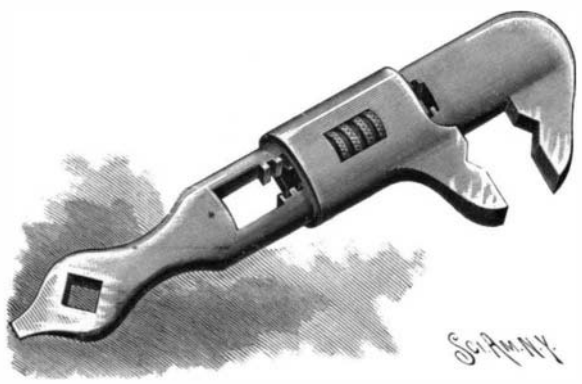
AN IMPROVED WRENCH.

The illustration represents a strong, simple and inexpensive wrench, in which the movable jaw may be readily and quickly adjusted as desired. The improvement has been patented by Walter C. Stokes, of No. 66 Broadway, New York City. The two jaws have recesses adapted to receive a portion of two sides of a hexagonal or polygonal nut, an ordinary or square nut being received between the flat surfaces of the jaws. The body of the wrench has a longitudinal threaded slot, terminating in an enlarged outer portion, and the sleeve carrying the movable jaw fits somewhat snugly to the body, and is moved by an adjusting nut having an exterior thread entering the side threads in the slot, there being a slot about centrally in each side of the sleeve.



STOKES' WRENCH.

The adjusting nut is placed in position by moving the sleeve outward until the slot in the sleeve is opposite the larger outer portion of the slot in the wrench handle. In the outer end of the handle are one or more rectangular openings to receive a nut, and the handle end terminates in a screwdriver. By giving the body and sleeve an ovate cross section, it is designed to provide a wrench having the greatest possible strength without being heavy or cumbersome.

A RENAISSANCE WOOD CARVING.

In most periods of art development, sculpture led the plastic arts as regards time, and the Renaissance was no exception to the rule. The medium employed was stone, bronze or wood, according to the special use to which the object was to be put. Wood has always been considered as especially adapted for certain classes of work, though it has of course a relatively short life, all vegetable substances having deterioration as their first law, operative from the moment they leave the forest or field. Still, with the exercise of proper care, works executed in wood can be preserved for hundreds, even thousands of years, the best example being, perhaps, the famous portrait statue in the museum of Boulak, Egypt, which dates from 4000 years B. C. The old sculptors were quick to see that wood, with its structure of long fibers, strong in one direction and weak in another, was especially adapted for surface carving and small works. Large curves were avoided, on account of the tendency to split, and undercutting was eschewed as much as possible; still statues in the round were made during the middle ages and the Renaissance, and a large number of excellent works have come down to us. These were largely executed for church purposes, and include crucifixes, rood screens, confessionals, choir stalls, etc. Even Donatello and Brunelleschi, the giants of the early or first Renaissance, did not disdain to execute works in the round, in wood. The fine examples of wood carving are endless; they are found in Italy, Spain, France, Germany, England, Belgium and Holland. The lovely surface carving of the time of Raphael, when attention was first paid to the newly discovered remains of Roman wall painting, the so-called "grotesques," afford some of the most charming examples of an antique motive turned to account for modern use. The rich German "tabernacle work" so much used on altars still affords excellent material for study and imitation. Figures, sometimes life size, were frequently introduced into the composition, and some of the grand scroll work has never been surpassed. France, with her Jean Goujon and other masters of the chisel, produced very beautiful works. England used wood carving extensively for church work for recumbent effigies on tombs, and the richly carved timber roofs are especially noteworthy.

To-day Belgium contains some splendid examples of artistic woodwork, one of which is shown in our engraving. This specimen is interesting largely on account of the difficult nature of the work, owing to its large size and the superb technique which is shown. This confessional is in the church of St. Paul, at Antwerp; it is a late Gothic edifice, built 1540-1571. The church contains fine Renaissance choir stalls and the confessionals, one of which is shown in our engraving. The frieze is, perhaps, the purest part of the work, but the naive cherubs who sit at the right and left of Christ are charming. It will be seen that the four figures are of large size. The wood carving in this church is one of the sights of Antwerp.

A RENAISSANCE WOOD CARVING IN ANTWERP.

Speed of Trolley Cars.

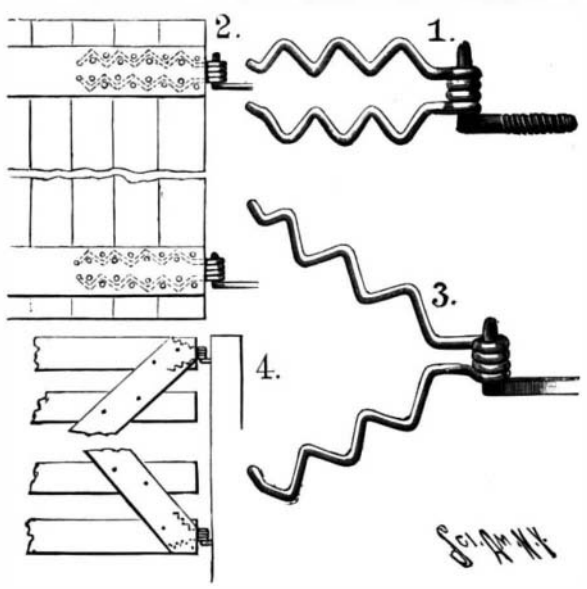
How to calculate the speed of a trolley car is an interesting problem to any one in the business who happens to be riding faster or slower than he is accustomed. It also has a fascination to the passenger with an inquiring mind. Various ways have been suggested, but the simplest is to note the number of feet the car goes a minute and divide by 88, which will give you the number of miles an hour, or rate of speed. A car moving at the rate of 1 mile an hour will pass over 88 feet a minute. A speed of 176 feet a minute is at the rate of 2 miles an hour; 352 feet, 4 miles; 528 feet, 6 miles; 704 feet, 8 miles; 880 feet, 10 miles; 1,320 feet, 15 miles; 1,760 feet, 20 miles; 2,200 feet, 25 miles; 2,640 feet, 30 miles; 3,520 feet, 40 miles; 4,400 feet, 50 miles; 5,280 feet, 60 miles. If poles are set regularly at equal distances, it is easy to calculate the distance the car goes in a given time.

A rather complicated method is based upon the purring sound caused by the meshing of the gear and pinion teeth. In order to calculate by this plan, it is necessary to carry along a tuning fork or a seven octave piano. If the tone is the same pitch as "middle C," which makes 264 vibrations a second, the teeth are meshing at the rate of 264 a second. If the number of teeth on the gear is known, together with the diameter of the car wheel, the rate of speed can be ascertained.

The number of 30 foot rail lengths passed over in 20 seconds will give the speed in miles per hour approximately.

A CHEAP AND EFFICIENT HINGE.

The illustration represents a hinge made of a piece of stout wire, and well adapted for use on any cheap gate, or on a door having battens which may inclose the corrugated shanks diverging from the eye of the hinge. The improvement has been patented by Tyree Rodes, of Cedar Hill, Tenn. The figures show different forms of the hinge and how it is applied, the wire being bent



RODES' HINGE.

upon itself to form an eye or knuckle, in which the wire is closely coiled upon itself, while the body members have a corrugated or serpentine form, with angular spurs at the ends. The two members are located between the slats, cross bars or braces of a gate, or are inclosed by the battens of a door, the means employed for securing the parts together also holding the members of the hinge in place, while the eye or knuckle extends outward and receives the ordinary knuckle pin attached to the swing post, or equivalent device in a door casing.

"Pole" Paper.

What is called "pole" paper is paper saturated with a substance that is sensitive to the action of the electric current and that permits of instantly distinguishing the positive from the negative pole in an open circuit. According to the Annales de Chimie Analytique, this paper is prepared as follows:

From 1 to 2 grammes of phtalein of phenol are dissolved in 10 cubic centimeters of 90° alcohol. The solution is poured into a glass vessel and about 110 cubic centimeters of distilled water are added to it. The result is a milky emulsion of phtalein.

On another hand, 20 grammes of sulphate of soda are dissolved in about 100 cubic centimeters of distilled water.

The first solution is poured into a porcelain tray, and several sheets of slightly porous paper are dipped into it one after another. These sheets, after being allowed to drain, are immersed, while still damp, in the soda solution.

The paper, after being dried, is extremely sensitive to the action of the electric current. In order to ascertain the direction of a current, a piece of the paper is dampened and the extremities of the two copper conductors are applied to it in such a way as to leave a space of about half an inch or an inch between them. One of the wires instantly produces upon the paper a deep red line, which is due to the action of the soda set at liberty, and which extends toward the negative pole upon the phtalein. The other wire remains inactive.