(No Model.)

A. R. FOOTE.

VECTOR TIP AND HOLDER.

No. 355,308. Patented Jan. 4, 1887.

Fig. 1.

Fig. 2.

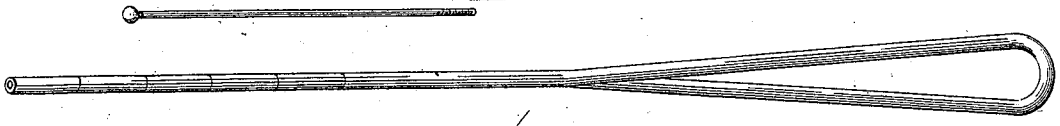

Fig. 3.

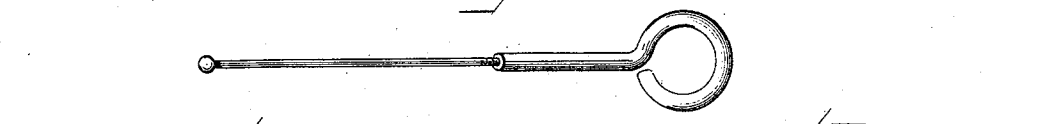

Fig. 4.

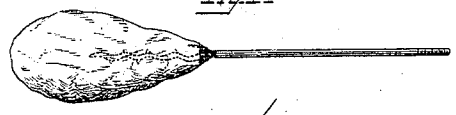

Fig. 5.

Fig. 6.

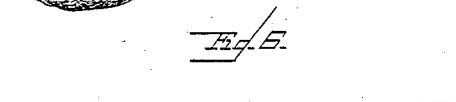

Fig. 7.

Fig. 8.

Fig. 11.

Fig. 9.

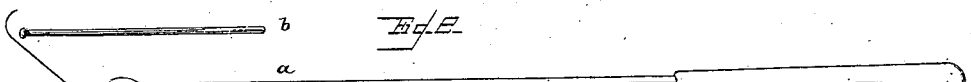

Fig. 10.

Fig. 13.

Fig. 14.

Fig. 12.

WITNESSES

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VECTOR TIP AND HOLDER.

SPECIFICATION forming part of Letters Patent No. 355,308, dated January 4, 1887.

Application filed April 29, 1886. Serial No. 200,504. (No model.)

To all whom it may concern:

Be it known that I, ALLEN R. FOOTE, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Vector Tips and Holders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to that class of instruments called "applicators" or "vectors," which consist of flexible wires or sounds, either coated or not with some medicament; and it consists in a short (or long, as the case may be) handle with female screw-threads at one end, combined with the short vectors proper, or flexible sounds, in the various ways hereinafter described and claimed.

The invention consists, also, in a short flexible wire, with or without a small head or bulb at one end, coated with a medicament, and in a steel olive or head, with female screw-die which cuts automatically a male thread upon the short tip which is inserted.

Similar letters refer to similar parts in the several figures of the drawings, in which—

Figure 1 shows single tip with the holder with solid handle. Fig. 2 shows tip and holder with open handle. Fig. 3 shows still another form with short handle and the vector-tip screwed in place. Fig. 4 shows one of the tips used as a sponge-holder. Fig. 5 shows one of the tips bent to serve as curette. Figs. 6 and 7 show the vector-tip bent to serve as hooks. Fig. 8 shows the vector barbed to serve as a simple flexible applicator. Fig. 9, *a b c* show the holder provided with an olive-shaped bulb of steel, furnished with a female screw or die for cutting a thread upon the soft tips during insertion. Fig. 10 shows a form adapted for use in the throat. Fig. 11, *a b* show the vector-tip bent spirally and adapted to carry a sliver of cotton or piece of sponge for use in cleansing a cavity or applying a medicament thereto. Fig. 12 shows the tip medicated. Fig. 13 shows the tips as boxed and sold. Fig. 14 shows the longest size of vector-tip formed into a "Belloc" canula or sound.

In making various examinations and in applying remedies to cavities or openings in the human body, various difficulties have arisen, and many different sorts of instruments are required to be kept constantly on hand by the physician and surgeon. With nearly all the instruments previously invented it has been exceedingly difficult to carry medicaments like iodoform into, for example, the cervix uteri. In forcing the instrument into the canal the medicament is forced off. Again, the work of keeping the expensive instruments thoroughly cleansed and disinfected is great, and a careless attendant becomes unwittingly the means of spreading disease. This led first to furnishing to the physician long flexible wires coated with any preferred formula. The medicament is in a solid form, and is only soluble when warmed and moistened by the cavity in which it is applied. These small coated wires can follow every sinuosity of a canal. They are cheap and can be thrown away after each use.

A difficulty was experienced in not having an easily-manipulated handle, and this led to furnishing a vector-holder for continuous use with all sorts of tips, which could be medicated or not, and so inexpensive that they can be thrown away after each operation.

Formulas can be prepared ready for use and handled as articles of trade, making it an economical, compact, and convenient way for the physician to carry the remedies and to apply them. Being furnished medicated according to certain well-known formulas, the physician has only to decide upon his medicament, and it is almost instantly ready for use.

The holders are made of tough flexible metal, plated, if desired, highly polished, and, as in Fig. 1, graduated in half-inch spaces and about nine inches long. The second form is made from a single piece of tough flexible wire bent upon itself to form a handle.

One form of short tips is of soft copper, finished or not with white plating. This plating will not scale off, and will resist the action of acids perfectly for all practicable requirements. They are of uniform gage, and the screw for attaching them to the holder is cut on a scale of sixty-eight threads to the inch, corresponding with the thread in the holder. They are about two and three-quarter inches in length. In order to furnish smaller and less expensive tips, they are furnished in lengths of two and nine inches without screw-

thread at the ends, and the holder shown in Fig. 9 is furnished with an "olive" (so called) containing a steel die-screw.

The olive can be made separate and attached by swaging or in any approved way to a holder-body of soft wire.

By giving the tip (shown boxed in Fig. 13) about three or four turns a thread is cut in its end, and it is securely attached. It is only necessary, in using it in a cavity, to turn to the right, and so remove all possibility of unscrewing.

The advantages of these vector-tips are that a physician can have any length he pleases, and can after each treatment throw away the tip used, avoiding absolutely all danger of infection. He can enjoy the luxury of using an entirely new applicator for each operation. The tips are so small and extremely flexible that they can be used in the most delicate operations. They can be exclusively used for all work requiring the use of cotton wads.

The uses to which these vector-tips can be put in the hands of a skilled operator are almost innumerable. They can be used in every specialty of practice. By cutting a few barbs with a common knife the tip will carry a sponge, as in Fig. 4. By bending the point around the large part of the handle it can be made, as in Fig. 5, into a curette, and used readily in the uterus, or can serve any one of the numerous uses to which hooks are applied, as in Figs. 6 and 7, either clipping off the bulbed end or allowing it to remain at will.

The tip may be wound spirally around the body of the holder and, as in Fig. 11, be used to carry cotton.

When the tip-extension is attached to the long holder, it furnishes the uterine gage of two and one-half inches. The graduated scale on the holder indicates the depth of the insertion, while the flat of the looped handle, or a mark made easily upon the jet-handle, indicates the direction. The tip can be easily given any desired curvature. Small bits of sponge can be attached to the tips with the aid of a spiral hook or loop, a bit of sealing-wax, or in other suitable manner.

These tips, with the holders, take the place of a large number of instruments, and thus save weight, space, time, care, and in an unforeseen emergency can readily serve a multitude of uses.

The simple straight short vector-tip, as seen in Fig. 9^b, may serve for catheterism of the nasal duct, or as a style for dilating it. By simply rubbing the longest of the fine wire tips between the thumb and finger-nails the operator can at once have a very fair extemporized "Belloc sound," (so called,) by which a compress can be drawn well up into the posterior nares to control epistaxis.

I am aware that it is not new to coat wires or stems of wood with various medicaments when found necessary in order to render the local application of such medicaments practicable, and I do not therefore claim such medicated applications, broadly; but,

Having thus described my invention, what I desire to claim, and secure by Letters Patent, is—

1. A holder or carrier for vector-tips provided at the end with female screw-thread, and combined with short flexible tips with male screw-thread, all as and for the purpose described.

2. A holder for vector-tips, with an olive formed with a steel female screw-die for cutting a thread upon the soft wire tips as they are turned in, all as and for the purposes set forth.

3. As an article of manufacture, vector-tips of short pieces of flexible wire for insertion in holders, and with one end coated with a medicament, all as and for the purpose set forth.

4. As an article of manufacture, vector-tips of short flexible wire with small olives or bulbs upon one end and adapted for insertion in holders, all as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 28th day of April, A. D. 1886.

ALLEN R. FOOTE.

Witnesses:

ORMOND RAMBO,

FRANCIS C. ADLER.