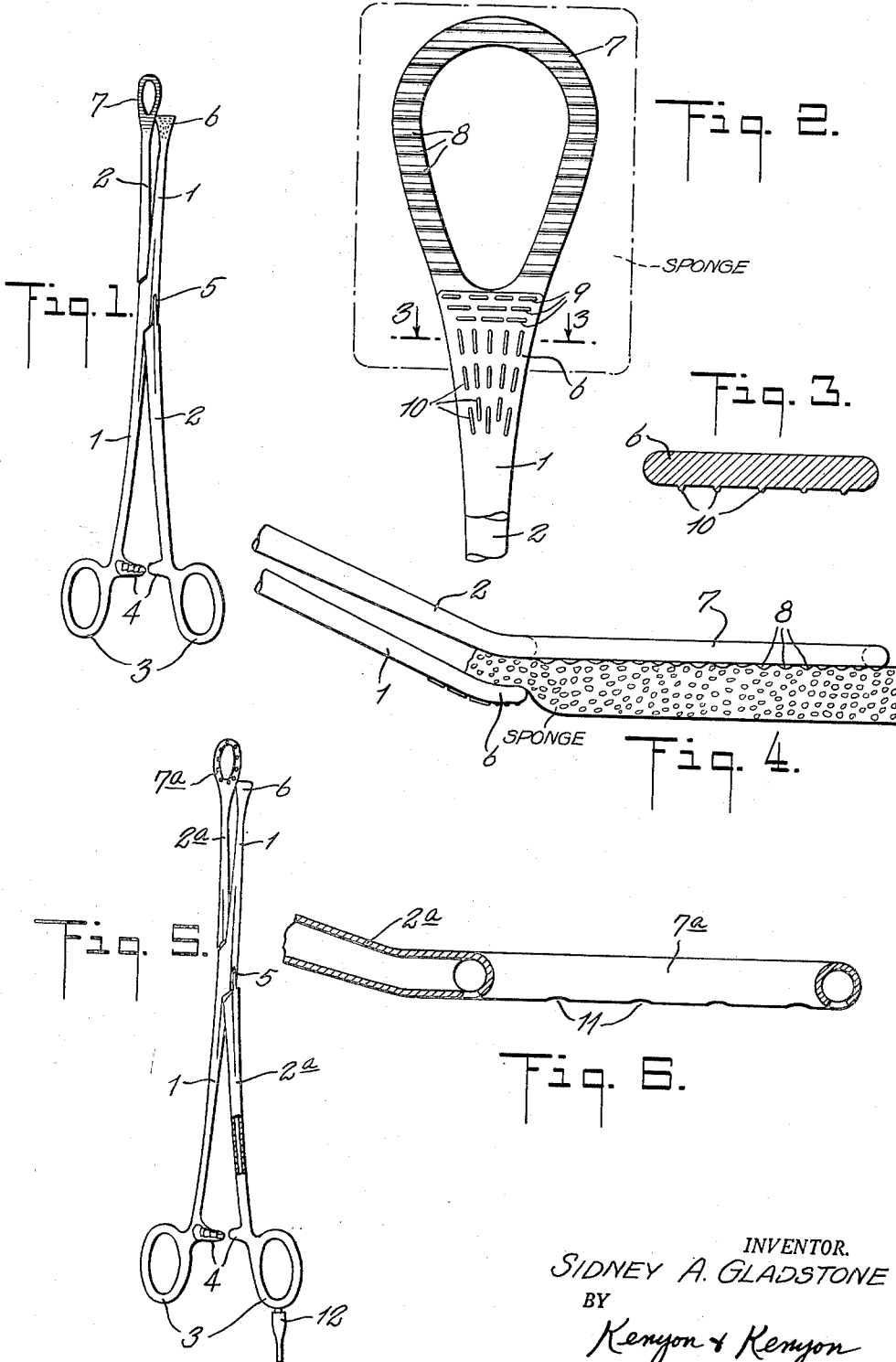


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S. A. GLADSTONE
SURGICAL TISSUE COLLECTOR DEVICE

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SURGICAL TISSUE COLLECTOR DEVICE

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4 Claims. (Cl. 128—2)

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This invention is a surgical tissue collector device particularly adapted for collecting tissue from a tumor.

A novel technique for obtaining tumor tissue specimens is disclosed and claimed in a copending application bearing Serial No. 53,131 and filed by the present inventor on October 6, 1948, now Patent No. 2,591,927. Among other things this technique includes rubbing a sponge over the tumor to collect tissue from it. A primary object of the present invention is to provide an instrument particularly adapted for manipulating the sponge and which is better adapted than prior art devices for use in connection with the technique of the invention of the copending application. However, in attaining this object an instrument has been developed which may be useful for other purposes.

The present invention involves a surgical tissue collector device comprising forceps having cooperating short and long jaws adapted to grip the sponge therebetween with its major sponge portion free on one side and backed-up on its opposite side by the long jaw. This permits greater rubbing pressure to be applied to the sponge. The outer side of the short jaw is roughened and adapted to loosen tissue when rubbed thereover whereby to provide loosened tissue for absorption by the sponge. In a modified form of the device the jaw and handle portions are relatively angular which is an arrangement that has been found advantageous under certain conditions. In a further modification the long jaw is made tubular and provided with inlets to its interior with these inlets arranged on its sponge-engaging side. This tubular jaw is provided with an outlet to which suction may be applied whereby to enhance the liquid absorption ability of the sponge.

Such a device and modifications are illustrated by the accompanying drawings in which:

Fig. 1 is a perspective of the device;

Fig. 2 is an enlarged top view of the jaws with a broken line outlining the portion of a sponge gripped thereby;

Fig. 3 is a cross section of the short jaw taken from the line 3—3 in Fig. 2, this Fig. 3 being enlarged relative Fig. 2;

Fig. 4 is a side view of the jaws as they appear when in angular relation with the handle portions and thus represents a modification;

Fig. 5 is a perspective showing the further modification involving the suction feature, and

Fig. 6 shows the long jaw of the device of Fig. 5 on an enlarged scale to illustrate its construction in detail.

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Referring to Figs. 1 through 3, the device may generally follow the construction of surgical forceps by comprising interpivotated handles 1 and 2 having finger loops 3 and ratchet locking parts 4. The handles 1 and 2 are interpivotated at 5 and extend beyond to the jaws. Thus far the device is similar to a surgical forceps.

Now diverging from the prior art the device has a short jaw 6 and a long jaw 7, the latter being in the form of a loop arranged in a plane parallel to the pivoting axis of the handles 1 and 2 and, therefore, transverse to its swinging direction. These short and long jaws are adapted to grip a sponge therebetween with its major sponge portion free on one side and backed-up on its opposite side by the long jaw. The manner of holding the sponge is illustrated by Fig. 4 showing the modified angular relation between the jaws and handles but operating in the fashion of the device illustrated by Figs. 1 through 3. Preferably the sponge engaging face of the long jaw 7 is roughened as shown at 8 so as to restrain relative movement between the sponge and the long jaw. The inner end of the sponge is tightly nipped or gripped between the two jaws. The shortness of the short jaw leaves a large amount of the sponge exposed. Therefore it is easy to use the device to rub the sponge on the tumor so as to realize the full effectiveness of the sponge. The long jaw backs-up the sponge so heavy rubbing force may be used if desired.

The roughness on the outer face of the short jaw 6 preferably comprises transverse ridges 9 adjacent its outer end and longitudinally extending ridges 10 leading to the transverse ridges 9. The ridges 9 are preferably interrupted transversely of the jaw so that they are in the form of sections and preferably a multiplicity of rows of the ridges 9 are provided. The longitudinally extending ridges 10 are interrupted longitudinally of the jaw and are also used in multiple rows. The jaw 6 is shown as having a triangular shape so as to match the throat of the loop forming the long jaw 7. The longitudinally extending grooves 10 are arranged in a fanned pattern so as to take full advantage of the triangular shape.

In Fig. 4 the handles 1 and 2 are shown bent at an angle relative the jaws 6 and 7. This has an advantage where it is necessary to use the device through surgical devices making manipulation of the sponge difficult. The handles 1 and 2 may be operated effectively at an angle relative the sponge gripped by the jaws.

In Fig. 6 the handle 2a and the long jaw 7a are made tubular, and the face of the jaw 7a that engages the sponge is formed with a series of in-

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lets 11. The finger loop of the handle 2a may be provided with an outlet 12. The other parts may be made as already described. The constructions of the handle 2a and jaw 7a are such that there is a continuous passage between the outlet 12 and the jaw 7a. This passage is free from openings excepting for the inlets 11. Therefore suction applied to the outlet 12 tends to remove excess fluid with which the sponge may become absorbed and hence enhances the capacity of the sponge to collect tissue.

In using the device the sponge is clamped between the short and long jaws in the manner indicated by Figs. 2 and 4, the lock 4 being used to maintain the jaws closed. The device may be drawn toward the user with the longitudinal ridges 10 lacerating the tumor tissue and the transverse ribs 9 tending to roll the tissue free. When the sponge reaches the tissue there is considerable loose material thus provided for it to pick up. The sponge collects the tissue on its surface while absorbing any liquids, the surface of the sponge functioning somewhat as a screen to prevent the tissue from penetrating too deeply. When the sponge becomes filled with liquid it loses its absorption properties. If the modification shown by Figs. 5 and 6 is in use, suction may then be applied to remove the liquids with which the sponge may have become saturated, thus permitting the penetration of more liquid into the sponge and consequent collection of more tissue on the sponge surface. Suction may be used continuously if desired.

The roughened surface 8 on the face of the long jaw tends to prevent the sponge from moving relative to the long jaw which is backing it up. Considerable pressure may be applied to the sponge to rub it on a tumor because the long jaw 7 provides its backside with rigid support.

I claim:

1. A surgical tissue collector device comprising forceps having cooperating short and long jaws adapted to grip a sponge therebetween with its major sponge portion free on one side and backed-up on its opposite side by the long jaw, the outer side of the short jaw having a plurality

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of projections thereon adapted to loosen tissue when rubbed thereover.

2. A surgical tissue collector device comprising forceps having cooperating short and long jaws adapted to grip an end of a sponge to leave its major portion free on one side and backed-up on its opposite side by the long jaw, the outer side of the short jaw having transverse ridges adjacent its outer end and longitudinally extending ridges leading to said transverse ridges, said long jaw being tubular and having inlets to its interior arranged on its sponge-engaging side and having a tubular handle communicating with its interior and provided with an outlet for connection with a vacuum.

3. A surgical tissue collector device comprising forceps having cooperating short and long jaws adapted to grip an end of a sponge to leave its major portion free on one side and backed-up on its opposite side by the long jaw, the outer side of the short jaw having transverse ridges adjacent its outer end and longitudinally extending ridges leading to said transverse ridges.

4. A surgical tissue collector device comprising forceps having cooperating short and long jaws adapted to grip an end of a sponge to leave its major portion free on one side and backed-up on its opposite side by the long jaw, the long jaw being tubular and having inlets to its interior arranged on its sponge-engaging side and having an outlet to which suction may be applied.

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