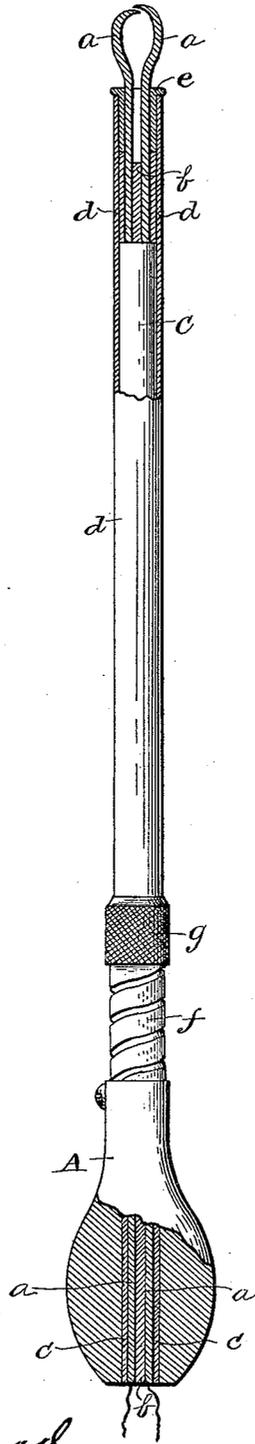


(No Model.)

F. L. CONNABLE & T. V. HARPER.  
ELECTRICAL SURGICAL INSTRUMENT.

No. 463,785.

Patented Nov. 24, 1891.



WITNESSES:

*Just Blackwood*  
*Albert B. Blackwood*

INVENTORS

*F. L. Connable & T. V. Harper*

BY

*M. H. Doolittle*

ATTORNEY.

# UNITED STATES PATENT OFFICE.

FRANK L. CONNABLE AND THOMAS V. HARPER, OF XENIA, OHIO; SAID HARPER ASSIGNOR AND SAID CONNABLE ASSIGNOR OF ONE-TWELFTH TO AUGUSTA MASON CONNABLE AND FANNY M. CONNABLE, BOTH OF SAME PLACE.

## ELECTRICAL SURGICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 463,785, dated November 24, 1891.

Application filed January 15, 1891. Serial No. 377,859. (No model.)

*To all whom it may concern:*

Be it known that we, FRANK L. CONNABLE and THOMAS V. HARPER, citizens of the United States, residing at Xenia, in the county of Green and State of Ohio, have invented certain new and useful Improvements in Electrical Surgical Instruments; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in electrical surgical instruments, as forceps and probes, whereby the aid of the electrical current is invoked in searching or probing for a foreign metallic body and in providing for signaling the contact of the instrument with the said body, the signaling continuing as long as such contact exists or the foreign metallic body is grasped by the instrument, but ceasing, of course, the instant such body becomes separated from the instrument. Thus much unnecessary pain and laceration are avoided, which result from the use of the ordinary forceps, where the sense of touch has to be alone relied upon and where the instrument frequently grasps a ligament or tendon.

In effecting the important results set forth we employ the appliances hereinafter disclosed.

Our invention is illustrated in the accompanying drawing.

Two steel strips *a a*, forming the jaws of the instrument, are insulated from each other by means of the insulating-strip *b*, and are inclosed in the rubber or other insulating tube *c*, all of which extend from or near the bottom of the handle *A* to the top of the instrument. The metal tube *d* fits loosely over this, and is provided at the upper end with an insulating-thimble *e*, which fits in the tube *d* tightly or is otherwise secured to it, and which fits or encircles the steel strips and their insulating-strip loosely enough to admit of its being moved up and down upon them easily. The other end of the tube *d* is provided with the coarsely-threaded or spirally-grooved metal tube *f* and the thumb-nut *g*, by which it may be turned. The steel strips *a a* are

rounded on their outer and flat on their inner surfaces, so that when they and their insulating-strip *b* are finished, ready for the insulating-tube *c*, they present the appearances of a round rod or bar. The upper end of the steel strips are permanently sprung outward, so that when the metal tube *d* is drawn toward the handle *A* the steel strips separate by reason of their normal spring-tension. The extreme upper ends of the steel strips *a a* are bent in toward each other and are provided each with one or more sharp teeth or points, which, when the instrument is fully closed, overlap or pass each other slightly without coming into metallic contact with each other. The lower ends of the steel strips are secured to the handle *A* in any suitable manner, care being taken during the entire manufacture of the instrument to prevent any electrical connection or contact between the two steel strips. The lower or handle ends of the steel strips are provided with suitable means for making connection to the respective poles of a battery *D*, which includes in its circuit a bell *F* or buzzer or other suitable device for producing a signal when the circuit is closed. The lower or spirally-grooved end of the tube *f* enters the handle *A* and engages with a corresponding thread or spiral groove, or an inwardly-projecting stud, pin, or screw in the handle may engage with the thread or groove in the tube *f*, so that by turning the tube by means of the thumb-nut *g* the tube may be moved up or down, and thus open or close the jaws *a a*.

The operation of the instrument is as follows: The two steel strips being connected with the respective poles of a battery by means of a suitable plug or otherwise, the instrument is inserted into the wound with the jaws closed, as shown in the drawing, and when the jaws touch the bullet or any other foreign metallic body the circuit is closed and a signal given. The nut *g* is then turned, causing the jaws to open by reason of their normal spring-tension. When opened sufficiently to allow the foreign body to come within their grasp, they are then closed upon it by turning the handle in the reverse direc-

tion, which by forcing the tube *d* upward draws the jaws toward each other, the electrical signal being continuous as long as the metallic body is grasped by the instrument and ceasing immediately should it slip from its grasp.

Having thus described our invention, what we claim is—

1. The electrical surgical instrument having the electrically-insulated jaws adapted to connect with the battery-wires and provided with approximately closed jaws, and the adjustable sleeve adapted to actuate or spread said jaws, substantially as set forth.

2. An electrical surgical instrument composed of the combination of steel strips, an insulating central strip, an insulating-tube inclosing said strip, an outside adjustable

sliding tube, an insulating-handle, and a battery connection, substantially as set forth.

3. An electrical surgical instrument composed, in combination, of steel strips *a a*, forming at upper end overlapping jaws, the insulated central strip *b*, the inclosing insulating-tube *c*, the outer tube *d*, provided with a thimble *e* and adjusting thumb-nut *g*, the tube *f*, which said thumb-nut turns, the handle, and a battery connection, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK L. CONNABLE.  
THOMAS V. HARPER.

Witnesses:

ABNER S. BUCK,  
SAML. L. WITHAM.

Correction in Letters Patent No. 463,785.

It is hereby certified that Letters Patent No. 463,785, granted November 24, 1891, upon the application of Frank L. Connable and Thomas V. Harper, of Xenia, Ohio, for an improvement in "Electrical Surgical Instruments," was erroneously issued to "Frank L. Connable, Augusta Mason Connable, and Fannie M. Connable," as owners of the invention; that said Letters Patent should have been issued to *Frank L. Connable, Augusta Mason Connable, Fannie M. Connable, and Thomas V. Harper*, said Harper being owner of one-fourth interest in said invention as shown in the record of assignments in this Office; and that the proper correction has been made in the files and records of the case in the Patent Office and should be read in the Letters Patent that the same may conform thereto.

Signed, countersigned, and sealed this 8th day of December, A. D. 1891.

[SEAL.]

CYRUS BUSSEY,  
*Assistant Secretary of the Interior*

Countersigned:

W. E. SIMONDS,  
*Commissioner of Patents.*