

**Ice Caves of Japan.**

A correspondent to the London Field gives the following account of a wonderful cave in Japan :

Some eight or nine miles from Shoji, in the woods, is the entrance to the great ice cave we had come so far to see, a natural circular depression or basin in the ground in the middle of the forest, some thirty yards across and about forty feet deep. At the foot of one of the sides is a dark opening in the lava, a few feet down which may be seen the top of a wooden ladder. This is about twenty feet long, and at the foot of it are a heap of blocks of lava, down which wescrambled for some thirty or forty feet more, till a floor of solid ice, more or less flat, was reached. Very careful progress along this had to be made to avoid slipping down and extinguishing the torches. For the first fifty yards frequent blocks of lava rise through the ice of the floor, while further on there is nothing but ice. The lava roof is sometimes thirty or forty feet above one's head, sometimes only four or five feet from the floor. The light of the torches glanced continually on icicles many feet long pendent from the roof. Presently we passed some large blocks of ice, which had been cut by the country people for sale at Kofu, some miles off. At nearly four hundred yards from the entrance about twenty wonderful ice stalagmites, from two to five feet in height, rose from the floor close to a lava wall forming apparently the end of the cave, to meet icicles hanging from the roof from which water at this time of the year continually drops on to them. The tops of these stalagmites form hollow bell-shaped cylinders, giving out a faint note like a gong when struck ; they are partly filled with the water which drips on to them from the icicles above. Soon by the side of them, on the left, a low arch in the lava on the level of the floor, about three feet high, may be seen. Down this is a strong current of air ; there is a rapid descent for some thirty-five feet, and thence the course of the cave has been followed for another two hundred yards or so, but owing to the strong current of air which constantly extinguishes the torches, and the smallness of the passage, which slopes down rapidly from the entrance, no detailed description of it can be given ; but undoubtedly the cave runs on for some distance, perhaps to another outlet, for the current of air is very strong at the extreme point to which any one has yet penetrated.

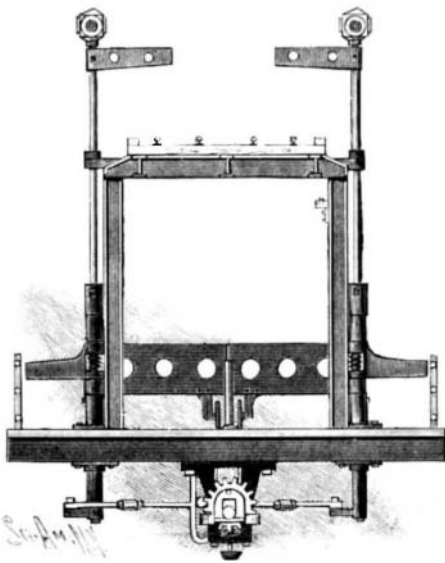
The ice has probably remained frozen in the cave from the winter months, the action of the higher summer temperature being insufficient to do more than affect the surface of the ice floor, form a few pools of water, and melt part of the ice stalactites and stalagmites. The temperature of the cave in summer seldom exceeds 35° Fah., and that in the declivity or basin in the ground at the entrance some 10° or 12° higher ; on going up from the latter to the level of the ground in the wood, a rise of some 20° on a warm day is at once experienced.

**The Argentine Cruiser Buenos Aires.**

The latest cruiser turned out by the Elswick firm for a foreign government has just made her trials and has made a speed which, if not altogether unprecedented, is most creditable to her designers, and must be satisfactory to her owners. The length between perpendiculars of this ship is 396 feet ; her beam 47 feet 2 inches ; and normal draught 17 feet 7 inches ; the displacement being rather over 4,500 tons. It has the usual protective deck and in general design resembles all the cruisers that have been turned out by this firm. The guns, carried in protective positions fore and aft, are two of the new 8 inch quick firers, while between these, in the open battery, are ten other quick firers, four of them being 6 inches and the others 4.7. In addition, there are sixteen three-pounders and eight one-pounder guns, with five torpedo discharge tubes. The machinery, supplied by Humphrys & Tennant, consists of two pairs of inverted direct acting, compound engines, steam being supplied by four double-ended and four single-ended boilers. The power used on the run was 14,000 H., the steam pressure being about 15.5 pounds and the vacuum 28 to 29 inches. The speed attained was 23.2 knots with natural draught.

**IMPROVED DRAWBRIDGE GATES OPERATING MECHANISM.**

To simplify and cheapen the opening and controlling of the gates of drawbridges, where the mechanism is actuated by the opening and closing of the drawbridge, the improvement represented in the accompanying illustration has been patented by George F. Ryan, and is being introduced by Joseph L. Duplissis, of Nos. 6357 and 6359 Champlain Avenue, Chicago, Ill. The large engraving is a side view of one end of a



**DRAWBRIDGE GATES OPERATING MECHANISM—END VIEW.**

bridge on which the improvement is applied, and over which is also carried an elevated railway, the adjacent abutment, the gates and the operating and controlling mechanism being shown, and a portion of the abutment being broken away to show the parts beneath the roadway.

The drawbridge, which revolves about an axis at its center, has curved ends, there being a corresponding curve in the abutment, and on each side of the roadway is a gate post, preferably surmounted by a lamp with lenses of colored glass for signaling purposes, the post being suitably stepped to maintain it firmly in place. Immediately beneath the lamp, on each post, is a short arm or plate, for use as a signal, as such device may be operated for the elevated railway simultaneously with the gates. For the driveway and sidewalks the gates are so mounted as to yield when they meet obstructions, and the driveway gate is attached to sleeves fitting loosely on the post. The movement

of the gate is limited by an adjustable stop, in connection with a coiled spring, preventing injury to a person who may be caught between the gates as they are closing. The sidewalk gates are yieldingly held by coiled springs attached to the post and engaging opposite sides of each gate. In opening or closing the gates the posts are turned in opposite directions, each post being moved a quarter of a revolution by a toothed rack carried by the

**Where Pennies are Coined.**

It is not generally known that all the minor coins of base metal, such as pennies and nickels, are made at the Philadelphia mint, and that nearly 100,000,000 pennies are coined here every year. This large number is occasioned by the fact that thousands of pennies are lost annually, and the government has some difficulty in maintaining a supply. The profit of the government on their manufacture is large. The blanks for making them are purchased for \$1 a thousand from a Cincinnati firm that produces them by contract. Blanks for nickels are obtained in the same way, costing Uncle Sam only a cent and a half apiece.

Gold is coined in Philadelphia and San Francisco. Not enough of it comes into the mint at New Orleans to make the coinage of it worth while. Gold pieces are the only coins of the United States which are worth their face value intrinsically. A double eagle contains \$20 worth of gold without counting the one-tenth part copper.

**Extraordinary Railroad Into the Black Hills.**

A remarkable piece of engineering is to be seen on what is known as the Spearfish branch of the great Burlington Railroad system in the Black Hills, over which a Chicago Record reporter recently traveled. This branch runs from the little town of Englewood, ten miles south of Deadwood, in a northwesterly direction, to the town of Spearfish, a distance of thirty-one miles. For a greater portion of the distance after leaving Englewood the road is steep up-grade, the grade being at several points three and four feet to the hundred, finally reaching the very summit of the Black Hills, after passing around innumerable curves of so abrupt a nature that passengers are led to wonder how the train can keep the track, and through numerous cuts that have been blasted out of the solid rock.

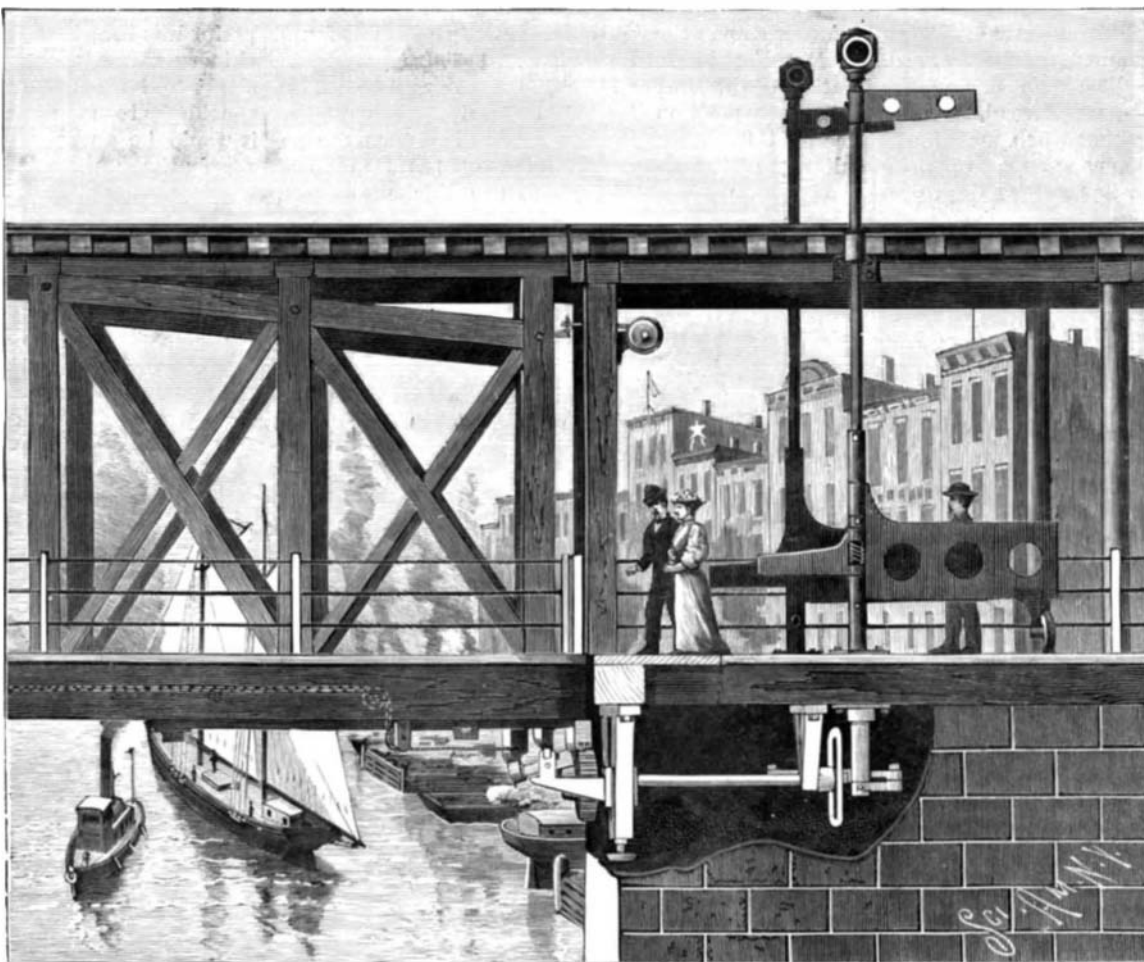
At one or two of the most dangerous places on this remarkable road safety switches are in use. In descending the grade, should the train get beyond control, these switches will carry it around the points of mountains and up a steep grade, enabling the engineer to regain control of the train. The road is ballasted with broken rock, not even a shovelful of dirt being visible on the entire roadbed.

The cost of constructing the thirty-one miles of road was \$1,750,000. The engines in use are 100 ton engines, but, owing to the steep grades, they are unable to haul more than three loaded ore cars.

At one point the road makes a curve of seven miles to reach the higher grade, and, if the tracks were on a level, the upper one would be within a few hundred feet of the lower track of the "loop."

Notwithstanding the dangers attendant upon railroading on this winding mountain road, but few accidents have occurred. At intervals trains are stopped for the purpose of testing the air brakes, and the utmost care is taken to prevent disasters. On the entire thirty-one miles of road there is not more than two or three hundred feet of continuous straight track.

THE deepest artesian well is at Budapest. Depth, 8,140 feet.



**RYAN'S IMPROVED MECHANISM FOR OPERATING DRAWBRIDGE GATES.**

of the gate is limited by an adjustable stop, in connection with a coiled spring, preventing injury to a person who may be caught between the gates as they are closing. The sidewalk gates are yieldingly held by coiled springs attached to the post and engaging opposite sides of each gate.

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