Scientific American.

A WEEKLY JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. X.—No. 7. (NEW SERIES.) NEW YORK, FEBRUARY 13, 1864. SINGLE COPIES SIX CENTS. $3 PER ANNUM—IN ADVANCE.

Improved Marine Clock and Register.

In order to tell the exact number of revolutions made by any machine it is necessary to have a self-registering counter which shall accurately record every stroke made by the engine or other machine to which it is attached. By this means the distance traveled by a steamship can be approximately ascertained. The log of the engine being compared with that of the ship affords some data for estimating the duty done by the machinery. The engravings herewith illustrated represent a marine clock and indicator, or engine register, combined in one case, A. The small disks, B, have numbers on their faces and are all fastened to the shaft, C; this shaft is worked from the engine by the arm, F. The frame, D, carries all the disks, and, by means of appropriate devices not seen in the engraving, the disks are caused to rotate and stop for every stroke of the engine; this concealed apparatus acts on the jogs, *a*, to produce this effect. When the register is first set, all the disks are turned at 0, so that they represent nothing, numerically, through the small square loop holes in the clock dial. As the engine makes one revolution the left hand disk also turns and registers 1; when 9 turns have been made, the disk next to the first turns with it; thus registering 10; the first disk then goes on again while the second one stops, thus counting up to 19, when the second one turns again counting 20, and this continues until the whole number of disks have been turned. The other appurtenances, such as the clock movement, E, are very highly finished and there is a fixed handle at G by which the works are wound up as it becomes necessary to do so. This handle is so connected with a ratchet wheel and pawl that, as it is worked back and forth, the spring moving the clock works is wound up; those details are behind the dial enclosed in the box, E, and cannot be shown; there is also another arrangement of a pinion, in connection with the hands, which, together with the previously-mentioned winding handle, constitute a great improvement in marine winding clocks. This invention was patented on Nov. 3, 1863, through the Scientific American Patent Agency, by Victor Giroud, New York City. Further information can be obtained by addressing Davison, Dickinson & Co., 229 Broadway, New York.

Fig. 1.

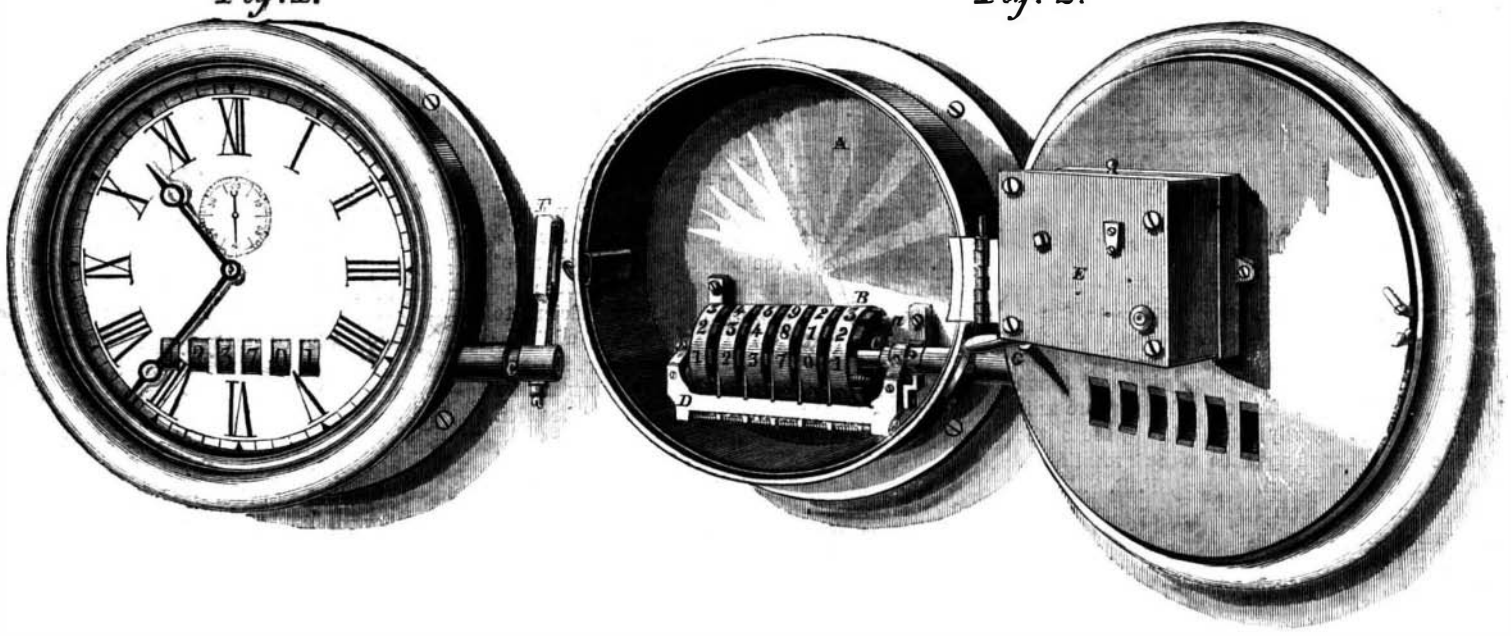

Fig. 2.

GIROUD'S MARINE CLOCK AND REGISTER.

GUN-COTTON FOR CANNON.

At the last anniversary meeting of the Royal Society of England, in the President's Address, delivered by Major-General Sabine, are the following remarks on gun-cotton:—

"The application of gun-cotton to warlike purposes and engineering operations, and the recent improvements in its manufacture, have been the subject of a report prepared by a joint committee of the chemical and mechanical sections of the British Association, consisting chiefly of Fellows of the Royal Society. The report was presented at the meeting in Newcastle in September last, and is now in the press. The committee had the advantage of personal communication with General von Lenk, of the Imperial Austrian Artillery, the inventor of the system of preparation and adaptation by which gun-cotton has been made practically available for warlike purposes in the Austrian service. On the invitation of the Committee, and with the very liberal permission of the Emperor of Austria, General von Lenk visited England for the purpose of thoroughly explaining his system; and we have in the report of the Committee the information, thus gained directly from the fountain-head, of the results of his experience in the course of trials extending over many years; together with additional investigations by individual members of the Committee.

"The advantages which are claimed for gun-cotton over gun-powder for ordnance purposes and mining operations are so many and so important as to call imperatively for the fullest investigation. Such an inquiry, however, in its complete sense, is both beyond and beside the scope and purposes of a purely scientific body; and the British Association have done well—whilst reappointing the Committee to complete certain experiments which they had devised, with the view of clearing up some scientific points which are more or less obscure—in pressing on the attention of her Majesty's Government the expediency of instituting under its own auspices a full and searching inquiry into the possible applications of gun-cotton in the public service.

"The absence of smoke, and the entire freedom from the fouling of the gun, are points of great moment in promoting the rapidity of fire and the accuracy of aim in guns employed in casemates or in the between-decks of ships-of-war; to these we must add the innocuous character of the products of combustion in comparison with those of gun-powder, and the far inferior heat imparted to the gun itself by repeated and rapid discharges. With equal projectile effects, the weight of the charge of gun-cotton is but one-third of that of gun-powder: the recoil is stated to be reduced in the proportion of 2 to 3, and the length of the gun itself to admit of a diminution of nearly one-third. These conclusions are based on the evidence of long and apparently very carefully conducted courses of experiment in the imperial factory in the neighborhood of Vienna. The results appear to be especially deserving the attention of those who are engaged in the important problems of facilitating the employment of guns of large caliber and of great projectile force in the broadsides of our line-of-battle ships, and in reducing, as far as may be possible, the dimensions of the ports.

"In the varied applications of explosive force in military or civil engineering, the details of many experiments which bear on this branch of the inquiry are stated in the report of the Committee, and appear to be highly worthy of consideration and of further experiment.

"It cannot be said that the advantages now claimed for gun-cotton are altogether a novel subject of discussion in this country. When the material was first introduced by Schonbein in 1846, its distinctive qualities in comparison with gunpowder were recognized, although at that period they were far less well ascertained by experiment than they are at present. To the employment of gun-cotton, as then known, there was, however, a fatal drawback in its liability to spontaneous combustion. The elaborate experiments of General von Lenk have shown that this liability was