

M. GALLY.

ADJUSTABLE AND SELF ADJUSTING MUSIC ROLL AND SPOOL.

APPLICATION FILED AUG. 29, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1

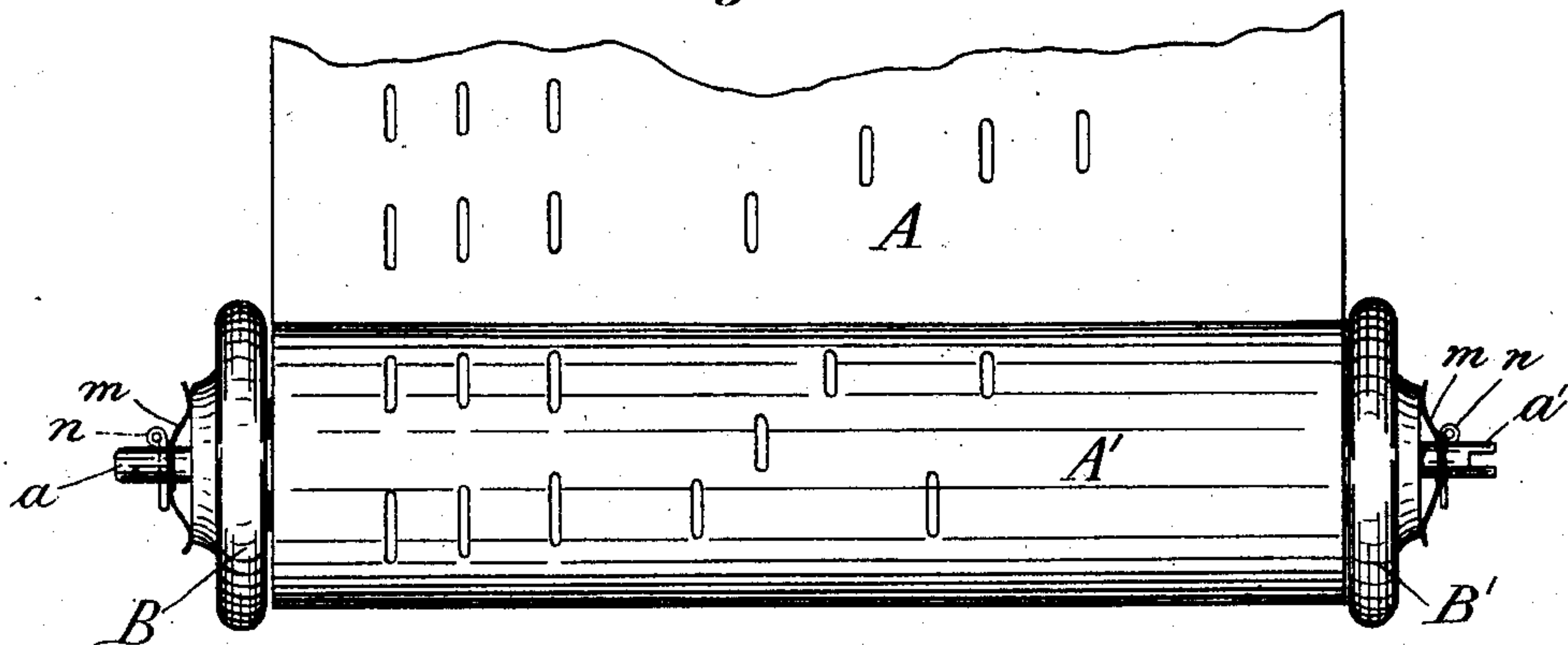


Fig. 2

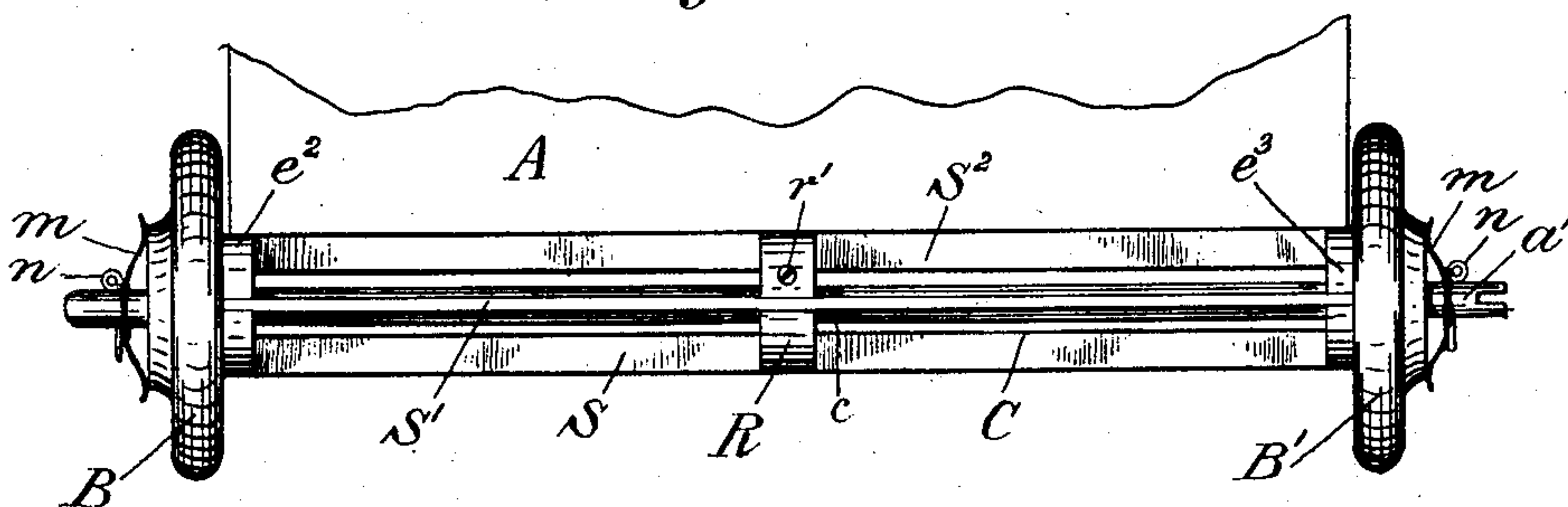


Fig. 3

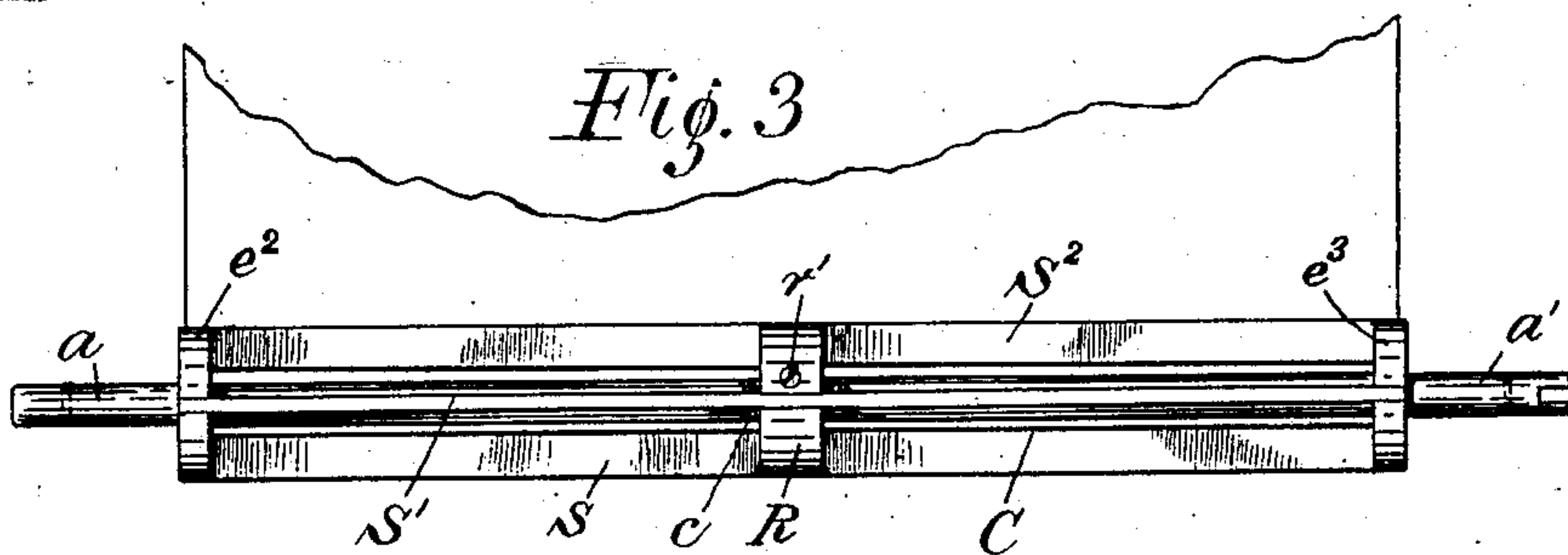
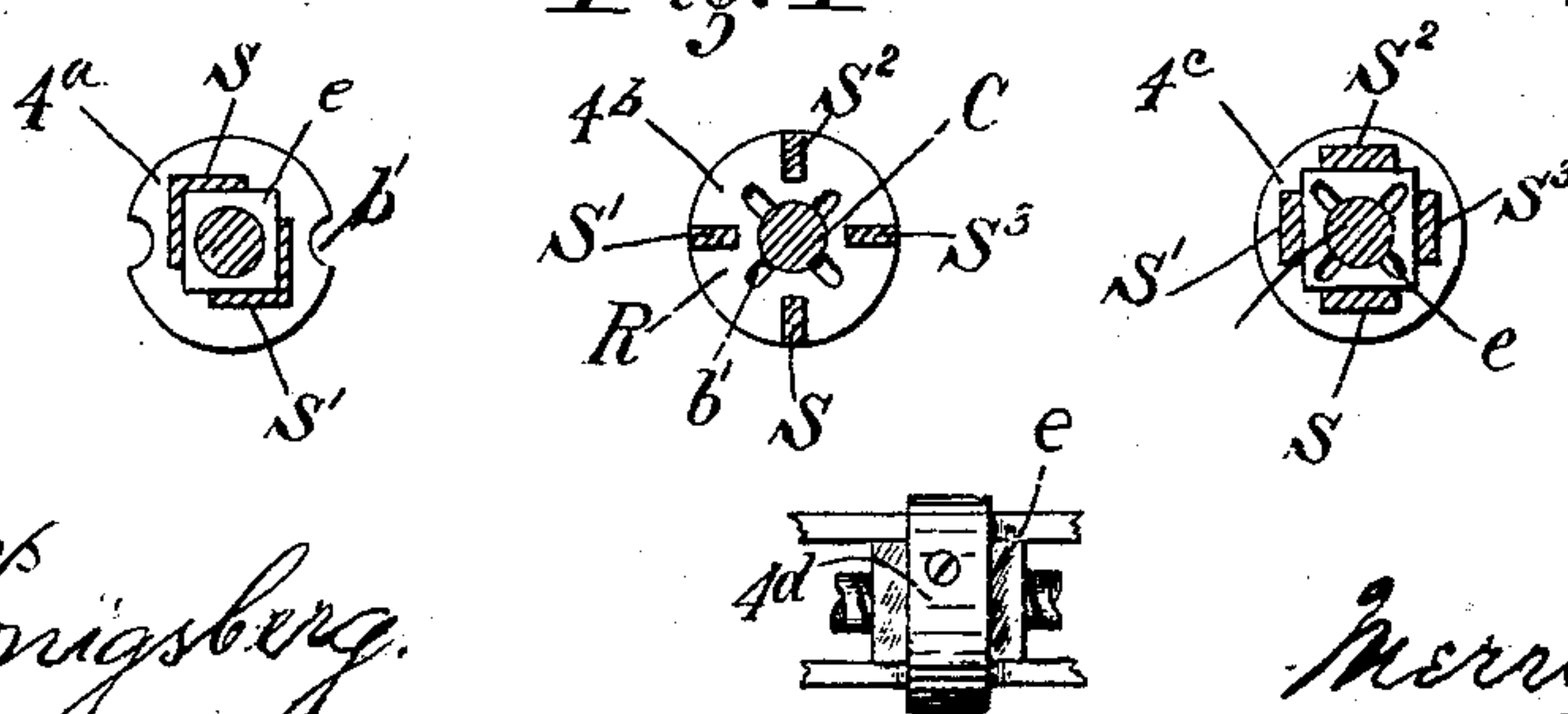


Fig. 4



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NO MODEL.

2 SHEETS—SHEET 2.

Fig. 5.

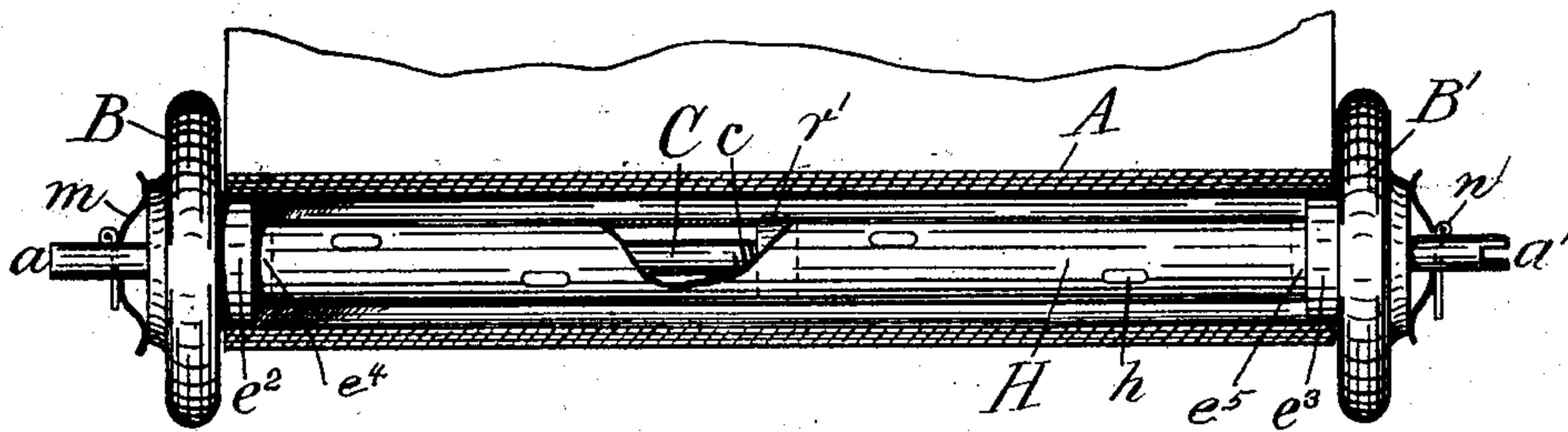


Fig. 6.

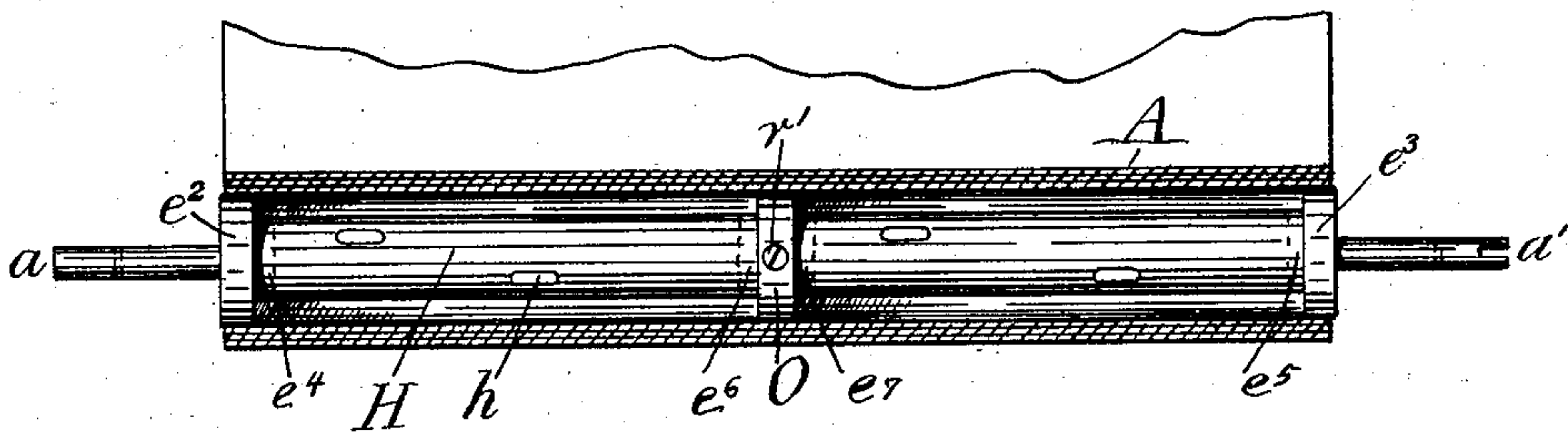


Fig. 7.

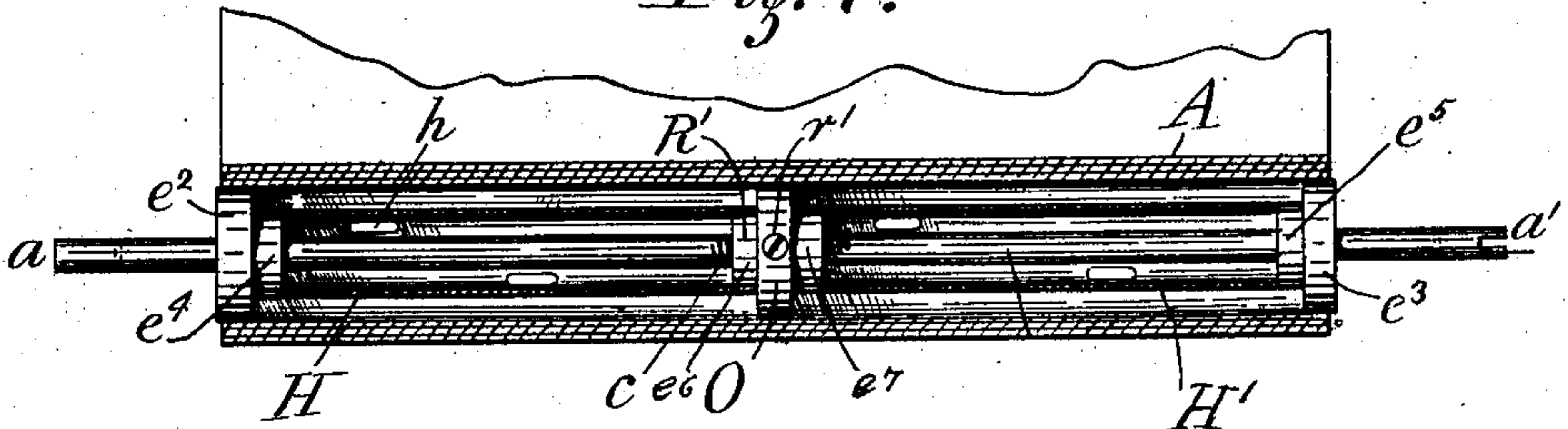
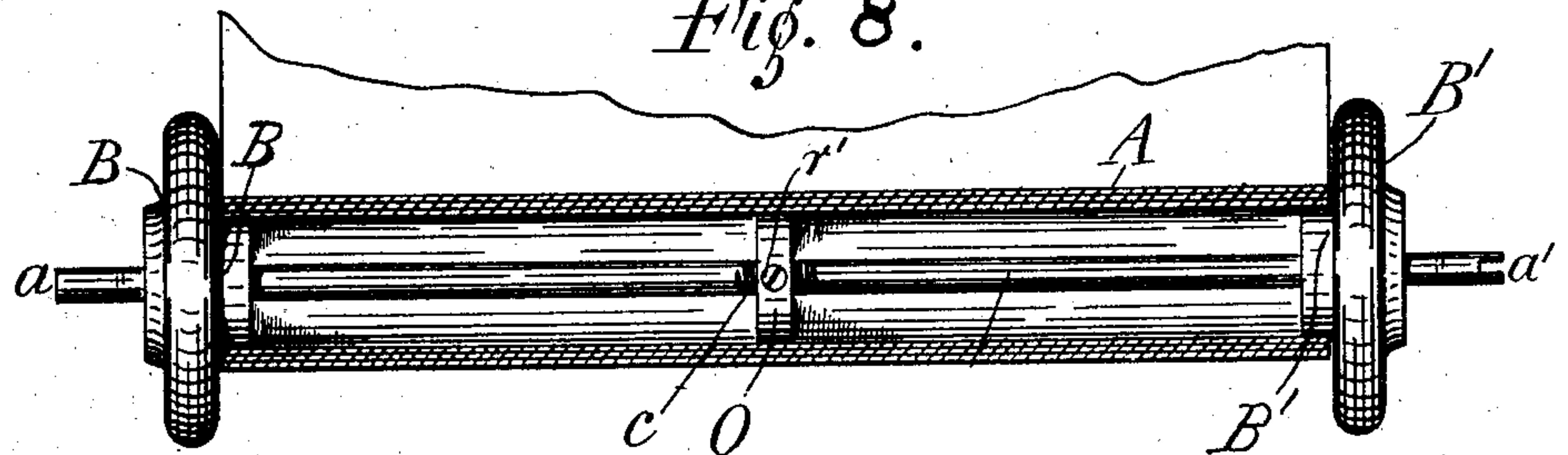


Fig. 8.



Witnesses
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UNITED STATES PATENT OFFICE.

MERRITT GALLY, OF BROOKLYN, NEW YORK.

ADJUSTABLE AND SELF-ADJUSTING MUSIC ROLL AND SPOOL.

SPECIFICATION forming part of Letters Patent No. 751,494, dated February 9, 1904.

Application filed August 29, 1903. Serial No. 171,206. (No model.)

To all whom it may concern:

Be it known that I, MERRITT GALLY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Adjustable and Self-Adjusting Music Rolls and Spools, of which the following is a specification.

My invention relates to perforated music-sheet rolls and spools therefor for operating automatic or mechanical musical instruments or players; and it consists of improved means for facilitating the accurate adjustment of the sheet to the spool, the adjustment of the sheet and spool to the instrument, and for preserving their adjustment automatically.

Considerable has been done of late in the matter of self-adjusting music-spools to provide for the changes in the width of the music-sheet caused by atmospheric influences.

The object of my present invention has partly to do with further improvements in this direction and also to easily and practically secure the minimum of correction to be automatically made by preliminary adjustment.

The automatic adjustment of the position of a perforated music-sheet to preserve alignment with the tracker of an automatic musical instrument or player has been accomplished to a considerable extent by the use of a self-adjusting music-spool. Usually this adjustment is made from one end of the spool, the adjustment necessarily increasing in extent from this end to the other extreme end of the spool. It has been found that placing the central point of the spool as to its length midway between its extremes in line with the center of the tracker and securing the correction for changes in both directions from the center the amount of correction is divided, and therefore easier to be accomplished. This I do in my invention; but I do not claim this feature broadly, as it is clearly shown and described in patent to Robert A. Gally, No. 669,342, dated March 5, 1901. What I shall describe as my invention is improved means for making the preliminary adjustment of the sheet and spool to the instrument and improved means for securing the

relative automatic adjustment in the sheet and spool.

In the accompanying drawings, Figure 1 represents a self-adjusting or compensating music sheet and spool, the sheet wound on the spool. Fig. 2 represents a music-spool of the general character to be described. Fig. 3 represents the spool of same construction, having its spool heads or flanges removed. Fig. 4 represents three cross-sections and one front view of central part of spindle and core, showing varied construction modified, but substantially one and the same device. Fig. 5 shows the central adjusting device as applied to a tubular cored spool. Fig. 6 is same as Fig. 5 with spool-heads removed. Fig. 7 shows the interior of the core, and Fig. 8 shows the central adjusting device as applied to a tubular cored music-spool, the music sheet or core being attached to the hubs of the spool heads or flanges, the shrinking or expanding of the tubular core causing a corresponding movement of the spool-heads.

The cores of self-adjusting or compensating music-spools have been heretofore made tubular and either formed of a portion of the music-sheet wound on the spool shaft or hubs or a tube of other material than the music-sheet, but of like tendency to shrink and expand when exposed to atmospheric changes. In order that the core of the music-roll shall be exposed as much as possible to like changes as the outer coils of the music-roll, it is the custom to ventilate the core to the outside atmosphere. This has been effected in various ways. I find, however, that none of the means yet commonly employed for this purpose have been sufficient to fully secure the object, and therefore I have decided to construct the core in other form than that of a tube and expose more thoroughly the material of the core to the affecting atmosphere.

In Figs. 2 and 3 I show the hubs e^2 , e^3 , and R placed on a spindle a , the hubs being connected together by strips S S' S^2 S^3 of material of like or approximately like nature as the sheet as to tendency to contract and expand under atmospheric changes. Nearly all

of the surface of these strips is directly exposed to the air which enters the chamber of the core from the outside and secures a great amount of constant exposure. Besides, the strips not being in one mass like a tube are more quickly affected throughout by sudden atmospheric changes. These strips I show varied in form and construction in the different sectional views of Fig. 4, and as they are subject to still further variation without departing from the gist and spirit of my invention I do not wish to be limited to any particular suitable form.

In Figs. 1 and 2 the adjustable flanges B B' slide loosely on the spindle $a a'$ and are backed up by the springs m to allow expansion and contraction of the length of the core, made of the compensating strips S S' S² S³. Fig. 3 shows the core without the flanges.

Whether the core of the spool is to be set centrally on its spindle as to position relatively to the tracker of the instrument or not it is desirable to have a quick and accurate adjustment for it. To make the core fast to the spindle at the central hub has been accomplished by means of a set-screw, as shown in patent, above alluded to, of Robert A. Gally, and with his device can be adjusted; but the placing accurately of the hub without moving it out of place by setting the set-screw is difficult, and as the most accurate adjustment is desirable I cut a screw-thread c of fine lead midway of the spindle, into the gain of which the point of the set-screw enters. By just loosening the set-screw r' the spindle can be easily screwed either to right or left to any desired point with absolute accuracy and then the set-screw again tightened and the hub made fast to the spindle. A counter screw-thread may be cut in the inside of the hub, if desired, so that it will act as a nut on the screw of the spindle. Such means for a centering adjustment saves a great amount of labor and care in the manufacture of the spools, as it does away with the necessity of accuracy in the first assembling. Besides this, it is almost impossible to turn out all instruments alike, so that spools will be generally interchangeable for all.

To provide the means for quickly adjusting any spool or set of spools with their music-sheet to an instrument, if for a central adjustment I first make a mark across the tracker at the middle line of that part which is covered by the music-sheet, as shown in Figs. 5 and 6.

The core of the roll or spool constructed with the connecting-strips shown I call a "skeleton" core to distinguish it from a tubular core, as this generic name indicates in itself the construction of the core. As no such core has heretofore been made or used, I shall claim the same broadly as my invention, however varied as to specific construction.

By using spring tension for holding the end hubs or flanges of the spool apart to proper position the compensating strips may be made of the same material or as thin material as that of the music-sheet, and therefore as sensitive to atmospheric influences as the single outside coils of the music-roll, and as the spindle serves as a support for the core and roll a single compensating strip may be sufficient.

With the use of the skeleton music-spool in any of the forms shown the music-sheet may be connected only to the central hub, if so desired.

Fig. 5 shows the central adjusting device with a small tubular core having a chamber between the tube and the music-sheet and a chamber within the core with communicating vents through the body of the tube. This tube forms the core of the spool.

As shown in Figs. 9, 10, and 11, the body of the core is somewhat shorter than the width of the music-sheet. Therefore for such construction paper should be used of proportionately more tendency to contract and expand than that of the music-sheet. In making the core or body H, Figs. 9, 10, 11, the paper should be coiled without paste or other adhesive and for attachment as little adhesive as possible used except at the extreme ends of the core.

In Figs. 5, 6, 7, the material of the music-sheet is shown as being entirely independent of that of the compensating core and is in no way attached thereto. The coils of the music-sheet do not necessarily form any part of the paper core of the spool. In its connection with the spool it has only a small point of attachment to one or more of its hubs, thus leaving the core of the spool to act freely in performing its office in its expansion and contraction and allow the music-sheet to be applied or removed whenever desirable.

In Fig. 8 the two end hubs of the core are made fast to or form a part of the flanges B B' and are loose on the spindle, the music-sheet being fastened thereto. The music-sheet is centrally attached to the hub R, the hub set in permanent adjusted position on the spindle with the set-screw r' . This form of core does not differ from that of Robert A. Gally, before referred to, either in construction or adjustment except that beside the set-screw for making the hub fast to the spindle it has a positive central adjusting device which is perfectly reliable and accurate. The same construction of spool may be followed and much improved by using the compensating strip instead of the tubular core. The central screw adjustment is not for any change of position of music-sheet or other parts for producing any musical effect on the instrument or for any compensating against atmospheric changes occurring during the working of the instrument, but for the preliminary mechanical as-

sembling and adjustment of parts to accurately align the music-sheet centrally with the pneumatic action. The purpose intended or the office of this device is not in any way to correct any defect occasioned by the expansion or contraction of the music-sheet, nor to make any change in the relative position of perforations in the sheet and apertures of the tracker, nor to effect any transposition of scale, but simply to mechanically correctly apply the music-sheet to the instrument. The placing is all the same whether the sheet is in normal condition or expanded or contracted or whether the tracker is solid, sectional, adjustable, or self-adjusting. The mechanism is simply a centering device made positively accurate and easily operated.

In practice the screw-thread is made sufficiently fine to easily make adjustments of one one-hundredth of an inch or even less, if necessary. It is the smallness of the movement and accuracy sometimes required that makes this micrometer-screw adjuster useful. In the spool of the patent of Robert A. Gally, before referred to, this central adjustment may be made approximately at hub O², but with loss of time and lack of accuracy. A "cut-and-try" adjustment is not sufficient to meet the requirements of the case.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A self-adjusting or compensating music-spool for an automatic music-sheet; the spool having a central hub on its spindle; and a screw-thread on the spindle; for adjusting the hub to the spindle.

2. A self-adjusting or compensating music-spool for an automatic music-sheet; the spool having a central hub on its spindle; a screw-thread on the spindle for adjusting the hub thereto; and means in the hub to operate in the gain of the screw-thread.

3. A self-adjusting or compensating music-spool for an automatic music-sheet; the spool having a central hub on its spindle; a screw-thread on the spindle for adjusting the hub to

the spindle; and a set-screw having its point engaging with the thread on the spindle for coacting therewith.

4. A self-adjusting or compensating music-spool for an automatic music-sheet; having an expansible and contractible core, affected hygro-metrically by atmospheric changes; the core having end hubs; the hubs connected together to form the body of the core by strips of expansible and contractible material.

5. A self-adjusting or compensating music-spool, for an automatic music-sheet, having an expansible and contractible core, affected hygro-metrically by atmospheric changes; the core comprising end hubs and a central hub, tied together by strips of expansible and contractible material, and exposed to the atmosphere.

6. A self-adjusting or compensating music-spool for an automatic music-sheet, having an expansible and contractible core, affected hygro-metrically by atmospheric changes; comprising end hubs tied together by strips of expansible and contractible material, as a skeleton placed within the chamber of the music-roll formed by the coils of the music-sheet.

7. A self-adjusting or compensating music-spool for an automatic music-sheet, having an expansible and contractible core, affected hygro-metrically by atmospheric changes; comprising end hubs or flanges; a central hub; all tied together by strips of expansible material; a spindle for the core, the end hubs loose on the spindle; and the central hub fitted to a screw-thread on the spindle for adjustment.

8. A self-adjusting or compensating music-spool for an automatic music-sheet, having an expansible and contractible core; affected by hygrometric changes, having end hubs, loose on a spindle and a central hub; a screw-thread on the spindle for adjusting the hub, and a set-screw for making the hub fast in position.

MERRITT GALLY.

Witnesses;

G. POTTER,

JAS. C. CARTER.