CLAIMS

1. A sensor for electrically measuring a force acting on the sensor within a specified measuring range, which force is distributed unevenly over a measurement surface of the sensor, wherein an electrical force measurement signal is generated, comprising:

a spring device which is arranged between the measurement surface and a counter-surface,

a first measuring element arranged in or on the measurement surface and a second measuring element arranged in or on the counter-surface, the first and second measuring elements comprising capacitor plates covering these surfaces,

wherein the measurement surface and the counter-surface plus the measuring elements are elastically deformable,

wherein the measuring elements generate a measuring signal from a distance between the measuring elements,

wherein the spring device has a large number of incompressible but elastically designed spring members which are arranged spaced apart from each other by gaps, wherein each spring member upon loading by the force or a fraction of this force can deform, into the gaps and hence in a space-consuming manner,

wherein the height for each spring member between the measurement surface and the counter-surface upon loading of the sensor by the force within the specified measuring range is linearly proportional to a partial force acting thereon,

wherein the measurement surface and the counter-surface further include shielding elements for electrically shielding the first and second measuring elements, the shielding elements being separated from the capacitor plates of the first and second measuring elements by a dielectric, and

further including a capacitance measuring device connected to the shielding elements and to the capacitor plates of the first and second measuring elements to measure the capacitances between the shielding elements and the capacitor plates to obtain a temperature signal to be used to correct the measuring signal.

2. The sensor according to claim 1, wherein the measurement surface and/or the counter-surface comprise textile material, in particular a knitted fabric or a woven fabric.

3. The sensor according to claim 2, wherein the measuring elements comprise capacitor plates, with a capacitance between the capacitor plates being able to be measured to generate the force measurement signal.

4. The sensor according to claim 2, wherein the measurement surface and/or the counter-surface are connected to the spring members by fastening means.

5. The sensor according to claim 1, wherein the capacitance between the capacitor plates is able to be measured to generate the force measurement signal.

6. The sensor according to claim 5, wherein the measurement surface and/or the counter-surface are connected to the spring members by fastening means.

7. The sensor according to claim 1, wherein the measurement surface and/or the counter-surface are connected to the spring members by fastening means.

8. The sensor according to Claim 7, wherein the fastening means are designed elastically such that the measurement surface and/or the counter-surface is/are displaceable relative to the spring device.

9. The sensor according to claim 1, wherein the shielding elements are disposed on the sides of the measurement surface and the counter-surface remote from the spring device.

10. The sensor according to claim 1, wherein the spring members are arranged at regular distances from each other.

11. The sensor according to claim 10, wherein the spring members are bar-shaped, frusto-pyramidal, or frusto-conical individual elements.

12. The sensor according to claim 10, wherein the spring members are manufactured from silicone rubber.

13. The sensor according to claim 12, wherein the silicone rubber has a Shore hardness between 45A and 55A.

14. The sensor according to claim 13, wherein the Shore hardness is between 47A and 53A.

15. The sensor according to claim 1, wherein the spring members are connected together via at least one carrier surface.

16. The sensor according to Claim 15, wherein the carrier surface is designed in one piece with the spring members.

17. The sensor according to claim 1, wherein one of the spring members comprises a group of spring members wherein the spring members in the group have spring characteristics which are inverse to one another, to thereby compensate for each other and bring about linearisation of a group spring characteristic.

18. Use of a sensor according to claim 1 for measuring loads exerted by human limbs or effectors of a robot on a surrounding object.

19. Use of a sensor according to Claim 18, wherein the surrounding object is a shoe, a prosthesis, an orthosis, a handle, a steering wheel, a natural or an artificial joint, a tool or a workpiece.