chronometer. This style of Russian mountain differs from those that have hitherto been operated. It is due to an English builder, Mr. Thompson, who has put up numerous specimens in various countries.—*La Nature.*

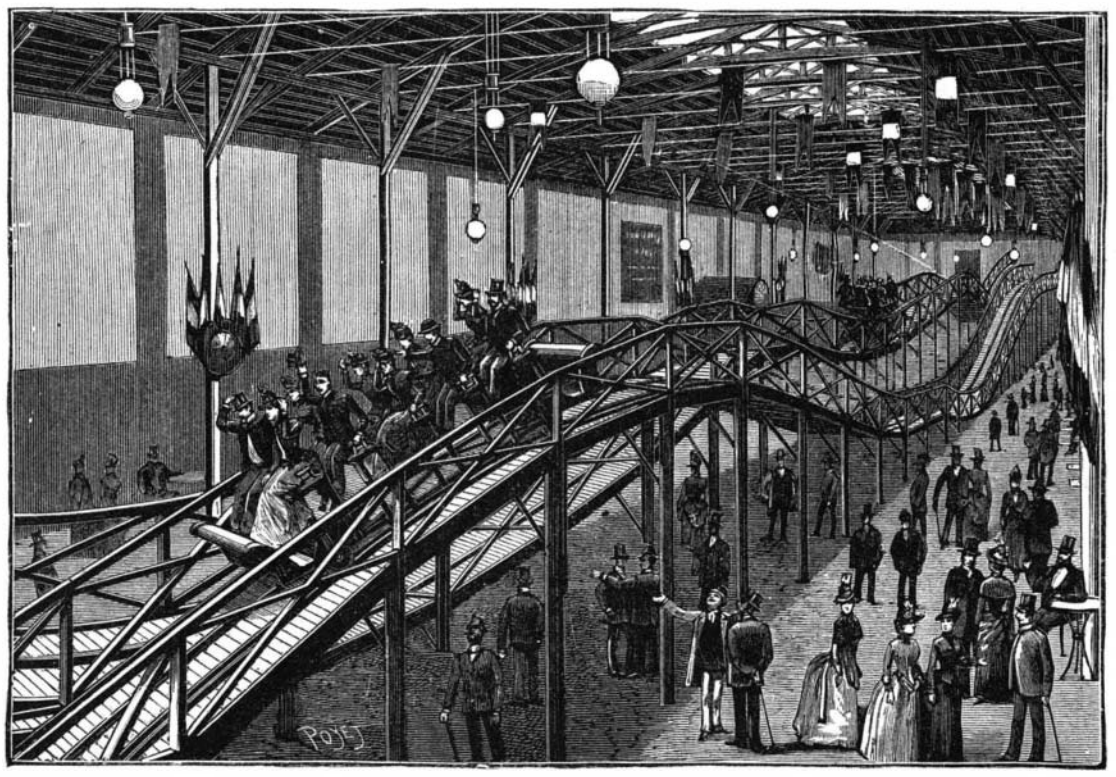
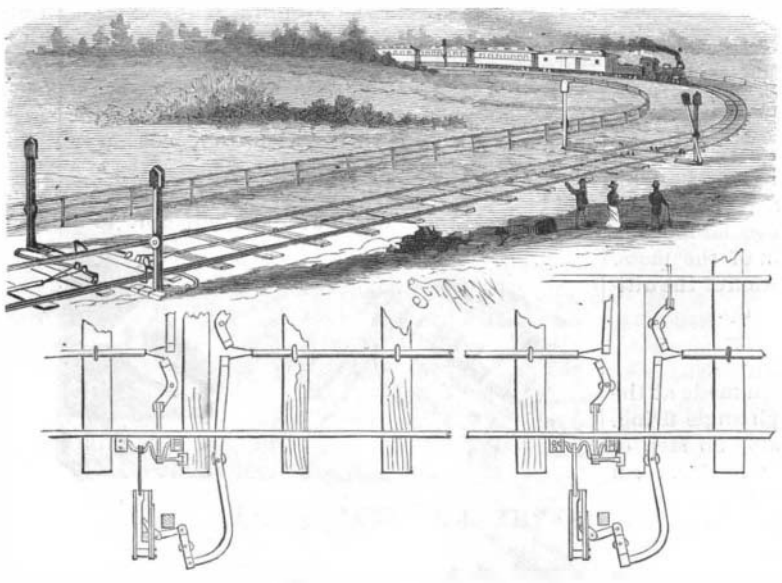


Fig. 4.—RUSSIAN MOUNTAINS OF THE BOULEVARD DES CAPUCINES (1888).

AN IMPROVED BLOCK SIGNAL.

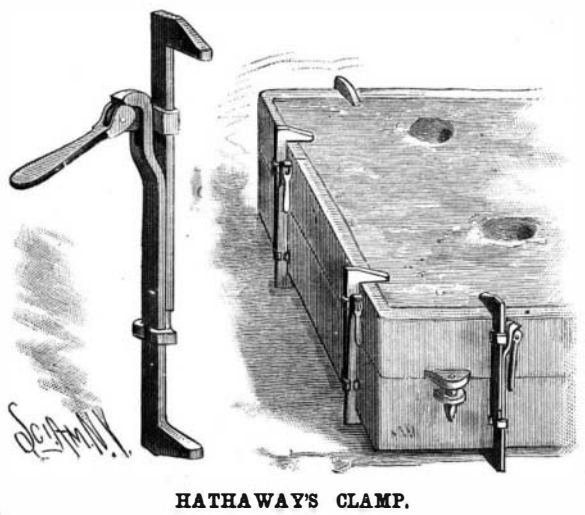
A block signal system, so arranged that a train entering a section of track will set a signal at the end of the section toward which it is moving to "danger," and set to "safety" a similar signal, by the same movement, on the section it is leaving, has been patented by Mr. George W. Peterson, of Leonardville, Kan., and is illustrated herewith. In connection with posts arranged at suitable distances apart at the side of the track, spring levers are mounted in alignment carrying signal disks, the posts carrying lights, and the tendency of the springs being to throw the signal disks out of line with the lights toward the track. The lower ends of the levers extend downward into cases, near the foot of the post, whence they are connected by double crank bars, links, other levers, and tripping bars, with wires extending through tubes secured to the ties midway between the tracks, the posts and signal disk levers at each end of a block or section being thus connected together. The engine is provided with an overhanging arm on its left side, mounted in such position that it will strike against and depress the tripping bar connected with this signal disk lever moving mechanism, thus closing or setting to safety the signal for the section of track it is passing from, and setting to danger the signal at the farther end of the block the train is just entering, to warn the engineer of a train approaching in the opposite direction. Similar signals are arranged on the opposite side of the track for use by trains moving in the opposite direction, the connecting wires passing through the same tubes centrally between the tracks.



PETERSON'S BLOCK SIGNAL.

AN IMPROVED CLAMP.

A clamp especially designed for use in foundries, for clamping flasks and moulds, and by carpenters and others, having a quick and easy adjustment, with a secure fastening, is illustrated herewith, and has been patented by Mr. Henry E. Hathaway, of Merrill, Wis. One of the bars has a guiding clasp to embrace the edges of and slide freely on the other bar, which has at its inner end a slotted offset portion with outwardly projecting lug and inclined bearing face. A stud on an independent clasp embracing the other arm of the clamp passes through the slot, and on this stud is pivoted a cam which operates against the inclined bearing face of the lug at the extremity of the first arm. The cam has a handle for convenience in operating it, and the bars slide freely one upon the other when not set in use, the construction being such that when the jaws are adjusted or closed upon the parts to be clamped, the moving of the handle down will slightly draw the jaws of the clamps inwardly and firmly bind the bars one upon the other, preventing any longitudinal movement.



HATHAWAY'S CLAMP.

Pumping Machinery.

In the course of a paper on this subject lately read at a meeting of the Association of Birmingham Students of the Institution of Civil Engineers, by Mr. F. W. Hewett, he said that one of the first contrivances for raising water by steam pressure—or, as it was stated at the time, for raising water by fire—was Captain Thomas Savey's patent, exhibited before the Royal Society in 1699, when Sir Isaac Newton was president. The valves were all worked by hand. A most important advance was made by Newcomen, who must have been contemporary with Savey; but little was known of this gentleman except his invention. When James Watt's beam engine was invented, the conception of making the condenser apart from the steam cylinder and keeping the steam cylinder as hot as possible was the basis of its mechanical success. The energy of Bolton, his partner, soon brought this pumping engine into extensive use; and as the demand increased, so the machine developed. The supremacy of the Cornish pumping engine had remained undisputed from the moment Watt perfected it; and it had scarcely been approached for deep drainage and working against a constant head of water. The velocity of the water through the valves of ordinary pumps should not exceed 4 feet in a second at the most, and the pumps should generally work well at 50 feet per minute—bucket speed. The velocity of the water in the delivery pipes should be as consistent as possible.

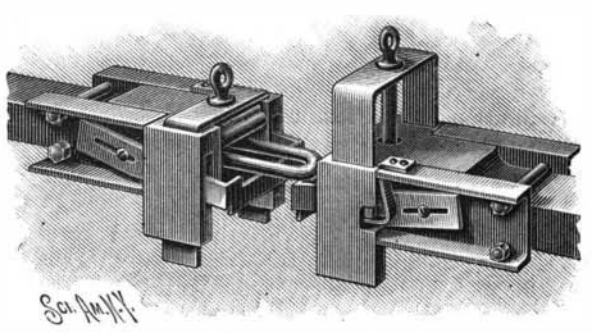
Curious Wants at Druggists' Counters.

The *National Druggist* gives the following amusing specimens as fair samples of every-day experience:

"Send me some of your essence to put people to sleep with when they cut their fingers off. I want something to take tobacco out of my mouth. Send me a baby's top to a nursing bottle. Something for a sore baby's eye. Enough ipecac to throw up a girl four years old. Enough anise seed to take the twist out of a dose of senna. Something for a woman with a bad cough and cannot cough. Something, I forget the name, but it is for a cure for a swelled woman's foot. For a man with a dry spit on him. For a woman whose appetite is loose on her."

AN IMPROVED CAR COUPLING.

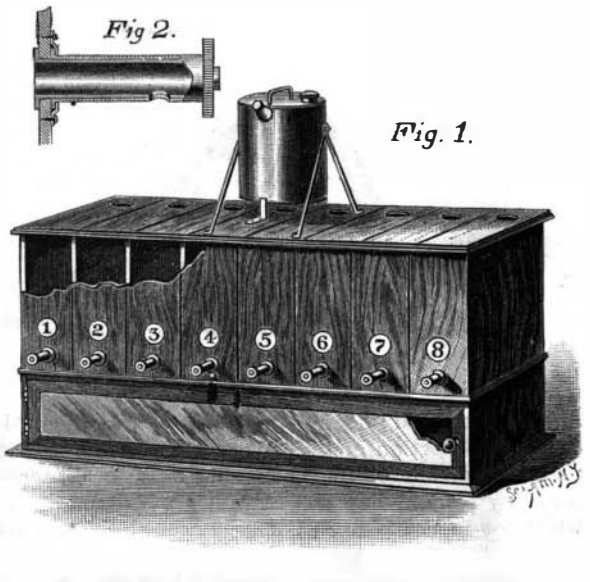
The invention illustrated herewith provides a coupling in which the link is held up and guided into the drawhead, while the coupling pin is held in position for automatic engagement therewith, and has been patented by Mr. William O. Rutledge, of Galveston, Texas. A side metallic casing is secured to the drawhead, in recessed portions in the forward part of which are guides for the depending arms of a U-shaped frame, having an aperture for the coupling pin in line with the opening in the drawhead, so that when the frame is dropped the pin will extend across the recess receiving the end of a link. The frame is held in elevated position by a spring catch on each casing, having its bent end projecting through a notch in the guide. Through slots in the front of the casing pass the legs of a U-shaped piece, whose crossbar extends over the front of the drawhead, the legs being connected to the casing by pins projecting through slots, and adapted to slide thereon, the forward portion of the legs being beveled so that the crossbar is lowered as it is pushed back by a similar piece on the opposite drawhead, thereby guiding the link into position for engagement by the coupling pin. Upon the drawheads being brought together, the parts being in position as shown in the illustration, the piece with sliding arms, which guides the link into the right hand drawhead, will be pushed back by the similar piece on the other drawhead, when a lip or projection on the casing releases the spring catch, causing the pin-carrying frame to fall, and engagement with the coupling pin is effected. This inventor has also applied for a patent for an uncoupling device.



RUTLEDGE'S CAR COUPLING.

AN IMPROVED POWDER AND SHOT CABINET.

An invention providing convenient means for handling powder and shot, in the form of a cabinet, in which a dealer may keep handily and separately the various articles generally called for, is illustrated herewith, and has been patented by Mr. Augustine La Point, of Wessington Springs, Dakota Ter. The cabinet has a lower compartment with a glass door, adapted to receive and display cartridges, gun caps, etc., and the upper compartment is divided by vertical partitions into eight or more lockers, one for each size of shot, which may be poured in through a properly capped opening at the top. The different sizes are indicated by numbers on glass sections in the front of each locker, through which also the sizes may be seen. To withdraw the shot a



LA POINT'S POWDER AND SHOT CABINET.