

(No Model.)

H. KAUFMANN.
SPRING.

No. 490,389.

Patented Jan. 24, 1893.

Fig. 1.

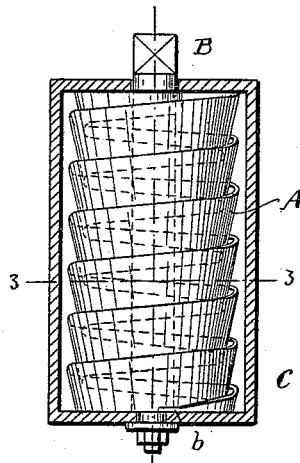


Fig. 2.

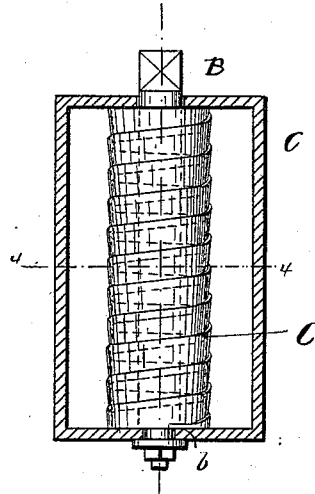


Fig. 3.

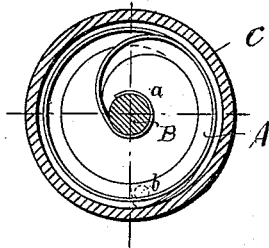
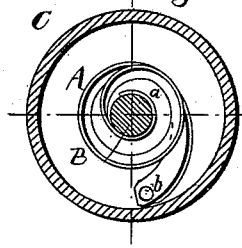


Fig. 4.



WITNESSES:

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HERMANN KAUFMANN, OF LANGERWEHE, GERMANY.

SPRING.

SPECIFICATION forming part of Letters Patent No. 490,389, dated January 24, 1893.

Application filed June 18, 1892. Serial No. 437,223. (No model.)

To all whom it may concern:

Be it known that I, HERMANN KAUFMANN, a citizen of Germany, and a resident of Langerwehe, near Aix-la-Chapelle, in the Empire of Germany, have invented certain new and useful Improvements in Springs, of which the following is a specification.

This invention relates to improvements in motor springs. Heretofore motor springs were usually formed of a spring-band wound in the form of a spiral, the entire spiral being in the same plane, and in most cases where the driven part had to make a considerable number of rotations before the spring had run down considerable gearing was required for transmitting this motion, as otherwise a very long spring with numerous windings would have been required.

The object of my invention is to provide a spring of this kind which has great power and does not uncoil rapidly and occupies very little space.

In the accompanying drawings, Figure 1 is an elevation of my improved motor spring uncoiled, the casing being shown in cross-section. Fig. 2 shows the same coiled. Figs. 3 and 4 are horizontal sectional views, on the lines 3 3, of Fig. 1, and 4 4 of Fig. 2, respectively.

Similar letters of reference indicate corresponding parts.

My improved motor spring consists of a steel band which is wound helically to form a cylinder having the same diameter at the top and bottom. The band is inclined inward slightly and downward, so that each spiral section in its external appearance has the shape of an inverted truncated cone, or funnel, each truncated section extending into the next lower section. One end of this spring A is secured at *a* to the winding spindle B, and the other end of the spring is se-

cured at *b* to the bottom of the casing C, which contains the spring. When the spring is wound on the spindle the diameter of the helix is reduced, as shown in Fig. 4, and the diameters of the apparently conical sections are also reduced. The height of the spring remains the same. When the spring is wound it surrounds the spindle B a greater number of times than when unwound, as can be seen by comparing Figs 3. and 4. The spring when wound has rotative power and also exerts a pressure in the direction of its length, which can also be utilized, if desired. As the spring strip is inclined inward from its upper to its lower edge, the bottom edge of the strip or band forms a helical line of less diameter than the helical line formed by the upper edge of the strip or band.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. The combination, with a spring composed of a metal band wound to form a series of funnel-shaped sections, of a spindle passing centrally through the spring, to which spindle one end of the spring is fastened, substantially as set forth.

2. The combination, with a casing and a central spindle in the same, of a spring having one end secured to the spindle and the other end to the casing, said spring being composed of a metal band wound to form a series of funnel-shaped sections, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two subscribing witnesses.

HERMANN KAUFMANN.

Witnesses:

JOHN HECKMANN,
TH. WITTICH.