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NEW SERIES.

## IMPROVED DETECTOR AND ALARUM.

All proprietors of breweries, distilleries, printworks, bleachworks, paper mills, dyeing works or other manufactories, and all persons who desire to keep rooms, vats or vessels at a uniform temperature, are provided by this invention with a cheap and simple apparatus for accomplishing the object. It is also a reliable alarum for giving notice of a great increase of heat, either from fire or any other cause.

A copper cylinder, *a*, has a tube, *b*, rigidly secured to its top, and an elastic diaphragm, *h*, stretched across its interior and attached air-tight to its sides. A rod, *i*, is fastened to the diaphragm and rises up through the interior of the tube. As the air below the phragm is warmed it expands and presses the diaphragm upward, thus raising the rod, the upper portion of the cylinder communicating with the external air, and the lower portion being air-tight. To indicate the movements of the rod, a slot is made in the enclosing tube, and a small pinion is secured to mesh into a rack on this portion of the rod. On the end of the pinion's axle is placed an index which traverses in front of a graduated arc; the arc being rigidly fastened to the tube, *b*. For regulating the temperature of a room or other enclosure, an arm, *j*, is secured to the axle of the pinion and connected with the register or valve, by which the flow of the air either into or out of the room is controlled. The alarm is operated by a weight, *g*, which turns the wheel, *k*, this wheel having a pin upon its further side which strikes a rod in its revolutions and rings the bell, *d*. By a simple device the wheel is prevented from revolving until a certain temperature is reached, when it is released. The pin, *l*, rests upon the arm, *m*, which thus holds the pin a little removed from a position directly below the center of the wheel, and when the arc is carried along till its end passes from beneath the pin, the wheel is permitted to revolve and the bell is rung. The arc, *m*, is secured by an arm to the axle of the pinion by means of a set screw, so that it may be adjusted to ring the alarum at any temperature desired.

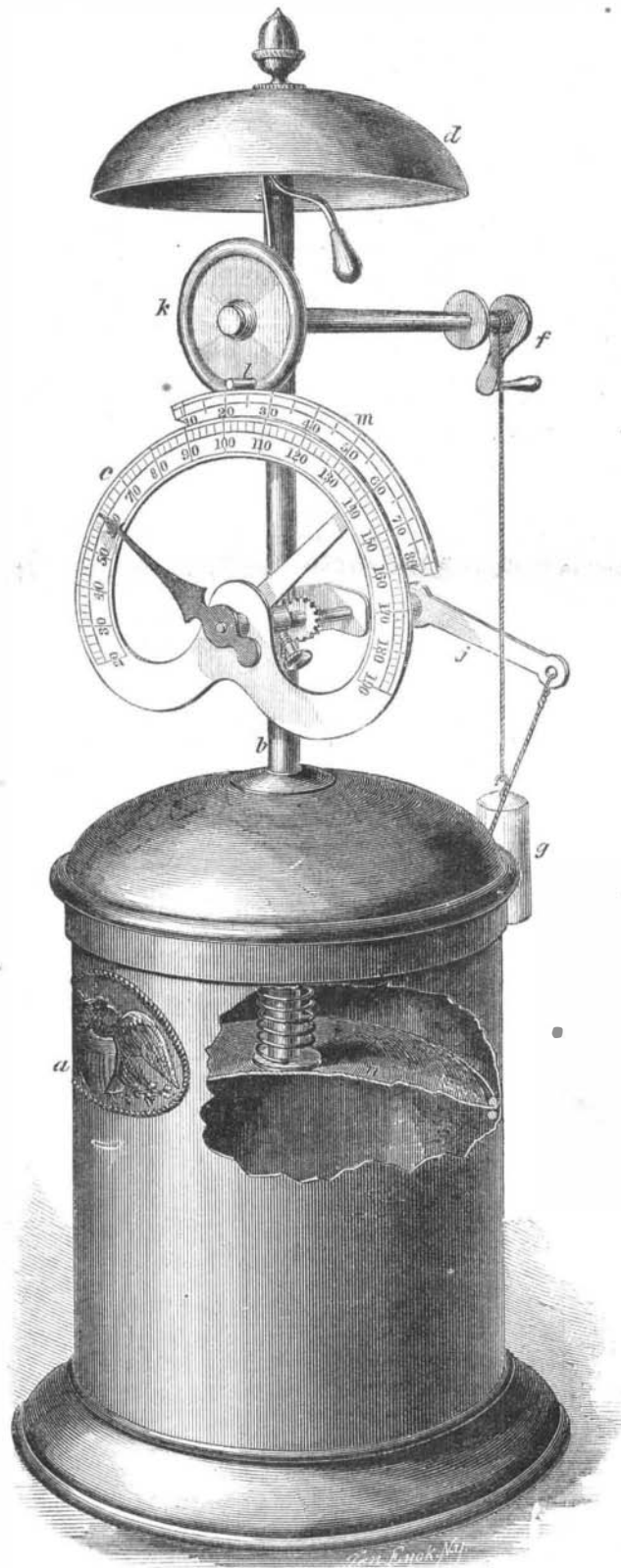
This neat and valuable invention has been patented in England, and is in practical use on the steamship *Great Eastern*. The American patent was procured, through the Scientific American Patent Agency, Feb. 22, 1860, and further information in relation to it may be obtained by addressing the inventor, W. D. Grimshaw, at No. 9 Fair-street, Newark, N. J.

hemp, for making cordage. Mr. Todd sails for England on Saturday next, for the purpose of putting up some of this machinery in London, which was ordered by a company there some time ago. Our pride

## CAUSE OF DETERIORATION OF THE SOIL.

The *Baltimore Rural Register* says:—"In this new country, upon which the first European settlements were made but a little more than two centuries ago, go where

we will, east of the Alleghany mountains, we are constantly meeting with old fields, worn into gullies, or covered with sedge, and perfectly valueless in their present condition for agricultural purposes. In England, on the contrary, during the last half-century, the crops instead of diminishing in quantity, have been increased in the product to the acre by more than 50 per cent. Yet the land there has been under cultivation more than a thousand years. Now it has been repeatedly demonstrated that by pursuing a similar system, our soils are capable of raising as large an amount of grain or hay to the acre as those of any other country. The remarkable decrease in our agricultural products which statistical tables indicate, can proceed from no other cause than careless and slovenly farming. The fatal defect in the old system of farming with us was, that it did not take into due consideration the injurious influence excited by our climate upon surfaces constantly exposed to an almost tropical heat in the summer season. At an earlier day tobacco was our staple production. It was what wheat has since become—the planter's money crop; and high prices and a steady demand stimulated him to cultivate in a negligent manner as many acres of this plant as the number of his field hands would admit of putting under the plow. A succession of crops taken from the same field, without rest or intermission, speedily wore the life out of it. Fresh lands were cleared, which were subjected to the same ruinous mode of treatment, until in the course of a few years, thousands of acres of as fertile soil as the world could boast became but little better than a sterile waste. Where the fields were not sufficiently exhausted to be thrown entirely out of cultivation, corn succeeded tobacco; and shallow plowing, and the sun, the wind, the rain, and the frost acting continually upon the exposed surface, completed the work of destruction which reckless tillage had commenced. If there had been instituted, from the beginning, a proper rotation of crops; if tap-rooted plants had been allowed to succeed fibrous-rooted plants; if the manure of the barn-yard, and the wood ashes of the house fires, had been husbanded; if shells, or lime, or marl had replaced the alkaline constituents which had been taken from the soil by previous crops; if plaster had been permitted to exert its singular influence upon the growing clover, and if the latter instead of being cut and carted off the land, had been turned under it, those fields now looking so barren and forlorn would have been more fertile at this day than they were when the plow turned the first furrow in the virgin soil."



## GRIMSHAW'S DETECTOR AND ALARUM.

AMERICAN MACHINERY FOR ENGLAND.—Messrs. Todd & Rafferty of Paterson, N. J., have recently secured, through our agency, a patent in Great Britain for some valuable improvements in machinery for preparing and spinning

is tickled whenever American mechanics receive orders for machinery from England, and this, because English machinists are second in skill to none in the world.

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