The conductive layer becomes exposed at the surfaces of the layer upon application of pressure. The insulating yarn therefore provides an insulating separating means between the conductive layer within layer **702** and the conducting fibre in the central layer. Similarly the conductive fibre **705** within layer **703** also forms a conductive layer which allows conduction in all directions along the layer, and the insulating yarn **704** provides an insulating separating means between said conductive layer and the conductive fibres within the central layer.

[**0060**] Under the pressure of an applied external force, the conductive fibres of the outer layers are brought into contact with the conductive fibre of the central layer and so the conductive fibre within the central layer provides a conductive path between the two outer conducting layers. However, at other locations, for example at a fold, the insulating yarn performs the function of the mesh layers of **FIG. 5**, and prevents a conductive path being formed.

[**0061**] In an alternative embodiment the insulating yarn may be replaced with a single filament insulating fibre of larger diameter than that of the conducting fibre **705**. The conducting fibre is then recessed within the layers **702** and **703** due to its smaller diameter.

[**0062**] A portion of a further alternative position sensor **801** is shown in the cross-sectional view of **FIG. 8A**. The sensor **801** has outer conductive fabric layers **201** and **202** of the type described with reference to **FIGS. 2 and 3**. However, the outer layers are separated by a central layer **802** which is knitted according to a pattern using a multi-filament insulating yarn and separate conducting fibre, with the pattern arranged such that the conducting fibre is concentrated into conductive islands **803** surrounded by a fabric constructed mainly from insulating yarn. Each conductive island is therefore surrounded by a very high resistance fabric portion **804**. The operation of the sensor is optimised if the fabric **804** is completely non-conductive. However, in order that continuous lengths of conductive fibre may be used in the knitting production process without cutting the conductive fibre, each island is connected to two neighbouring islands by a continuous conducting fibre. For example, island **803** is connected to islands **805** and **806** by portions of conductive fibre **807** and **808** respectively. The knitted fabric is configured such that the connecting portions of conductive fibre, such as **807**, are recessed within non-conducting fabric.

[**0063**] The knitted central layer **802** is also configured such that the conductive islands are recessed below the general surface of the high resistance fabric portion **804**. For example, the conducting fibre of conductive island **806** defines an upper surface **809** which is below the general upper surface **810** of the surrounding high resistance fabric portion **804**. The recessing of the conductive fibre is achieved by applying greater tension to it during the knitting process.

[**0064**] A view of the upper surface of the central layer **802** is shown in FIG. 8B. As is shown, each of the conductive islands, such as **803**, **805** and **806**, are surrounded by the substantially non-conductive fabric **804**. Thus, conductivity in the central layer **802** is minimised in all directions along the layer.

[**0065**] In operation the sensor **801** performs in a similar manner to those previously described. At the position of an external applied force the conductive outer layers **201** and **202** are pressed into electrical contact with conductive fibres in a number of the conductive islands. The conductive fibres in the central layer, therefore provide a conductive path between the outer conductive layers at the position of a mechanical interaction.

[**0066**] At other locations, such as at folds in the fabric, the insulating yarn within the high resistance fabric portion **804** prevents both of the outer layers from coming into contact simultaneously with the conductive fibre of the central layer at a particular location. The insulating yarn within the central layer thus provides an insulating separating means disposed between each of the outer conductive layers and the conducting means within the central layer. This forms a fabric considerably more conductive across its thickness than along the layer, thus reducing still further any interference, with positional data from a mechanical interaction, caused by contact between the central layer and one outer layer due to folding at a nearby position.

[**0067**] A portion of a further alternative position sensor **901** is shown in cross-section in **FIG. 9A**. The sensor **901** comprises, of outer conducting layer, **201** and **202** of the type described with reference to **FIGS. 2 and 3** separated by a knitted fabric central layer **902**. The central layer **902** is knitted using a yarn constructed by twisting together a conductive fibre and a plurality of insulating fibres. The fibres are chosen so that the conductive fibre is recessed below the general profile of the surface of the yarn.

[**0068**] A portion of the mixed fibre yarn **903** used to produce the central layer **902** is shown in **FIG. 9B**. The yarn **903** is produced on conventional equipment by twisting together a bundle of mono-filament polyester fibres **904** with a single filament carbon coated nylon fibre **905**. During manufacture of the yarn **903** the conducting fibre **905** is twisted under more tension than the insulating fibres **904** and as a result the conducting fibre is recessed below the general profile of the insulating fibres. The recessing process is further assisted by selecting a conducting fibre of slightly larger diameter and hence greater stiffness than the individual insulating fibres.

[**0069**] Therefore, by using yarn **903** to produce the central layer **902**, the insulating fibres **904** prevent the conducting fibre **905** from coming into contact with the conducting outer layers **201** and **202** except at locations where pressure is applied. In addition, the portions of insulating fibres **904** within the structure of the central layer **902**, tend to hold the conductive fibres apart. However, when an external force is applied to the sensor, the central layer becomes compressed at the location of the applied force and portions of conducting fibre come increasingly into contact with each other. As a result, the resistance between the outer layers, through the central layer, decreases as the applied force increases.

[**0070**] A portion of a mixed fibre yarn **906** which has an alternative construction to the yarn of **FIG. 9B** is shown in **FIG. 9C**. The yarn **906** is manufactured on conventional equipment by twisting together a bundle of fine, flexible insulating fibres **907** with a single, less flexible conducting fibre **908**. In this example, yarn **906** includes ten 16 decitex mono-filament polyester fibres **907** and one 24 decitex mono-filament carbon coated nylon 6 fibre. Due to the relatively large diameter, and hence the relative rigidity of the conductive fibre **908**, the insulating fibres become