GRIFFITHS' IMPROVEMENTS IN VESSELS, &c.

Patent dated 28th November, 1856.

FIG.1.

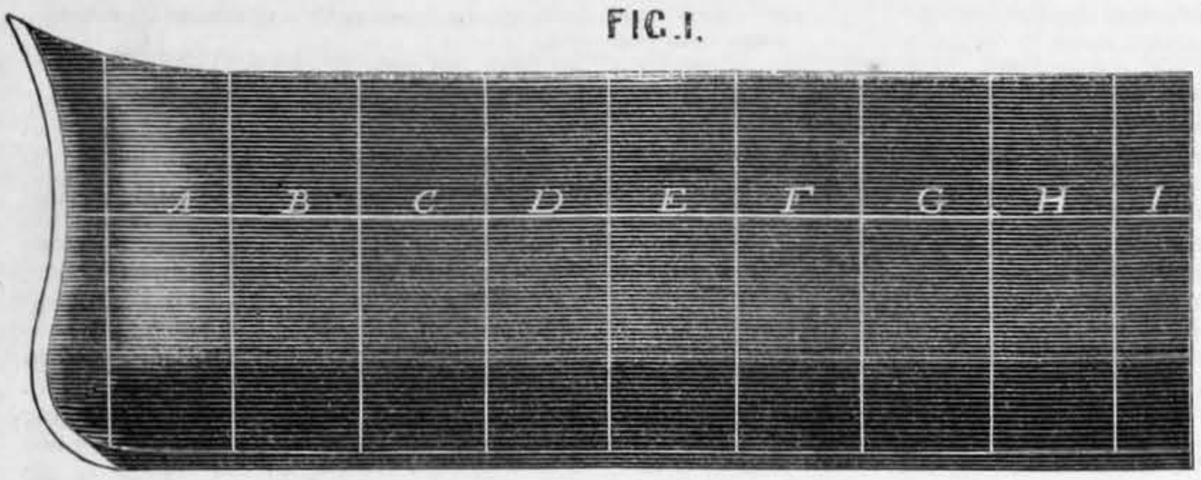


FIG.2.

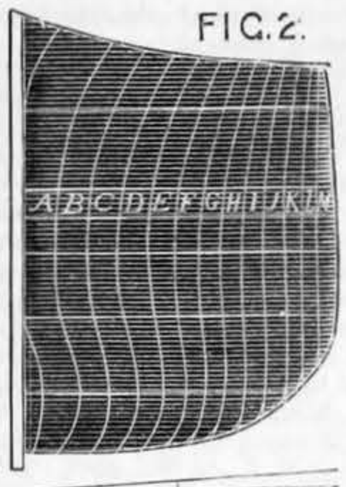


FIG.3.

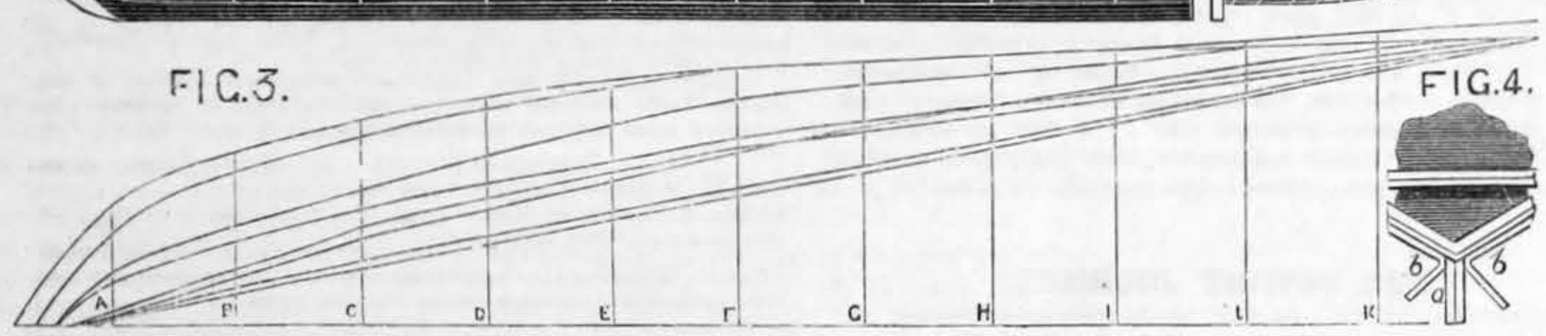
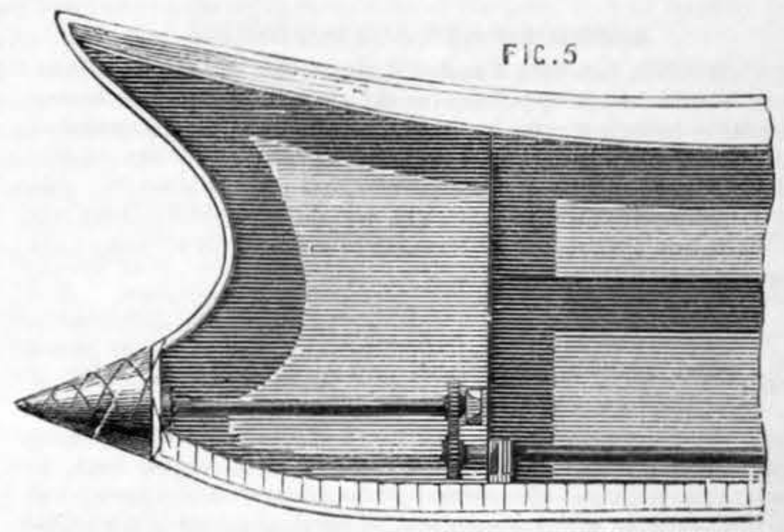


FIG.4.

FIG.5



This invention consists, Firstly, in constructing and forming the bows of vessels so that when under weigh the water will be driven away horizontally or upwards, instead of downwards, thus causing less resistance to the progress of vessels through the water; Secondly, in forming the keels of vessels hollow underneath, so as to stiffen them, and enable vessels to carry more canvas, and, Thirdly, in the application of an apparatus on the bow of a vessel, which will be put in motion by the resistance offered to it from the water when the ship is under weigh, so that the power thus obtained is made available as an auxiliary to the prime mover; Fourthly, in a mode of arranging the engines for propelling vessels on to or between the boilers.

Fig. 1 shows part of the side of a ship constructed according to the first part of this invention; Fig. 2 a half front view, and Fig. 3 a part plan of the vessel. The lines on these Figs. indicate the peculiar formation of the forepart of a ship or vessel, by which it will be seen that the fore parts of a ship are constructed with a view to cause the water as it is divided by the stem to be driven upwards and partly horizontally by reason of the form given to the vessel below the water line, where it will be perceived that there is produced on either side a hollow channel, the parts below such channel swelling out in the manner shown by the lines, hence the water will be driven upwards as the vessel moves through the water.

Fig. 4 shows the second part of the invention where *a* represents the ordinary keel; and *b*, *b*, two inclined keels, the spaces between such keels being left hollow.

Fig. 5 shows a longitudinal section of a ship or vessel made according to the third part of the invention. The fore part of the ship is made conical, and has a shaft or axis passing through a suitable stuffing box. On the fore end of the shaft is formed a cone, on which blades are fixed, set at an angle with the keel of the vessel, or they may form portions of a screw, so that when pushed through the water by means of the prime mover the cone will be caused to revolve, and thus give motion to the shaft to which the cone and blades or screws are fixed, according to the speed due to the angle given to the blades. If the vessel be only a sailing ship, the power will be transmitted to a screw, or any other form of propeller applied to the vessel, and suitably arranged to receive rotary motion from the shaft to which the cone is applied. The illustration shows this part of the invention applied to a vessel propelled by a steam engine, and the shaft from the cone is geared with the shaft from the engine; hence the power derived from the blades or screw on the cone by the same being forced through the water is transmitted to the engine shaft. The fourth part of the invention consists in fitting the cylinders of engines for propelling screw vessels between the boilers; the engines being, however, upon a higher level in order to get as long connecting rods as possible to the propeller shaft which is also between the two boilers, by which mode of combining the cylinders with the boilers on board a vessel to give motion to a propeller shaft great convenience is said to be obtained.

CAMBRIDGE'S IMPROVED PORTABLE RAILWAY.

Patent dated 11th December, 1856.

FIG.1.

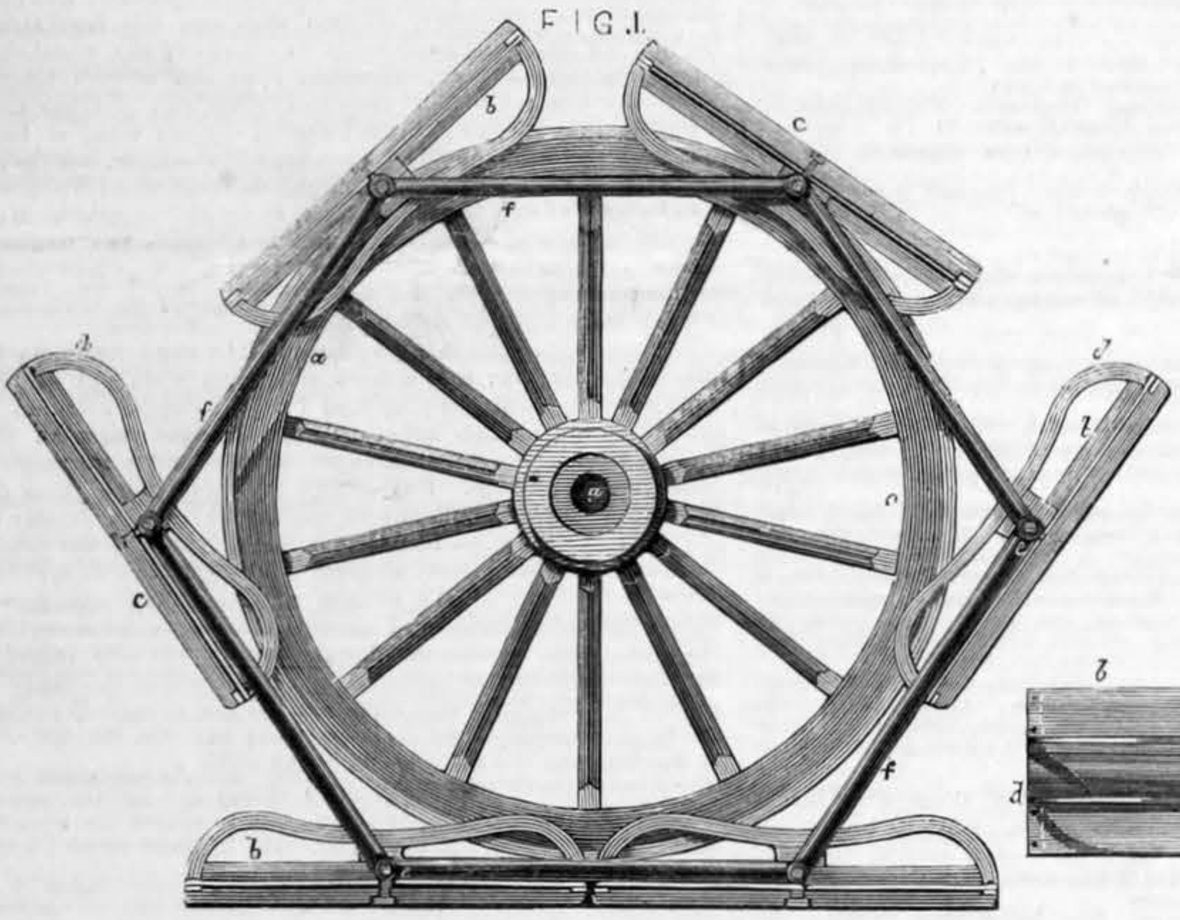


FIG.2.

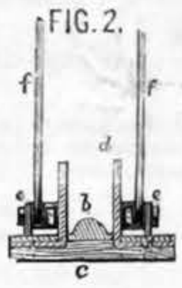
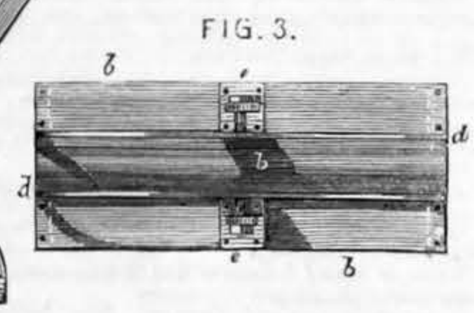


FIG.3.



This invention consists in a new mode of constructing portable or endless railways to be applied to the wheels of engines and carriages, for the purpose of facilitating their movement over loose ground and irregular surfaces.

Fig. 1 is a side elevation of the portable or endless railway. Fig. 2 is a plan of one of the sections of which the railway is composed; and Fig. 3 is a transverse section of the same. *a*, *a*, represents a wooden wheel of the ordinary construction, and provided with an iron tyre as usual. The portable railway is divided into sections, consisting of an iron rail *b*, which has a projecting rib made along its centre from end to end, and is bolted or secured to a thick wooden plate *c*. Side pieces or guides *d*, *d*, made of angle iron, are secured in any convenient manner on each side of the central projecting rib of the rail as shown in Figs. 2 and 3. These pieces, by forming a kind of groove in which the wheel runs, serve to keep the wheel on the central projecting rib of the rail. Lugs or ears *e*, *e*, are bolted to the rail, and are provided with centre pins, bolts, or studs, which pass through holes at the end of the rods *f*, *f*, by which the several sections of the railway are jointed or connected together, as shown in Fig. 1. It will be seen that the railway is in no way connected or attached to the wheel, but is entirely independent of it, and merely forms a kind of endless chain round the periphery of the wheel, from which it may be removed by simply withdrawing the centre pin or bolt from one of the pairs of rods *f*, *f*, so as to break the continuity of the endless chain. The wheel will then assume the appearance of an ordinary wheel, and may then travel in the usual manner on common roads, but the portable endless railway may be adapted thereto again with facility when required. It will also be evident that, as no special mode of constructing the wheel is required, the same railway may be adapted to any ordinary wheel of the same dimensions.

EATON'S INDIA RUBBER SPRINGS.

Patent dated 8th December, 1856.

This invention has for its object an improvement in the manufacture of springs when india-rubber is used. For this purpose thin sheet vulcanised india-rubber is used of less thickness than half an inch. It is preferred that the sheets of india-rubber used should not exceed a quarter of an inch in thickness, and in making up a spring several thicknesses of india-rubber are used together with sheets of metal between. The patentee has found that when a given weight of india-rubber is used in making a spring, if such quantity be subdivided into sheets of less thickness than half an inch it will sustain a far greater weight and still offer the requisite elasticity for a spring, than if the whole quantity be used in one mass, or if the mass be subdivided into thicknesses of half an inch or more, and each piece separated by a plate of metal from the next piece. This property of increased capability of resistance improves as the thicknesses of the india-rubber are reduced below half an inch, hence the advantage of dividing each half inch of india-rubber used in a spring into several parts. By this invention springs required to resist a given weight or force may be made to occupy less space, and require a considerably less quantity of india-rubber than heretofore.

We select for illustration one of each kind of springs. Fig. 1 shows one form of bearing spring; Fig. 2 shows the application to a coupling being similarly applied to drawing and lifting springs; and Fig. 3 is an illustration of a spring constructed according to this invention, and which may be taken as a type of all the other applications, and which the patentee calls a "laminated" spring.

Fig. 3 shows a spring, consisting of a series of india-rubber lamina *a*, *a*, each being by preference a quarter of an inch in thickness, and piled alternately with separating plates of metal *b*, *b*. The spring is contained between the upper and lower plates B, C, and the whole are guided and retained by the central suspension bolt A. The dividing or separating plates are perforated so as to slide freely upon the central guide bolt A; but the central apertures in the lamina of india-rubber are larger than the bolt, and the space is partially filled up by metal washers *d*, *d*, which are about half the thickness of the lamina, and like the separating plates slide freely upon the central guide A. When the metal washers are not used it is preferred that the centre of each piece or disc of india-rubber should be pierced with a circular hole when for a square bolt, and with a square hole when for a cylindrical bolt, in order that the discs of india-rubber may only touch the bolt at intervals. To obtain economy of material very thin separating plates are shown; but in building up a spring at convenient intervals separating plates of greater strength may be used which prevent any tendency to distortion, and one of such strengthening plates *c* is shown at the centre of spring. Fig. 1 is an elevation of a laminated bear-spring, suitable for a locomotive engine, consisting of one lower B, and two upper springs A, A¹, formed of square plates or lamina *a*, *a*, of india-rubber, and corresponding intervening or separating plates *b*, *b*, the whole being guided and retained by the square central spindle *e* and suspending bolt *i*. Each of the two upper springs A, A¹, is loaded with equal and separate weights, by means of the arrangement comprising the central spindle or pillar *e*, sustaining bolts *c*, *c*, and top and bottom plates *d*, *g*, *k*, and *l*. The spindle is round where it passes through the guide bracket *f*, and square where

FIG.3

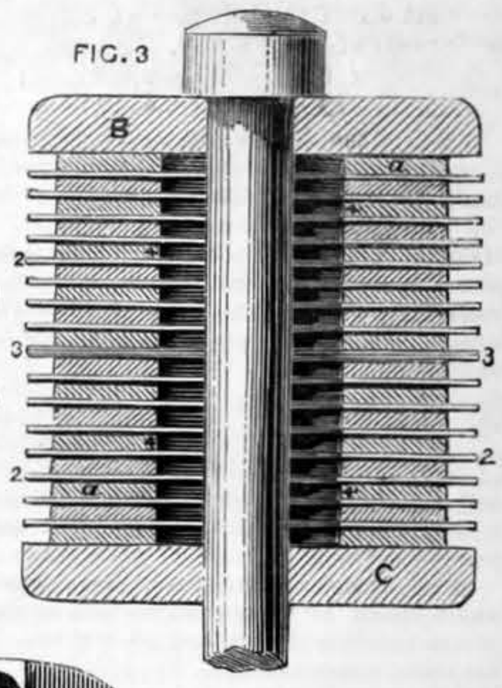


FIG.1

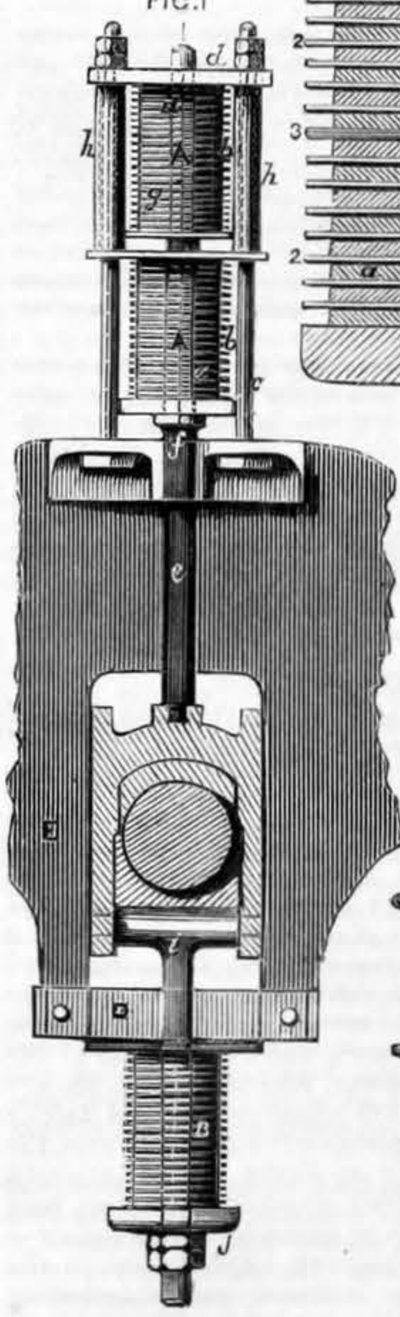
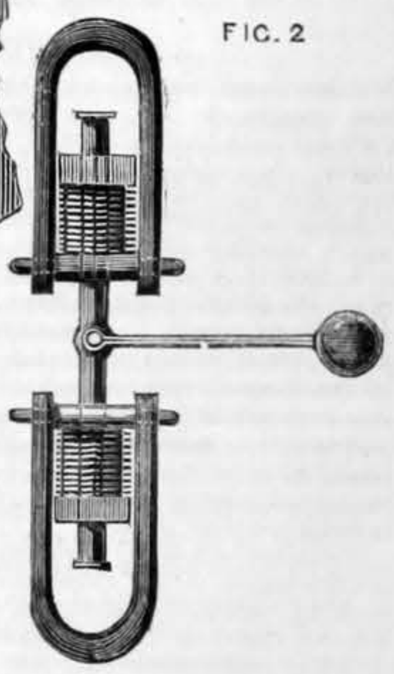


FIG.2



it passes through the springs, and is provided with suitable shoulders or collars for supporting the several bottom plates *g* and *l* of springs. A certain portion of the weight of the engine is transferred to the spring A by means of the sustaining bolts *c*, *c*, and cap plate *d*, and to the spring A¹ by means of the metal tubes or ferrules *h*, *h*, which press upon the cap plate *k* of spring A¹. The lower spring B receives its portion of weight through the cross bar D and cap plate *m*, and is suspended to the axle box E by means of the square-shanked bolt *i* and the bottom plate *j*.

Fig. 2 shows the laminated springs applied to the coupling links