

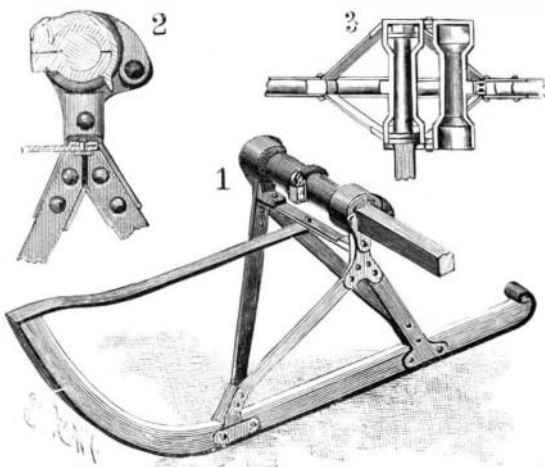
### A WONDERFUL PIECE OF CLOCKWORK.

At the upper part of the Mareorama building, at the Exposition, there was exhibited a wonderful piece of clockwork in the form of a small house constructed of copper and bronze. It was the work of I. M. Goldfadoff, a Russian clockmaker. The façade, which was 5 feet in length and 3 feet 6 inches in height, represented a Russian railway station, with its telegraph office, station agent's office, ticket office, and even a buffet. Opposite the station there was a garden, with fountains, trees and flowers, and, surrounding the garden, a railway, with gates, semaphores, lubricator's box, water tank, etc.

In the cupola that surmounted the station was housed the clockwork mechanism. This, in the first place, controlled several dials that indicated the time at various points of the globe, the season, the month, the day, and the phases of the moon, and, in the second, a system of pulleys and wheels that gave life to the station once a day. When noon sounded, a lever was set in operation and the telegraphers, who were bustling around their office, received the announcement of the arrival of a train. A guard rang a bell, a whistle was heard, and the train entered the station. It stopped at the tank to take on water, while the red disk of the semaphore gave place to a green one in order to protect it. The station agent came out of his office, on the platform, the lubricator examined the axles of the car wheels, and the passengers, who had come out of the waiting room, passed in front of the ticket office. The guard rang the bell three times, and the train, announced at the following station by the telegraphers, got ready to start again. The conductor of the train whistled, the locomotive responded, and the train left the station. There were passengers in the cars who seemed to be making their farewells from behind the curtains. After the lubricator had re-entered his box the gates closed and a gendarme upon the platform made a military salute to a portrait of the Czar, which was unmasked by a dial; while, at the same time, an invisible orchestra played the Russian national hymn. Finally, the station agent re-entered his office, and all this little world relapsed into quiet. We are indebted to La Nature for the engraving and description.

### A RUNNER FOR VEHICLES.

The accompanying engraving represent a vehicle-runner patented by Frank G. and George L. Scott, of

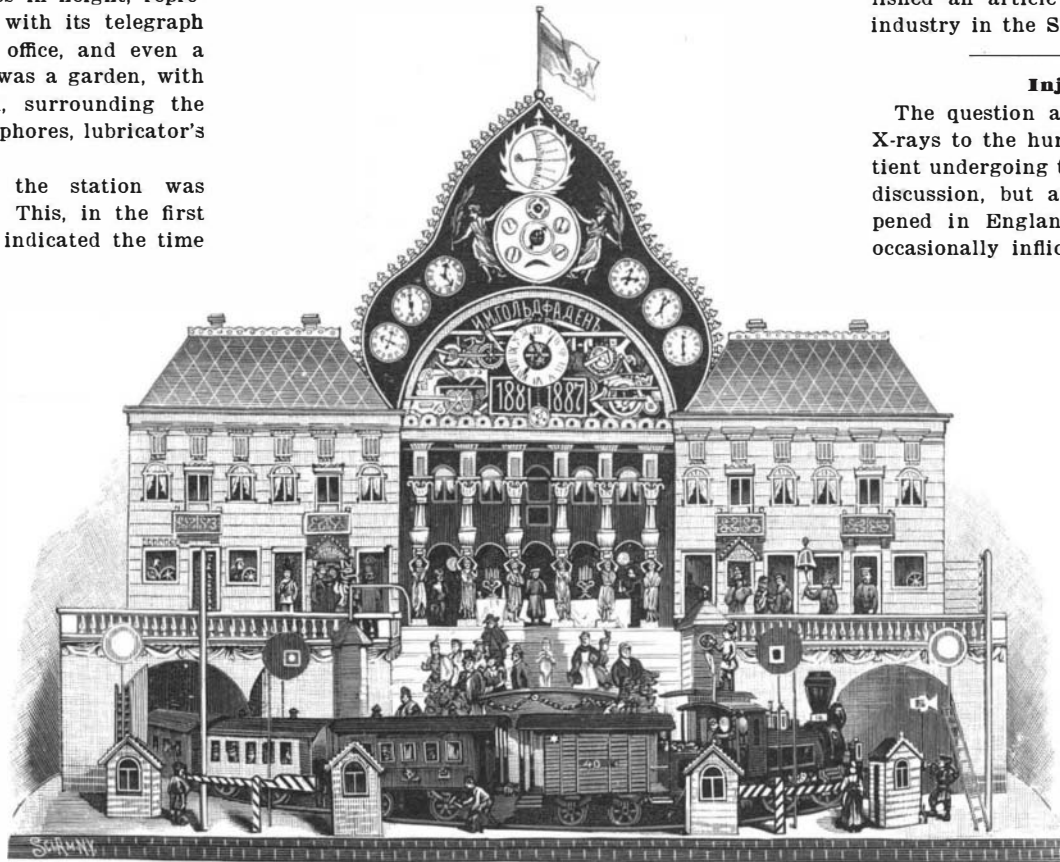


NEW VEHICLE RUNNER.

Newport, R. I. To the recessed front socket-sections of the runner the lower ends of braces are secured, the upper divergent ends of which are fastened to the lower, forward members of bifurcated connecting-blocks. To the rear, lower members of the connecting blocks the upper ends of rear braces are attached. The lower, converging ends of the braces are received by rear, recessed socket-sections on the runner. The connecting-blocks are tied together by a cross-bar, which is in turn united by a longitudinal brace with the forward end of the runner.

In connection with each runner a box-bearing is employed. (Figs. 2 and 3.) This box-bearing consists of upper and lower sections hinged together, so that one can close upon the other to form a complete box. The tapering portion of an axle-spindle is received by the correspondingly-shaped central portion of the inner chamber of each section. The spindle is provided with the usual collars where it joins the axle.

When an axle-spindle is placed within a bearing box, the lock-nut remains on the spindle, so that the nut will not be lost; and, therefore, the end of each bearing-box section is enlarged. The inner end of the upper bearing-box section is open; while the inner end of



A CURIOUS RUSSIAN CLOCK.

the lower section is provided with a square jaw for the reception of the rectangular portion of the axle. This jaw prevents the runner from working detrimentally on the spindle; and the box-bearing effectually prevents the runner from working off the axle and protects the axle-spindle. The sections of the bearing-box may be connected either by bolts or by a spring-catch such as that shown in Fig. 2.

### THE BURTON PLASTIC PRESSURE TUBE EXPANDER.

At the Thornycroft works a new tool for expanding boiler-tubes has been successfully used, which may supersede the old taper mandrel and rollers. It is a well-known principle that certain metals, such as lead, can be made to flow when subjected to pressure; and upon this principle the operation of the invention depends. The tool consists of a phosphor-bronze cylinder containing a piston provided with three piston-rods which pass through the cylinder-cover and are secured to a bearing-block. The rear end of the cylinder is fitted with a valve. At the forward end of the cylinder, in the center of the cover is a mandrel, enlarged at its forward end to fit the boiler-tube.

The piston having been drawn back to the rear end of the cylinder, a lead-bush is placed around the mandrel. After the mandrel has been forced as far as possible into the tube, the bush will fill the space between the tube and the mandrel. Water under high pressure, when admitted to the cylinders, will draw the mandrel back, whereby the lead-bush will first be wedged into the space between the tube and the mandrel and will then flow past the shoulder of the mandrel. Simultaneously the tube will be expanded. Finally, when the mandrel-shoulder enters the tube-plate, the lead is thrust between the face of the bearing-block and the end of the tube. The mandrel can be easily taken out of the tube and the thin sheet of lead still remaining scraped off. The amount of expansion can be regulated by varying the length of the bushing. Tubes can be readily expanded into flanges for steam-pipes and into tube-plates. The tool is the invention of Dr. C. V. Burton, of London, England.

Two syndicates have been formed to raise tea in large quantities

on the fertile tract which lies near Charleston, S. C. Some Connecticut capitalists have negotiated for the purchase of 4,000 acres of land near Charleston, where 300,000 pounds of tea could be raised annually for the American market. The cultivation of this product in the South is expected to yield rich returns. We published an article upon the subject of the Pinehurst industry in the SCIENTIFIC AMERICAN, August 19, 1899.

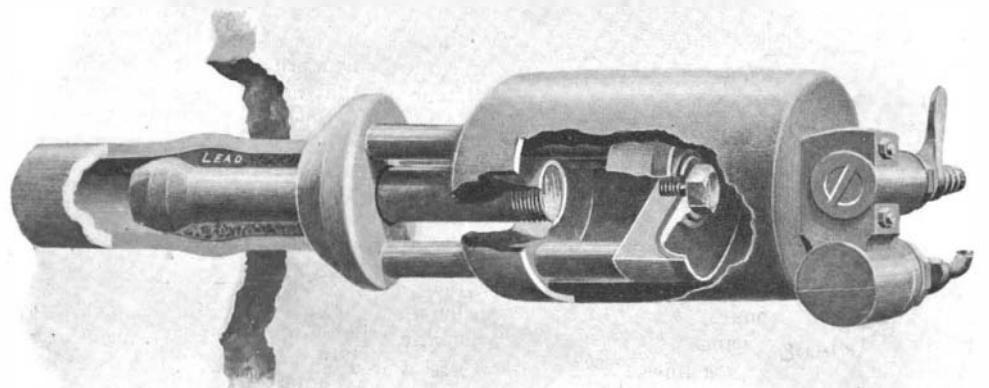
### Injury by the X-Rays.

The question as to whether the application of the X-rays to the human body causes any pain to the patient undergoing the treatment has aroused widespread discussion, but according to a recent case that happened in England, it is evident severe suffering is occasionally inflicted by their application. A lady 68 years of age, while cycling, met with an accident, which was supposed to have fractured her thigh. Shortly afterward an eruption broke out in her stomach, and to diagnose the case the Roentgen ray apparatus was brought into use. The lady eventually succumbed to the malady, and at the inquest which followed, a letter was read in which she stated that she had suffered untold agonies by the "cruel over-exposure of the X-rays." The photographer stated that he made two exposures of thirty-five minutes and forty-five minutes respectively. The surgeon who was present at the exposures, and superintended the operations, stated that death was due to the exhaustion from shock produced by the fracture of the thigh and the application of the X-rays. Expert evidence

upon the subject was given by Dr. Lewis Jones, the medical officer in charge of the electrical department of St. Bartholomew's Hospital, London, who said he considered that the exposures had been normal. He had discovered in the course of his investigations that some people were sensitive to the rays while others experienced an immunity from their effects. This was believed to be due to the condition of the skin at various times. There was always a risk of skin burn where the exposures were prolonged, but he had never heard of death being attributable to the X-ray burn. The jury, however, returned a verdict that the woman died from shock and exhaustion, following an accident and the effects of the X-rays, upon a weakened system. The photographer and surgeon were exonerated from all responsibility.

### Large Gushing Well in Texas.

The great gushing well near Beaumont, Tex., is creating considerable interest in the Southwest. The well far eclipses any ever drilled in the United States, and the output is 7,000 barrels daily greater than the largest gushing well in Russia. It is estimated that this flow exceeds 25,000 barrels every twenty-four hours, and the flow is constantly increasing in volume. This is due to the fact that when the oil was struck the iron casing was blown out of the hole, and the size of the hole gradually increased. A solid six-inch stream of oil shoots into the air to a height of 200 feet. It is thought that the only way to save the oil is by dirt reservoirs, and they are being constructed as rapidly as possible, in order that none of the oil may be wasted. As is usual in such cases, almost fabulous prices are being paid for almost waste lands. The well is attracting great attention, and is being visited by thousands of people. The new well has served to depress prices in the oil market.



A PLASTIC-PRESSURE BOILER-TUBE EXPANDER.