On Her Majesty's Service

Code No. 27-33

"Guns" Dudley Pope Spring Books 1965 WASC1032

One other development that concerns us took place in a laboratory, and although nothing further was done for many years, it signalled the end of the flintlock, both for artillery and infantry weapons. To appreciate the significance of the discovery of fulminate of silver by the French chemist Berthollet in 1788, it is necessary to understand the difference between ordinary explosives – gunpowder, for example – and a fulminate.

Ordinary explosives can be ignited by percussion, but the resulting explosion is no more rapid or powerful than if a spark, or fire, is used. A fulminate, on the other hand, produces a very violent and rapid explosion if ignited by percussion: more rapid and violent than if ignited by other methods.

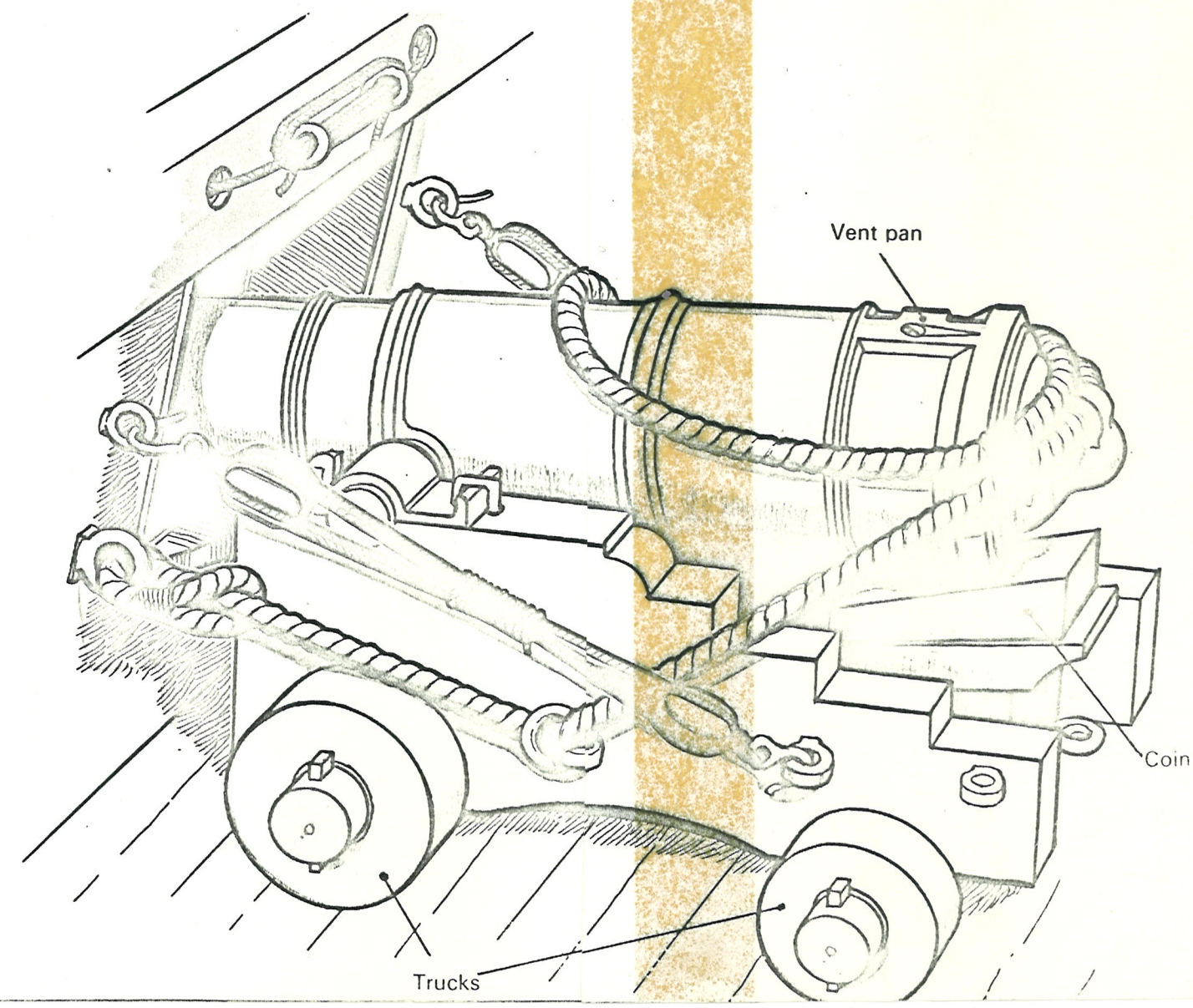
Early research into fulminates – dating from before 1700 – led to experiments in using chlorate of potash with gunpowder, instead of saltpetre. But although it made gunpowder more powerful, the mixture was dangerously unstable. In 1744 a Frenchman, Bayen, discovered fulminate of mercury and its explosive properties. However Bayen (who was Louis XV's physician) did not attempt to use it in firearms, but his research was followed by others, mostly French, until Berthollet's experiments. After a couple of explosions while using chlorate of potash, Berthollet changed the line of his research, and in 1788 discovered fulminate of silver. It was tried in fireworks, and then in firearms, but it was much too sensitive to handle.

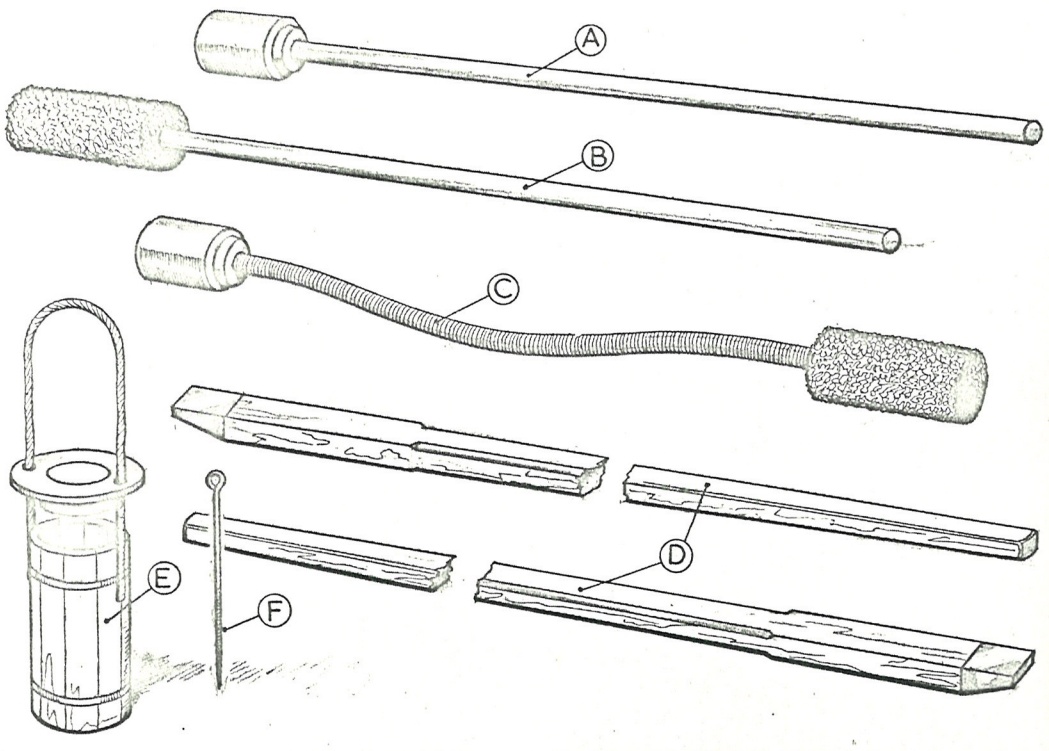
It was left to a Scottish parson to discover the secret – which will be described in the next chapter – and patent it in 1807.

At sea the advances were in weapons, not tactics, and the first was introduced a few years earlier than the period dealt with in this chapter. The mortar, capable of hurling very heavy projectiles in a high trajectory, was just the sort of weapon that the European fleets lacked. An admiral engaging an enemy fleet was well served with cannon, whose round shot would batter the ships; but if he wished to attack a fortified port – either to destroy it, or as a preliminary to a landing – round shot were no substitute for mortar shells.

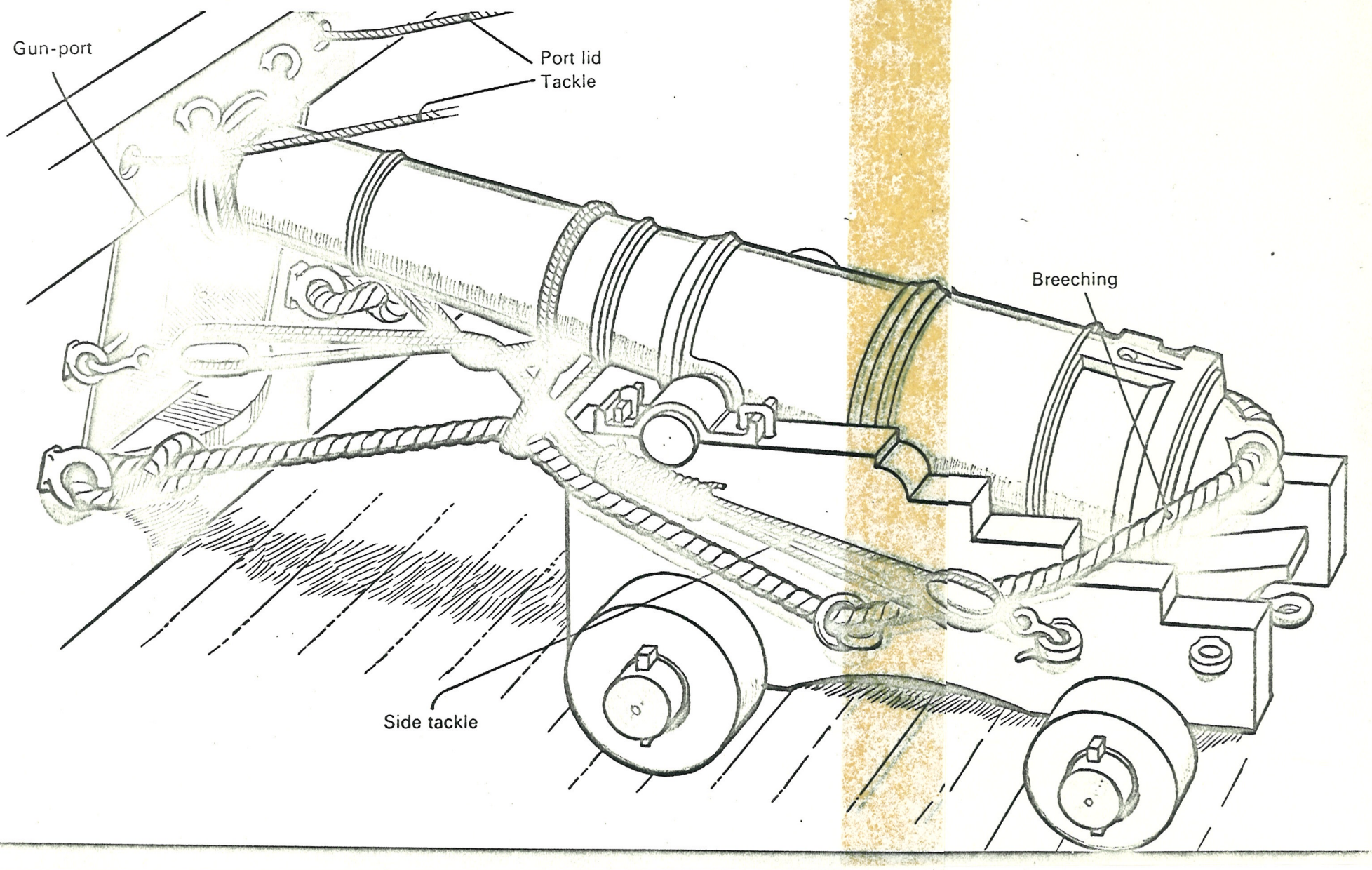
This led the French to construct a special, comparatively small ship to carry a large mortar. There

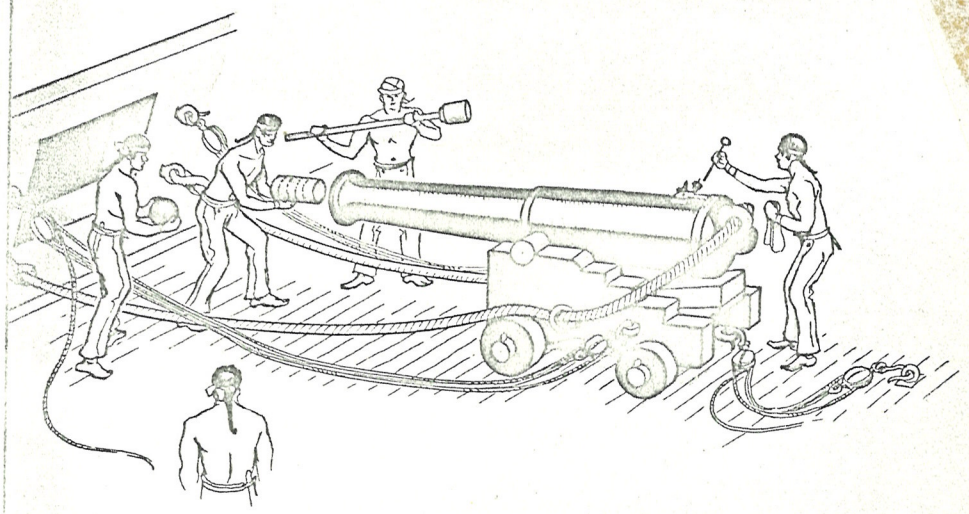
RIGHT AND OPPOSITE: *One of the dangers facing a warship at sea in heavy weather was that a cannon could come adrift. These two drawings show* (right) *a gun secured by its side-tackles and breeching in the run-out position and* (opposite) *in the run-in position, allowing the port lid to be closed. The tackle for opening the port lid (which was hinged along its top edge) can be seen above the port*





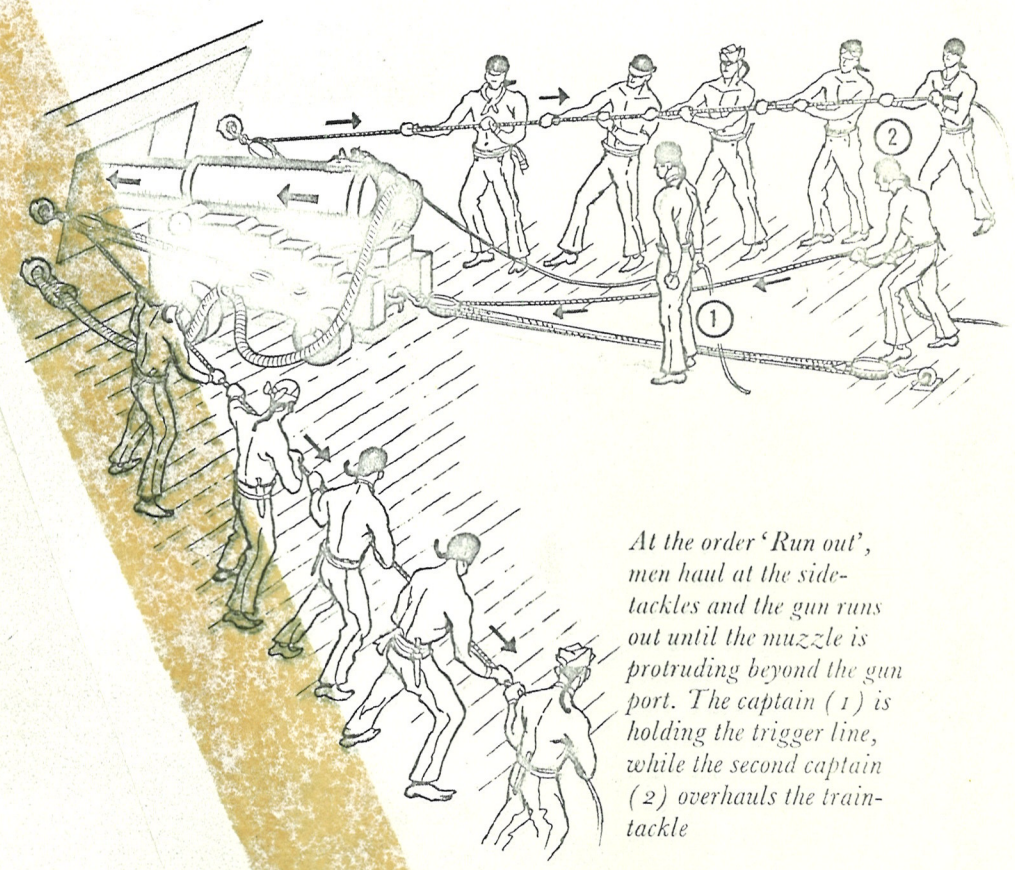
Some of the gear used with a cannon on board a ship. The design of some items varied. Those shown in this drawing are French and comprise a rammer (A) and sponge (B) with wooden staffs; a combined rammer and sponge (C) with a rope handle which is thick yet flexible, and for use in a confined space; hand-spikes (D) for training and elevating; a wooden cartridge box (E) and a priming wire (F)



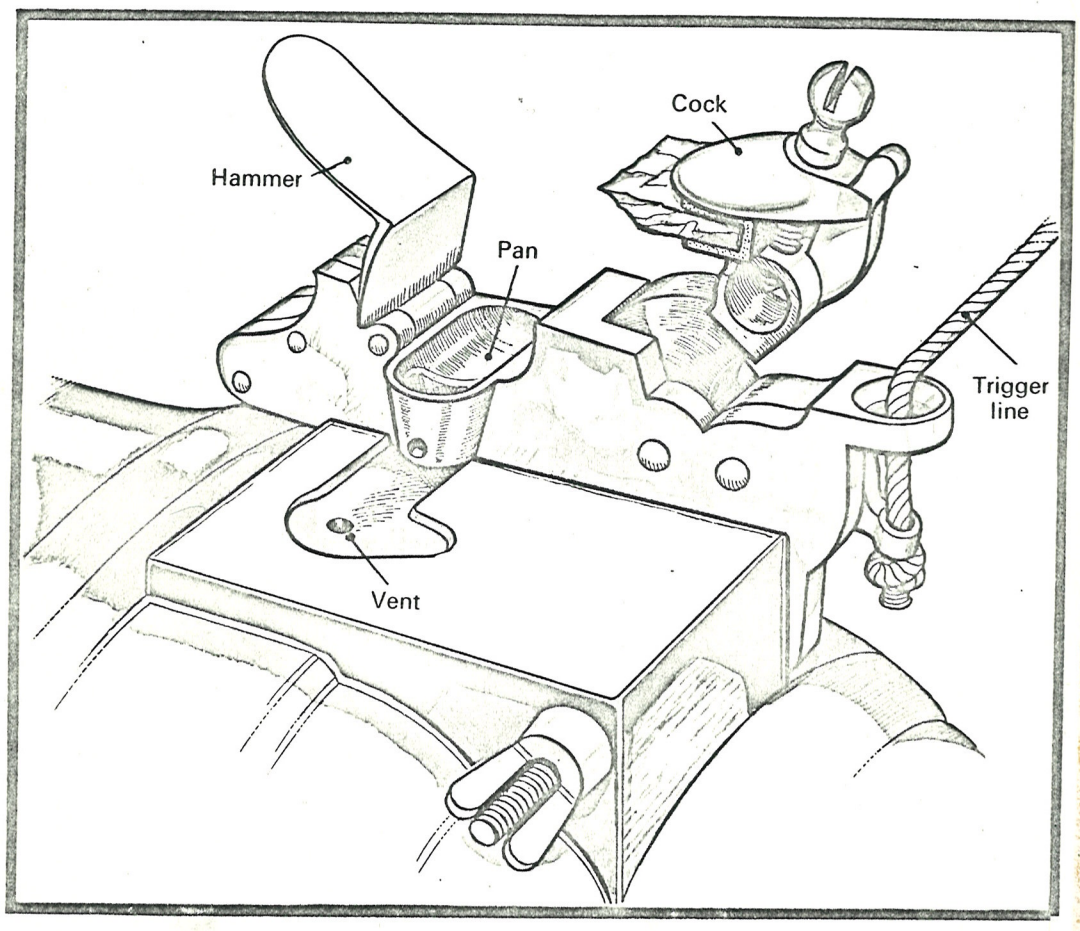


One of the several methods of loading and firing the big cannon in a ship like Nelson's Victory. *It should be noted that there was no standard drill at the time of Trafalgar. For clarity, these drawings omit several of the men and the breeching is drawn longer than it actually was, so the men at the muzzle had in fact much less space in which to work*

The cartridge, wad and shot are loaded, with a man standing by with the rammer. The man at the breech has the priming wire in his hand, and as soon as the cartridge is loaded he will drop the wire down the vent to make sure the cartridge is rammed well home



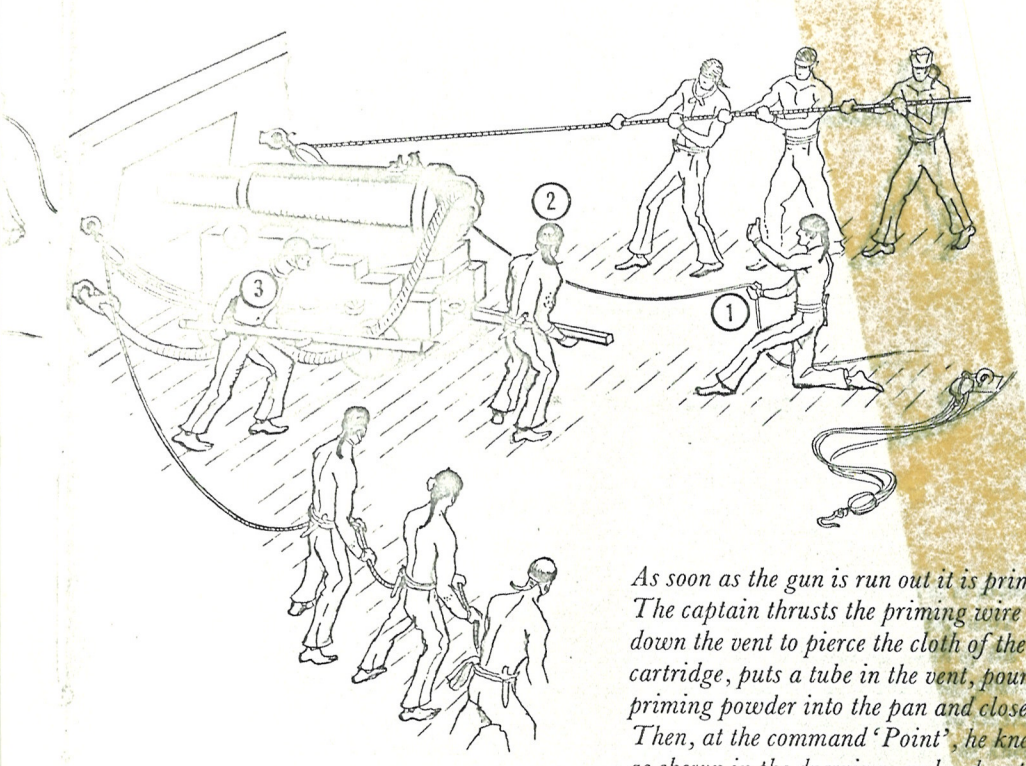
At the order 'Run out', men haul at the side-tackles and the gun runs out until the muzzle is protruding beyond the gun port. The captain (1) is holding the trigger line, while the second captain (2) overhauls the train-tackle



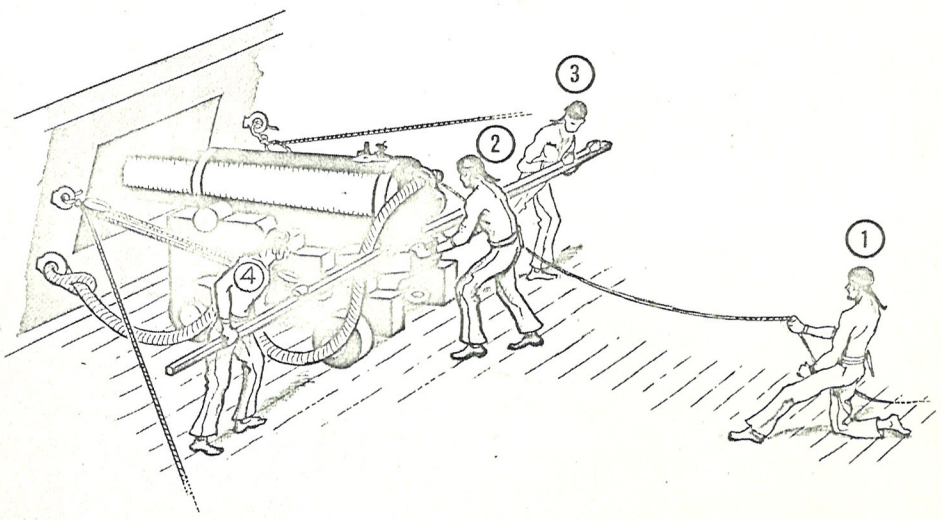
this was not the case. However, he was almost certainly responsible for replacing tin tubes with quills.

The other advance in naval gunnery, the fourth and last in this period, was one whose full impact – the pun is unintentional – was not felt until the French Revolutionary War began: the adoption by the Royal Navy of the carronade. To understand its significance the following points must be appreciated: (1) although navies relied on the cannon, essentially a long-range weapon, actions were usually fought at close range; (2) the largest cannon was usually a 32-pounder, whose shot was 6·3 ins in diameter; (3) although obviously the larger the shot the larger the hole, at close range more damage was done to the enemy's ship if the muzzle velocity of the shot was reduced: a shot hitting at high velocity made a round, clean hole which was comparatively easy to plug, but a shot with less velocity – just sufficient to ensure penetration – made a bigger, jagged hole and flung up many splinters (usually more men were wounded by flying splinters than round shot).

This type of flint-lock for the cannon of sailing warships was in service by 1836



As soon as the gun is run out it is primed. The captain thrusts the priming wire down the vent to pierce the cloth of the cartridge, puts a tube in the vent, pours priming powder into the pan and closes it. Then, at the command 'Point', he kneels, as shown in the drawing, and orders the handspikemen and side-tackle men to train to the left or right

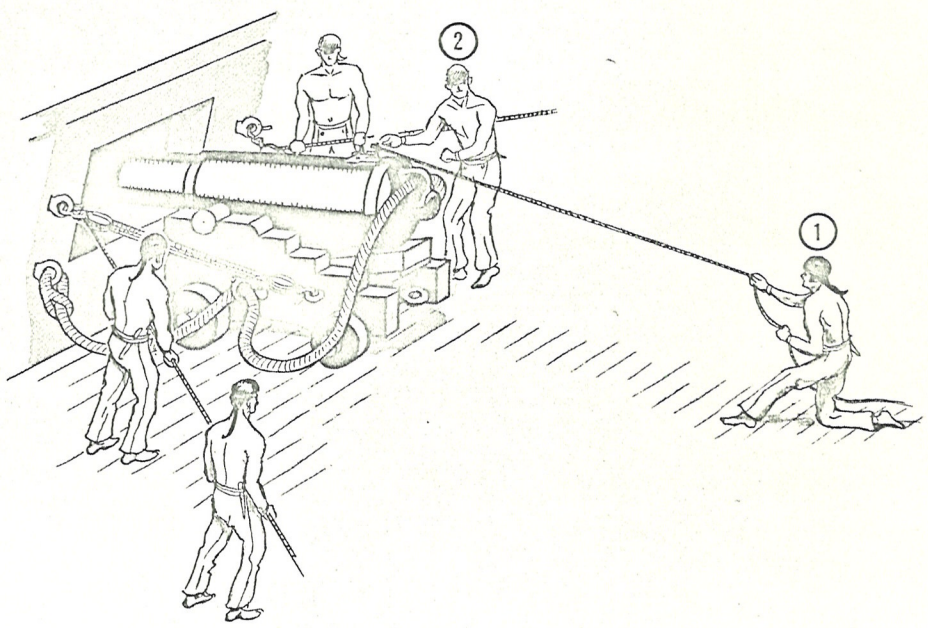


After training comes elevation: the handspikemen (3 and 4) use their handspikes to raise the breech, and the second captain (2) adjusts the wooden wedge (the coin), pushing it into position as soon as the captain (1) thinks the gun is aimed correctly

Obviously a very large shot fired at a low velocity would do the job: but even a 32-pounder gun weighed up to three tons ... The answer was the 'Smasher', produced in 1778 by the Carron Company (a Scottish firm of iron-founders and shipowners) and later called a carronade. The carronade was simply a small, very short-barrelled gun with a very big bore – like a small howitzer – which fired a large shot with a small amount of powder and a comparatively flat trajectory. The range was short but it was, considering the size of shot, very light.

Eventually the carronade was produced in various sizes, but a carronade firing a 24-lb shot used a 3-lb charge of powder, weighed just under 12 cwt, and was three feet long. A 24-pounder cannon normally used a 6-lb charge, and its weight varied between 50 and 31 cwt, and its length between nine feet six inches and six feet. Yet the *largest* of the carronades – firing a 68-lb shot – weighed only 36 cwt and was an inch short of five feet long. Since it was light, it needed fewer men to handle it, could be mounted high in the ship, and a new type of sliding carriage allowed it to be trained through a wide arc.

Its main advantage was that it allowed small ships – merchantmen, frigates and suchlike – to carry a 'punch' out of all proportion to their size.



A few moments before firing: at the command 'Make ready' the second captain (2) cocks the lock, the captain (1) is ready with the trigger line (sufficiently far back to be out of reach of the gun when it recoils), and the side-tackle men are about to let go of the falls, or tails, of the tackles. To fire, the captain pulls the trigger line 'with a suitable jerk'