

No. 861,231.

PATENTED JULY 23, 1907.

A. W. CLARK.
SURGICAL LIGATURE.
APPLICATION FILED MAY 3, 1906.

Fig. 1

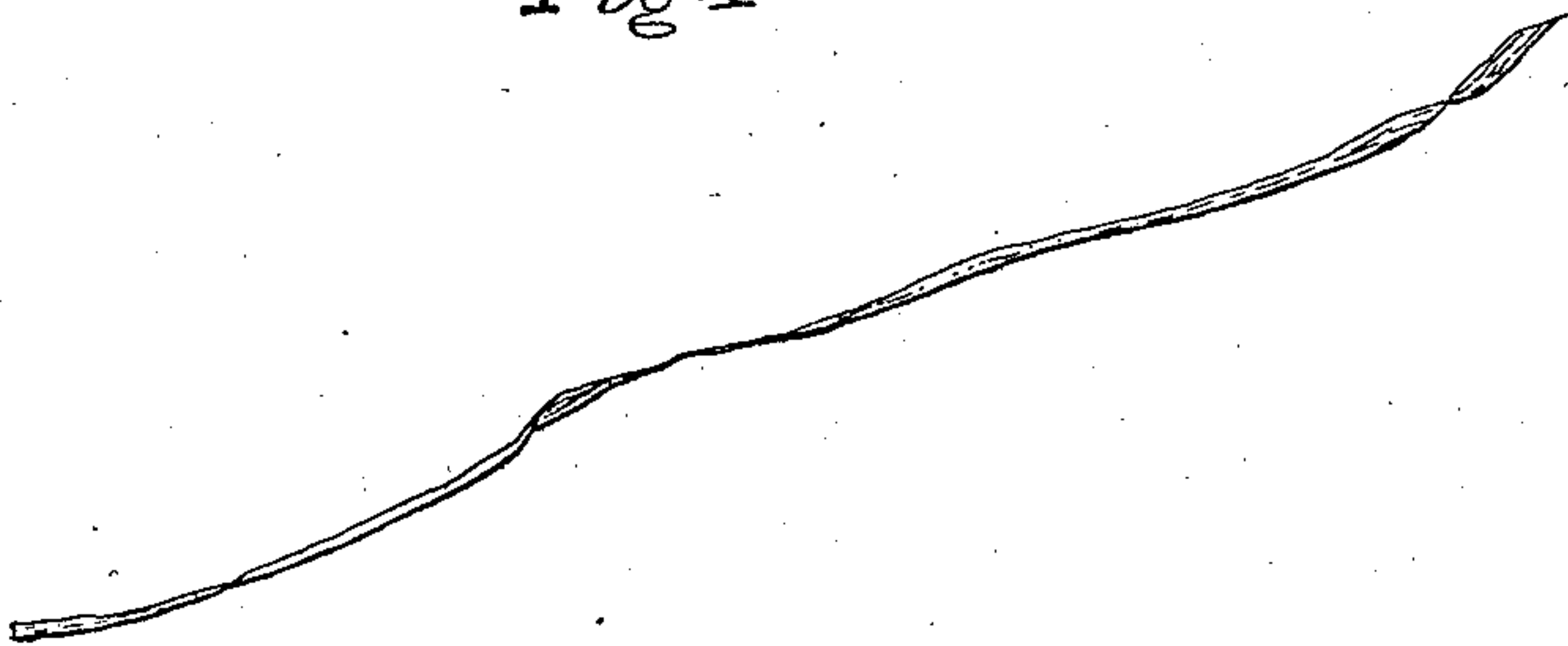
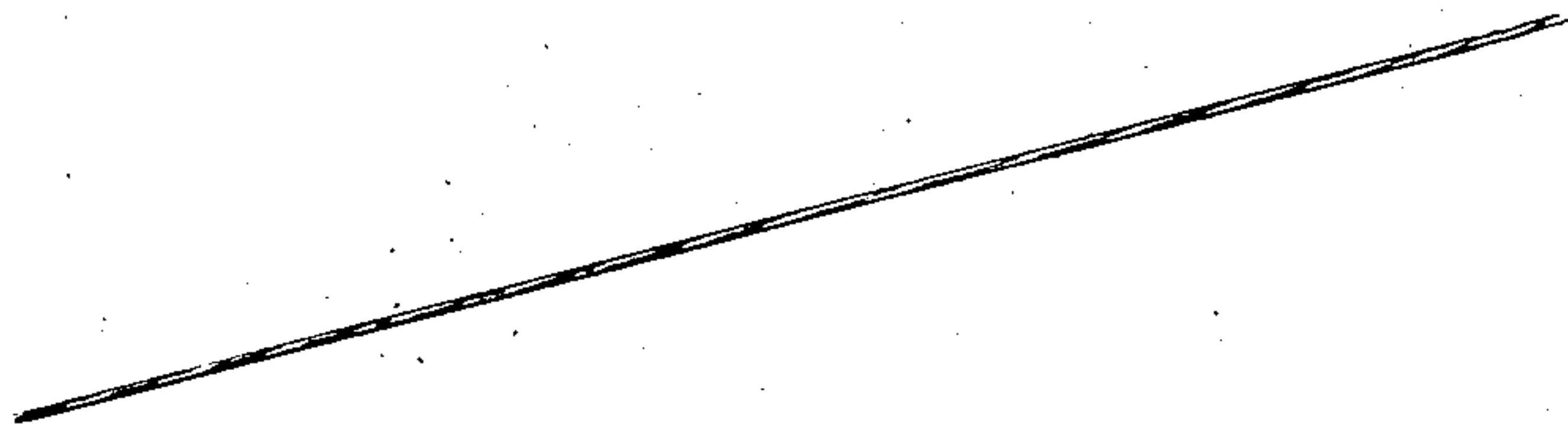


Fig. 2.



WITNESSES

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ARTHUR W. CLARK, OF CONSHOHOCKEN, PENNSYLVANIA, ASSIGNOR TO JOHNSON AND JOHNSON, OF NEW BRUNSWICK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SURGICAL LIGATURE.

No. 861,231.

Specification of Letters Patent.

Patented July 23, 1907.

Application filed May 3, 1906. Serial No. 315,106.

To all whom it may concern:

Be it known that I, ARTHUR W. CLARK, a citizen of the United States of America, residing in Conshohocken, in the county of Montgomery, in the State of Pennsylvania, have invented certain new and useful Improvements in Surgical Ligatures, of which the following is a specification.

The essential purpose of this invention is to provide a surgical ligature charged with an antiseptic or germicide by which the ligature will be more thoroughly charged or impregnated and will be more lasting and effective than the antiseptic ligatures as now made. This purpose I effect by charging the ligature strands with an insoluble antiseptic salt, and I prefer to employ iodid of silver as the insoluble salt.

In the accompanying drawing Figure 1 indicates a piece of one style of ligature strand before it is twisted; and Fig. 2 indicates its appearance after it has been twisted.

I proceed in the following manner:—I make a fluid emulsion of the insoluble salt, although other insoluble salts such as bismuth carbolate, for example, may be employed which is to be used as the antiseptic, and I thus mechanically suspend the antiseptic salt in the fluid. I take the strand of catgut, silk or other strands, in a loose or free state, that is, untwisted or more or less unspun or unbraided, and I dip these free strands into the emulsion, so that when they are taken out, their surfaces will be found coated or charged with the antiseptic or germicidal salt. The strands thus coated are then twisted, so that the particles of salt will be thereby mechanically grasped and held by the strands twisted thus. In the case of silk or other fibers the twisting may be conveniently effected by spinning or braiding.

It will be understood that I use this expression "twist" in a sufficiently general sense to apply to spinning, and braiding, as well as ordinary twisting of the ligature strands to produce the mechanical grip of the particles of antiseptic or germicide used. I use the term "ligature" in a sufficiently wide sense to include a "suture."

The advantage resulting from the use of insoluble substances as an antiseptic, as compared with soluble

antiseptics is that lasting quality of the insoluble salt, which is not absorbed away from the ligature in use, but lasts practically as long as the ligature remains in the tissue unabsorbed.

In this specification I use the term "insoluble" to mean that the antiseptic is insoluble in water, alcohol, ether or the ordinary solvents which are acceptable and practicable, so that a solution of the antiseptic cannot be made with which to impregnate the ligature in the ordinary manner. On the other hand, when a ligature charged with an insoluble antiseptic in the manner I have described, is embedded within the living tissue, the vital processes which take place cause disintegration of the ligature and the antiseptic is taken up or absorbed by the organisms present or by the living tissue, in a way which is not fully understood, but which doubtless implies a slow dissolving of the antiseptic.

The process herein described of preparing the ligatures forms the subject of a separate application for patent filed by me of even date herewith.

I claim as my invention

1. As a new article of manufacture, a ligature charged with an insoluble antiseptic, substantially as described, which will be absorbed by the tissues of the body but will last practically as long as the ligature remains unabsorbed in the tissue.

2. As a new article of manufacture, a ligature having a twisted strand holding mechanically in the twisted strand an insoluble antiseptic, substantially as described, which will be absorbed by the tissues of the body, but will last practically as long as the ligature remains in the tissue unabsorbed.

3. As a new article of manufacture, a twisted ligature charged with iodid of silver, which will be absorbed by the tissues of the body, but will last practically as long as the ligature remains in the tissue unabsorbed.

4. As a new article of manufacture, a twisted ligature charged with an antiseptic salt of silver, which will be absorbed by the tissues of the body, but will last practically as long as the ligature remains in the tissue unabsorbed.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

ARTHUR W. CLARK.

Witnesses:

FRED B. KLINE,
H. L. LACK.