

other end, and there also pass a stand pipe in order to be watered if necessary. Interlocking switches will be provided at one or both ends of the yard.

While the work is incomplete, such parts of it as are available are being used; thus the well water is already in use for constructional purposes, and the round house itself will very soon be occupied by engines. When completed, the buildings will all be lighted by electricity, the Pullman car service and the ordinary car service will each have large store rooms, a special electrical plant will be installed, and eventually a very complete system for passenger car service will be in operation.

Fire Hydrants.

The need of having plenty of street hydrants was illustrated by Chief Scannell, of the San Francisco fire department. With the aid of his most powerful engine he recently gave the grand jury and the mayor and supervisors of that city an ocular demonstration of the crying need for proper protection against fire of additional fire hydrants. Of course the gentlemen knew perfectly well that in many parts of the city the distance between the hydrants was from 1,500 to 2,000 feet, but it is probable that they never before realized so thoroughly how great was the loss in power of a stream caused by the friction in the long line of hose thus made necessary. It is safe to say that they were somewhat surprised when, after seeing water thrown 206 feet through 100 feet of hose, the pressure at the nozzle standing at 90 pounds, 900 feet more of hose were coupled on and the enfeebled stream fell to the ground just fifty-four feet from the nozzle, where the pressure mark was but six pounds.

THE "AMERICAN SYSTEM" OF ELECTRIC ARC LIGHTING.

It is almost needless to say at the present day, when dynamos are used in nearly every city and village and in many isolated places for the purposes of illumination, that the dynamos and machinery employed for such use should be of the simplest character, as it cannot be expected that an accomplished electrician or engineer will accompany every electric lighting plant, large and small.

The dynamo shown in the annexed engraving is based upon the principle of the well known Gramme machine, the pioneer of efficient dynamos. The machine, as developed by the New American Electrical Arc Light Co., is a great improvement over the original Gramme. It has been simplified, its parts have been rendered accessible, the armature is provided with means for free ventilation, the commutator is so constructed as to avoid short-circuiting, and the commutator bars are made removable, so that one or more may be taken out of the commutator without disturbing the rest.

The lamps used in connection with this dynamo are practical and efficient. It is claimed that 2,000 candle power lamps are run in connection with this machine with an expenditure of seven-tenths of a horse power each. The machines range in capacity from 1 to 50 arc lights, each of 2,000 candle power, and they will supply a proportionately increased number of lamps of 1,200 candle power.

It may be of interest to state that this company has lighted the statue of Liberty in New York Harbor since its completion. Owing to the haste with which this plant was installed, the apparatus was not arranged in duplicate; however, its operation has been continuous, and the machinery is said to have performed satisfactorily in all respects without any interruption.

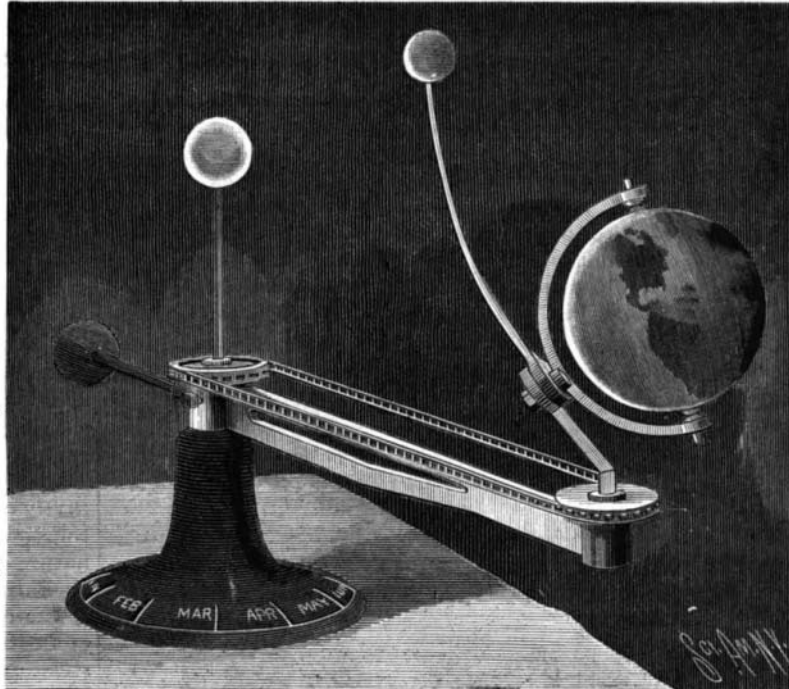
The American system of electric lighting is in extensive use in all parts of the United States and Canada as well as in England, France, Germany, Sweden, Australia and China.

The offices of The New American Electrical Arc Light Company are at 173 Broadway and 2 Cortlandt St. Factory at 165 West 18th St., New York.

CAUSTIC soda or kerosene oil may be used to clean the hands from printer's ink. The former must be dilute or it will affect the skin unpleasantly. Other inks yield to oxalic acid, javelle water, etc.

Soapstone and Its Uses.

A writer in a London journal calls attention to the unappreciated uses and preservative qualities of soapstone, a material, he says, which possesses what may be regarded as extraordinary qualities in withstanding atmospheric influences, those, especially, which have so much to do with the corrosion of iron and steel; and



HOSKING'S INSTRUMENT FOR ILLUSTRATING THE CHANGES OF THE SEASONS.

from experiments made, it is said that no other material is capable of taking hold of the fiber of iron and steel so readily and firmly as this. In China, soapstone is largely used in preserving structures built of sandstone and other stones liable to crumble from the effect of the atmosphere; and the covering with powdered soapstone in the form of paint, on some of the obelisks in that country, composed of stone liable to atmospheric deterioration, has been the means of preserving them intact for hundreds of years.

An arrangement for the prevention of accidents by the electric current has been adopted at the works of the Morgan Engineering Company, of Alliance, Ohio. A board is fixed on the wall facing the dynamo in the engine room. On this board are six hooks on the checks of the six men who are employed in looking after the circuits. When a man is called on duty he removes his check from the hook and takes it with him. The en-

AN IMPROVED TELLURIAN.

The illustration represents an instrument designed to show, in a simple and effective manner, the motion of the earth around the sun and that of the moon around the earth. It has been patented by Mr. Alfred Hosking, of the Mount Eden School, Auckland, New Zealand, the instrument being the result of the inventor's efforts to perfect a "seasons demonstrator" for use in his own school—one which would not readily get out of order, and which would enable the teacher, instantly and without noise, to change the relative positions of the sun, earth, and moon. On a circular base, provided with a graduation indicating the different seasons of the year, is a post on which is mounted to turn a counterbalanced horizontally extending arm, on the outer end of which turns a vertical shaft integral with which is an inclined arm. At the outer end of this arm is a stud provided with a segmental arm, in which is mounted to turn a globe representing the earth, the axis of this globe being inclined to the vertical post extending upward from the base, on the upper end of which is a fixed globe representing the sun. On the stud carrying the segmental arm in which is held the globe representing the earth is also held to turn a curved arm carrying at its outer end a globe representing the moon. On the main post, above the horizontal arm, is a sprocket wheel, over which passes a sprocket chain, which also passes over a sprocket wheel on the vertical shaft of the horizontal arm. The sprocket wheels are both of the same diameter, so that when the operator turns the horizontal arm once around the post, the globe representing the earth makes a movement similar to that of our earth around the sun, and the moon globe, when its arm is turned, travels around the earth in a similar manner to the natural movement of the moon around the earth. The horizontal arm and the arm carrying the moon can be turned at pleasure, and the four seasons of the year can be easily demonstrated on the globe representing the earth.

Warping of Wood.

As lumber is now sawn, every board but one will warp and curl up in the process of seasoning. The reason for this is plain. If the board is sawn from the side of a log, the grain rings of the wood lie in circles, which have a greater length on one than upon the other side of the board. A board cut from the very center of the log has grain circles of equal length upon each side, and will lie perfectly flat when seasoned.

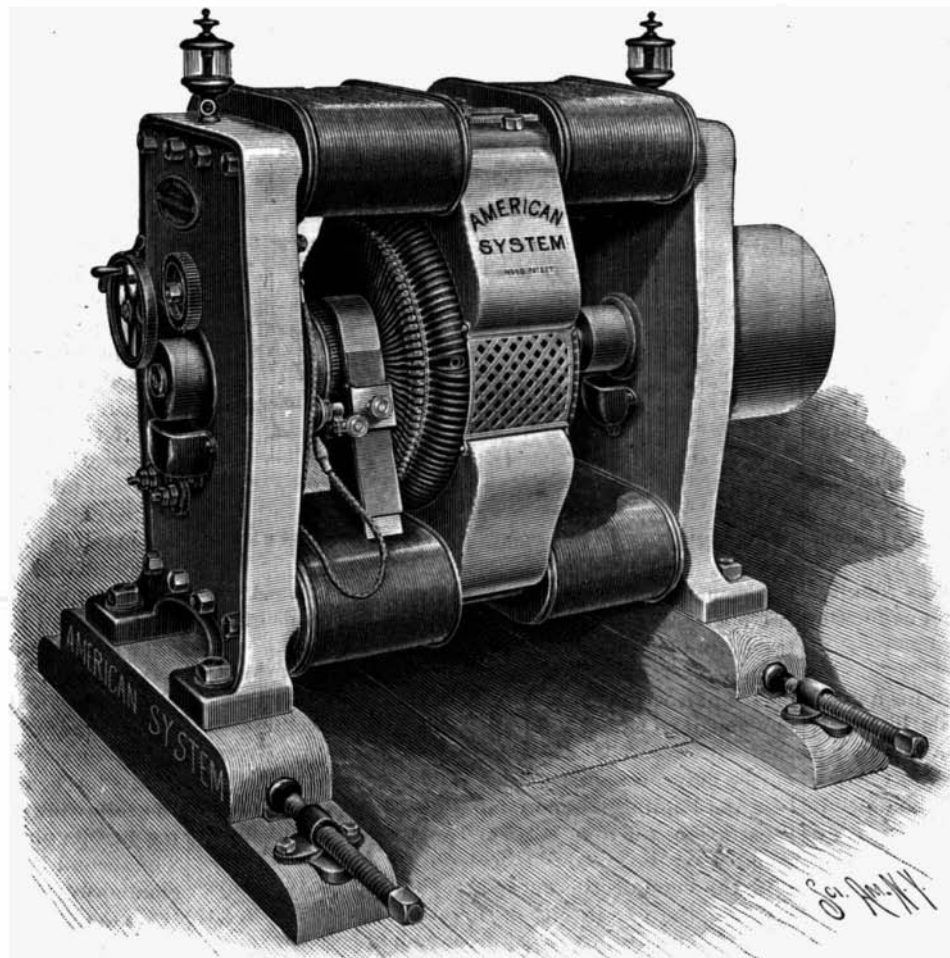
When selecting the lumber for a tool chest or some other fine job, pick out boards which show that they came, as near as possible, from the center of the log. A method is in use which compensates for this tendency to curl in seasoning. This is known as quarter sawing, and quartered oak, of which so much is said at present, is sawn by this process.

It consists in cutting out boards radially from the center to the outside of the log. Suppose a log to be split into four pieces, each of these pieces is sawn diagonally so that the grain rings run through, instead of the circles running into, part way through and out upon the same side of the board.

Quarter sawn lumber will not warp in drying, neither will it yield so readily to changes of weather. It has the disadvantage of being more expensive, as in sawing each quarter a narrow board is first taken off, then one a little wider. The boards increase in width until the middle of the quarter is reached, making the widest board equal to half the diameter of the tree. The narrow boards may be glued up into wide strips, but that shows considerable sap, and they cannot be used in some kinds of work.

To prove that the circles or sap rings cause curling during the seasoning process, it is only necessary to take such curled boards and wet the concave side, or apply heat to

the convex side. If each or both be done, the boards will straighten out forthwith. This method is often taken advantage of by carpenters, in working twisted or warped boards. The seasoning process is also controlled by frequently turning boards over so that each side may receive just enough heat and air to keep the boards flat.—Woodworker.



THE "AMERICAN" DYNAMO.

gineer sees by a glance at the board that one hook is absent, and that, therefore, one man is engaged about the lines around the shop, and the dynamo is not started until the check is replaced on the hook. The engineer then understands that the coast is clear, and turns on his current without fear of accident to any of the linemen.