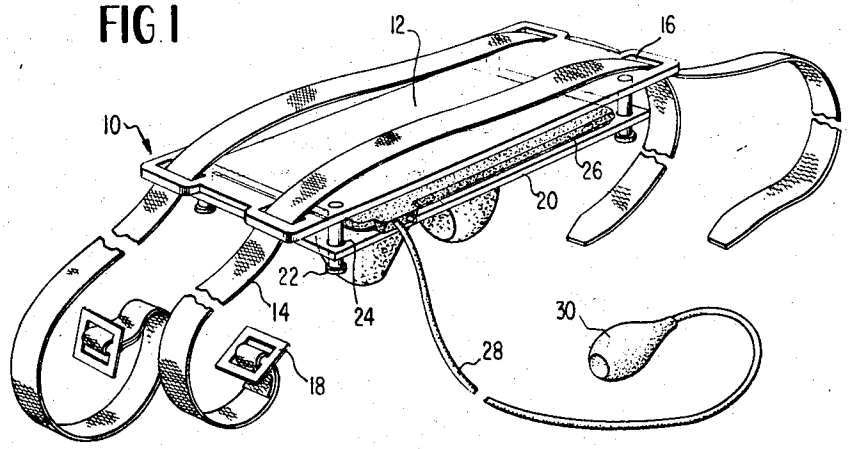
Nov. 19, 1968 M. J. FRIEDENBERG 3,411,494

URETERAL COMPRESSION DEVICE

Filed March 28, 1966

FIG. 1



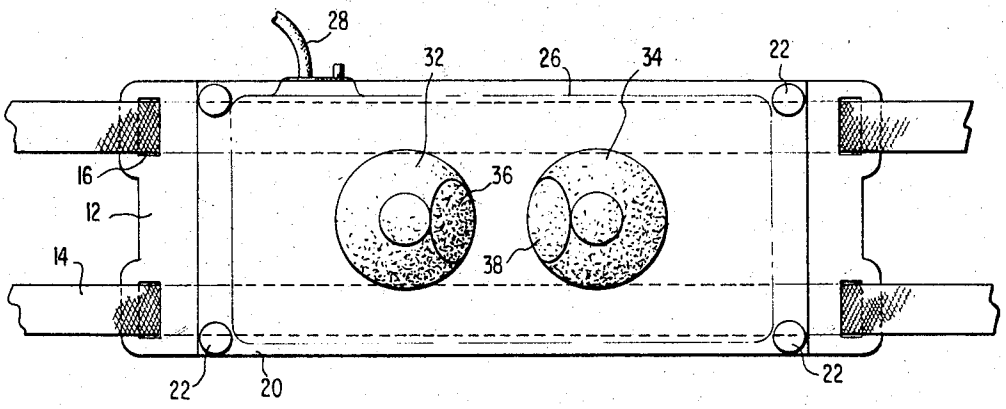


FIG. 2

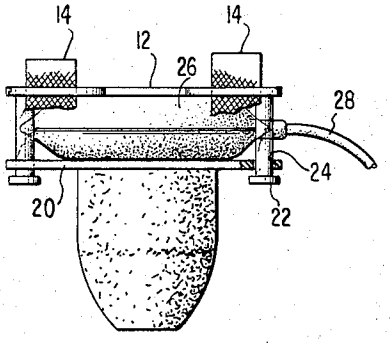


FIG. 3

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URETERAL COMPRESSION DEVICE

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This invention relates to improvements in ureteral compression devices of the type used for oblique roentgenography during intravenous urography.

It is known in medicine that the quality of intravenous urograms is significantly improved by the application of extrinsic ureteral compression after the injection of contrast material.

The conventional ureteral compression devices are attached to the roentgenographic table which makes it impossible to obtain exposures in oblique or other views which require mobility of the patient for positioning for such views, since the roentgenographic table with the patient strapped to it cannot assume all such universal positions. To overcome such problems there are devices known in the art which girdle the patient and utilize inflatable pads to compress the ureters. These devices also have disadvantages in that the inflatable pads are not as efficient as they could be in the compression of the ureters.

This invention provides a unique ureteral compression device which permits patient mobility during excretory urography since the device is attached to the patient and not to the roentgenographic table. Compression pressure is applied by an inflatable bag but the bags do not actually accomplish the compression since more effective ureteral compression is accomplished by means of cones which are compressed into the body of the patient by inflating the bag.

Other features of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose by way of example, the principle of the invention and the best mode which has been contemplated by applying that principle.

In the drawings:

FIG. 1 is a perspective view of the ureteral compression device of this invention;

FIG. 2 is a front elevation view of the ureteral compression device of FIG. 1; and

FIG. 3 is an end elevation view of the ureteral compression device of FIG. 1 shown in its almost fully inflated condition.

Referring to the drawings, a ureteral compression device **10** in accordance with this invention includes a base plate **12** which may be strapped to a patient by means of flexible straps **14**. These straps may pass through holes **16** in the plate **12** and have buckles **18** or other suitable securing means so that the straps may girdle a patient to strap the device **10** onto the patient with the base plate **12** outermost.

A movable plate **20** is mounted for limited movement relative to base plate **12** by suitable means such as headed pins **22** rigidly attached to base plate **12** and extending through holes **24** in movable plate **20**; each hole has a diameter less than the diameter of the head of its associated pin **22**.

An inflatable bag **26** is positioned in the space between the plates **12** and **20** and the bag may be connected by flexible tubing **28** to a conventional rubber bulb pump **30** so that the bag **26** may be inflated and deflated as required.

Attached to the face of plate **20** on the outside of the assembly and on the side of the device so as to press into the patient's body are a pair of compression cones **32** and **34**. These cones are rigidly attached to the face of plate **20** in spaced apart relation as shown and include

a surface configuration, including flats **36** and **38** for most effectively compressing the ureters when the device is positioned on a patient.

All of the components are of materials which are radiolucent with the technical factors used in abdominal roentgenology. For example, the plates are made from Plexiglas and the compression cones from Styrofoam, and the inflatable bag is latex.

In operation, the ureteral compression device **10** is placed on a patient with the cones **32** and **34** abutting the patient's abdomen and straps **14** fastened so that the device girdles the patient and is held in position with the bag **26** deflated. The physician positions the device so that the cones can compress the ureters. Thereafter the bag is inflated causing the movable plate **20** to expand inwardly toward the patient causing the cones **32** and **34** to press into the patient's body providing excellent compression of the ureters and allowing urograms of high quality to be taken, since with the cones correctly positioned and sufficient compression applied, the contrast agent used in intravenous urology will stay in the ureter at a level of the compression cones. The device allows complete patient mobility during excretory urography and greatly facilitates the examination of the kidneys in a minimum of time.

While the invention has been particularly shown and described with reference to a preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention.

I claim:

1. A ureteral compression device for use on a patient for oblique roentgenography during intravenous urology, the device comprising;

(a) a base plate of radiolucent material,

(b) a flexible strap of radiolucent material and of sufficient length for extending around the patient's body to strap the base plate around a patient's body,

(c) a movable plate of radiolucent material,

(d) means mounting the movable plate on the base plate for limited movement toward and away from the base plate,

(e) an inflatable bag of radiolucent material positioned between the plates, the bag being inflatable to separate the movable plate from the base plate up to the limit of the movable plate's movement,

(f) and a pair of spaced compression cones of radiolucent material attached to an outside face of the movable plate so that with the base plate strapped to a patient's body by the flexible strap the inflation of the bag will force the movable plate toward the patient's body and the compression cones will compress the ureters within the patient's body.

2. A ureteral compression device as in claim **1** further comprising a hand pump and a length of flexible tubing connected to the inflatable bag.

3. A ureteral compression device as in claim **1** wherein the means mounting the movable plate on the base plate for limited movement toward and away from the base plate includes headed pins extending through holes in the movable plate and attached to the base plate, the holes being of a diameter less than the heads of the pins.

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