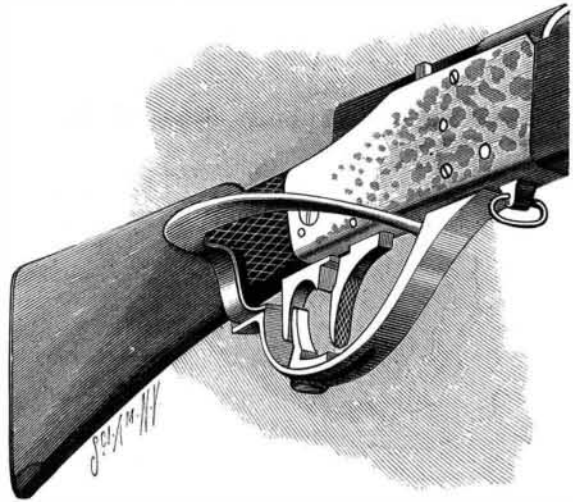


FIRE ARM.

Mr. Salvatore J. Buzzini has invented an improved breech-loading fire arm, in which the breech is opened and closed by the operation of a lever which may also serve as a trigger guard. The lever not only ejects the exploded shell, but cocks the arm, and the same motion automatically moves a safety catch which locks the trigger, thereby preventing accidental discharge. The arm cannot be discharged except by intentionally releasing the catch and pulling the trigger. There is an adjustable device attached to the breech lever for automatically controlling the safety catch that locks the trigger, so that when it is desirable to fire rapidly, the closing of the breech lever automatically releases the catch from the trigger. When rapid firing



BUZZINI'S FIRE ARM.

is not required, the adjustable device may be set so that it will not release the safety catch. The engraving shows the breech lever, at the side of the butt, the upper and laterally projecting part forming a convenient rest for the hand when its rapid manipulation is desired. The safety catch is directly under the butt, behind the trigger, and it is automatically released by the device attached to the inner under side of the breech lever. This device can be shifted along the lever and locked in its new position when quick firing is not required. Mr. Buzzini's address is 500 West 125 Street, New York city.

Standard Railway Time.

The subject of standard time is now before the railroad managers of this country, demanding not simply approval, but action. It will be remembered that at the spring time conventions the proposition of Mr. W. F. Allen, Secretary of both these conventions, to adopt for North America five standard times, exactly an hour apart, namely, the time of 60, 75, 90, 105, and 120 degrees west of Greenwich, was unanimously approved, and Mr. Allen was instructed to send information concerning the new standards proposed to the managers of all the railroads, and endeavor to have them adopt them. This information has been given by Mr. Allen in the completest way by means of two maps of the United States, on one of which all the railroads having the same time standards at present are colored alike, and on the other they are colored in accordance with the proposed uniform standards. The map showing the present standards makes a striking picture of the existing complexity. There are different times close alongside. A line run by Philadelphia time projects through a network of lines run by New York time; in some places there are several kinds of railroad time; and in the United States there are no less than forty-nine time standards, which by the proposed change will be reduced to four; for the time of the 60th meridian will apply only to the British maritime provinces. Roughly speaking, the time of the 75th meridian, which it is proposed to call "Eastern time," will apply to all the railroads of New England, New York, Pennsylvania, Maryland, and the two Virginias and the two Carolinas, the exception being the extension of the 90th meridian time ("Central time") to Buffalo, Pittsburg, and the other western termini of the trunk lines; while in Canada, "Eastern time" will extend to Detroit and Lake Huron. The chief points of junction between "Eastern" and "Central" time are Sarnia, Detroit, Buffalo, Pittsburg, Wheeling, Parkersburg, Huntington, W. Va., Bristol, Tenn., Gastonia, N. C., Augusta, Ga., and Charleston, S. C. This time is four minutes slower than New York time, one minute faster than Philadelphia, and eight minutes faster than Washington time.

But by far the larger part of the railroad system of the country will come under "Central time," or that of the 90th meridian, which is but one minute faster than St. Louis time, three minutes slower than Vicksburg time, just New Orleans time, and nine minutes slower than Chicago time. It takes in all the railroads from Buffalo, Pittsburg, and Savannah to the Missouri River in Dakota, nearly to the Colorado line in Nebraska and Kansas, and the whole of

Texas except a little corner from New Mexico south to the Rio Grande. Nine-tenths of the railroads of the country come under these two times. The 105th meridian (Denver) and the 120th (the line between California and Nevada) naturally cover a small mileage.

Whether a time which in some places will be half an hour from solar time will be adopted for general use is questionable; but for the railroads the proposed standards are certainly a great improvement on the present confusion, and perhaps as likely as any that could be proposed to come into general use.

Mr. Allen has studied out the subject thoroughly, and has prepared "translation tables" by which the proposed standard can be substituted for any one of the fifty existing standards without any computing. A large number of important railroads have agreed to adopt these standards if the majority of the roads in their district do so, and at the coming time convention it is hoped that something may be effected.—*Railroad Gazette.*

Inside Guard Rails.

In a paper by Mr. William Howard White, M. Am. Soc. C. E., upon the subject of "Railroad Bridge Floors," the author advocates inside guard rails for the purpose of preventing, as far as possible, serious results from the derailment of wheels.

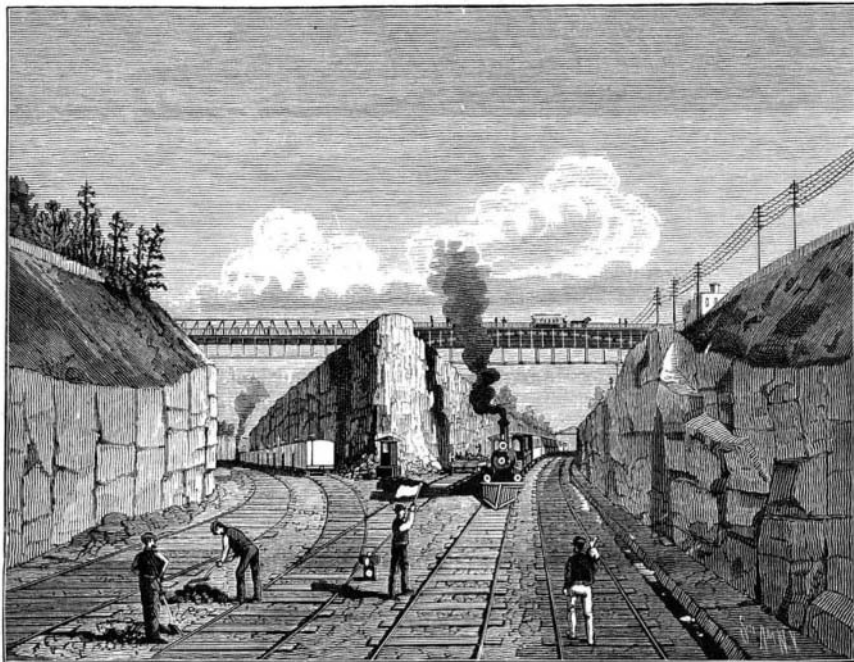
His reasons for advocating the inside guard rails are that he considers them more efficient for the same height above tie than the outside guard; that they can be placed so as to hold the wheel nearer the rail, particularly when the use of the snow plow is considered; that they can be more strongly secured at the ends for the purpose of drawing derailed wheels toward the rail, or to secure the ditching of a car which has gone too far to be safely drawn back; that they are more economical. He considers that the ties should have five inches of clear distance between them.

Storage of Wind Power in Sand.

The Oil City, Pa., *Blizzard* states that one Townsend has six arasras running to their full capacity, and four more will be started up in a few days. The arasras are placed in a little sandy flat, where only sufficient water for drinking purposes and to moisten the ore operated upon is to be obtained. The arasras are actually operated by sand, which drives a large overshot wheel. A windmill runs a belt containing a large number of buckets, and these carry the sand up to a big tank, just as grain elevators carry wheat in a flouring mill. A stream of sand being let out upon the overshot wheel, it revolves just as it would under the weight of a stream of water, and the arasras move steadily on at their work. When there is much wind, sand is stored up for use when calm prevails, so the arasras are never idle.

DEEP ROCK CUTS NEAR NEW YORK.

The line of the Pennsylvania Railroad from the depot in Jersey City, on the Hudson River, opposite New York to a point several miles back encounters the hills of rock which begin at New York Bay, and gradually rise until they form the famed Palisades of the Hudson. These hills have caused more or less trouble to all the roads whose termini are on



DEEP ROCK CUTS ON PENNSYLVANIA RAILROAD NEAR NEW YORK.

the west bank of the river. The old line of the Pennsylvania road passed through these rocks by means of cuts and was quite circuitous, the curves in some places being very sharp. Some time ago a line was surveyed which obviated these difficulties and reached the depot in a direct line. The new route was made of a width sufficient to accommodate four tracks, two for the passenger and two for the freight traffic.

The work of opening the new cuts was, in some cases, extremely difficult, owing to their great length, depth, and width and the hardness of the rock. Our illustration represents a section of the road as viewed from a point about two and a half miles from the ferry, the rock passed through in this case being trap. To the right is shown the new cut,

the old road curving from it as indicated upon the other side. There are several new cuts through the rocky obstruction that present the same general appearance as the part above illustrated.

WAGON TONGUE SUPPORT.

The object of this device is to relieve the horse's neck from the strain incidental to supporting the weight of the wagon tongue, at the same time allowing the connection between the tongue and wagon to have such a flexibility that the wagon may easily adjust itself to uneven ground. The tongue is hinged to the forward hounds in the ordinary manner. Placed under the tongue is a spring whose forward end is connected with and slides upon a keeper attached to



Fig 1

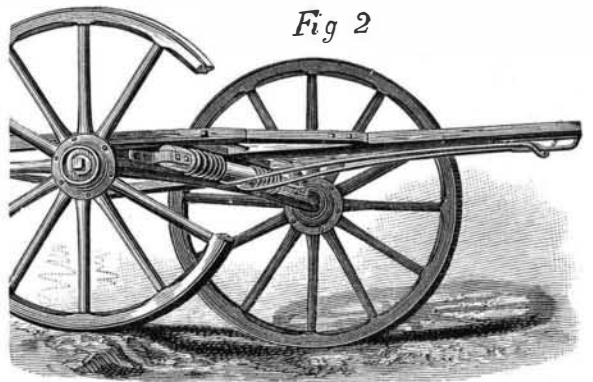


Fig 2

BALLARD'S WAGON TONGUE SUPPORT.

the middle part of the tongue. The rear part of the spring is coiled around a bar whose ends are secured to the forward axle. By this means the tongue is held in a horizontal position, and yet is free to adjust itself to the wagon's movements. This invention has been patented by Mr. D. C. Ballard, of Townsend, Montana.

American Manners in Traveling.

An English snob, named Robinson, writing about his visit over here, describes certain bad habits as characterizing the traveling Americans generally, leading to the idea that at least nine out of ten Americans when traveling grab their food, and gorge and snort in ways too hideously unpleasant for repetition. This is teetotally denied by Mr. Richard A. Proctor, the English traveler and lecturer, than whom few persons have had such extensive opportunities of learning the manners of different peoples, especially in traveling. He answers Mr. Robinson as follows:

I believe the truth to be that the American system leads to a diminution of otherwise prevalent bad habits—for ninety-nine hundredths of the so-called lower class in America will not suffer any inferiority to be shown in their habits in the presence of those whom they regard as no otherwise better than in having more money to spend. But be this as it may, a fair, unbiased comparison of the manners of the traveling community, class for class, or comparing the whole number of travelers, would show that—in some way or another—a marvelous superiority has arisen on the other side of the Atlantic. Such offenses as the stolid, stupid staring so common in England, even among well-to-do people, rudeness to women or children, carelessness as to the comfort of the old and weak, etc., are scarcely ever seen on the other side of the Atlantic. If I were an American, with what "pride in my port, defiance in my eye" should I be tempted to boast that a young, inexperienced, and pretty girl, poor or rich, in her teens, can travel across the length and breadth of the United States alone and unprotected, not only in perfect safety and comfort, but with the certainty that nine-tenths of the men—of all classes—with whom her journey brings her into contact esteem it equally a duty and pleasure to assist her in every possible way. How contemptuously I might be tempted to remind the Briton that—for reasons too well known—the most courteous and well meant proffer of assistance to such a traveler in England is apt to be looked on with suspicion. On the Continent, and especially in France, it is even worse.

The substance known as anthracene has been found by Dr. Tommasi to possess a new property, namely, a sensitiveness to light, which will doubtless prove of value. Anthracene on exposure to light acquires different physical and chemical properties without any change in its composition. If a cold, clear, saturated solution of anthracene in benzol is exposed to the direct rays of the sun, it becomes turbid and deposits crystals, which have received the name of paranthracene.