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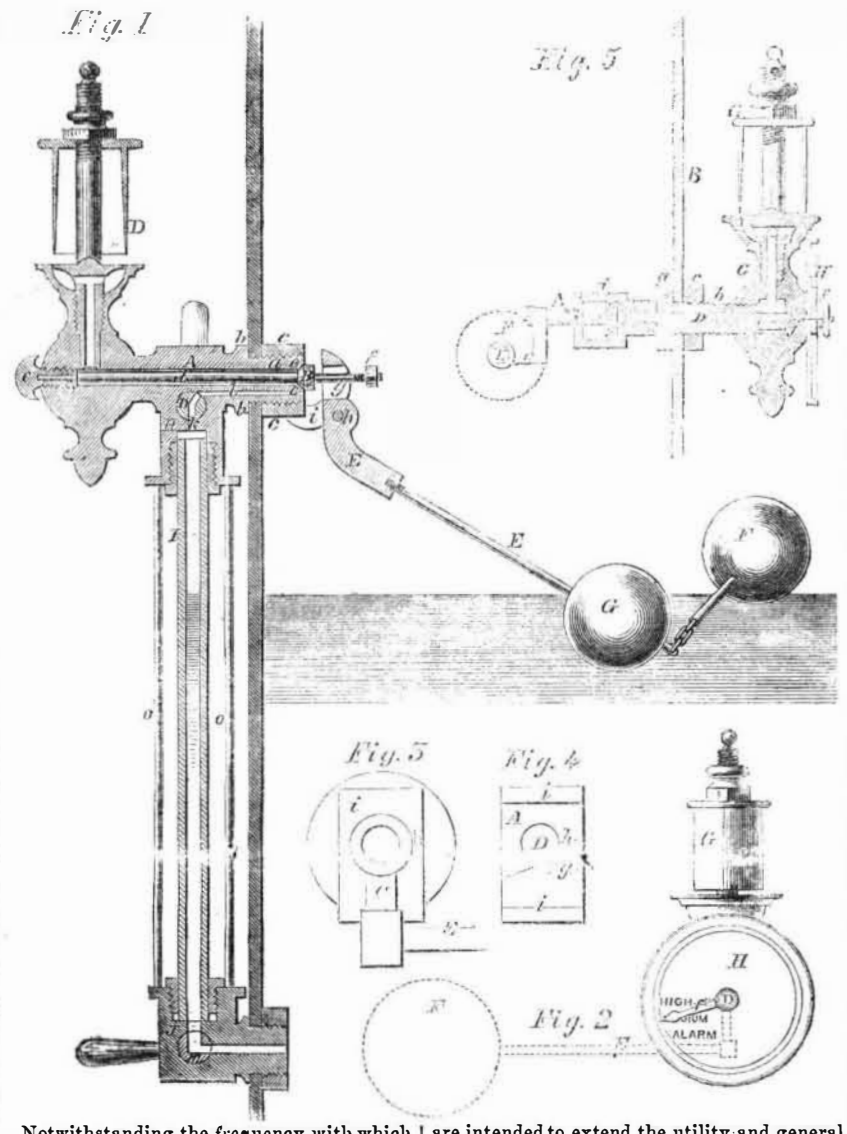
New Atlantic Steamers--Galway Line.

The difficulties of locomotion are gradually being placed among the things that were, and traveling, whether by land or sea, has become a pleasant recreation. Seldom now do we hear travelers speak of the dangers through which they have passed, their tales being generally of the comforts they have had while crossing this or that ocean, or marching over this or that continent.

The Atlantic has been fairly conquered by steam, and although the iron monsters of the deep have brought the Old and New World comparatively close together, we are on both sides continually desiring to be nearer still. This spirit is the one which founds new lines of steamships and calls absention to fresh points of arrival and departure, by which the time of ocean travel may be reduced. In pursuance of this anxiety, an English capitalist, Mr. Lever, cast his eye on the lovely city of Galway, in Ireland, on one side, and St. Johns, Newfoundland, on the other. Almost before any one was aware, ships were bought, and after a few complimentary receptions on both sides, the Galway line, as it is familiarly called, took its place as a commercial enterprise of some importance.

The passages made have been average ones, and passengers have availed themselves of what was to be a shorter sea voyage, but which, at present, has not been much curtailed. The company, now finding that there is a great chance for making money, are doing a wise thing, by ordering three new steamers whose guaranteed minimum speed is to be twenty miles per hour. They are to be side-wheels, 330 feet long and 38 feet beam; the engines are to be 2,200 indicated horse-power, having three oscillating cylinders, each 75 inches in diameter. If these accomplish all that is expected of them, we shall have to thank the Galway line for bringing London within five days of this continent. The mails are carried from London to Kingston—over 300 miles—in eleven hours; thence to Galway in three hours more, and to St. Johns in four or five days at the outside. We are pleased to see that some ship-builders and owners are thinking and acting in a common sense manner, and, with two suggestions, we wish success to the "Galway line." The first is, that propellers would be cheaper than side-wheels; and secondly, that better discipline must prevail on board their ships than does at present, as many complaints are made by those who have been passengers in the *Indian Empire*, *Prince Albert*, and other ships of this line, upon the want of order and regularity that prevails in them.

MILLER'S STEAM BOILER ALARM AND WATER GAGE.



Notwithstanding the frequency with which we have explained the causes which lead to boiler explosions, and shown how, by ordinary prudence and attention, they may generally be prevented, yet they are still too numerous, and the annual loss of life from them is great. The change of water from the spheroidal state into steam is, undoubtedly, the great cause of explosion, and this is induced by lowness of water, and the heating of the boiler plates above the water line. In the evidence taken before the jury which investigated the recent boiler explosion at St. Louis, the engineer stated that, when a boiler is liable to "foam," the try-cocks will not truly indicate the quantity of water in the boiler. This is an important fact, for often, when any apprehension is felt as to the state of the water in the boiler, the try-cocks are depended on as the surest test and indicator. It must be evident that, while a simple try-cock gage or indicator may be made by foam to give a deceptive indication, it is impossible for the foam to alter the position of a *float*, for such a device will always rest on the actual surface of the water, and thus truly indicate the level, and if connected with suitable mechanism outside the boiler, it can be made to give an alarm which can be relied upon, whenever the water approaches to a dangerous level. We are led to these remarks by the examination of some improvements that Alexander Miller, of Cleveland, Ohio, has made in the gage which was illustrated on page 44 of the present volume of the SCIENTIFIC AMERICAN. These improvements are intended to extend the utility and general application of these gages, and to cause their action to be so certain that, if the person in charge will but use his eyes or his ears, an explosion will be impossible, and the loss of life from such a cause will be one of the "things that were." These gages have now been in use for some time, and have won the golden opinions of many eminent engineers, as is fully shown by numerous testimonials of their extreme usefulness and reliability.

Fig. 1 represents a sectional view of a combined water gage and safety-alarm, the ordinary glass water gage and safety-alarm gage being connected with the alarm, so as to save one elbow.

A is the casting outside the boiler, carrying the whistle, D, that communicates with the inside of the boiler by a passage closed on its end (which is ground into a valve seat *e*,) by the conical valve, B, upon the rod, *d*. Should this valve by any means get choked up, it can be ground in its seat from the outside by the screw-top, C. The alarm casting is secured into the boiler plate, by the nut, *c*, passing over the screw, *a*, and holding the boiler plate against the flange, *b*, on the outside. To *a* is secured the projection, *i*, that carries by a pivot, *h*, the bent lever, E; a slot, *g*, in which, passing over the rod, *d*, and and bringing the sides of E against a nut, *f*, opens the valve, B, and causes the alarm. The rod, E, carries on its end a small float, G, large enough to sustain or balance the weight of the rod, and this connected by a link, to the larger float, F, that really operates the alarm. The float, F, being thus loosely connected with rod, E, it can swing to accommodate itself to the motion of the water in the boilers, whether the motion be caused by ebullition or by the rolling of a ship. The weight of the ball, G, is not sufficient to open the valve, B, by its own weight, when there is a pressure of steam on, its only duty being to sustain the weight of the rod, when there is no pressure of steam in the boiler. A channel, *l*, is cut or bored through A, which has free communication with the inside of the boiler, and with the glass tube gage, I, by the passage, *k*. The glass tube is secured in H, by suitable packing, and a screw and nut, and at the junction of *l* and *k*, there is a stop-cock *n*, to admit into or shut off the steam from the glass tube. An elbow pipe, J, provided also with a stop-cock, *m*, connects the glass tube with the lower part, or that containing water. The tube is protected from breakage by the rods, *o*. This invention, it will be seen, allows the person in charge to see at once in the tube the hight of the water, and should he neglect to make the necessary observations, when a dangerous point is about to be reached, the whistle will give an alarm.

Figs. 2, 3, 4 and 5 show another invention designed to effect the same end. Fig. 2 being a front outside view of the whistle and indicator, and Fig. 5 a section showing the working parts, Figs. 2 and 5 being diagrams of the various parts. G is the whistle, H a dial, having engraved upon it the words, "high." "medium," "alarm," to each of which, according to the hight of water in the boiler, the finger, *f*, on the shaft, D, points. The piece, A, is secured to the boiler, B, by *a b c*, and the whistle is screwed on to it. The valve stem, D, is turned smaller at the end that carries the finger, *f*, to pass through the hole, *j*, in G, steam tight. The inside of A is of box form, with the sides open, *i*, and provided with a slot or bearing, *k*, through which the interior part of the valve stem, D, passes, and to which is secured the crank or elbow piece, C. From C there runs parallel with the front of the boiler, a rod, E, carrying the float, F.

The operation will be easily understood. The pressure of steam keeps the valve, *d*, of valve stem close to its seat, *e*, in A, and while the water is "high" or "medium," no steam can escape to the whistle; but the mement the water sinks, the float, F, following the level of the waterfalls, and consequently turns the rod, D, causing the finger, *f*, to indicate "alarm," and bringing a projection, *h*, on D, against a cam, *g* on A, the valve, D, is thereby brought out from its seat, *e*, and the steam passes to the whistle and sounds an alarm.

The inventor has applied for patents for these inventions, and any further information may be obtained by addressing him, care of Dr. Seelye, of the same place.

Atmospheric Phenomena.

A correspondent writing to us from Byson, Ill., states that some peculiar phenomena were witnessed in that place on the morning of the 4th inst., at 9 A. M., consisting of several rainbows intersecting one another, and at every intersecting point there was a bright spot resembling a miniature sun. These bows displayed all the prismatic colors, and were exceedingly beautiful. They continued for about three-quarters of an hour, and then disappeared.

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