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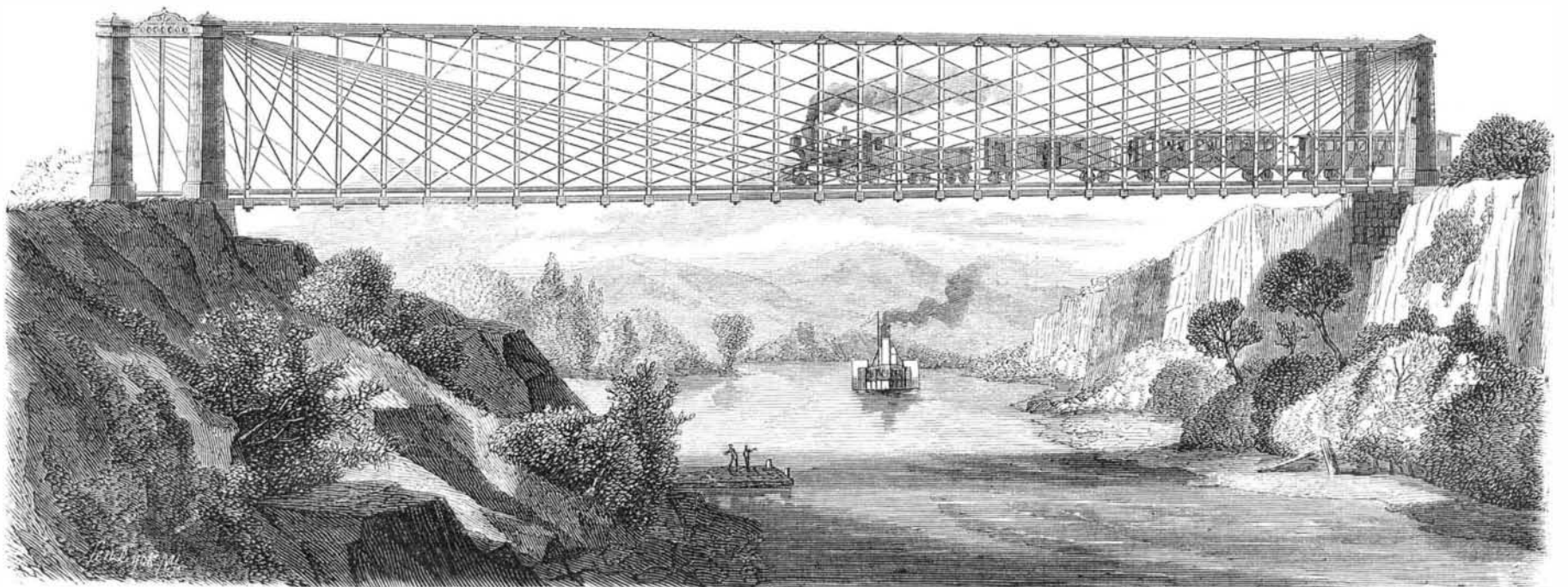
Suspension Truss Bridge.

Our engravings illustrate a light and graceful bridge, invented by Mr. John H. Diedrichs, an engineer well known to the scientific world by his valuable work on the theory of strains. His object was to produce a suspension truss for bridges which should be durable and economical in construction, and should secure from a given quantity of material a greater proportion of strength than is derived in any other truss system. This is accomplished principally by a novel and judicious distribution of the tie rods which connect the lower ends of the pendent posts with the top chord of the bridge.

and posts may be made of wood or metal. In the first case, the upper ends of the tie rods are secured, where they join, to boxes placed upon the top chord, as shown in Fig. 2. In the second, the connection may be made directly to the metallic top chord, as shown in Figs. 1 and 3. The lower ends of the tie rods, where they project from the post, are united by a bolt passing through a vertical slot in the post. A strap is laid round the bolt in the slot, and its two ends passed through a plate at the bottom of the post and secured by nuts, as shown in Fig. 4. By this mode of fastening, the tie rods are made adjustable as to their length, and the tension on them can be regulated with extreme nicety. Fig. 5

loud report. They are in use on some roads for night signals and in foggy weather, when lights or flags would not be seen in time to prevent accident. Track men are provided with these torpedoes, and in case of danger they are placed on the rail, far enough from the place of danger to prevent disaster. Usually three of them are placed, a few feet apart, to insure their being heard by the engineer. They are reliable, and will explode at the touch of the wheel at the slowest speed.

It is said that the Reading company uses 35,000 of these torpedoes per annum on the roads which it operates. This is a good showing in favor of the contrivance, and doubtless



DIEDRICH'S SUSPENSION TRUSS BRIDGE.

Fig. 1 shows the arrangement of these parts, which the following description will explain:

From the top chord of the bridge, which is properly supported on the buttresses, are suspended posts at suitable distances from each other, but of which posts there should be an uneven number pendent from every top chord. Tie rods or braces connect the lower ends of these posts with the buttresses and top chord; and these tie rods are applied in the following manner: From the lower end of each post, project two tie rods in opposite directions, bent at equal angles, one

shows an elongated form of strap adapted to the support of transverse beams below the posts.

The contraction and expansion consequent on changes of temperature cannot give rise to undue strain on the parts of this bridge, as the tie rods projecting from each post are of equal lengths. A lateral shifting of the connecting pins from the above causes is also rendered impossible, which is a feature of great importance. The system admits of the use of equally thick rods throughout bridges of considerable length, though the rods nearest the middle may be made somewhat thicker than the others. The peculiar distribution of the tie rods relieves the top chord of excessive strain, and the special bracing of panels is rendered unnecessary, while the general appearance secured is light and harmonious.

The improvement was patented through the Scientific American Patent Agency, April 2, 1872. For further information address John H. Diedrichs, care of Mr. C. Gewecke, 115 North Front street, Baltimore, Md.

Powdered Coal for Unhealthy Plants.

In a communication, addressed to the *Revue Horticole*, the writer states that he purchased a very fine rosebush, full of buds, and, after anxiously awaiting their maturing, was greatly disappointed, when this took place, to find the flowers small, insignificant in appearance, and of a dull, faded color. Incited by the suggestion of a friend, he then tried the experiment of filling in the top of the pot, around the bush, to the depth of half an inch, with finely pulverized stone coal. In the course of a few days, he was astonished at seeing the roses assume a beautiful red hue, as brilliant and lively as he could desire.

He tried the same experiment upon a pot of petunias, and soon after, all the pale and indefinite colored ones became of a bright red or lilac, and the white petunias were variegated with beautiful red stripes. Some of the lilac petunias became a fine dark blue. Other flowers experienced similar alterations; those of a yellow color alone remained insensible to the influence of the coal.

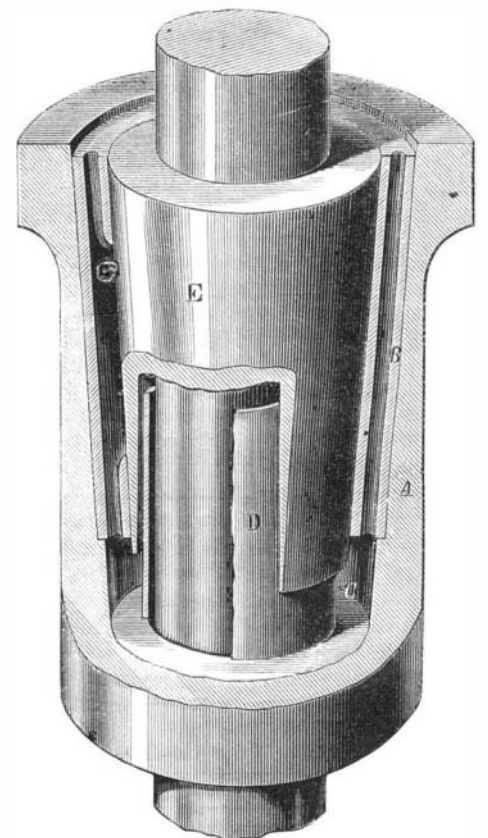
Railway Torpedoes.

A neat and effective device for securing convenience and safety in railroad operations is the "torpedo" or alarm signals. This little affair consists of a tin box about the size and shape of the smallest sized blacking boxes. The box is filled with an explosive compound, and two strips of tin are soldered to two opposite sides of the box, perpendicular to its sides or edges, for fastening it to the rail. These boxes explode on the principal of the percussion cap, with a

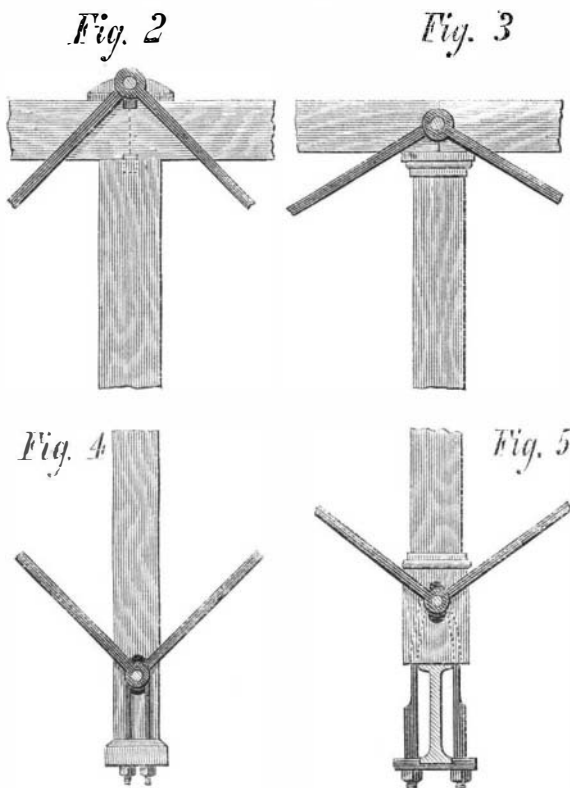
many serious accidents are prevented by their use. They cost but a trifle. The Reading company is always ready to adopt good improvements. Some genius might do a good thing by contriving a plan by which a torpedo could be placed on the rail at drawbridges and switches in case of misplacement.

SELF-LUBRICATING BOX AND SHAFT BEARING.

In this invention, centrifugal force is utilized for the pur



pose of lubricating upright bearings. Our engraving shows the several parts of the device, partly in sections and partly in perspective. A is the outer shell of the box, which is lined with the composition metal, B. Through this lining up



of which is continued to the nearest buttress, the other to the juncture of a post with the top chord. By this means every post is connected with one buttress only, but the middle post, which is united to both. At the upper ends, only every alternate post is braced, provided they are equidistant, which arrangement is preferable in practice. The top chords