may be wound about an inch deep. The bichromate plunger battery described in SUPPLEMENT, 792, price 10 cents, will fully energize the magnet. If you mean to make a magnet which will draw a piece of iron directly through two inches of wood, so that it will enter on one side and come out of the wood on the other side, making a hole through the wood, you will be disappointed in your work. No magnet can do this. A magnet of good strength will cause small pieces of iron to move at a distance of two inches from its poles. It does not matter whether the space is filled with wood or air.

(7808) H. W. T. asks: 1. I have the castings and parts for the little motor of which I inclose a cut taken from your advertising columns. What size of wire shall I use on fields and armature? A. Almost any size from 18 to 24 will answer to wind the little motor. 2. Will 9 cells of Samson or carbon cylinder battery run a 10-candle, 12-volt lamp not more than 20 minutes a night? A. Yes. 3. Is there any way of recharging dry batteries? A. Dry cells are not recharged. They are not worth the trouble.

(7809) W. P. asks: 1. What causes "cross talk" in a telephone? Can you tell me the remedy for it? A. Cross talk in a telephone is caused by the wire of another grounded circuit, near the wire of the telephone line in which the cross talk is heard. The remedy is found in a metallic return wire twisted around the other wire of its own circuit. See Poole's Practical Telephone Handbook for instructions. Price \$1.50 by mail. 2. I have some small machine steel screws in some brass material which I cannot take out with a screw driver (it is a screw which holds the fork of a desk phone). Please tell me how I can take this out. A. Put a few drops of kerosene oil on the screw head and let it stand a few hours. 3. How can I charge the telephone standard Fuller battery? A. A solution for the Fuller cell may be prepared by dissolving 7 ounces of sodium bichromate in 1 quart of water and pouring into the solution very slowly when cold, 3/4 pint of strong sulphuric acid.

(7810) H. C. H. writes: I wish to make a small storage battery capable of running a 3 candle power lamp a given number of hours on one charge. A. We advise you to purchase Salomon's storage battery, price \$1.50. This book will give you the instruction needed for making what you need.

(7811) W. J. M. asks: How to tan fur hides and skins so they will remain soft after tanning? A. We refer you to SUPPLEMENT, numbers 959, 1077, 1090 and 1140. Price 10 cents each by mail.

(7812) C. J. asks: Will you please give directions how to wind ringer coils for a telephone? A. There are many varieties of ringers. The resistance of the coils is usually from 75 to 100 ohms, though it is sometimes as high as 5000 ohms, varying according to their use. Wind each of the spools with about 40 ohms of fine silk covered wire, No. 36 or 38, and mount them so that the opposite poles shall be toward the armature.

(7813) E. B. W. asks: Is there such a thing as an electric belt that is good for anything? A. We have never seen an electric belt in which we could put any confidence. If any one is in need of electrical treatment, he should consult his physician, who knows his constitution, and not a stranger at a distance. He will then have the proper form of application for his condition. At the most the electricity from a belt is too feeble to expect any benefit from its use.

(7814) E. B. H. asks: What effect would it have on the length of the spark in an induction coil if No. 30 cotton covered magnet wire were substituted for No. 36? A. To use No. 30 in place of No. 36 wire in the secondary of an induction coil will reduce its power approximately to one-fourth of its value, since there will be but about one-fourth as many turns in the same space.

INDEX OF INVENTIONS For which Letters Patent of the United States were Issued for the Week Ending

JANUARY 9, 1900,

AND EACH BEARING THAT DATE.

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

Table listing inventions with patent numbers and names of inventors. Includes items like Acetylene generator, Adding machine, Air and gas engine, etc.

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Table listing various inventions and their patent numbers. Includes items like Dumping apparatus, Dust pan, Dye, Elastic compound, Electric machine brush, etc.

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