To all whom it may concern:

Be it known that I, THEODORE H. MILLER, a citizen of the United States, residing at Poughkeepsie, county of Dutchess, and State of New York, have invented a new and useful Improvement in Springs for Spring Bearings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a novel spring for use in a spring bearing and especially adapted for centrifugal separators.

In my invention a metal sheet or shell is bent or curved into the form of a cylinder adapted to lie between the bearing and the outer support. From this metal sheet are cut and bent a series of fingers, which fingers are bent outwardly or inwardly and circumferentially. Certain of the fingers are arranged out of circumferential alignment with certain other fingers and also out of vertical alignment with the adjacent spring fingers with which they are out of circumferential alignment. Preferably the fingers are arranged in a plurality of circumferential rows, the fingers of one circumferential row being arranged alternately with respect to the fingers of an adjacent circumferential row, whereby there are provided a plurality of circumferential lines of contact and also a number of points of contact equal to substantially a multiple of the number of fingers in a row.

I will now describe the embodiment of my invention shown in the accompanying drawings in which—

Figure 1 is a side view elevation of the same.

40 a is the metal piece, b, c and d the fingers which are cut and bent outwardly from the metal piece at different points, to lie circumferentially. As will be seen, the spring contacts of fingers b are in circumferential alignment with each other and so with the contacts of fingers c and with the contacts of fingers d, but each set of fingers a, b and c is out of circumferential alignment with the other sets of fingers. Each finger b is arranged in a different plane from the adjacent fingers c, and each finger c is arranged in a different vertical plane from the adjacent fingers d. In the embodiment shown, the fingers of each set are arranged alternately with respect to the fingers of an adjacent set. More specifically, two fingers b and d are arranged in the same vertical plane, the next adjacent finger c of the intermediate set is arranged in a different vertical plane, and so on around the circumference of the spring. Thus, while there are only five fingers in each set, the spring fingers contact along ten vertical lines. Therefore the spring contact points are widely distributed over the bearing surface, the fifteen fingers contacting at fifteen points measuring circumferentially and at ten points measuring vertically. As shown, these fingers are bent outwardly, in which case they contact with the outer support. They may be bent inwardly with the same resultant construction, the only difference being that the fingers will then contact with the inner support (bearing or bushing). To secure the maximum elastic effect from the springs the same are not, in the preferred construction, bent out in the form of an arc of a circle but each finger is bent approximately tangentially from its connected end to a point relatively near its outer extremity where it is curved inwardly toward the shell, whereby the bearing point of the finger is near but not at its actual extremity.

I do not intend to limit myself to forming the fingers by cutting and bending the sheet itself, although this method of forming the fingers is preferable, my invention residing in the arrangement and form of the fingers and not in the way in which each finger is formed from the sheet.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. A spring for spring bearings comprising a metal sheet of cylindrical form having bent out circumferentially extending fingers each of which is connected with the metal sheet at one end only, said fingers being arranged in a plurality of circumferentially extending rows, each finger of one row being arranged out of vertical alignment with the nearest fingers of an adjacent circumferential row.

2. A spring for spring bearings comprising a metal sheet of cylindrical form having circumferentially extending fingers cut from the metal of the sheet and all project-
in a plurality of circumferential rows, each finger being arranged substantially midway between the two adjacent fingers of an adjacent circumferential row.

3. A spring for spring bearings comprising a metal sheet of cylindrical form having circumferentially extending spring fingers each of which is connected at one end to the metal sheet and projects toward its free end in a substantially tangential direction and is bent at a point relatively near its free extremity toward the body of the shell, said fingers being arranged in a plurality of circumferential rows, the fingers of each row being arranged out of vertical alinement with, and alternately to, the fingers of an adjacent circumferential row.

In testimony of which invention, I have hereunto set my hand, at Poughkeepsie, on this 26th day of Sept., 1910.

THEODORE H. MILLER.

 Witnesses:
  H. C. BARKER,
  WILLIAM T. F. REILLY.