

## A NEW COMBINED LITHOTRITE WITH CYSTOSCOPE.

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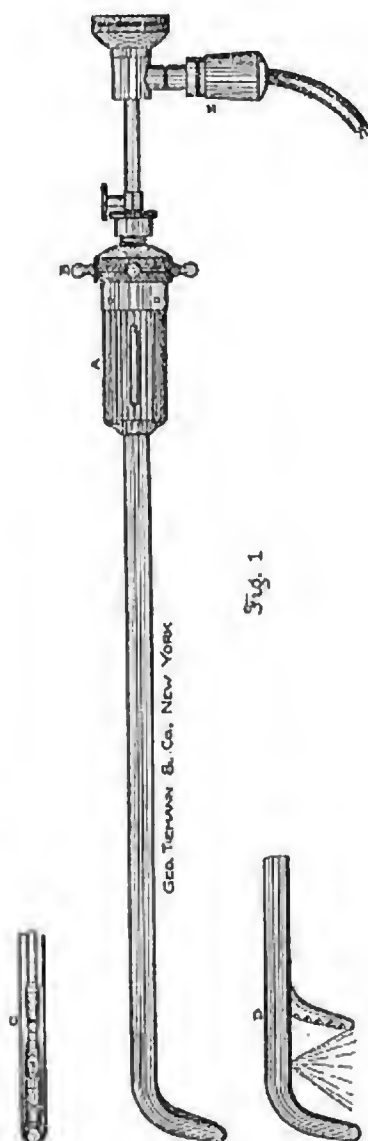
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THERE are three instruments of this kind on the market, those of Nitze, Bierhoff, and Casper, but all of them have the great disadvantage that one blade of the lithotrite is interposed between the prism and object to be seen. Moreover, owing to the mode of their mechanical construction, they are necessarily too weak to crush any stone that is not very soft and relatively quite small. These two disadvantages are so great that they render the instruments of very little practical value.

In the accompanying cuts I have shown an improved instrument so arranged that one looks directly between the jaws. It is constructed sufficiently strong to stand the strain of 175 pounds, which is amply sufficient to crush any stone except those of the hard oxalate type.

*Description of the Instrument.*—Figure 1 shows the complete instrument closed; (C) is a section looking directly between the open jaws on to the surface of the prism end of the cystoscope; (D) shows the jaws open (side view). The instrument (fig. 2) consists of a female blade (A) carrying a handle (ab); a male blade (B) carrying a screw (g); two attachments (e) for the cystoscope and (f) for the evacuator; a cystoscope (C) and a steel rod (D). The female blade, exclusive of the handle, is  $9\frac{1}{2}$  inches in length; in the straight portion it has a calibre of no. 25 French and in the curved of no. 26 French. It, as well as the other blade, is made of the very best quality of steel, highly tempered. The handle consists of two parts, a fixed (a) and a revolving part (b); (a) is firmly fixed to the blade, its surface is corrugated and it has two lateral flanges which prevent it turning in the hand; (b) the revolving cap is attached to the fixed portion by means of a ridge and a groove. It is provided



with four metal pins on its surface, so as to afford a better hold. This cap is adjusted, by means of a screw thread, to the end of the male blade (*g*), a device that readily provides for the opening and closing of the jaws. The female blade and handle, except the revolving cap, are provided with an open slot, into which the ridge on the male blade fits. The distal end of the female blade is perforated so as to allow the fragments to pass through and to permit the end of the cystoscope to project when necessary. The male blade is a steel tube reinforced on the under surface by a ridge which fits into the slot of the female blade and prevents it from turning. On the proximal end of the male blade there is a cylindrical screw (*g*) on which the outer portion of the handle (the revolving cap of the female blade) turns. On the end of this screw two attachments can be fitted: One (*e*), for holding the cystoscope in place, and the other (*f*) for connecting the evacuator. The cystoscope (fig. 2, C) has a calibre of no. 15 French; it is made with a small convex prism and the lamp is turned around so as to be placed very near the prism. The attachment for the cord at the outer end is placed on the same side as the prism and lamp and not on the opposite side, as has heretofore been the custom. The electric connection is made or broken by turning the guttapercha end of the cord (fig. 1, E). The cap for holding the cystoscope is of the usual type. The attachment for the evacuating apparatus is made after the pattern of the end of the ordinary evacuating tubes, but so modified that it screws on the end of the male blade. The steel rod (fig. 2, D) is the same calibre as the cystoscope; it is one-half an inch longer and has a small flat handle on the proximal end. This is intended to pass through the instrument and clear it of any fragments which might have become lodged in the tubal portion. The instrument with the evacuator attached is shown in fig. 3. This principle has been used for a number of years in the Chismore instrument. It is not, therefore, illustrated as anything new, but simply to show its adaptation to my instrument.

*Mode of Using.*—The bladder is thoroughly irrigated until the returning fluid is entirely clear, 150 cc. of clear sterile water being finally left in. The instrument, adjusted as shown in fig. 1, is then introduced; the jaws are opened by

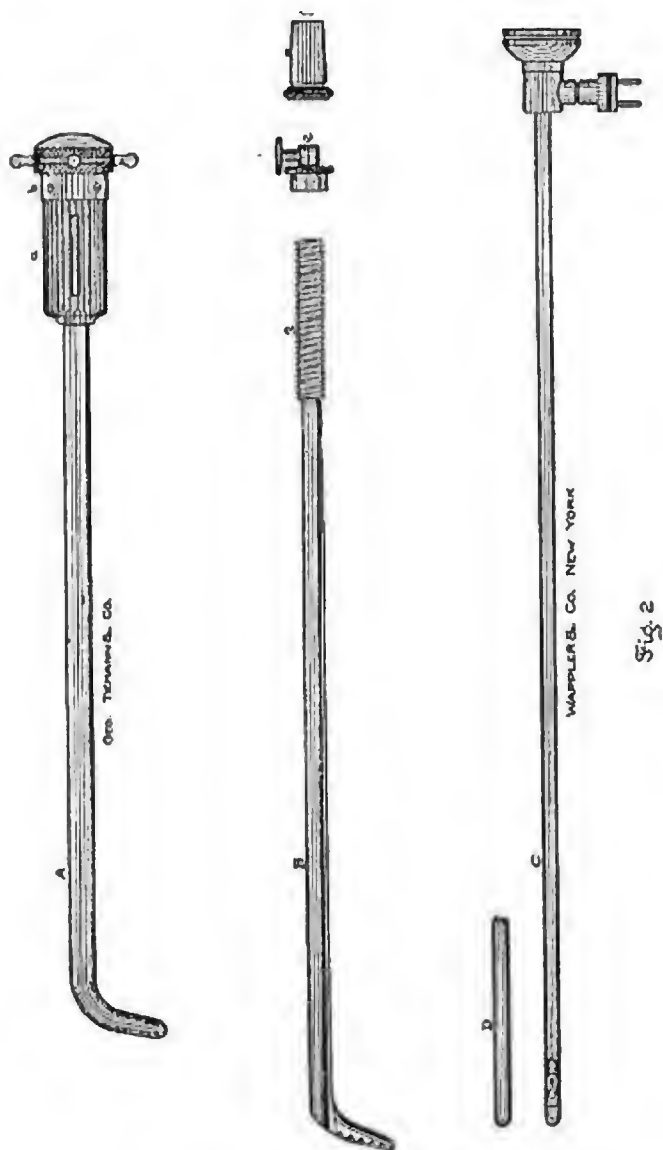


Fig. 2

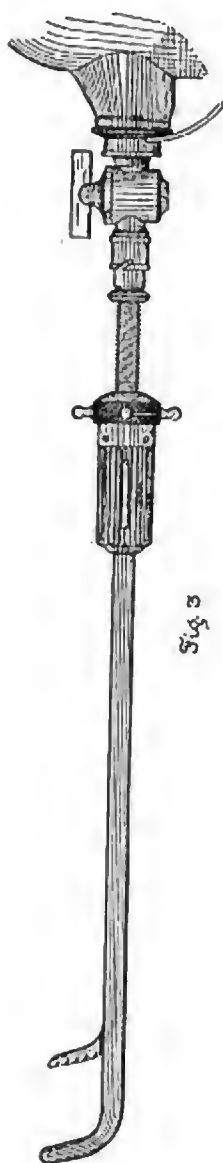


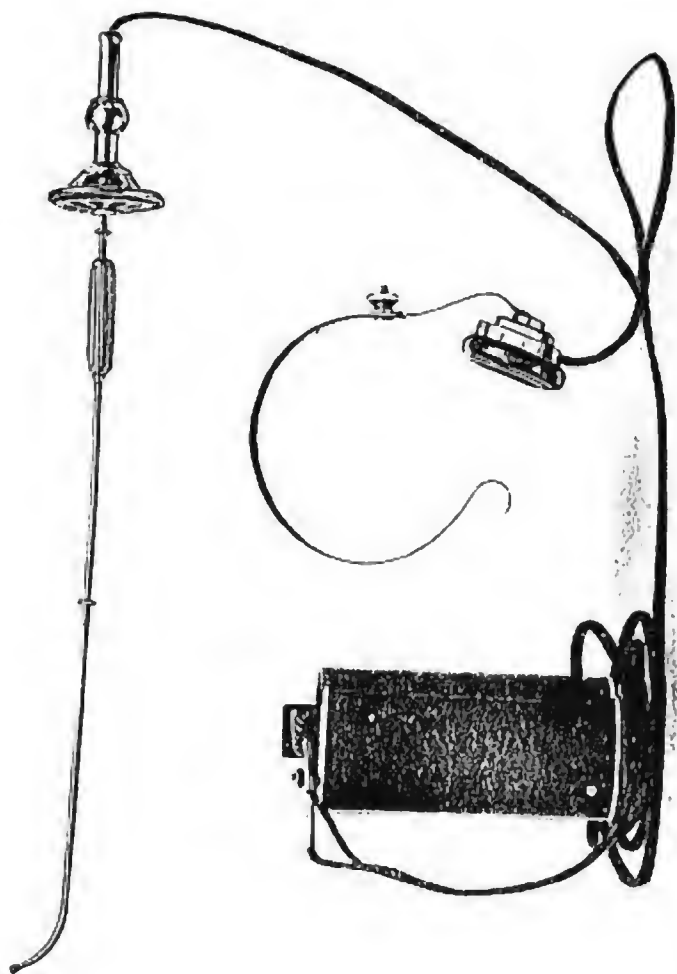
Fig. 3

turning the screw from right to left; the cystoscope is adjusted in such a way that the line of vision is between the open blades. The stone is then located and the male blade, which can be seen, is placed squarely in front of it, and the jaws are closed by turning the screw. Before the jaws are entirely closed the cystoscope is turned so that the prism surface will be protected. In some instances it is better to pull the cystoscope well back into the male blade so that it cannot be injured by the stone. After the primary crushing the larger fragments are sought for and broken. If during the crushing some fragments are forced into the tubal portion of the male or female blade, the cystoscope is removed and the steel rod passed through so as to clear the canal; after which the cystoscope is reintroduced. When the crushing is finished the cystoscope is removed and the evacuator attached (fig. 3). After this, the lithotrite is turned around so that the convex surface rests on the floor of the bladder and the beak projects upward into the cavity. The jaws are separated from  $\frac{3}{4}$  to 1 inch, and the fragments are washed out in the usual manner. If there is any doubt as to the completeness of the operation the bladder is again filled with water and the cystoscope reintroduced. In filling the bladder it is better to raise the outer end of the instrument so that the water will not run out; if it, however, tends to do so, the end of the finger may be held over the opening. As the cystoscope is introduced, if there is much vesical contraction some fluid will escape, but the amount will be insignificant and the deficiency can be easily provided for beforehand by injecting a little more than is necessary for proper distention. If the operation is done under cocaine and the vesical contraction is violent some leaking will occur during the whole operation, but if the bladder is quiet the amount is reduced to a minimum and is not troublesome.

The object of this instrument is not to supplant suprapubic section or the use of the ordinary lithotrite, except in certain cases. It is intended to be used not for large or hard stones, but for small ones of the soft variety.

NOTE.—After having completed my instrument, I found in an old catalogue a cut of Casper's lithotrite, which formed a part of his operating set. It was impossible to get a very correct idea, but the instrument appeared to be constructed out of two tubes, one passing into the other and each carrying jaws on their distal ends. The cystoscope, which is straight, passes entirely through so that one blade is between the prism and the object. I have tried to find a better illustration and have applied to two of the largest instrument makers in New York, but they could tell me nothing about it.

I beg to thank Mr. R. Wappler for valuable suggestions in the adaptation of the cystoscope to the instrument and Mr. L. G. Pfarre for suggestions in the construction of the lithotrite.



Jacobson's Telephonic Searcher.