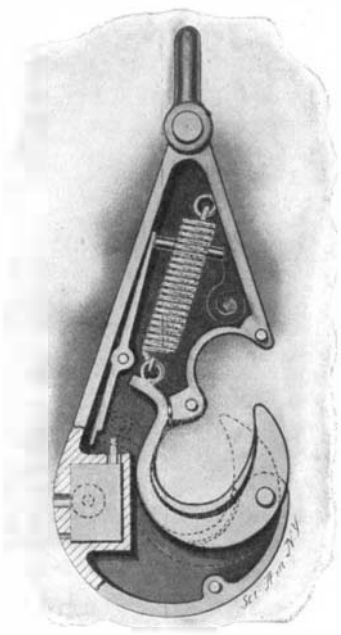
SAFETY HOOK PROVIDED WITH COUNTING MECHANISM

In the accompanying illustration we show an improved hook recently patented by a German inventor. It is so arranged as to automatically lock onto the article which is to be lifted, and at the same time to operate a counting mechanism. By this means the operator is relieved of the duty of counting the number of articles lifted and transported by his crane or other mechanism. When a job is completed, he can tell at a glance just how many operations have been performed with the hook. The hook consists of a hook-shaped casing, to the front end of which the hook proper is pivoted. A spiral spring normally holds up the rear end of the hook, causing it to occupy the position shown in full lines in our illustration. When a load is suspended on the hook it causes the hook to swing on its pivot to the dotted position shown, thereby closing over the cable or other means of attachment to the load. With the hook in this position it will be observed that the weight of the load is carried by the casing, and the hook merely acts as a guard to prevent the load from slipping off. In order to prevent the device from accidentally opening, a locking lever is provided, which snaps over the rear end of the hook when it is in its lowest position. This lever may be moved out of engagement with the hook by pressing a stud at the upper end of the device. The counting device is shown at the left of the device, and is operated by the hook, which, when in its lowest position, depresses a pin on the counting attachment, and registers either with a printing device or a pointer swinging over a dial.



SAFETY HOOK PROVIDED WITH COUNTING DEVICE.

Underground vs. Overhead Telegraph Cables.

Owing to the widespread havoc that is wrought to the overhead telegraph wires of the British Post Office laid through the midland and northern counties, through gales, often causing a serious dislocation of business, the government decided to test the advantages of a subterranean cable as a solution of the difficulty. The first section was laid three years ago between London and Birmingham. During the whole time this cable has been in use there has been no defect or derangement of working, though the overhead wires north of Birmingham have often been broken down and the business centers of Liverpool and Manchester have been quite isolated from London. Owing to the serious inconvenience thus caused, and the satisfactory working of the London-Birmingham cable, a scheme is now being carried on by which all of the overhead wires extending across exposed weather zones are to be supplanted by underground cables.

An experimental cable was at first continued from the Birmingham end of the London cable as far north as Warrington. It was subjected to severe trials, and these were so satisfactory that now this experimental cable is being pulled out and a permanent trunk cable is being installed.

The cable is being laid in a 3-inch cast-iron pipe. It consists of 103 wires inclosed in a leaden sheathing. Seventy-four of the wires are twisted in pairs and the remainder are single wires separately wrapped with a tape of copper for the purpose of screening the wires from inductive action. The pairs of wires may be used for telephonic purposes, but their primary use will be for high-speed telegraph circuits. The necessity for double wires for the latter is to reduce capacity of the wire. When the capacity of a wire is increased the speed at which it is possible for a circuit to be worked is decreased. Underground wires have very much greater capacity than overhead, but by using another wire for the return path instead of the earth, the speed of a circuit can be considerably increased.

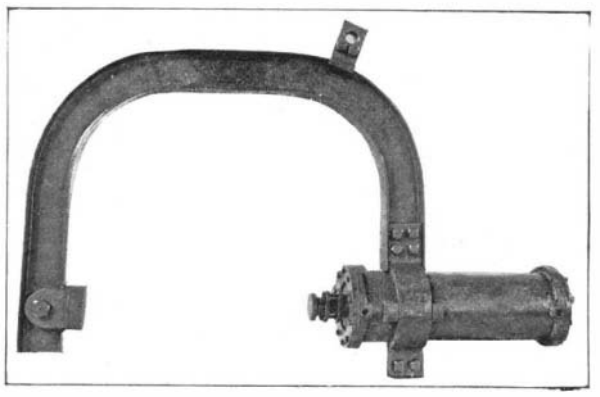
The route from Birmingham is *via* Walsall, Cannock, Stafford, Eccleshall, Woore, and Nantwich. At the present time the cable has been completed to Eccleshall. The whole of the cables have been pulled into pipes, but between the last-named place and Nantwich the lengths of cable still require to be joined together.

It is anticipated that the cable will be carried to Warrington before the end of March. At Warrington, lines connecting Liverpool and Manchester will be tapped. It will then be possible to work from London to those cities by means of underground wires.

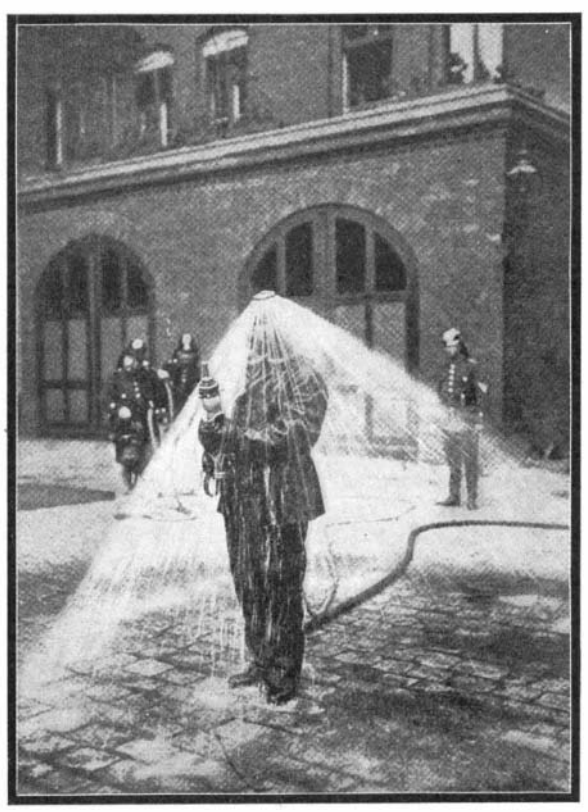
When this scheme is completed it is proposed to continue the cable to Carlisle so that there will be a continuous underground trunk cable, free from interruption, direct from London to the extreme north.

A POWERFUL COMPRESSED AIR CLAMP.

The value of compressed air in submarine work is being appreciated by the invention of various kinds of mechanism which is operated from above the surface of the water, the air being supplied through hose connections just as it is furnished the diver. The accompanying photograph shows a device which is utilized in crib-work and other submarine construction. It is really a gigantic grip of steel, which is employed for holding timbers together temporarily until they can be bolted into place. The grip is usually handled by a crane, and when in position the end opposite the cylinder is submerged, being adjusted beneath the timber to be held while the cylinder end is placed above. Merely by turning a valve, the compressed air forces the piston of the cylinder against the timber and clamps it securely until the bolts can be adjusted, when, by relaxing the air pressure, the piston is released, and the grip can be at once moved to another position. By using this apparatus the services of a diver can be frequently dispensed with, while it also avoids considerable other manual labor.



CLAMP OPERATED BY COMPRESSED AIR FOR SUBMARINE WORK.



A WATER SHADE.

NOVEL APPLIANCES FOR FIGHTING FIRE.

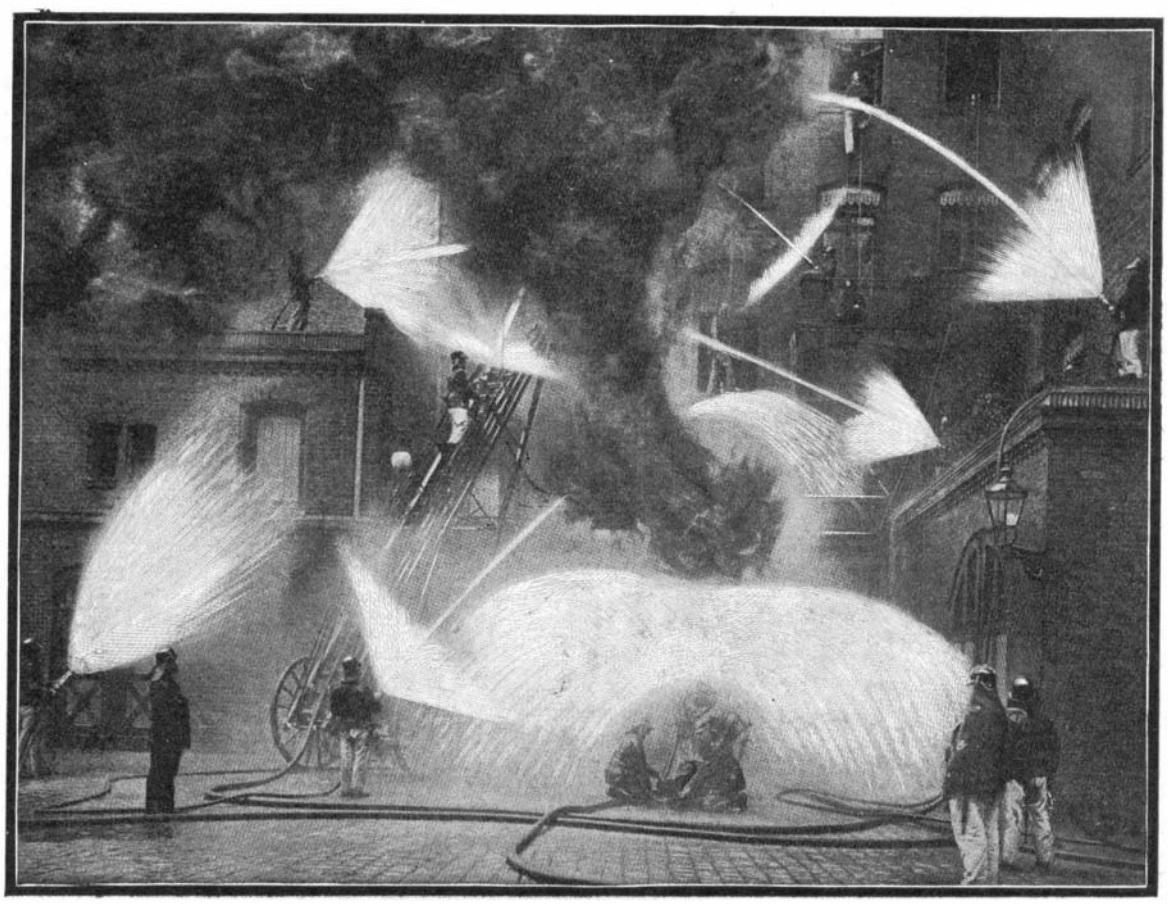
One of the main characteristics which differentiate man from the lower animals is his ability to produce fire. Just how early in the existence of the human race this ability appeared is not clearly known, but it is certain that primitive man had not acquired it for a considerable period.

Having once obtained the power of producing combustion at will and of keeping it up for an indefinite time, fire became perhaps man's greatest friend, and surely a highly important adjunct to his ultimate civilization. Yet when this mighty destructive force is uncontrolled, it becomes a most potent and dangerous enemy, scarcely less to be dreaded than a plague.

Of this latter truism history has not been wanting in examples, and we ourselves have only recently had two most appalling exhibitions of its power for destruction. Methods and means for fighting and conquering this dread enemy to human life and treasure, occupy the minds of experts continuously. For small and relatively unimportant conflagrations, acids giving off heavy and non-combustible gases are found efficient, but where the surface attacked is not circumscribed within narrow limits, this will not do, and recourse must be had to water, the greatest extinguisher of fire, and at once the most abundant and easy to provide. How to apply water in the most effective manner has long been the problem.

Close proximity to the fire is requisite to overcome it; but there is no fierce fire which does not supply intense heat and blinding smoke in large quantities, and these are the greatest obstacles which the fire fighters have to combat in their efforts to rescue life and property. Numerous expedients have been resorted to for enabling them to do this with comfort and safety; and we take pleasure in placing before our readers the mechanical contrivance recently exhibited by the fire department of Charlottenburg, near Berlin, for the illustrations of which we are indebted to the Illustrirte Zeitung.

To protect the fireman from the wall of flame and dense cloud of smoke, while at the same time enabling him to play water upon the burning building, is the main object of the invention. The pictures are from photographs recently made in the courtyard of the Charlottenburg fire station, and they present a realistic view of a fire fought from behind the watery protection afforded by the new appliance. In the larger pic-



FIREMEN EMPLOYING THE SWIFT NOZZLE, SHOWING HOW WIDELY THE STREAM CAN BE DIVERGED.