

Scientific American.

A WEEKLY JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES

VOL. VI.—NO. 22.

NEW YORK, MAY 31, 1862.

NEW SERIES.

Railroad Suspension Chair.

The enormous sums expended annually by our railroad companies in repairing the ends of the rails which are battered by the numerous wheels so frequently passing over them, are stimulating inventors to devise some effectual mode of obviating the evil. One of the most novel plans which has been suggested for this purpose is illustrated by the annexed engravings. It consists in a chair for supporting the ends of the rails so formed as to yield slightly to the concussion of the wheels and thus diminish the shock.

Fig. 1 of the engravings is a perspective view of a railway track showing the manner of attaching the chair. Fig. 2 is a side elevation of the chair connecting the ends of two rails. Figs. 3, 4 and 5 are cross vertical sections of the chair and rail.

The chair, C, (18 inches long more or less,) is made of boiler or sheet iron, in one piece. It is intended to be formed by machinery so that it shall fit exactly to the sides and bottom of the rail, as seen in Fig. 3. Underneath the rail the plate is bent downward in a U-shape to the depth of 2½ or 3 inches, more or less, which thus forms a strengthening rib sufficient to sustain every weight that may come upon it, but it is not heavy enough to form a solid bed on which the ends of the rails can be hammered or battered by the passing wheels. This U-shaped rib also serves another important purpose. In putting the chair upon the rails it allows the sides of the chair a chance to yield or spread apart, and thus accommodate itself to those variations in the thickness of the rails which are unavoidable. This elasticity is a very necessary consideration in the easy application of the chair to the rails, as it saves all fitting by cutting or filing. After the chair is in place the bolts, D D D D, are screwed up, and thus bring the sides of the chair into close-fitting contact with the sides of the rail. The bolts, D D D D, pass through slots in the web of the rail; these slots are long enough to allow for all expansion of the rail by heat.

On a hard rigid road-bed the nuts of the bolts, D D D D, are liable to loosen from the jarring produced by the rolling stock, and to guard against such a contingency, a wooden cushion or washer, E, Figs. 4 and 5, is introduced in order to impart such an elasticity as will almost entirely overcome this tendency. This is very important, as a great deal of labor is saved thereby.

The patent for this invention was granted February 5, 1862, and further information in relation to it may be obtained by addressing the inventor, Ira Leonard, at Lowell, Mass.

Disappearance of a Nebula.

The eminent astronomer, J. R. Hind, of London, has published the following letter:—

Toward the close of the past year it was announced by Prof. d'Arrest, of Copenhagen, that a nebula in the constellation *Taurus*, which was discovered at this observatory on the 11th of October, 1852, had totally vanished from its place in the heavens. That one of these objects, which the giant telescopes of the pres-

ent of an arc, with a condensation of light in the center; or its appearance was that of a distant globular cluster, when viewed in telescopes of insufficient power to resolve it into stars. From 1852 to 1856 a star of the tenth magnitude almost touched the edge of the nebula at its north-following edge; it was at first remarked on the night the nebula was detected, having escaped notice on many occasions when its position had been under examination with the same telescope

and powers. Hence I was induced to hint at its probable variability in a note upon the nebula, published in No. 839 of the *Astronomische Nachrichten*. The suspicion is fully confirmed; the star has diminished to the twelfth magnitude, either simultaneously with, or soon after, the apparent extinction of the nebula.

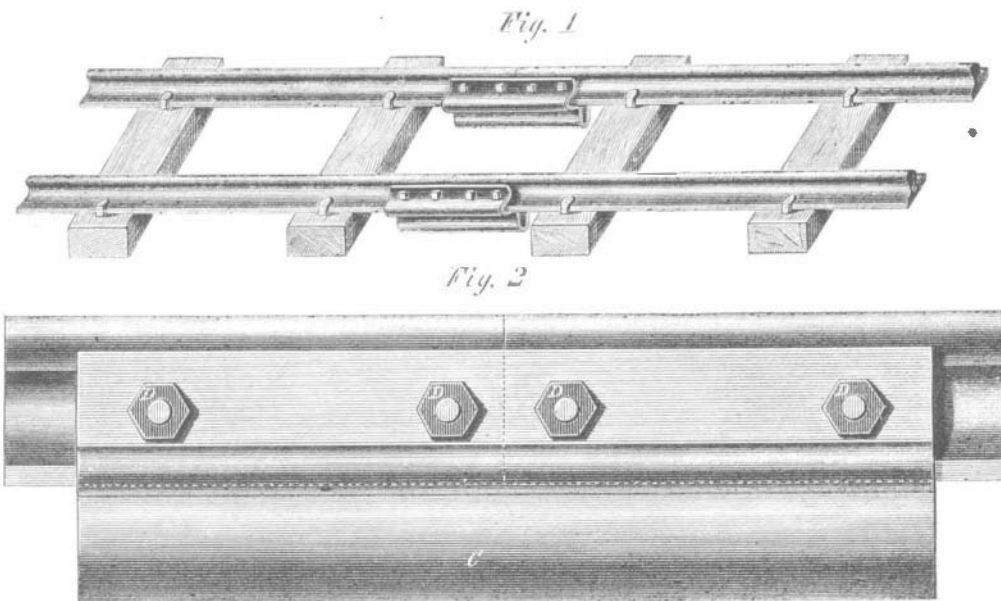
The history of this object, and the result of his observations on the night of January 26th, are appended by Mr. LeVerrier to his meteorological bulletin of the 29th. The sky being very clear at intervals, the Paris equatorial, which has an object glass twelve French inches in diameter, was directed to the place of the nebula, but notwithstanding

ing stars of an extremely faint class were visible in its immediate neighborhood, not the slightest trace of it could be perceived either by M. LeVerrier or M. Chacornac. The star which Professor d'Arrest and I have repeatedly noted, of the tenth magnitude, and almost touching the nebula, had dwindled down to the twelfth; so that telescopes which would

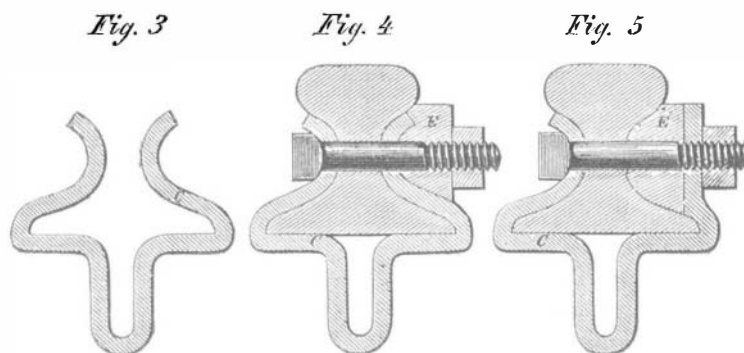
have shown it well between 1852 and 1856, would not at present afford a glimpse of it. From the fact that M. Chacornac saw the nebula in forming a chart of the stars in that region in 1854, and did not remark it while reconstructing the same in 1858 with a much more powerful instrument, there is reason to infer that the disappearance took place in 1856 or the following year.

How the variability of the nebula and a star closely adjacent is to be explained, it is not easy to say in the actual state of our knowledge of the constitution of the sidereal universe.

A dense but invisible body of immense extent, interposing between the earth and them might produce effects which would accord with those observed; yet it appears more natural to conclude that there is some intimate connection between the star and the nebula, upon which alternations of visibility and invisibility of the latter may depend. If it be allowable to suppose that a nebula can shine by light reflected from a star, then the waning of the latter might account for apparent extinction of the former; but in this case it is hardly possible to conceive that the nebula can have a stellar



LEONARD'S RAILROAD SUSPENSION CHAIR.



ent day had taught us to regard as assemblages of stars in myriads at immense distances from the earth, should suddenly fade away, so as to be quite imperceptible in powerful instruments, must, I think, have been deemed a very improbable occurrence, even by many who are well acquainted with the care and experience of the observer by whom the statement was

made. Within the last few days, however, Mr. LeVerrier has obtained so strong a confirmation of its accuracy that there is no longer room for supposing it to have originated in one of those errors of observation which every practical astronomer knows will creep into his work in spite of all his precautions. The nebula in question was situated in right ascension 4 hours 13 minutes 54.6 seconds, and north declination 19° 11' 37", for the beginning of 1862. It was, therefore, about a degree and a half from the star *Epsilon* in *Taurus*, in the group commonly known as "the Hyades." Its diameter was about one minute