

IMPROVED PORTABLE PHOTOGRAPHIC APPARATUS.

We illustrate herewith a new photographic apparatus of very simple construction and intended to enable persons having little or no knowledge of photography to succeed in producing good pictures. It is equally well suited for the professional artist as for the amateur, and its compact form renders it especially well adapted for out-of-door work. The manipulations required are purely mechanical and require no dexterity or skill. The dark room or tent is abolished, and there is little probability of clothes or hands being soiled with the chemicals.

Fig. 1 represents the invention ready for use; the construction is depicted in the sections, Figs. 2 and 3. The central and main case, A, Fig. 3, is provided in front with the usual lens and cap, and in rear with a removable shutter shown detached at B, Fig. 1. To the bottom of the main case at each side are hinged side cases, C, which, when extended as shown in Fig. 1, are sustained by cords, and, when folded as in Fig. 3, are attached to the main portion by hooks and staples. Openings are made in the lower part of each side of the main casing, as shown in Fig. 3, to allow of inserting therein the trays, D, containing the developing and other solutions. Just above these openings are hinged boxes, E, which inclose the trays when the latter rest on the side cases, C. In this position the two boxes, with the central or main case, form the dark chamber. When the apparatus is folded, the boxes rest, as shown in Fig. 3, against the side walls of the main case. The trays, D, are made of sheet zinc, and are controlled from both sides of the apparatus by the strings, F, by which they are drawn at will from their position in the boxes, E, into the main chamber, or vice versa.

G, Fig. 2, is the focussing frame which slides by a dove-tailed piece in guide strips. The sliding piece is graduated above so as to allow of the adjustment of the frame in any position in which it has formerly been set. A loop shown at H, Figs. 1 and 2, serves to move the frame as desired. Inside the latter is pivoted a swinging frame, I, Figs. 1 and 2, which supports projecting wire arms having hook ends to hold the ground glass or sensitized plate. This frame is held above by a suitable catch, which is released at will by one of the strings shown at the top of the case. A second string serves to raise and lower the frame, I, so that the plate may be dipped at will into the different solutions contained in the trap below (dotted lines, Fig. 2).

Besides the two trays in the side boxes there is an additional water tray, which is introduced into the main case through the lower hinged part of the rear shutter. There are also suitable boxes, J, Fig. 3, for storing the bottles of chemicals, etc. The mode of manipulation is as follows, the apparatus being arranged as in Fig. 1:

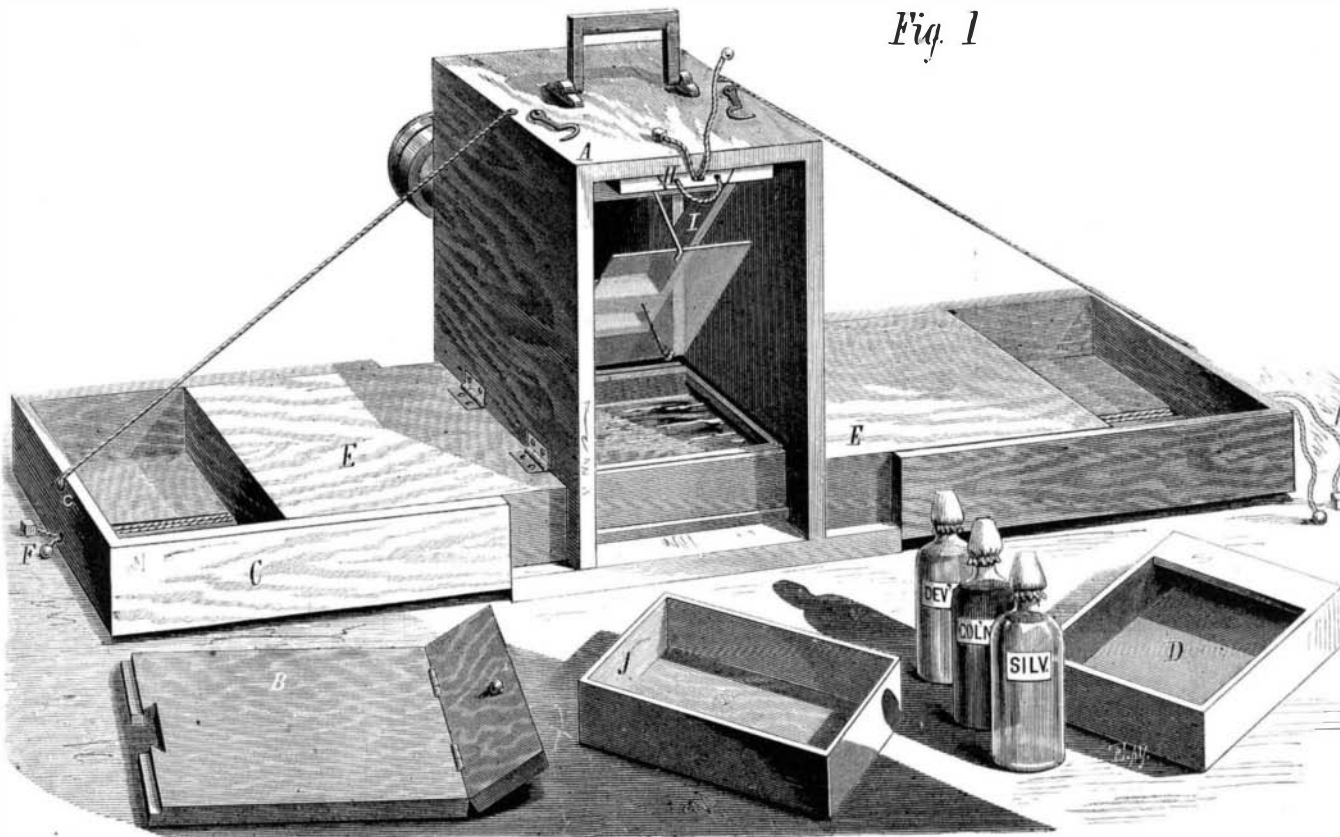
The focussing frame is drawn out and the ground glass inserted, and the whole pushed back until the catch engages. The frame is then adjusted until a clear image of the object

with the developing solution, and replaced. The collodionized glass plate is now inserted instead of the glass one, and the frame moved forward. The rear shutter is affixed in position. The swinging frame catch is next released; and the frame is gradually lowered into the silver solution, the tray containing which has previously been drawn into position. The plate is allowed to remain in this bath for about four minutes, to render it sensitive to light. It is then lifted out, and the frame carried forward until the click of the catch is heard. The focussing frame is now adjusted to the mark on the scale already observed, the lens cap is removed, and

Young, of Allegheny Gas Company, and the facts can be relied upon. It looks as though some facts would have to be changed, or some tables and books on pneumatics and hydraulics will have to be revised.

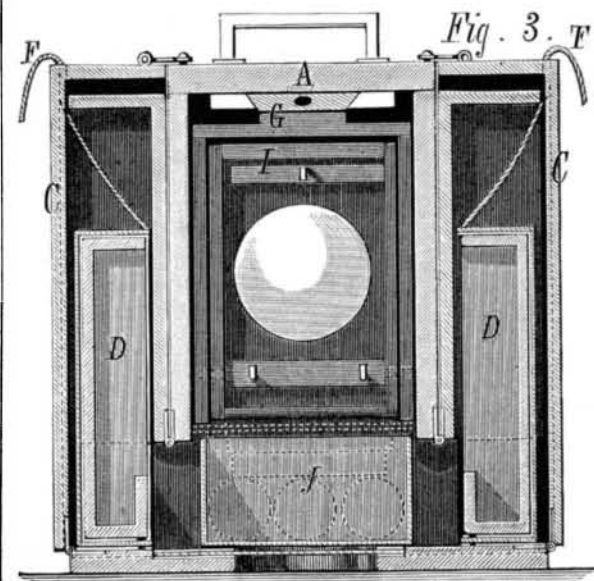
Six 100-Ton Guns.

Sir W. G. Armstrong & Co., of the Elswick Ordnance Works, Newcastle-on-Tyne, are constructing six 100-ton guns for the Italian navy. They will be muzzle-loaders, and will consist of 19 distinct pieces, bound together by the process usually adopted at the Elswick works. The barrel of each gun will be constructed of two lengths of steel, each length being about 16 feet, so that the total length of the barrel will be over 30 feet. The breech end of the barrel will be 29 inches in diameter, and the muzzle end 25.39 inches. Special machinery has been applied to the manufacture of the guns. The process of boring the barrels, which are made of welded steel, is one of great difficulty and delicacy. The first bore put through the solid steel was 9 inches, the second 12 inches, and the third 15.5 inches diameter. The center tube will be bound by 15 different coils, on the principle introduced by Sir W. G. Armstrong, and the trunnion pieces will be no less than 6.5 feet in diameter. There is no machinery now existing strong enough to deliver such guns, and hence Sir W. G. Armstrong &



BRICE'S PORTABLE PHOTOGRAPHIC APPARATUS.

exposure takes place. The tray with the silver solution being returned to the box, the developing solution is drawn in to position, and the glass plate is lowered into this for about ninety seconds. At the expiration of this period it is removed; and the water bath being introduced through the rear shut-



ter, the plate is finally lowered and washed. Nothing further remains to be done but the usual finishing treatment.

Patented in the United States, Great Britain, France, and Belgium through the Scientific American Patent Agency. For further particulars address the inventor, Wm. A. Brice, care of R. Clifford Poulter, 4a Middle Temple Lane, London, E. C., England.

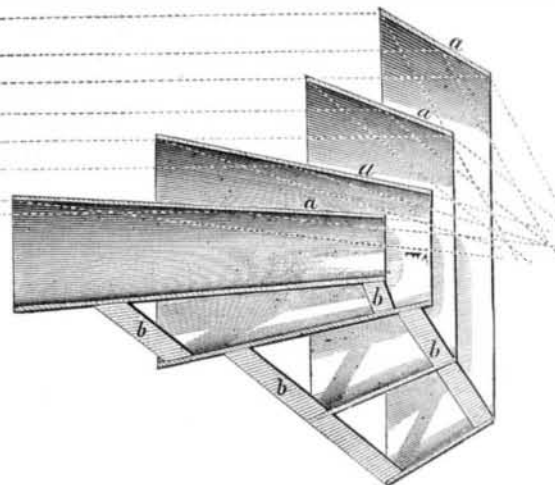
A Long Gas Pipe.

There was, says the *American Manufacturer*, a very interesting and conclusive experiment made with the use of the 3-inch pipes of the Columbia Conduit Company, before they were in use for the transportation of oil, by connecting them with a small gas well at Millerstown. From the time the gas was turned in to the time it ignited at Hammerville, Allegheny county, 32 miles from the well, was 22 minutes; of course it was impeded by the air, which had to be forced out of the whole 32 miles of pipe in that time. The amount discharged was at the rate of 161,000 feet per 24 hours, the noise or roar of the discharge alarming the people living in the vicinity, with no perceptible difference in the flame between the discharge end of the pipe and at the well. The pressure at the discharge was 49 lbs., and at the well 55 lbs., a difference of only 6 lbs. per inch after the connection with the well. This, of course, is not in conformity with the theories and demonstrations of scientists, but the experiment was conducted under the care of two experienced engineers, namely, J. H. McElroy, of Pittsburgh Gas Company, and R.

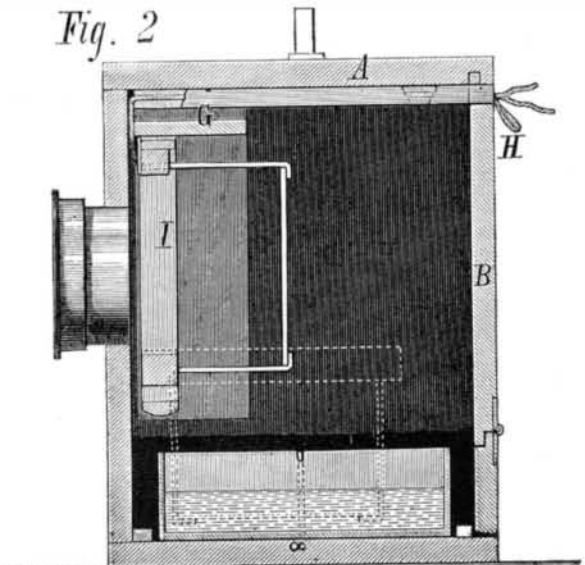
Co. have for some time past been constructing a crane to lift them in and out of the ships in which they will be fought. This crane is capable of lifting 160 tons, and its platform revolves upon a line roller frame of 43 feet diameter. It stands upon a masonry and concrete pedestal 20 feet high and 50 feet in diameter, the outer wall of which is made to carry the path in which the line roller ring runs; while the center is hollow and serves as a house for the boiler and the pump supplying the water pressure for working the crane. The process of lifting is achieved by an inverted hydraulic press hung in gimbals, on a new system devised by Mr. Rendal. Motion is imparted to the crane by an hydraulic rotary engine. The foundations for the crane are being laid in the arsenal of Spezzia, where it will be a fixture.

ANOTHER INVENTOR OF THE BALESTRIERI REFLECTOR.

We took occasion, recently, in describing the new lantern alleged to be the invention of Professor Balestrieri, of Naples, to point out that substantially the same device had already been patented by American inventors in this country in 1871. We are now indebted to an old and valued correspondent, Mr. David Shive, of Allentown, Pa., for reminding us that he devised the same apparatus a year previous to the date of the patent above referred to, and used it for concentrating the sun's rays in order to melt refractory sub-



stances. Mr. Shive refers us to our own files, and we find that in 1870 we published the annexed illustration, which the reader will see is almost precisely similar to the Balestrieri invention. Mr. Shive's idea of using the apparatus for heat, and that covered by the 1871 patent, for employing it as a locomotive head light, seem to include all of Professor Balestrieri's applications. So this appears to be an instance of double re-invention.



is obtained on the glass, when the figure marked on the slide piece scale is noted. One of the side trays is next drawn into the main case and filled with the silver solution from one of the bottles shown. This tray being returned to its first position, the other tray is similarly drawn forward, filled