of beeswax in 1 pint of the best boiled linseed oil over a gentle fire, applying when cold with a piece of rag, rubbing it well in and afterward hanging up to dry, which will take four or five days; or paint with boiled linseed oil colored to suit. It must be done in very hot room or in a bright sunlight. A shoebrush is the best for applying it. A little patent drier may be added. It is said that the Chinese use a mixture of 1 ounce each of beeswax and soft soap with the oil, which is then boiled down. If the surface seems tacky, varnish with shellac varnish. In any case, apply the oil as thin as possible and let it dry perfectly between successive coats. 2. Which side of a leather belt should be run next to the pulley? A. All the best belt makers say run grain side to the pulley, and it is claimed that 33 per cent more power can thus be transmitted than with the flesh side next the pulley. The grain of the leather has a velvety surface, which enables it to hug the pulley closer than will the hard flesh side. Some users run the flesh side to the pulley for small belts, and then daub and stick up the belt with beeswax or resin to make it take hold, but this is not economical for the life of a belt, is unworkmanlike, and there is always more or less fussiness in running machinery where the belts are so treated, instead of their running for years without any attention, as they will sometimes do when run grain side to the pulley, and of proper size to transmit the desired power.

(7531) D. L. G. asks how to adapt an arc lamp suited for 52 volts and 125 amperes to a circuit carrying 60 amperes at 104 volts. A. The arc lamp in question, when run on the 52 volt circuit, used probably 15 amperes and 45 to 50 volts, though perhaps it was wound so that it was put on the circuit directly at 52 volts. The 125 amperes did not pass through the lamp. Such a lamp can be put on a circuit of 104 volts by supplying it with a rheostat whose resistance can be varied. It will require the same voltage and amperes as before. The other 59 to 54 volts will be taken up by the rheostat. This rheostat requires 200 feet of No. 12 (B. & S.) German silver wire. It should be arranged so that the coils can be cut out one by one to the last one, and then the current can be adjusted to the lamp. We advise you to call upon dealers in lamps of this kind.

(7532) J. J. W. asks: Could you advise the adoption of the storage battery instead of the trolley system for running a line of street cars from town out into the country? A. We regret to say that the storage battery has disappointed its friends in this respect. Even in cities it is not used, since it cannot compete in cost with the trolley. The trolley system is much cheaper, and on country roads there has never been any chance for the storage battery. There the overhead trolley is the best possible mode of electrical traction. In cities the open conduit underground trolley is at present considered the best. On leaving the town this is changed to the overhead trolley, as in Washington, D. C.

(7533) W. W. asks: For an electric heater on 110 volt circuit, what size and quantity of German silver wire is suitable? A. If you wish to make a small heater to use about 1 ampere of current with German silver wire, get 1,300 feet of No. 18 B. & S. gage. For a heater using about as much current as an arc light, get No. 12 B. & S. wire and about 500 feet of it. For articles on electric heaters see SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 513, 825, 1112, 1185, ten cents each.

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INDEX OF INVENTIONS

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DECEMBER 6, 1898,

AND EACH BEARING THAT DATE.

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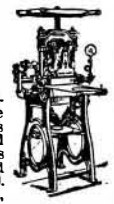

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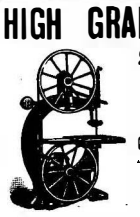

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