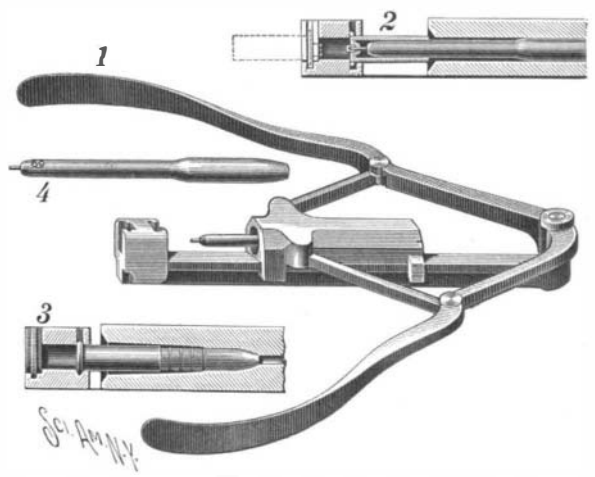
A TOOL FOR RELOADING EMPTY CARTRIDGE SHELLS.

One of the simplest devices of its kind to which our attention has been drawn is an ingenious tool for reloading empty cartridge shells, which has been patented by Walter H. Gripman, of Sioux Falls, South Dakota. By means of the tool the old primer is rapidly expelled, a new primer accurately inserted, the shell and bullet resized, the mouth of the cartridge expanded, and the bullet securely fastened in the charged shell.

Fig. 1 is a perspective view of the device. Fig. 2 is a section showing the method of expelling the old primer and seating the new. Fig. 3 is a section showing the method of compressing the powder, crimping the shell around the bullet and resizing the cartridge. Fig. 4 is a side elevation of a pusher employed.

The tool is provided with guideways for a reciprocating die, operated by levers connected with links having a toggle action. The reciprocating die co-acts



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with a stationary die having an inner and outer retainer or guideway for the head of the shell. The two dies are provided with bores for receiving a pusher carried removably by the reciprocating die and provided with a detachable pin.

To remove the old primer, the head of the shell is placed in the inner retainer or guideway of the stationary die, as shown by the full lines in Fig. 2, so that the open end of the shell registers with the bore of the reciprocating die. When the levers are brought together, the pusher passes into the shell, and its pin forces the primer out into the bore of the stationary die; at the same time the beveled end of the pusher enlarges the shell mouth. The levers are now swung apart; the pin is removed from the pusher; a new primer is placed in position, and the head of a shell is placed in the outer retainer of the stationary die, as shown by the dotted lines in Fig. 2. The closing of the levers causes the pusher to pass through the stationary die and to seat the primer. The levers are again opened. The pusher is taken from its bore; the shell is removed and filled with powder, and a bullet is placed in position. The shell-head is then fitted in the inner retainer, as in the first instance, and the levers are closed, so as to cause the bore of the reciprocating die to crimp the shell upon the bullet, to compress the powder by forcing the bullet inwardly, and to resize the cartridge by contact with the wall of the reciprocating-die bore. In resizing the bullet the pusher is again used, without its pin, the cartridge being placed at the inner end of the bore of the stationary die and extended toward the reciprocating die. Hence, when the levers are closed the pusher forces the bullet through the bore, trimming off surplus material and grease, and giving the bullet the desired diameter.

African Transcontinental Telegraph.

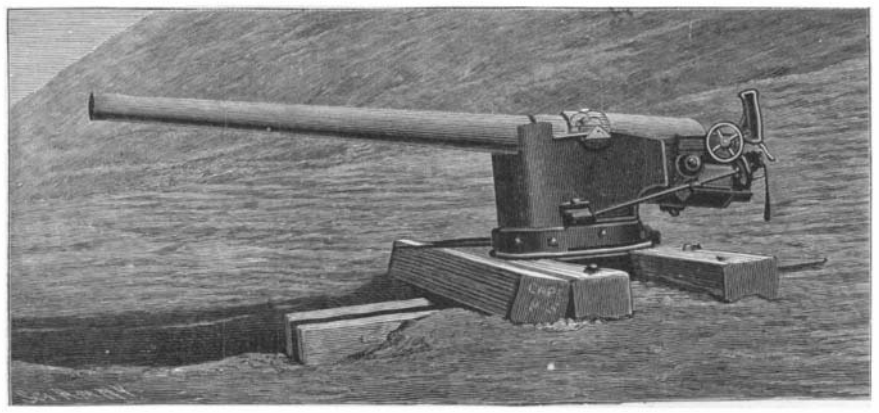
The construction of the African Transcontinental Telegraph Line, by which it was expected to unite the Cape with Alexandria across the whole of the continent, has been carried on with great activity, at least up to the time of the commencement of the hostilities in the south of Africa. The line has been finished up to a point midway between Lake Nyassa and Lake Tanganyika. From Karonga, a village situated at the northern end of Lake Nyassa, the line passes toward the northwest to gain the southern extremity of Lake Tanganyika. It will then follow the western shore of this lake and penetrate German territory, finally reaching Lake Victoria Nyanza, then Uganda, which is English territory. The construction of the line has been under the charge of 10 engineers, having 850 natives under their orders. A column of scouts chooses the best direction to follow, after which two relays of workmen trace the path and erect the posts, which are of hollow iron and conical shaped. The height of these posts is about 12 feet, and they weigh 170 pounds. The rear guard come after and stretch the wires, finishing the construction of the line. It is estimated that about 20 miles per day are thus constructed.

THE NAVAL GUNS AT LADYSMITH.

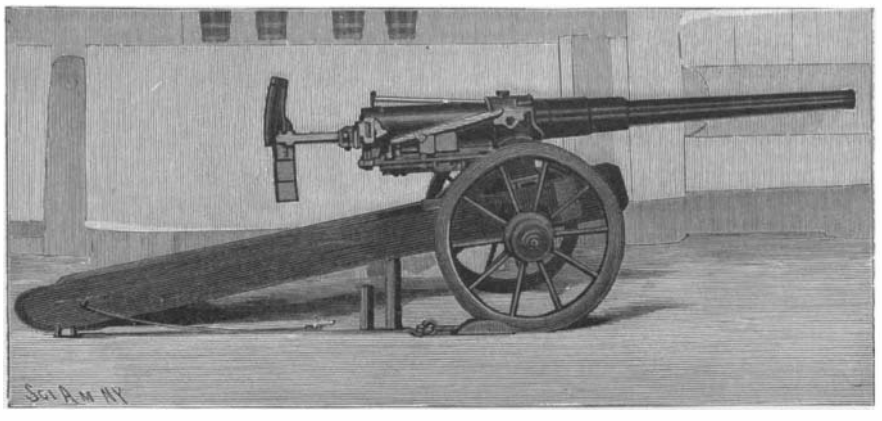
A great deal has been written in the past few weeks, or since the Boers completed the lines of investment around the town of Ladysmith, about the naval guns of H.M.S. "Terrible," which were rushed into the town at the last moment and are popularly supposed to have "saved it from destruction." These guns have been stated as being of various calibers, ranging from 3-inch up to 6-inch. As a matter of fact, they were of two sizes, four of them being the naval 12-pounder gun, of which the "Terrible" carries eighteen, and the other two being 4·7-inch rapid-fire guns, which must have been taken from one of the second-class cruisers on the South African station, as the "Terrible" does not include any guns of that caliber in her batteries.

As the methods of mounting guns on shipboard and for use in the field are entirely different, it was necessary to hastily improvise some form of field mounting for the navy guns which would serve the purpose. For the 12-pounder gun, which weighs 1,344 pounds, Capt. Scott, of the "Terrible," used a pair of heavy wagon wheels and a stout block of timber, the timber serving as a trail. The yoke which carries the trunnions of the gun was bolted securely to the timber, which was itself fastened to the axle of the wheels. A shoe-brake, which will be noticed in the accompanying illustration, was used for taking the recoil, the shoe being attached to the end of the trail by a length of wire rope. The four guns, as thus improvised, are much more powerful weapons than the 3-inch 12-pounders of the regular field batteries and the horse artillery guns, which weigh respectively 784 and 672 pounds. The former has a muzzle velocity of 1,574 feet and the horse artillery gun a velocity of 1,553 feet per second, whereas the naval gun, which is a much longer weapon, has a velocity of 2,210 feet per second. The extreme range of the regular field guns of the artillery is 5,000 or 6,000 yards, whereas these improvised naval guns have a range of 8,000 yards. The 4·7-inch rapid-fire guns fire a 45-pound lyddite shell with a muzzle velocity of 2,888 feet per second; and as its muzzle energy is about 1,500 foot tons, it can be seen that the question of providing a sufficiently secure mounting to withstand the recoil was a serious one. Capt. Scott overcame the difficulty by using several lengths of heavy 12 × 12 timbers. Two of these, 16 feet in length, were placed parallel with the axis of the gun; above these were bolted two other lengths of timber, and upon the platform thus formed was bolted down the baseplate of the regular mounting. One of the guns was fired with an elevation of twenty-four degrees and a range of 12,000 yards, and it was stated by an eyewitness that the effect on the platform was scarcely perceptible.

The valuable work which has been done by these guns is well known to the outside world, and while it is too much to say that they "saved Ladysmith," there is no question that they served very materially to keep down the fire of the Boer siege guns, among which there seem to be several long-caliber Canet pieces of great range. We are indebted for our illustrations to The London Graphic.



A Naval 4·7-inch Lyddite Gun on Timber Platform.

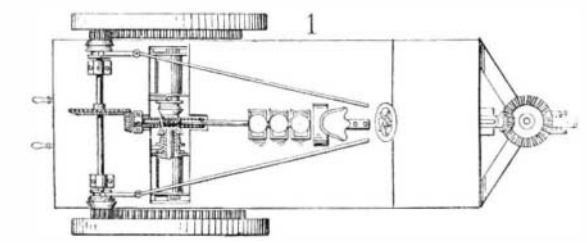


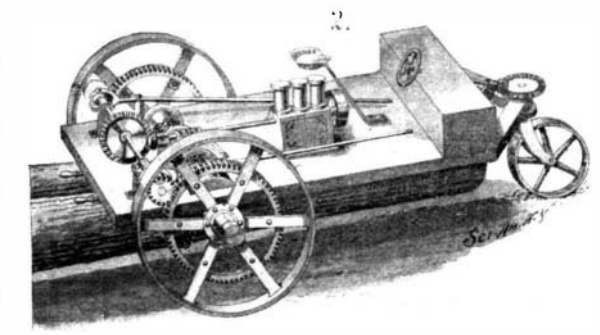
Naval 12-pounder on Improvised Carriage.

THE NAVAL GUNS AT LADYSMITH.

HAULING LOGS BY MOTOR TRUCKS.

That the automobile will some day find an extensive use in our agricultural and logging districts is not beyond the bounds of possibility. An auto-truck has been already invented by George F. Reed, of Waldo, Fla., which seems to possess the necessary strength and durability for the requirements of such heavy, mechanical traction. Mr. Reed's vehicle is driven by a gasoline engine, firmly secured on a platform or body





HAULING LOGS BY MOTOR TRUCKS.

supported by two rear traction wheels and a front pilot wheel. The engine shaft extends longitudinally, and carries at its rear end a bevel gear meshing with another bevel gear on a transverse shaft. Pinions on the end of the transverse shaft engage spur-gears forming part of the rear traction-wheels. Clutch-members on the transverse shaft and pinions can be thrown into frictional engagement with each other by means of two levers operated by the feet of the driver.

On the stationary axle of the rear wheels two drums are loosely carried, which, by means of friction-clutches, can be independently thrown into gear with a worm-wheel driven by a worm on the engine-shaft. The clutches are connected with levers extending below the platform, and are thrown by an assistant standing at the side of the truck, since they are not manipulated while the truck is in motion. About the drums, chains are wound, by means of which the logs are drawn up beneath the platform and supported during transportation.

The vehicle is steered by means of the front pilot-wheel, the controlling-shaft of which passes diagonally through the gasoline supply tank and carries a hand-wheel within reach of the driver's hand.

German Steamship Lines at Hamburg.

The following figures show the great development of the commerce and the navy of the German empire, and particularly the expansion and present importance of the port of Hamburg: At the beginning of this year, nine great navigation companies were counted at this port, among which may be mentioned the following: The most important is the Hamburg-American line, which has 67 steamers, giving a total tonnage of 256,300. The financial condition of this line is good, it having paid a dividend of 8 per cent upon its capital. The 30 steamers of the Hamburg-South American line represent 101,350 tons, and the dividend paid during 1898 reached 13 per cent. The Kosmos line has 25 steamers, with a tonnage of 90,000. Among the other companies may be mentioned the Sloman line, with 25 boats and a tonnage of 53,300; and the Woerman line, having 21 boats and a tonnage of 39,000; the 11 boats of the German-Australian line, amounting to 44,300 tons, gave a dividend of 10 per cent; the German-American Petroleum Company has 10 boats, tonnage 35,000. Following these are the German-Levant, with 14 boats, representing 29,000 tons, and the East African line, with 12 boats and a tonnage of 31,000.