(No Model.)

C. BACK.

SPOOL.

No. 487,704. Patented Dec. 13, 1892.

Fig. 1

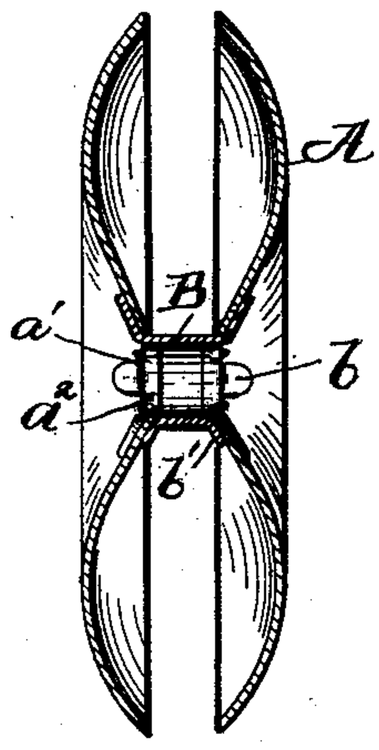


Fig. 2.

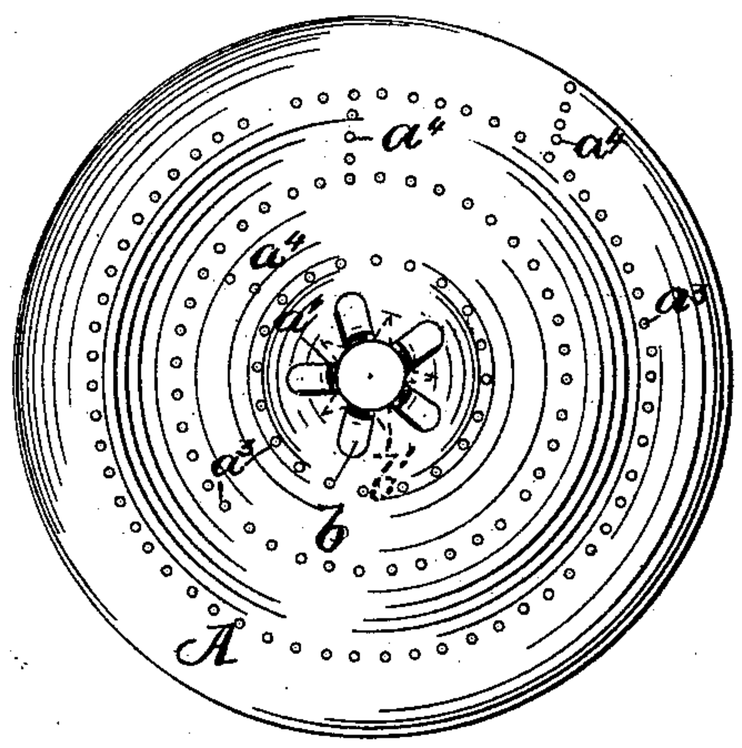
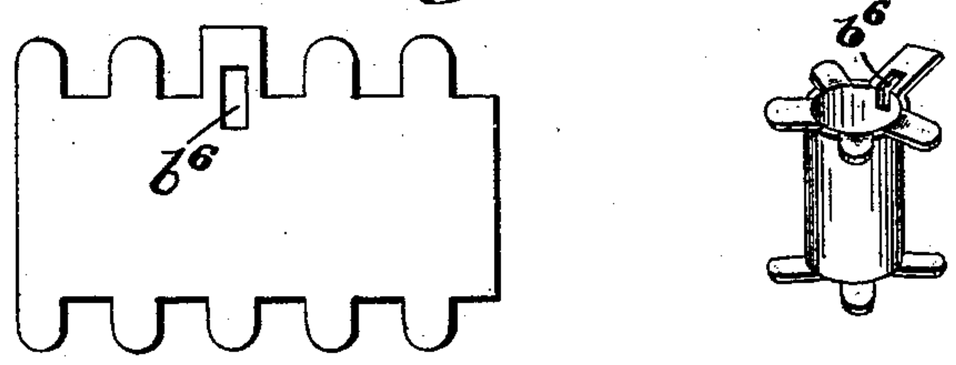


Fig. 3.

Fig. 4.



Witnesses
Henry Orth Jr
B. W. Sommers

Inventor
Carl Back
By Munn & Co
attys.

UNITED STATES PATENT OFFICE.

CARL BACK, OF VIENNA, AUSTRIA-HUNGARY.

SPOOL.

SPECIFICATION forming part of Letters Patent No. 487,704, dated December 13, 1892.

Application filed October 20, 1891. Serial No. 409,309. (No model.) Patented in Germany September 23, 1891, No. 61,805; in Switzerland September 23, 1891, No. 4,093; in France September 23, 1891, No. 216,301; in Belgium September 23, 1891, No. 96,505; in England September 23, 1891, No. 16,185; in Italy September 30, 1891, XXV, 30,468, LXI, 121; in Austria-Hungary February 18, 1892, No. 43,656 and No. 73,439, and in Spain March 5, 1892, No. 12,574.

To all whom it may concern:

Be it known that I, CARL BACK, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Province of Lower Austria, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Spools, (for which I have obtained Letters Patent in Austria-Hungary, No. 43,656 and No. 73,439, dated February 18, 1892; in Germany, No. 61,805, dated September 23, 1891; in Switzerland, No. 4,093, dated September 23, 1891; in France, No. 216,301, dated September 23, 1891; in Belgium, No. 96,505, dated September 23, 1891; in Italy, Vol. XXV, No. 30,468, Vol. LXI, No. 121, dated September 30, 1891; in Great Britain, No. 16,185, dated September 23, 1891, and in Spain, No. 12,574, dated March 5, 1892;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The invention relates to spools for thread or yarn, and has for its object a construction by means of which an extremely light yet sufficiently strong and a very cheap spool is obtained, also the provision of means for ventilating the thread on the spools, and the provision of means whereby the diameter of the spool-flanges may be reduced as the diameter of the thread thereon is reduced by use.

To these ends the invention consists in structural features and combinations of parts as will now be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a transverse section of a spool embodying my invention and illustrating the means of uniting the end flanges to the spindle or axis. Fig. 2 is an end elevation of the same, illustrating means whereby the diameter of the end flanges may be reduced according as the thread is removed from the spool. Fig. 3 illustrates the construction of the spindle or axis of the spool and the means for uniting the end flanges or disks thereto. Fig. 4 shows in perspective and plan a spool-axis and the blank from which it is made, wherein one of the lips is made slightly longer and slotted.

Similar letters indicate like parts wherever such may occur in the above-described drawings.

My improved spool is constructed of a cheap and light material, either light sheet metal only or of such metal and a fibrous material, according to the uses to which the spool is to be adapted.

I have shown a spool the spindle B of which is made from a blank *l* of light sheet metal having two sets of tongues or lips *b* and *b'* formed along its opposite longitudinal edges, which, when said blank is rolled into a tube, project from the ends thereof and serve to secure the flanges or end disks to said spindle, as will be hereinafter described. The end flanges or disks A for the spool may also be made of light sheet metal, or they may be made of sufficiently-stiff paper or thin card-board, and to give them greater rigidity they may be dished or corrugated, as shown, with their peripheries bent either inwardly or outwardly, the same results being attained by either construction. The end flanges or disks A are provided with a short inwardly-projecting bearing a^2, which fits into the spindle or axis B for the spool when the blank is rolled into tubular form. The lips *b* of the spindle forming the outer abutment or bearing are inserted into segmental slots *a'* formed around the central opening *a* of the disk A, while the smaller lips *b'* form the inner abutment for said disk and firmly unite the disk to the spindle.

In order that the spool may be firmly secured to the spindle of a winding or spooling machine, one of the outer abutment-lips *b* is enlarged and provided with a slot b^6, as shown in Fig. 4, for the reception of the retaining-pin on said spindle of the winding or spooling machine. I have shown this feature, for the sake of clearness, applied to a spool-axis in which all of the lips except the slotted one are of the same length. It is obvious, however, that one of the lips *b* of the spool-axis

shown in Figs. 1, 2, and 3 may be sufficiently large and slotted for the purpose stated.

To prevent the thread or yarn wound on the spools from "dry-rotting," I provide means whereby air may have ready access to the convolutions of such thread or yarn, which consists of a series of concentric circles or perforations a^3, made in said disks A, and when said disks are made of stiff paper or thin card-board concentric sections may be successively torn off as the thread is used up, thereby decreasing the diameter of the spool in proportion to the amount of thread remaining thereon. To facilitate the tearing off of the disks, transverse lines of perforations a^4 may be arranged so as to interconnect the concentric rows of perforations and to connect the peripheries of the disks with the outer concentric row of perforations.

It will be readily seen that with the described construction an extremely light and also very cheap spool is obtained that has advantages over the ordinary spools of wood now used beyond its lightness, as above described.

The parts of which the spool is composed are obtained by stamping and pressure in a well-known manner.

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

1. A spool composed of a spindle consisting of a tubular sheet-metal core having flexible tongues or lips b b', alternating with each other, said tongues b' being shorter than the tongues b and forming, when bent at right angles, the inner abutments for the end disks or flanges of the spool, in combination with said end disks having a central opening and slots arranged around said opening for the passage of the lips b, which when bent over form the outer abutments for the disks, substantially as and for the purpose set forth.

2. A spool having concentric rows of openings formed in its flanges or end disks, substantially as and for the purpose set forth.

3. A spool having flanges or end disks of paper or card-board provided with concentric rows of perforations between the spindle or axis of the spool and the periphery of the flanges or disks, for the purpose set forth.

4. A spool having flanges or end disks of paper or card-board provided with concentric rows or perforations between the spindle or axis of the spool and the periphery of the flanges or disks and with transverse lines of perforations between the several concentric rows and between the periphery and outer row of perforations, for the purpose set forth.

5. A spool composed of a tubular spindle provided at each end with flexible tongues or lips, one of said tongues having a longitudinal slot b^6 formed therein and flanges or end disks secured to the spindle by means of said tongues, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CARL BACK.

Witnesses:
W. B. MURPHY,
A. SCHLESSING.