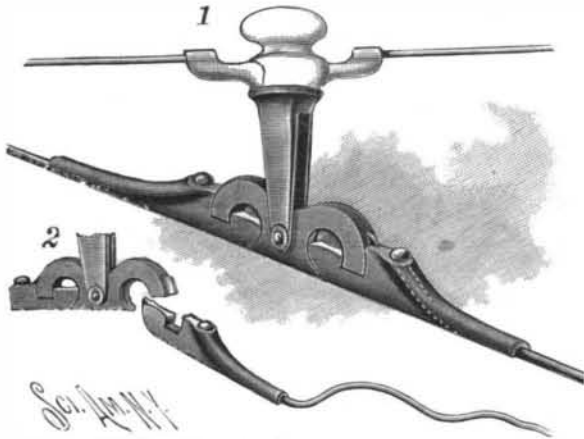


**TROLLEY HANGER AND CUT-OUT.**

The illustration represents a new and safe trolley hanger, which has been patented by Theodore Fletcher, of 1028 San Fernando St., San Antonio, Tex. The device will recommend itself as entirely doing away with the danger of the present overhead systems for electric cars at a trifling cost. It has been in use in San Antonio for some months, and is very strongly recommended for general adoption by those who have used

**FLETCHER'S TROLLEY HANGER AND CUT-OUT.**

it. The invention consists of a hanger made in sections coupled together and adapted to automatically uncouple as soon as the live wires break between adjacent hangers. Its operation is as follows: As soon as the trolley wire breaks, the broken ends sag and so disconnect at the adjacent hangers, permitting the broken section to fall, so that a live wire on the streets becomes a thing of the past. Furthermore, as the line does not become grounded, a block in the traffic can be avoided, for a car has only to get up a little momentum to carry it through the broken section. Fig. 1 shows the hanger supporting the wire, while Fig. 2 shows how the release of the broken end is effected. The hanger is simple, strong, quickly put up, and is designed to afford complete protection against accidents caused by a broken trolley wire.

**A TWENTY-FIVE CENT BICYCLE.**

Among the numerous bicycles which it has been our fortune to present to our readers in this era of the wheel, it is questionable if any has been shown which is more novel than the one illustrated here. This wheel was bought in the market from the manufacturer for 25 cents. This was no chance find, it was not an old curiosity from a lumber room, but was a genuine new wheel made for sale at the price of 25 cents. The cut, which is an exact reproduction of the machine, tells its own story. It is built of strips of wood and of boards, is fitted with brake, tool box, and it has an adjustable leather saddle, the latter having a stretching or tension screw to take up the sag of the leather. It was sold without driving gear, so it was fitted by one of the SCIENTIFIC AMERICAN staff with sprocket wheels and cranks, and with a perforated leather belt in place of a chain. Thus equipped, it proved rideable, not exactly equal in comfort, easy running, and speed to an 18 or 20

pound modern wheel; but it was ridden up and down the SCIENTIFIC AMERICAN office. Its construction does not conduce to the maintenance of a straight track, and our artist has been guided by experience in depicting its somewhat serpentine line of progress.

The wheel is constructed by Fred Dodson, a boy of fourteen years, who resides at Fishing Creek, Colum-

bia County, Pa., and who manufactures the wheels for his own amusement. They are very ingeniously and strongly made, and are very creditable, considering the low price. Mr. Dodson will furnish the wheel complete, with pedals, driving chain, etc., but of course this increases the expense somewhat. This is the only wheel on the market whose tire surface is non-destructible.

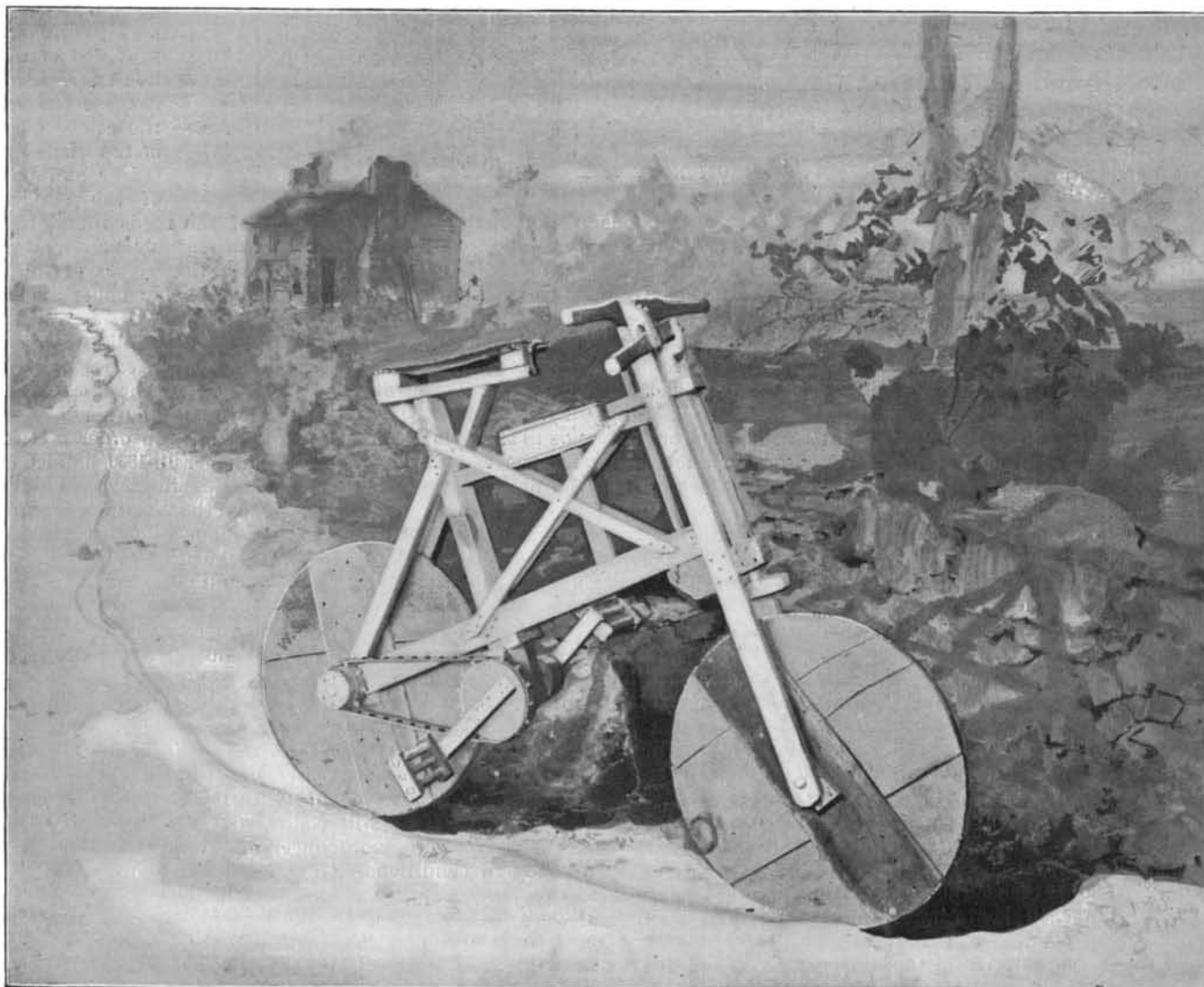
**A Rustless Coating.**

By forming on the surface of iron and steel a double carbide of hydrogen and iron, which is extremely hard and adhesive, protection of the metal from rusting is said to be insured. This is a French process, and the treatment is effected in a pair of gas retorts, set side by side, and raised to a temperature of from 600 to 700 degrees Cent. The articles in this case are placed in a retort for about twenty minutes, when a current of hydrogen is turned into the retort and kept on for 45 minutes, a small quantity of naphtha being now introduced, the supply of which is kept on for 10 minutes. After this the naphtha is shut off, a current of hydrogen is turned on for fifteen minutes longer, when the process is finished. All that remains is to cool the retorts down to 400 degrees Cent., and as soon as this temperature is reached, the retort lids may be taken off and the product removed. The coating thus produced has a bluish color, and is stated to be so adherent to the metal that a treated bar can be bent through an angle of 45 degrees without disturbing it.—Railway Review.

**The Difference.**

We came across the following lines the other day. They amused the writer and ended in an advertisement which we leave as it appeared in the original, as the advertisement is so cleverly drawn as to be worthy of its own reward.

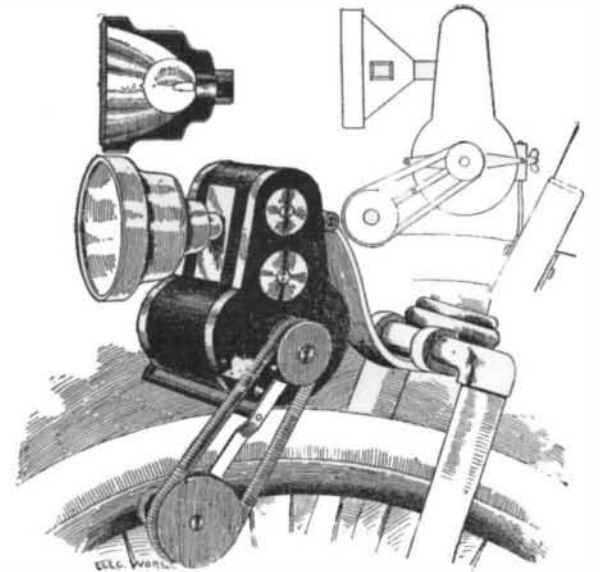
"Tennyson could take a worthless sheet of paper, write a poem on it and make it worth \$65,000—that's genius. Vanderbilt can write a few words on a sheet of paper and make it worth \$5,000,000—that's capital. The United States can take an ounce and a quarter of gold and stamp upon it an "Eagle Bird" and make it worth \$20—that's money. A mechanic can take material worth \$5 and make it into watch springs worth \$1,000—that's skill. A merchant can take an article worth 75 cents and sell it for \$1—that's business. A lady can purchase a 75 cent hat, but she prefers one that costs \$27—that's foolishness. A ditch digger works ten

**A TWENTY-FIVE CENT BICYCLE.**

hours a day and handles several tons of earth for \$3—that's labor. The printer of this could write a check for \$80,000,000, but it wouldn't be worth a dime—that's rough. Any one can go to see Robert Hilliard and his clever company in 'Lost—24 Hours,' and thoroughly enjoy an excellent performance of one of the brightest comedies ever written—that's common sense."

**AN ELECTRIC BICYCLE LAMP.**

A unique bicycle lamp was recently illustrated in the Electrical World. A small magneto-electric machine, operated by a friction and band wheel, as shown, furnishes current for a miniature incandescent lamp. The little magneto has a shuttle armature, the core of which is thoroughly laminated. No commutator is used, but the current is collected from the frame of the machine, one terminal being grounded,

**AN ELECTRIC BICYCLE LAMP.**

and from one of the bearings which surrounds a slip ring on the shaft. Thus the construction is of the simplest. The alternating current is carried to a low voltage, two candle power lamp, which is inclosed in a reflector of an ingenious pattern. It is a double parabola and concentrates the light at the focus of the outer parabola, from which it is thrown forward in a remarkably powerful beam, which will furnish illumination for quite a distance ahead. The slightest rotation of the bicycle wheel causes the lamp to glow. Indeed, it would be difficult to ride the wheel slowly enough to maintain equilibrium and not have light. The lamp has a short, stumpy filament, and is therefore not liable to break from any cause except excessive current. The perfected model will admit of ready dis-

connection of the friction wheel from the tire, so as to render the magneto inoperative, and the transmission mechanism will have a dust shield.

**Plants not Injurious in Bed rooms.**

The well-known property of plants of giving off CO<sub>2</sub>, has led to the presence of plants in sleeping apartments being popularly deemed undesirable. The experiments of a chemist in a London conservatory tend to prove such a supposition fallacious. In a conservatory containing 6,000 plants in the middle of the day oxygen had so far increased on the carbon dioxide that out of 10,000 parts only 1.40 proved to be CO<sub>2</sub>, whereas the normal proportion of the purest air is about four parts in 10,000. After being shut up twelve hours the air in the

greenhouse at noon thus proved to be surcharged with oxygen. The same air was analyzed just before sunrise, and the carbon dioxide had so far gained on the oxygen that the proportion of it was almost exactly four per 10,000. Taking the twenty-four hours round, therefore, the day just about balances the night.—Brit. and Col. Drug.