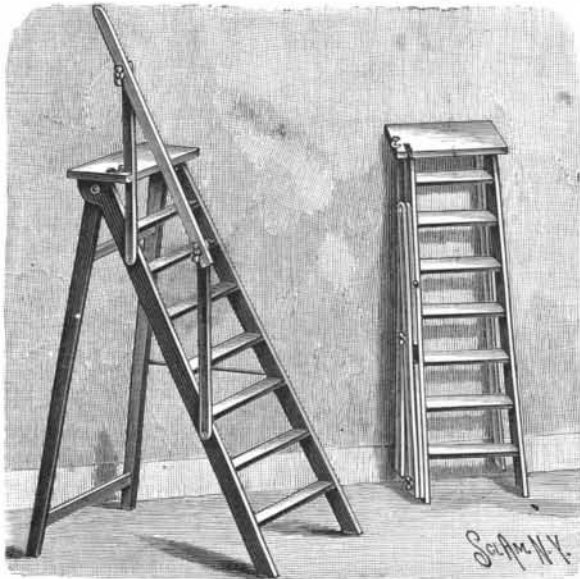


**AN IMPROVED GUARD FOR STEP LADDERS.**

A step ladder having foldably attached thereto a hand-rail guard, to give greater safety in its use, is illustrated herewith, and has been patented by Mr. Otto J. Meisel, 129 Ohio St., Terre Haute, Ind. The top step has a notch or recess in its edge, in which an arm pivoted to the side-piece of the ladder is adapted to enter when



MEISEL'S GUARD FOR STEP LADDERS.

the hand-rail is to be used. There are two of these arms pivoted to the upright, the outer ends of the arms being connected by thumb-screws to the guard rail, and in the upper arm is a staple with which a hook on the top step is engaged to hold the hand-rail and arms in position when the top arm is entered in the notch. To fold the hand-rail it is only necessary to loosen the thumb-screws and disengage the hook, when the arms can be turned down to the position shown in one of the views, the thumb-screws being then tightened again to hold the arms and guard folded.

**AN IMPROVED FIRE ESCAPE.**

A device designed to facilitate escape from a burning building is illustrated herewith, and has been patented by Messrs. James G. Berdrow and Frank A. Pelkey, of Seward, Neb. It has a frame adapted to be rigidly secured to the outside of a door or window casing, the frame having near its bottom forward projecting bearings in which is mounted to turn a transverse shaft having fixed thereto a pair of grooved winding drums. Hoisting cables are wound in opposite directions on the drums, the cables having hooks on their lower ends for attachment to suitable cars or cages, so that when one car descends, the other cable will be automatically wound up, bringing up its attached car for use by the next person. On the winding shaft is a cog wheel gearing with a pinion on an inner shaft, the latter also gearing with another shaft carrying a bevel gear communicating motion to a vertical shaft, the



BERDROW & PELKEY'S FIRE ESCAPE.

multiplying of the gearing causing the vertical shaft to revolve rapidly while the winding shaft is rotating comparatively slow. On the upper end of the vertical shaft is a brake wheel, the brake shoe of which is adapted to be operated by an angle lever, to check the speed of the winding shaft, a hand rope from the outer arm of the lever passing through a stationary guide

down to where it can be conveniently grasped and drawn upon by the person descending in the car. An automatic governor device is also fixed on the vertical shaft, whereby any excessive speed of the descending car will cause the brake to be applied without the use of the hand rope.

**Refrigerator Cars.**

The refrigerator cars in which meat is brought from Western stock yards to Eastern markets are 29 feet long inside, 8 feet 2 inches wide inside, and 7 feet 2 inches from the floor to the cross beams to which the hooks are fastened, above which is a space of 14 inches to the roof. At each end are galvanized iron tanks filled with a mixture of pounded ice and coarse salt. The temperature of the cooling rooms and the cars is kept as nearly equal as possible, about 30° to 36°. Between the cooling room and the car shed is the shipping room, where the beef that is to be shipped is weighed, quartered, and rigidly inspected. When loaded, a car contains about thirty carcasses, averaging 650 pounds. All the hind quarters are hung in one end of the car, and the fore quarters in the other. The cars are iced the day before shipping, refilled just before loading, and are iced again every twenty-four hours at regular stations on the route. Experiments have proved that in this way beef can be kept sweet for two or three weeks, and will taste quite as well at the end of that time as meat killed and eaten within two or three days. When the cars return empty, they are side-tracked at the packing house, and undergo a thorough scrubbing and cleaning with boiling water, the hooks are washed and polished, and the car is allowed to stand for twenty-four hours with open doors before it is again loaded for the Eastern market. The amount of traffic with the meat trains is something enormous.

**AN IMPROVED AXLE.**

The accompanying illustration represents an axle so constructed that, if one section should break, it may be detached from the other and a new section put in place, thus obviating the necessity of losing the whole axle. It has been patented by Mr. Charles H. Wilson, of No. 17 Beacon Avenue, Jersey City Heights, N. J.



WILSON'S AXLE.

The axle is made in two sections, each having their inner ends externally screw-threaded, one section having a reduced screw-threaded portion or shank and the other section having an internally screw-threaded cavity to receive this shank. The outer surfaces of the central portions of the two sections are screw-threaded, and upon them is screwed a coupling sleeve or tube, which is held in place by a collar and set screw on each end.

**Russian Petroleum.**

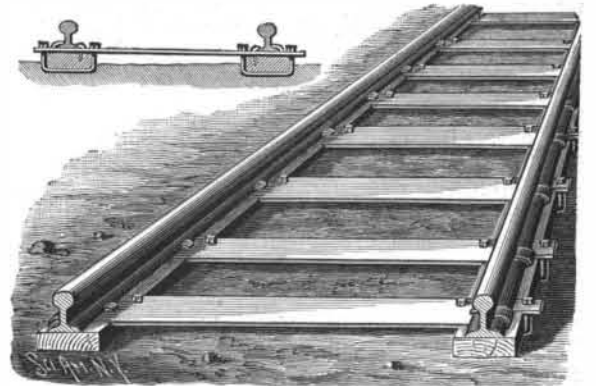
M. De Tchihatchef, a Russian writer, asserts that the average flow of petroleum in the Baku region is 88,000 barrels per day, as against 25,300 barrels in the United States. The chief drawbacks encountered by those who have worked the Baku oil fields have been lack of transportation and want of cheap package. A railway to Batoum, on the Black Sea, opened two maritime routes to Europe, and met the first difficulty. Cars and vessels constructed to carry crude oil met the last, and enabled refineries to be built in the interior of the empire wherever fuel might be cheapest. It is confidently predicted, since the completion of the Batoum Railway, that Russian oil will displace American in European markets, and that it will even be possible for the Russian product to compete for the markets of the United States. M. De Tchihatchef points out a probable demand in the near future for petroleum to serve as fuel on the great lines of railway completed and still building in Asia.

**How Scarlet Fever Poison is Distributed.**

The *Medical Era* relates the case of a girl aged about eight, living at Fortress Monroe, Va., who was some months ago attacked by scarlet fever, the disease running a typical course. For a long time no possible source of contagion could be discovered. The child had not been absent from home, had been with no one lately exposed, and no other case was known to exist anywhere in the vicinity. Subsequently Dr. Brooke learned that one of the house servants had nursed a case of scarlet fever in a distant city just about a year before. After the case terminated she packed some of her things, including some clothing then worn, in a trunk and left the place. A year later she had the trunk sent to her, opened it and took out the contents, the little girl being present and handling the things. Very soon after the latter was attacked, as stated

**AN IMPROVED RAILWAY.**

According to the invention illustrated herewith, which has been patented by Mr. Robert P. Faddis, of Socorro, New Mexico, a suitable stringer of timber is employed, with recesses in which the ends of metal ties are seated, so that the rails rest flat on the stringers. The tie has its ends divided, or split longitudinally, one portion being then turned upward to engage the outer side edge of each rail, the inner edge of the rail being engaged by a spike driven through an aperture in the tie into the stringer. The ties and stringers are, however, mainly held together by stirrups, which embrace the stringers from below, as shown in the small figure, the arms of the stirrups extending up along the



FADDIS' RAILWAY.

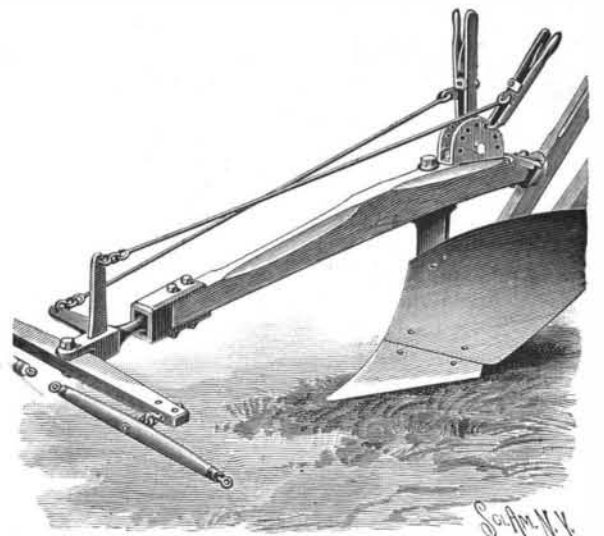
opposite sides of the stringers through the tie and being secured by nuts.

**Paper from Wood.**

The discovery of the value of wood in paper making is credited to Dr. H. H. Hill, of this city. About forty years ago the doctor visited the paper mill at Vassalboro, and after looking over the machinery suggested the feasibility of using wood, and asked why the manufacturers did not get a few bales of excelsior from Augusta, where it was made, and try the experiment of making paper from wood. "It can't be done," said the manufacturers. "Have not you as much gumption as the hornets, whose nests are made of wood paper?" asked the Doctor. The result of the conversation was a letter, some time later, from the firm's wholesale agents in Boston asking what they were putting in their paper to make it so much better than it had been. It was the wood, then first used in this way.—*Kennebec (Me.) Journal.*

**AN IMPROVED PLOW CLEVIS.**

A clevis, with mechanism for adjusting it, whereby the clevis may be maintained in proper position during irregular movement of the plow and team, is illustrated herewith, and has been patented by Mr. Marshal T. Cole, of Claremont, Minn. The clevis has a vertical arm and a lateral arm, each connected by adjusting rods with levers pivoted in a U-shaped bracket secured to the plow beam adjacent to the arms of the plow. The rearwardly extending arm of the clevis terminates in a knob or ball, and is connected to the plow beam by the ball resting in a socket formed by two castings bolted to the plow beam, and with recessed heads, fitting together, whereby a universal joint connection is made. To hold the clevis in elevated position, and in line with the plow-beam, the levers are adjusted as shown in the illustration, but the direction of the clevis to the right or left may be effected by differently



COLE'S CLEVIS FOR PLOWS.

adjusting one of the levers, or it may be held at a different angle vertically by changing the adjustment of the other lever. By this means the draught connection may be readily altered for a gradual or instant change of depth or width of work, or for both simultaneously, as may be required in ground of different surfaces or variable soil.