The Electric Light for Locomotives.

Experiments with the electric light as a head light for locomotives have recently been made in Russia on the railroad from Moscow to Kursk, with successful results. The apparatus consisted in a battery of 48 couples, which produced sufficient illumination to light up the track for a distance of from fifteen to eighteen hundred feet ahead.

A correspondent of *Les Mondes* suggests that a small electric machine would serve the purpose much better than a galvanic battery, liable to injury by agitation. It is proposed to connect the mechanism directly with the front axle, the revolution of which will set the former in operation. The chances of danger usually augment with the speed; but arranged as above described, the intensity of the light would increase in like ratio, up to certain limits. In running slowly, the illumination would be comparatively feeble; but in such case the bell, whistle, and other signals would afford warning in ample time.

THE FINCHES.

One of the most interesting of the numerous families of birds consists of the various species of finch, of which the canary is the best known in this country. In our engraving the chaffinch, the yellowhammer, the goldfinch, the linnet, and the crossbill are shown, and there are many others, the bulfinch, the greenfinch, etc. The goldfinch and the yellowhammer have very brilliant plumage, and, with the linnet, are excellent songsters. The linnet's note is not so powerful as that of the canary, but it is sweet; and the bird, when brought up near a good singing canary, becomes a very accomplished vocalist. The goldfinch and the chaffinch build nests of exquisite workmanship, the latter's domicile being nearly globular in shape, with an entrance at the side.

Most of the finches are very docile, the bulfinch and goldfinch being susceptible to an advanced education. Mr. Syme, an eminent British naturalist, describes some trained birds of this species, one of which appeared dead, and was held up by tail or claw without moving; a second would stand on its head; a third would walk about with little pails at his side, like a milkmaid; a fourth imitated a girl looking from her casement; a fifth acted as a soldier with his firelock; a sixth would fire a cannon, and go through the motions of an artilleryman. It has been known to live twenty-three years in confinement.

The crossbill has a singular conformation of the beak, the mandibles crossing each other like a pair of scissors; and the facility with which it opens the pine cones, for the sake of the seed, on which it principally feeds, is surprising. It is not found much in the south of England, except in captivity, but it frequents the pine woods of Scotland and the north of Europe. As a cage bird it is very amusing, and from its movements might be called the European parrot. The peasants of Germany have a tradition that its bill was twisted in an attempt to extract the nails from our Saviour's cross—a legend which Longfellow has embalmed in an exquisite poem. The bird being very shy, not much is known of its habits in a wild state.

NESSLE'S STREET RAILWAY RAIL.

In the invention herewith illustrated, the rail is divided horizontally, about through its center. The lower half is first bolted on the stringers, and the upper half is laid on it, so as to break joints with the lower half, the bolt holes being slotted sufficiently to allow for contraction and expansion, making substantially a continuous rail, thereby avoiding the bending and battering which is found to be so destructive to the rails and the rolling stock. The greatest advantage is that, when the upper half is worn out, it can be removed, and thus only these top halves need be renewed.

Fig. 1

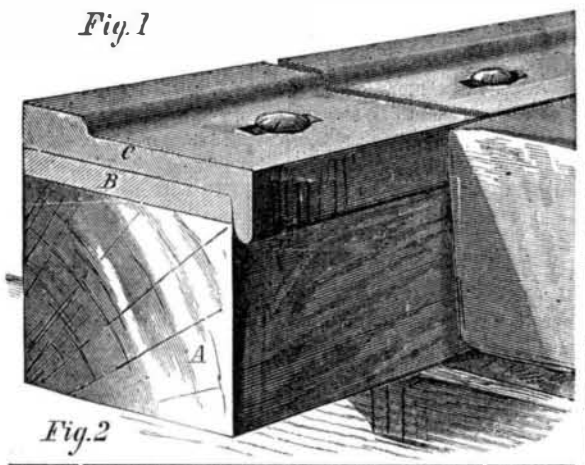

Fig. 2

A, in the engraving, is the timber ordinarily laid down to form the base for the track. On this is secured the lower half rail, B; and on it the upper half, C, is bolted so as to break joints with the under halves, as before explained.

Patented May 4, 1875. For further particulars address the inventor, Mr. John P. Nessle, 23 Frelinghuysen avenue, Newark, N. J.

The Duplexed Telegraph Printers.

The experiment of working the combination printing telegraph apparatus in duplex, between this city and Boston, has proved to be a complete success, and will probably result in the extensive use of printers on the Western Union line. The quadruplex arrangement of circuits is used, although only two circuits are worked by the printers, the other side, which, with the Morse instruments, is used for operating circuits, being utilized for breaking the sending circuit when required. By this arrangement neither circuit interferes with or interrupts the other, as is the case with the quadruplex Morse.

The operators are delighted with the new arrangement, and say they can work faster and more easily than with the old arrangement or single circuits. In one day recently, one thousand messages were transmitted over a single wire between this city and Boston, employing four operators only, and doing as much business as could have been accomplished by quadruplex Morse circuits and eight Morse operators, on the same wire in the same time.

This improvement is likely to open up a new and successful future for printing telegraph instruments, which had been somewhat out of favor of late years, and have heretofore been used only to a limited extent.—*The Telegrapher.*

Singular Explosion.

At the works of Hewes & Phillips, Newark, N. J., a few days since, it became necessary to remove the rings from a steamboat piston, which was hollow, with two sets of packing rings. The rings were found to be rusted and corroded fast, and the piston was placed on a fire in the blacksmith shop to loosen them by heat. In a few minutes an explosion occurred, and the piston was blown to pieces, injuring one man so that he died in a few minutes, and hurting another badly about the face. On a close examination of the pieces, it was believed that marks of an old crack were found. It is thought that, when hot and under pressure, some steam may have leaked through into the piston and subsequently condensed, and the crack may then have been rusted tight. When the piston was heated, this water inside became converted into steam and caused the explosion.

THE following is a good recipe for raspberry vinegar: Pour over 1 pound of bruised berries 1 quart of the best cider vinegar; next day, strain the liquor on 1 pound of fresh ripe raspberries, bruise them also, and on the following day do the same. Do not squeeze the fruit, only drain the liquor thoroughly. Put the juice into a stone jar and add sugar in proportion of one pound to a pint. When the sugar is melted, place the jars in a saucepan of water, which heat; skim the liquor, and, after it has simmered for a few minutes, remove from the fire, cover, and bottle.

PROFESSOR WILLIAM HAGEN, of the Academy of Civil Engineers, Berlin, predicts the failure of the jetty system, now being constructed at the mouth of the Mississippi, and declares that the large amount of money, appropriated by Congress for that work, will be a total loss.

MEMBERS OF THE FINCH FAMILY.