

No. 747,859.

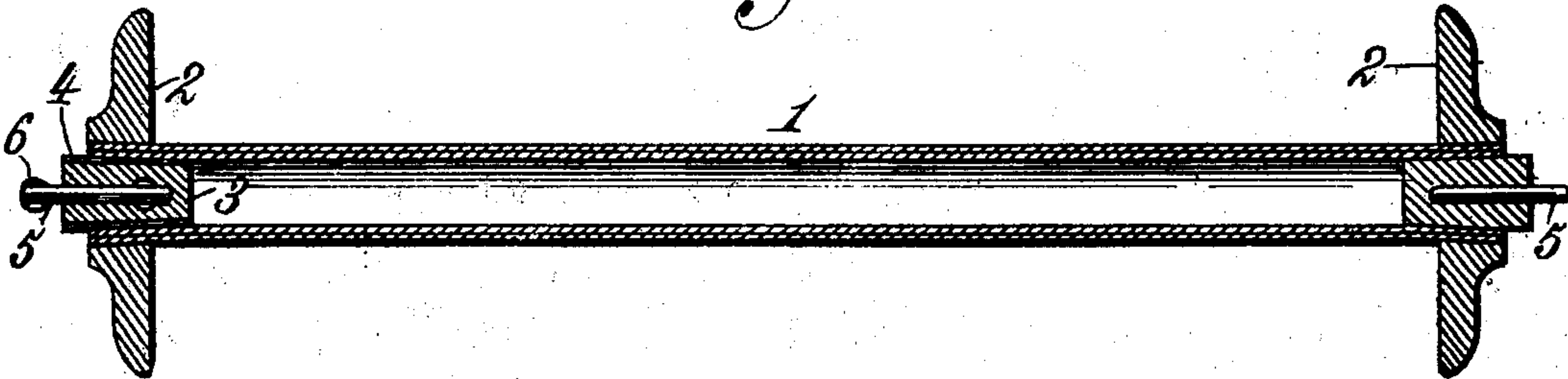
PATENTED DEC. 22, 1903.

G. H. DAVIS.  
COMPENSATING MUSIC ROLL OR SPOOL.

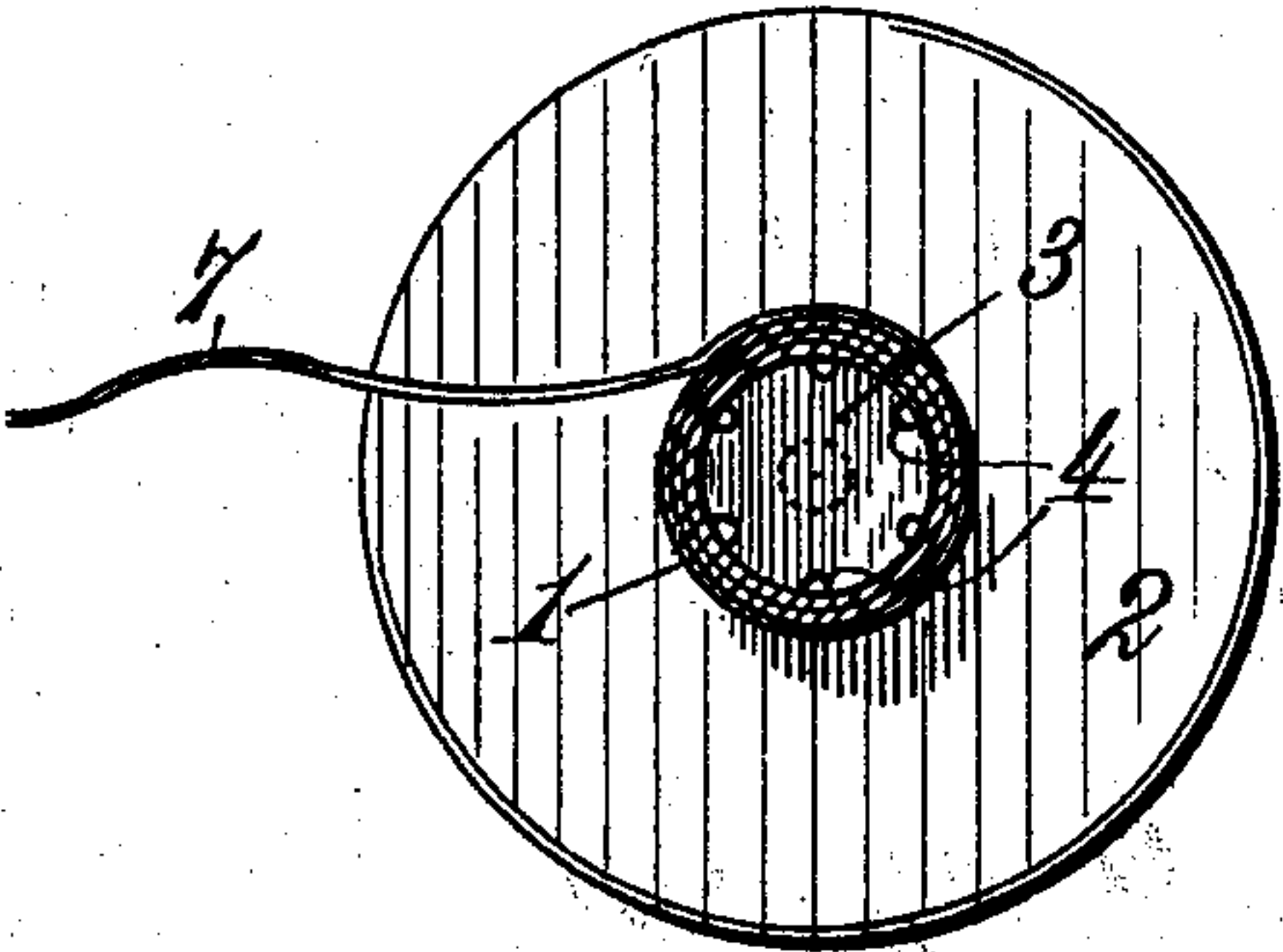
APPLICATION FILED FEB. 27, 1903.

NO MODEL.

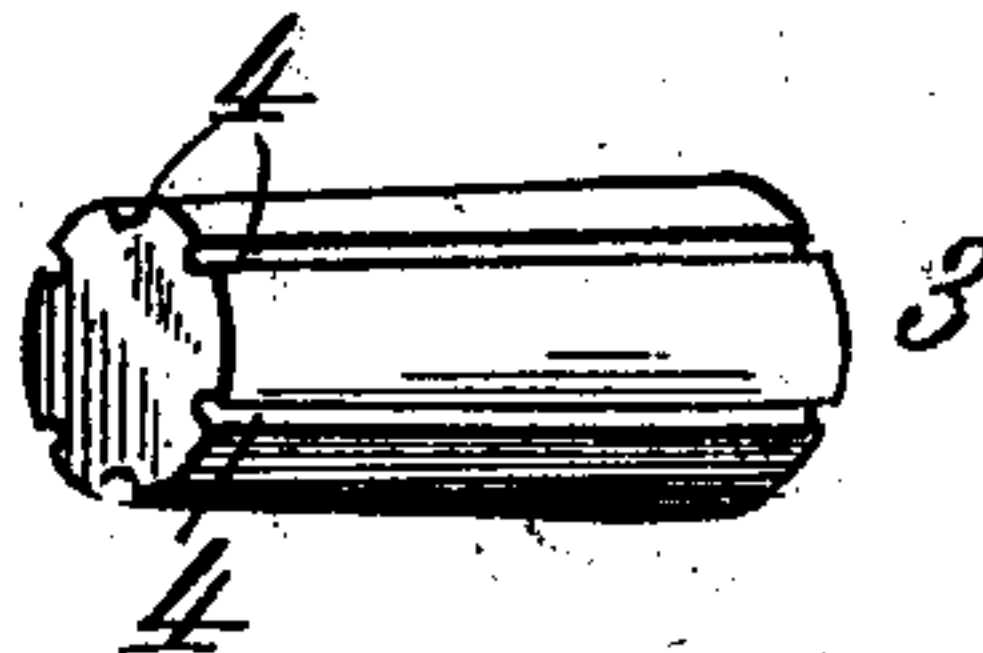
*Fig. 1.*



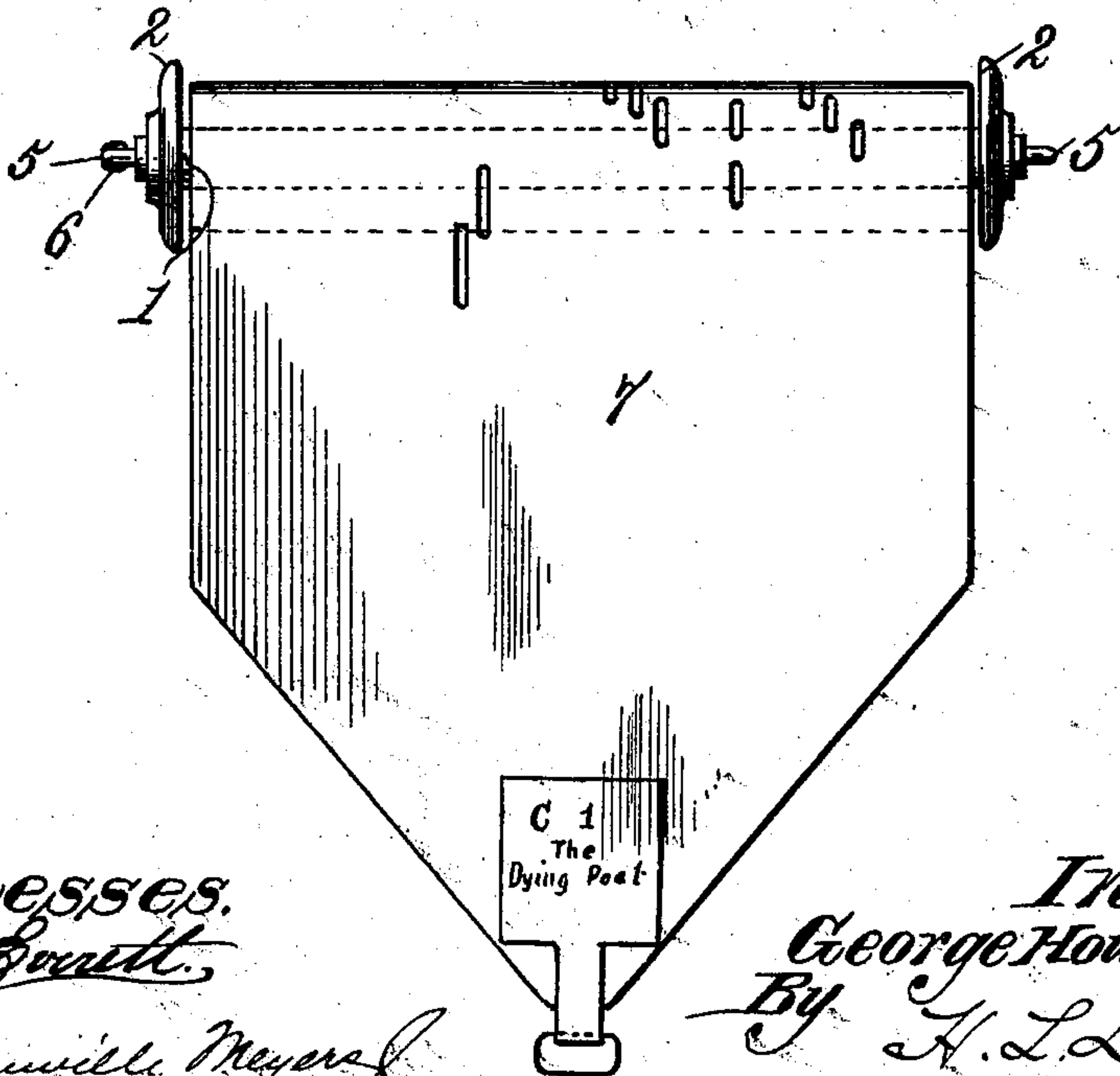
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Witnesses.*  
*Robert Smith*  
*J. Chaville Meyer*

*Inventor.*  
*George Howlett Davis.*  
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*Att'y.*



# UNITED STATES PATENT OFFICE.

GEORGE HOWLETT DAVIS, OF WEST ORANGE, NEW JERSEY.

## COMPENSATING MUSIC ROLL OR SPOOL.

SPECIFICATION forming part of Letters Patent No. 747,859, dated December 22, 1903.

Application filed February 27, 1903. Serial No. 145,350. (No model.)

### *To all whom it may concern:*

Be it known that I, GEORGE HOWLETT DAVIS, a citizen of the United States, residing at West Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Compensating Music Rolls or Spools; 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.

My present invention relates to certain new and useful improvements in music rolls or spools for perforated note-sheets employed in connection with automatically-operated musical instruments; and it has for its object to provide a roll or spool of simple construction possessing the characteristics of longitudinal expansibility and contractibility due to changes in the atmosphere.

It is well known in the art to which this invention belongs that perforated paper music-sheets are subject to atmospheric changes and expand or contract in width under the influence of moisture and heat or dryness, respectively. When the sheets are wound upon the ordinary wooden spools having fixed end caps or flanges (which spools as usually made are of a width equal to that of the sheets) and such expansion takes place, the opposite longitudinal edges of the sheets bear too much upon the end caps or flanges of the spools, which tends to crumple and tear the sheets. As it is necessary that the music-sheets shall be accurately and evenly guided over the "tracker" or "selector" fingers in order to secure a proper register of the perforations with the tracker-ducts or the selector-fingers, as the case may be, this crumpling and tearing of the edges of the sheets renders such guiding uncertain and unreliable. This is due to the fact that the sheets are thus rendered considerably narrower in width than the rolls or spools, and hence they will not wind evenly.

It is the purpose of this invention to remedy these defects by providing a roll or spool composed of a tubular spindle formed of a material, such as paper, that is itself capable of longitudinal expansion and contraction due to atmospheric changes, such expansion and contraction being coextensive with the

variations in the width of the music-sheet due to the same causes, which music-sheet is secured at one end to the said tubular spindle.

It is a further purpose of the invention to provide a novel manner of attaching the end caps or flanges and the journal-pins to the tubular spindle, whereby a strong, cheap, and easily-constructed roll or spool will result.

In order to enable others to understand, make, and use my said invention, I will now proceed to describe the same in detail, reference being made for this purpose to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of a complete roll or spool made according to this invention. Fig. 2 is a cross-sectional view of the same, showing a music-sheet attached to the tubular spindle. Fig. 3 is a detail perspective view of one of the end plugs, and Fig. 4 is a plan view of a complete spool having a perforated music-sheet partially wound thereon.

Referring now to the drawings, wherein like numerals of reference indicate corresponding parts throughout the several views, 1 indicates a tubular spindle formed of some suitable material or composition of matter capable of longitudinal expansion and contraction due to atmospheric changes. In the present instance the tubular spindle is represented as being made of a sheet of paper wound upon itself, and while I have shown but two plies or windings it will be obvious that I may increase or decrease this number as occasion may require or according to the thickness or quality of paper employed.

Fitted to each end of the tubular spindle 1 is an end cap or flange 2, said end caps or flanges being each provided with a central bore or opening sufficiently large to receive the ends of the spindle and which bores or openings are preferably, but not necessarily, slightly tapered or coned inward toward the center of the spindle, as more clearly shown in Fig. 1. Before applying the end caps or flanges to the spindle I prefer to dip the ends of the latter in glue, so that a firm union of the parts will result. Plugs 3 are then forced into the open ends of the tubular spindle in such manner that the ends of the latter will be firmly gripped or clamped between the end caps or flanges and the plugs, whereby a



rigid structure is provided. The plugs 3 are by preference slightly tapered, so that when they are driven home the end caps or flanges, will be held in place more securely. Before  
5 inserting the plugs 3, as described, I prefer to dip them in glue, so that they will be more securely held in place.

As shown in Fig. 3, the plugs 3 are provided with longitudinal peripheral grooves 4,  
10 extending from end to end thereof, the said grooves constituting ventilating-passages for the tubular spindle, since they lead directly into the same, as more clearly shown in Figs. 1 and 2. Each plug 3 has secured thereto and  
15 projecting outward from the outer end thereof a journal-pin 5, one of which pins is provided with the usual wings 6.

The perforated-paper music-sheet 7 is secured at one end by pasting or otherwise di-  
20 rectly to the tubular spindle 1, as seen in Fig. 2.

By constructing a music roll or spool as herein shown and described it will be seen that should expansion or contraction take place due to atmospheric changes such ex-  
25 pansion and contraction will affect the roll or spindle and the music-sheet alike. Hence there can be no overrunning or crowding of the music-sheet upon the end caps or flanges, resulting in crumpling or tearing of the  
30 edges of the sheet. Furthermore, the said music-sheet will be free to wind evenly and smoothly upon the spool at all times, so that a true and perfect register of the perforations with the tracker-ducts or selector-fingers will  
35 result. Again, a spool or roll constructed according to the present invention possesses many other advantages from a commercial view-point in that it is light, durable, simple in construction, and inexpensive to manufac-  
40 ture.

What I claim is—

1. A music-sheet spool capable of longitudinal expansion and contraction due to atmospheric changes, said spool comprising a tubu-  
45 lar spindle formed of paper, heads or flanges at opposite ends of the spool, each having a central opening into which an end of the spindle is inserted, means for attaching the heads to the spindle comprising plugs fitted tightly  
50 in the opposite ends of said spindle whereby said ends are securely clamped between the plugs and the walls of the openings in the heads, and a journal-pin carried by each plug.

2. A music-sheet spool, comprising a tubu-  
55 lar spindle formed of a material capable of longitudinal expansion and contraction due to atmospheric changes, end caps or flanges fitted over the opposite ends of said spindle,

means for securing said end caps in position comprising plugs fitted in the ends of the  
60 spindle and serving to tightly inclose the said ends between the end caps and plugs, and a journal-pin carried by each plug.

3. A music-sheet spool, comprising a tubu-  
lar spindle formed of paper, end caps fitted  
65 over the opposite ends of said spindle, conical plugs fitted in the open ends of the spindle and serving to clamp the said ends between the end caps and plugs, and a journal-pin carried by each plug. 70

4. A music-sheet spool, comprising a tubu-  
lar spindle formed of paper, end caps fitted over the opposite ends of said spindle, periph-  
erally-grooved plugs fitted in the open ends of said spindle, said plugs serving to clamp  
75 the said ends between the end caps and plugs, and a journal-pin carried by each plug.

5. A music-sheet spool, comprising a tubu-  
lar spindle formed of a material capable of longitudinal expansion and contraction due  
80 to atmospheric changes, end caps or flanges fitted over the opposite ends of said spindle, means for securing said end caps in position comprising plugs fitted in the ends of the  
85 spindle and serving to tightly inclose the said ends between the end caps and plugs, a journal-pin carried by each plug, and a music-sheet secured at one end to the said tubular spindle.

6. A music-sheet spool, comprising a tubu-  
90 lar spindle formed of material capable of longitudinal expansion and contraction due to atmospheric changes, end caps or flanges fitted over the opposite ends of said spindle, means for securing said end caps in position  
95 comprising plugs fitted in the ends of the spindle and serving to tightly inclose the said ends between the end caps and plugs, and suitable journaling means at each end of the spool.

7. A music-sheet spool, comprising a tubu-  
100 lar spindle formed of material capable of longitudinal expansion and contraction due to atmospheric changes, perforated end caps fitted over the opposite ends of said spindle, means for securing said end caps in position  
105 comprising plugs fitted in the opposite ends of the spindle and serving to tightly inclose the said ends between the end caps and plugs, and a journal-pin at each end of the spool.

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

GEORGE HOWLETT DAVIS.

Witnesses:

ESTELLE JORALEMON,  
J. FRED BERSTECHEK.