

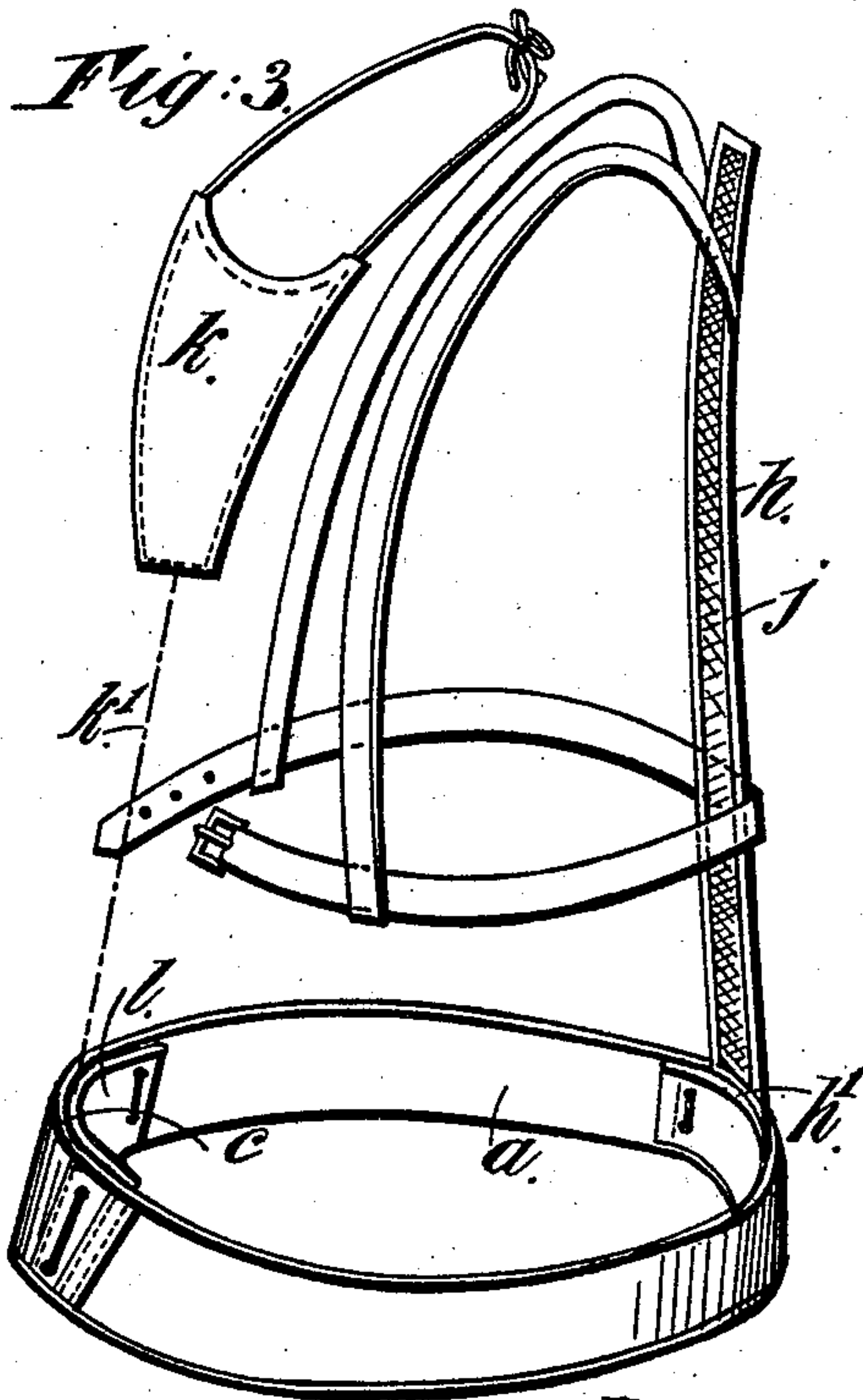
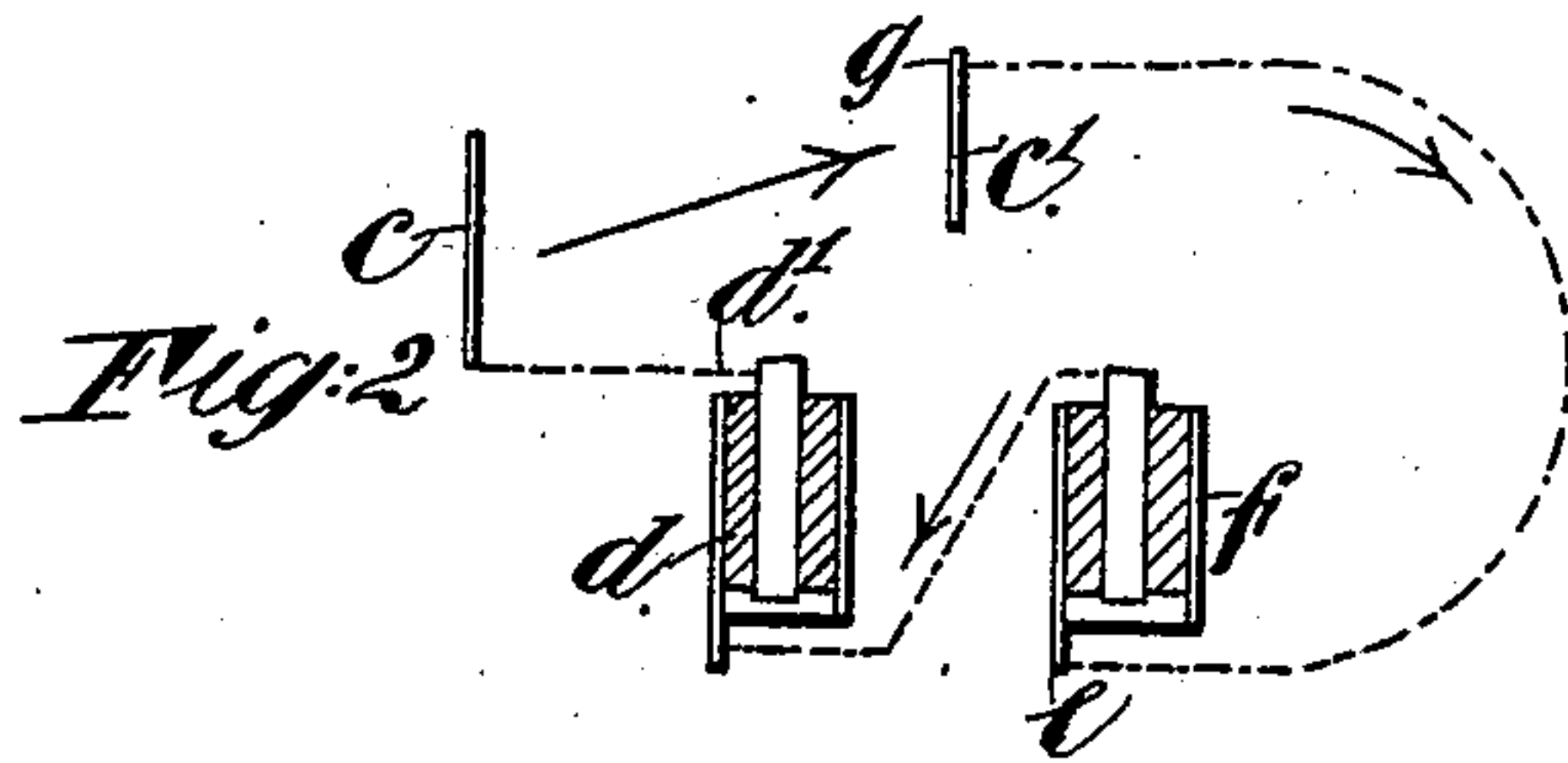
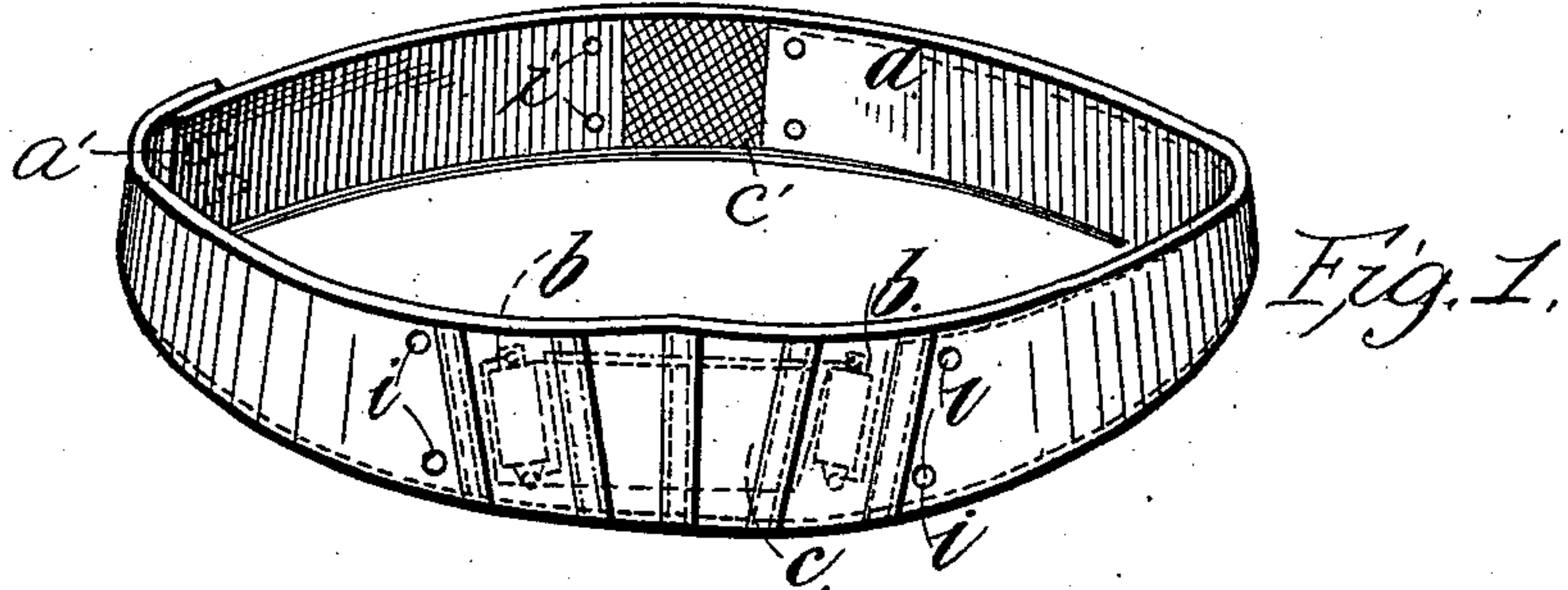
(No Model.)

3 Sheets—Sheet 1.

W. J. NEWTON, H. J. PURBROOK & H. DE C. HUDSON.
ELECTROTHERAPEUTICAL BODY WEAR.

No. 539,484.

Patented May 21, 1895.



Witnesses:

E. B. Bolton.

E. H. Sturtevant

Inventors:

Walter Joseph Newton
Henry James Purbrook
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their Attorneys.

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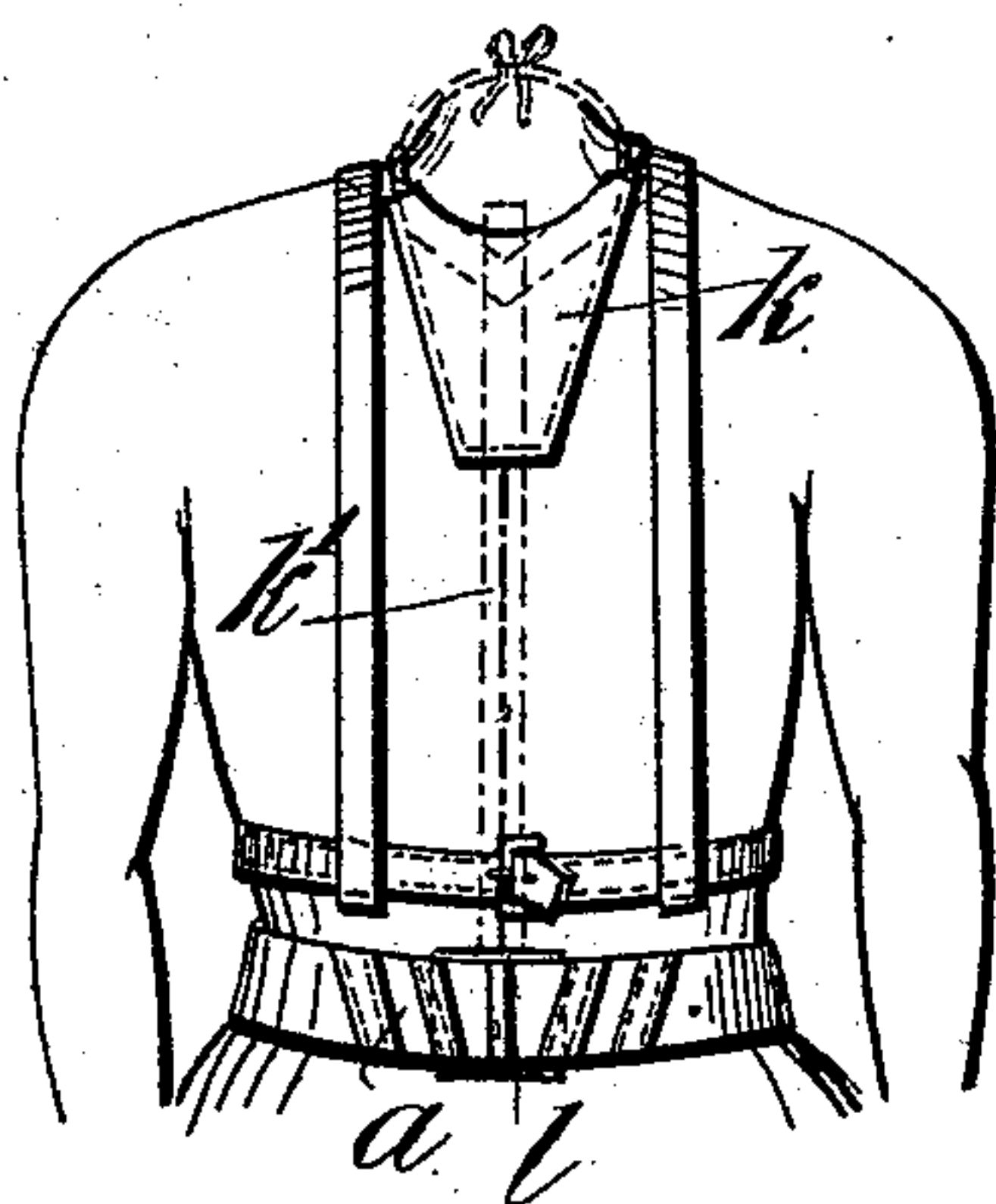
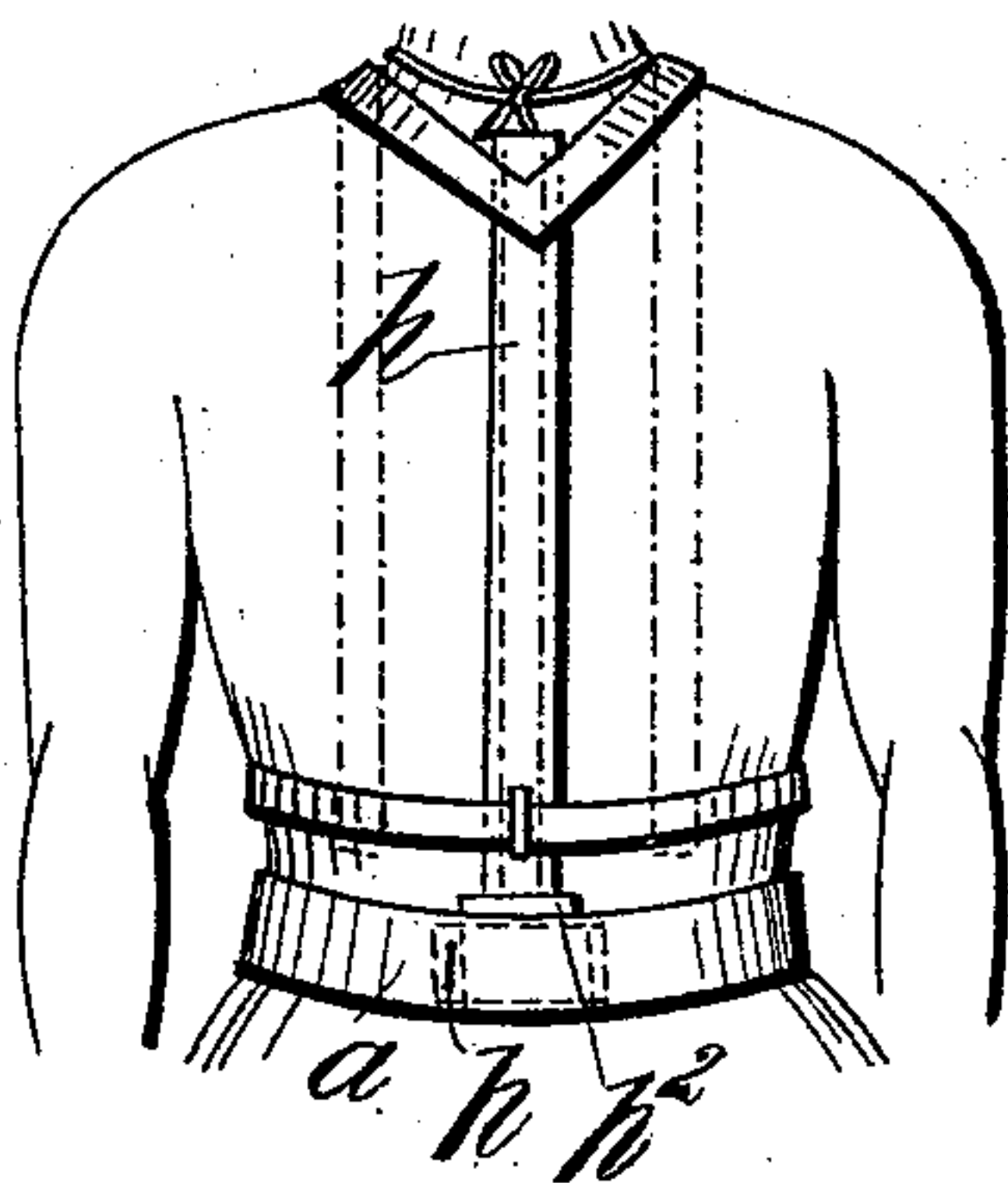


Fig. 4.

Fig. 5.



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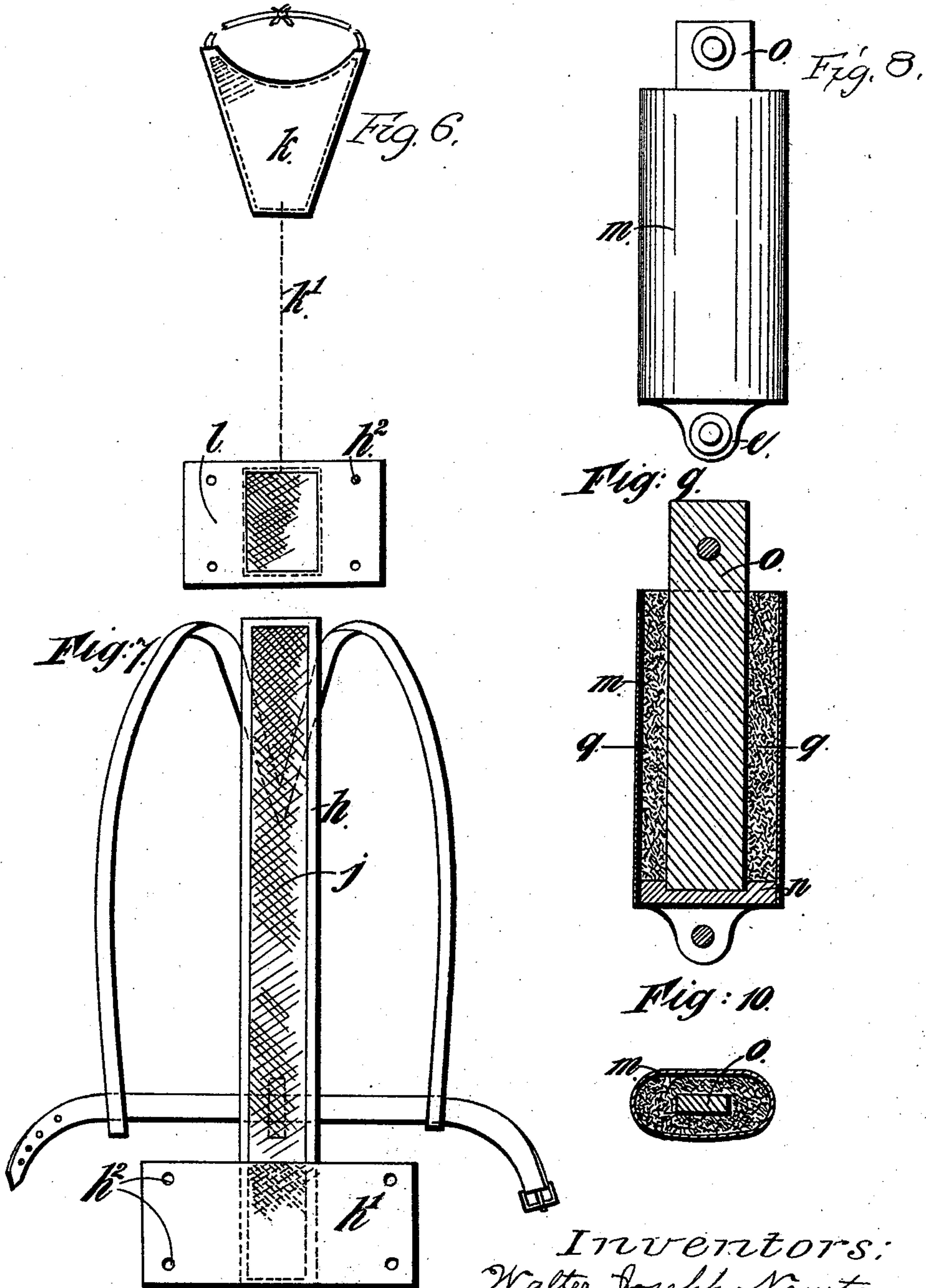
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UNITED STATES PATENT OFFICE.

WALTER JOSEPH NEWTON, HENRY JAMES PURBROOK, AND HERBERT DE CARLE HUDSON, OF WELLINGTON, NEW ZEALAND.

ELECTROTHERAPEUTICAL BODY-WEAR.

SPECIFICATION forming part of Letters Patent No. 539,484, dated May 21, 1895.

Application filed August 31, 1894. Serial No. 521,860. (No model.)

To all whom it may concern:

Be it known that we, WALTER JOSEPH NEWTON, HENRY JAMES PURBROOK, and HERBERT DE CARLE HUDSON, subjects of the Queen of Great Britain, residing at 42 Lambton Quay, Wellington, in the Colony of New Zealand, have invented new and useful Improvements in Apparatus for Generating and Applying Electricity to the Human Body, of which the following is a specification.

Our invention relates to applying electricity to the human body, and has for its object more especially applying a current of electricity for curative purposes in a convenient and effective manner.

One part of our invention consists in applying a belt, girdle, or wrapper of novel construction to any convenient part of the body, but more especially around the loins; such wrapper containing a dry battery or batteries connected to metallic terminals or electrodes, which batteries are placed in proper positions according to the purpose for which the application of the electricity is required, or the disease it is intended to cure or alleviate.

Another part of our invention refers to the nature and composition of the dry battery itself.

Our invention is illustrated on the accompanying drawings, in which—

Figure 1 is a perspective view of a belt fitted with the improved apparatus. Fig. 2 is a diagram illustrating the circulation of the electric current. Fig. 3 is a view of a similar apparatus to that in Fig. 1, but showing means for conducting the electric current through the chest and spine. Figs. 4 and 5 are front and back views, respectively, showing the application of the apparatus illustrated in Fig. 3. Fig. 6 shows the means of applying electricity to the chest. Fig. 7 shows the means of applying electricity to the spine. Fig. 8 is a front elevation of a battery constructed according to our invention. Fig. 9 is a vertical section of the same. Fig. 10 is a transverse section of the same on the line 9 9.

Similar letters of reference refer to similar parts throughout the several views.

(a) is a belt to be fixed around the loins by straps (a') or other suitable means, and fitted with pockets (b) or their equivalents to re-

ceive the batteries hereinafter described; which pockets may be of any desired number according to the number of batteries. These pockets we prefer to be in a diagonal position as shown for greater convenience in carrying them on the body of the patient.

(c) is a terminal or electrode having an extended surface so as to provide an efficient surface for supplying the electricity to the body, or the object to which it is attached; and (c') is another similar terminal or electrode applied to the part or position to which the current of electricity has to circulate from the terminal (c). These terminals or electrodes may be of wire gauze or woven wire, either woven into the substance of the belt or fixed upon it, or may be of metal deposited upon a suitable fibrous material. (c) is the positive, and (c') the negative terminal or electrode, or vice versa as desired and according to whether the negative or positive wire from the batteries is attached to them; and in the case of passing the current from the back through the abdomen to the front of the individual or vice versa this belt alone is used with the wires arranged as shown, viz., the positive (d') from the battery (d) attached to the terminal (c), the negative wire (e) passed to the positive pole of the battery (f) and the negative wire (g) attached to the terminal (c'), the current returning through the body of the subject from and to whatever part desired.

It is evident that instead of a belt, a suitable carrier for the battery may be attached to any other part of the body if desired, but we prefer to use the belt attached to the body as illustrated in the drawings.

To apply the current of electricity to the spine (see Fig. 3) we make use of a bandage or strap such as (h) which is (by preference) at its lower end (h') formed in the shape of a T with eyelet holes (h²) by which it can be fastened to the belt, which has similar and corresponding eyelet holes (i). This bandage or strap has attached to it a lining of wire gauze or metallic substance (j) which in the T piece (h') is exposed on one side of the textile fabric and in the main body (h) is exposed on the other side. Therefore by passing the said T end between the electrode (c') and the body of the patient the said electrode (c') is

cut off from the body, but as the upper metallic surface of (*j*) is in contact with the body, the current passes into the said metallic surface (*j*) and thence into the back and spine of the patient, and through the body back into the electrode (*c*) so as to complete the circuit.

To apply the current to the chest we make use of a breast piece (*k*) which is fastened around the neck of the patient in any suitable manner so as to lie close to the skin, and we connect the same by the wire (*k'*) to a piece (*l*) which is placed similarly to the T end (*h*) in Fig. 7, viz., with its metallic surface facing the electrode (*c*) and cutting the current of the same off from the body, but receiving the current from the said electrode, passing it through the wire (*k'*) into the breast piece (*k*) which has its metallic surface next the skin so as to pass the current of electricity through the chest and back, to the electrode (*c'*).

It will be seen that by similar arrangements applied to the feet, or any other part, we can pass the current of electricity through any part of the human body and in any desired direction. For instance, in the case of varicose veins an electric current may be produced up the legs by placing positive electrodes under the feet of the patient, so that the current may pass up the legs and thence to the opposite terminal of the battery which may be in any convenient position.

In Figs. 8, 9 and 10 is illustrated our improved dry battery which we prefer to use with our apparatus. (*m*) is the outer case of zinc having a binding screw to receive the negative wire (*e*). This outer case (*m*) is made in any form most convenient to the body, but (by preference) tubular as shown, and stopped at the lower end of the tube by plaster of paris (*n*). The carbon (*o*) is first prepared by dipping its terminal end into melted paraffine to prevent capillary attraction, and then hung in a saturated solution of permanganate of potash while it is acted upon by a powerful electric battery, say of six or eight Bunsen cells. The carbon is then put in position within the tube (*m*), being guided and held by the plaster of paris (*n*). We then fill in the space surrounding the carbon

with a creamy solution made as follows, viz: five parts by weight of oxide of zinc, and eleven parts by weight of plaster of paris moistened with a saturated solution of chloride of zinc in which is dissolved a small quantity of chloride of ammonia. This solution becomes comparatively hard, and when thus charged the battery will last for a considerable period.

We wish it to be understood that we do not confine ourselves to the exact details or location of the several parts of our apparatus, as these can be varied according to the part of the body to be operated on; and moreover the batteries can be carried on other parts of the person instead of by means of a belt around the waist as shown, and can be of any desired number.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In combination with the belt, the battery, the electrodes connected therewith, the spiral band *h* arranged to contact with one electrode and cut the same out and having a contact surface to bear on the body above the plane of the electrode, substantially as described.

2. In combination with the belt, the battery, the electrodes connected therewith and arranged at different points on the belt, the breast piece *k* having the contact surface to bear on the body, the cut out piece for one electrode and the connection from said electrode to the breast piece, substantially as described.

3. In combination, the belt, the battery carried thereby, the electrodes connected with the battery, the spiral band *h* and the breast piece *k*, said band and breast piece being connected with the electrode, substantially as described.

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