



ELASTIC SUSPENSION OF MACHINES.

It may be advantageous to use a caisson filled with sand, thus permitting of the easy shifting of the foundation. The trench is covered with a flooring or iron plate permitting of the motions of the masonry in a horizontal direction if it is a question of a steam engine, or in a vertical direction if the elastic suspension is applied to a steam hammer or a pump.

The steam admission and eduction pipes are wound spirally at the upper part, so that they may have elasticity enough to permit of the motion of the whole without forcing the joints.

In the case under consideration, the oscillating motions reach an amplitude of $\frac{1}{8}$ inch, and nothing is more curious than to see the whole affair, whose weight exceeds 25 tons, displace itself rapidly without the least vibration being felt at the edge of the trench. The same process is applicable to the rails of railways upon metallic viaducts crossing cities, and to the engines of boats, etc.

The second method of isolation, applied to vehicles, consists in the use of a rubber support, which, placed between the axle and the spring of carriages, gives a complete and stable isolation, increases the ease of motion and the duration of service, diminishes the noise, and reduces the variations in the tractive stresses of the horses.

This rubber support serves to fix the spring firmly upon the axle, if it is a question of a vehicle, without interfering with the elasticity of the junction by too much tightening, a drawback connected with all the arrangements hitherto employed. This result is obtained by means of a mode of attachment which interposes (1) an isolating rubber tube between the coupling plate and axle; (2) of a foundation disk of rubber supporting the load; and (3) of a reaction disk which isolates the nut and lessens the rebounding. The compression between the metallic parts is effected without crushing the metallic joint.—*La Nature*.