

## A NEW FIELD SERVICE FILTER.

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THE need of a good type of filter, capable of delivering a considerable volume of safe water and transportable under circumstances where wheel transport is impossible, has long been felt. For some months we have been experimenting and trying to get a suitable filter of the kind, and able to be packed on a horse or mule for use in hilly country. The earlier attempts to solve this difficulty were most unsatisfactory, the chief stumbling-blocks being size and weight. In November last, I suggested to the makers of these apparatus a design which they have put into practical shape, with the result that we are now in possession of a field service filter at once compact, handy, portable, efficient, and capable of delivering as much as sixty gallons an hour of sterile water. We are experimenting with a new type of filter tube, and when these are substituted for those now fitted in this apparatus, the delivery should be near eighty gallons an hour.

In principle, the filter is similar to those fitted to the water tanks. Fig. 1 shows a pair of these filters on a pack-horse, with a boiling kettle in addition, carried for the sterilisation of the filter tubes. Each filter, complete and dry, weighs 68 lbs., if wet it weighs 71 lbs. It is mounted on a basket-work platform, the frame of which is steel bicycle tubing. The apparatus consists of a semi-rotatory pump with 15 feet of tubing attached; the water raised by the pump passes into the central cylinder, which, packed with sponges under pressure, acts as a clarifier for the removal of coarse dirt. From this clarifying chamber the water passes to two filters placed one on either side and issues in a steady stream from the nozzles at the anterior end. We have subjected this filter to a variety of trials, and when using the muddiest water it has been possible to make or find, have not found the delivery to fall below fifty-four gallons in the hour; when using less muddy water the delivery has been sixty gallons in the hour. Fig. 2 shows one of these filters ready for use, while fig. 3 shows the same filter with one of the filtering cylinders open and the filter tube taken out for examination; it also shows the interior of the basket cover, with two spare filter tubes fitted therein as spare parts.

A feature of this filter is its compactness and lightness; this

latter has been secured by employing aluminium wherever possible. This has been done without sacrificing strength or rigidity. Another good feature of this filter is the fact that all detachable



FIG. 1.

parts are attached by small chains, so that no nuts, screw caps, handle pieces or nozzles can be lost, unless wantonly and forcibly broken away. The filter tubes are of the standard service pattern,

and interchangeable with those employed in the filter water tanks. Each tube is similarly covered with asbestos cloth for further protection against mud or other sediment which may have passed the sponges.

When not required for use, the hosing is detached and a screw cap placed over the aperture leading to the pump to exclude dust.

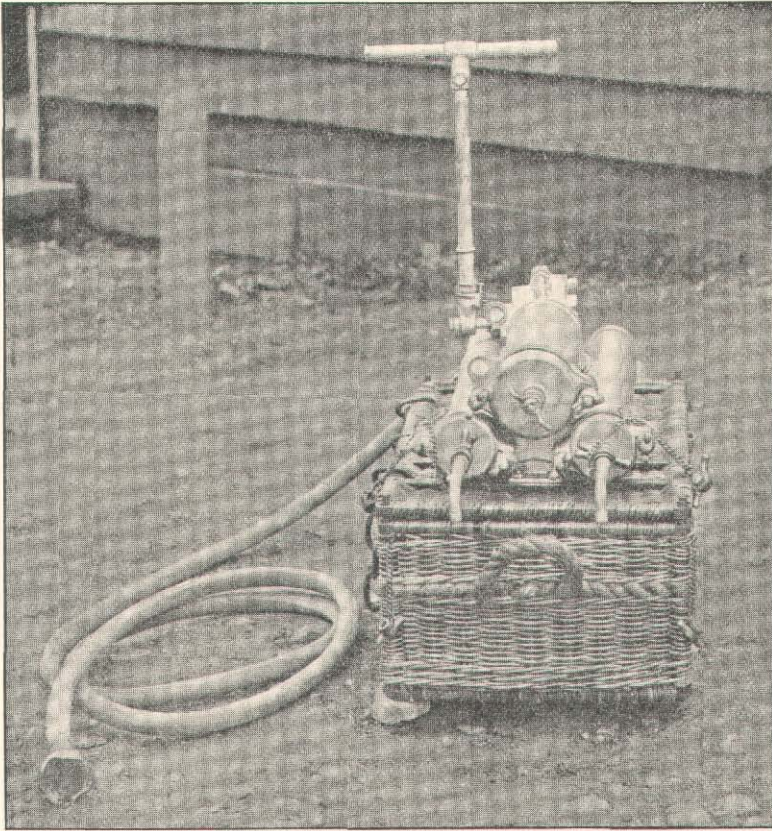


FIG. 2.

The pump handle is unscrewed as well as the T piece; this latter is strapped into the basket cover and the handle itself slid into the two eye-holes which are to be seen on the right side of the sponge chamber, and screwed home. The two nozzles are similarly detached and slipped into recesses provided for them under the filter cylinders; these slots are difficult to see in the photograph.

Screw-nuts are now adjusted over the delivery apertures to exclude dust. The whole apparatus is now ready to be packed up. This is done by lifting the filter platform up off the basket, the tubing is then coiled and placed in the bottom of the basket, and then the filter platform turned upside down so that the filter itself is inside the basket cover. The whole is now securely clamped down by means of small winged nuts which screw on to each of the four

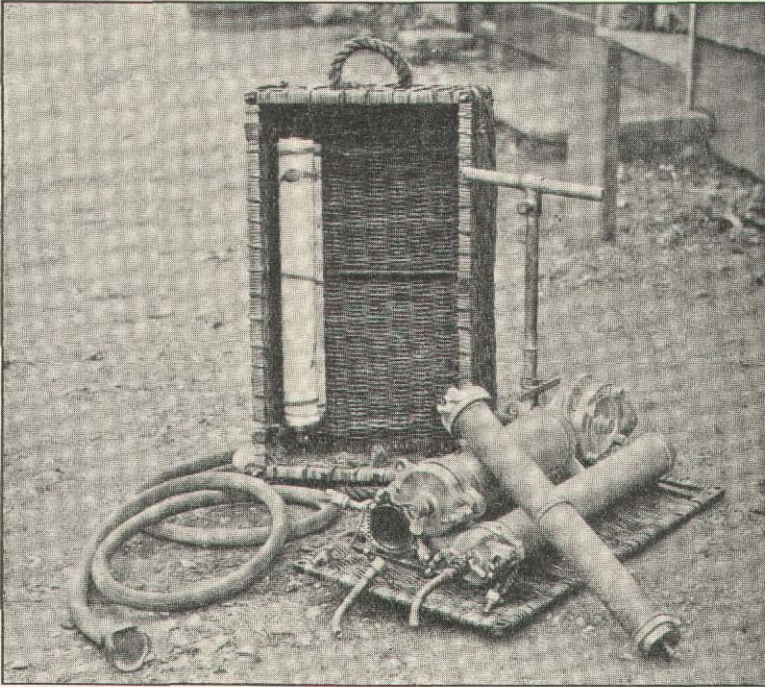


FIG. 3.

corners. The whole apparatus is now ready for attachment to the pack saddle. This is readily done by means of two short chains which are fixed to the upper inner border of the packed basket and which slip over the hooks on the saddle. A pair of these filters travel easily and well, requiring no ropes or straps to secure them. In spite of muddy water and large delivery, it is remarkable how easy this pump works. This is attributable to the firmness of the base on which the whole filter rests, and also to the increased power given to the stroke by means of the T piece. Each filter when

packed up ready for transport, makes a package measuring 25 by 15 by 9 inches and weighing seventy pounds.

In cases where wheel transport is impossible and where the ordinary filter water-tank cannot go, these pack-saddle filters will meet the requirements of troops. Four of these filters, that is, two mules or pack-horses, will suffice for an infantry battalion or a brigade of artillery, while a single mule or a pair of filters will be ample for a cavalry regiment. To work each filter one man is necessary; this means that a water squad of one corporal and four men of our Corps will have charge of and be the *personnel* for a pair of pack-animals carrying four of these filters. When one recalls the old tripod company filter and the many drawbacks associated with its use, the advantages attaching to this modern development will be obvious. Moreover, men who can work and take charge of a filter-tank will be equally fitted to work and control these more portable types. During the coming training season we propose to subject these pack-animal filters to practical work with troops, and anticipate no difficulties as to either efficiency or portability.