

No. 731,261.

PATENTED JUNE 16, 1903.

P. WUEST, JR.

AUTOMATICALLY ADJUSTABLE SPOOL FOR MUSIC SHEETS.

APPLICATION FILED JAN. 11, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

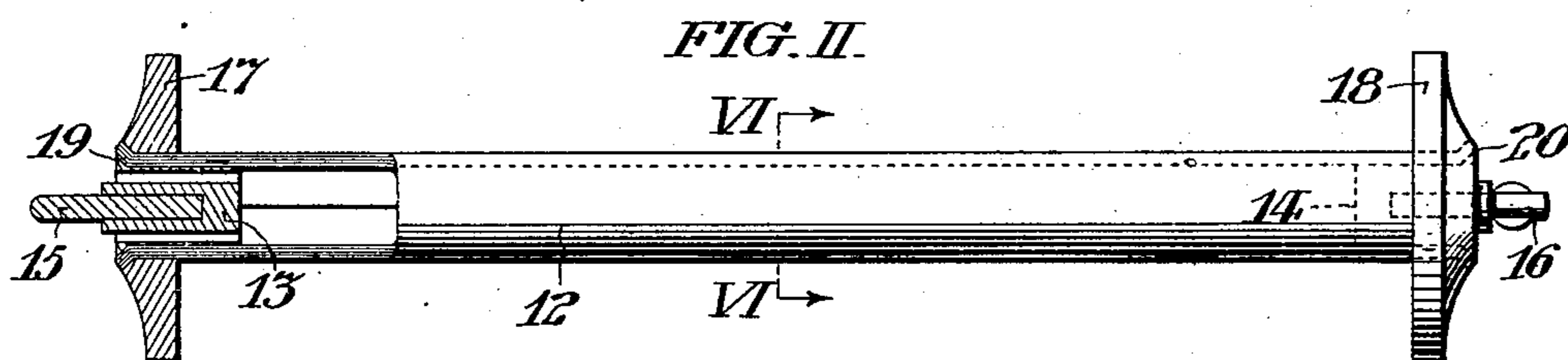
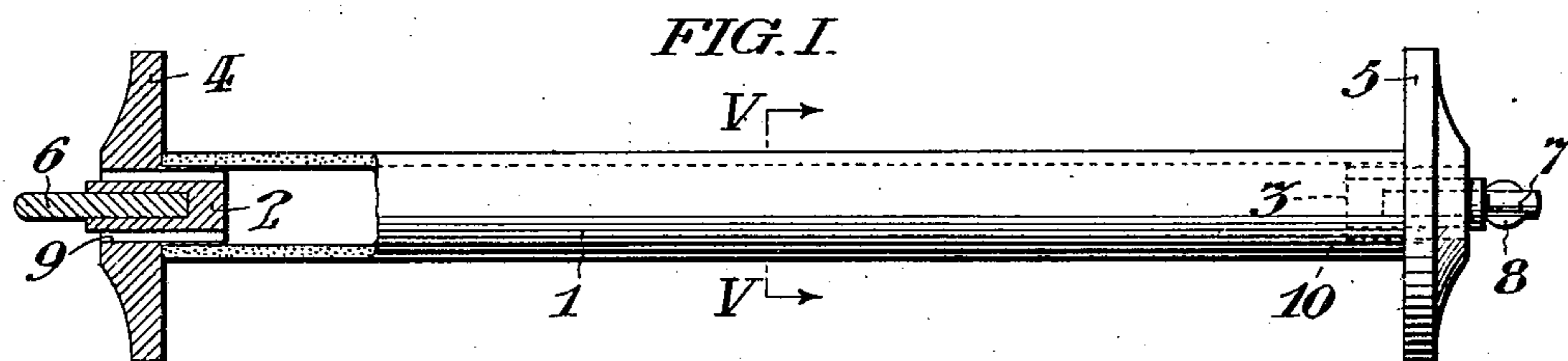


FIG. III.

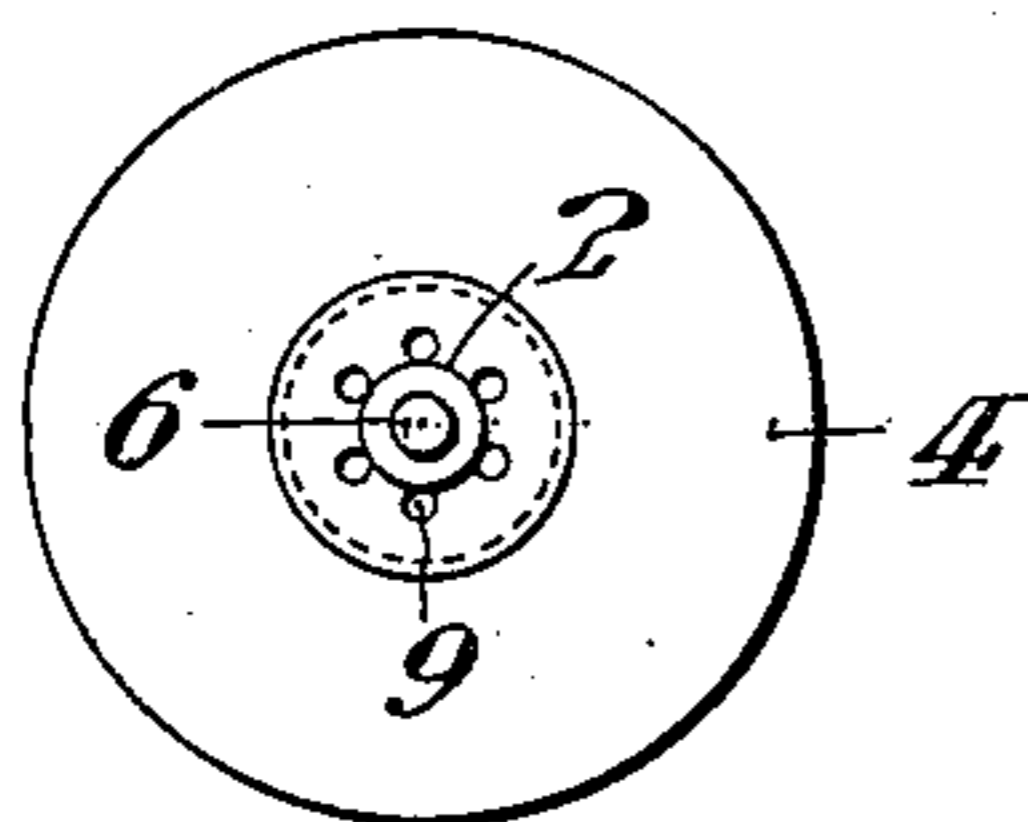


FIG. IV.

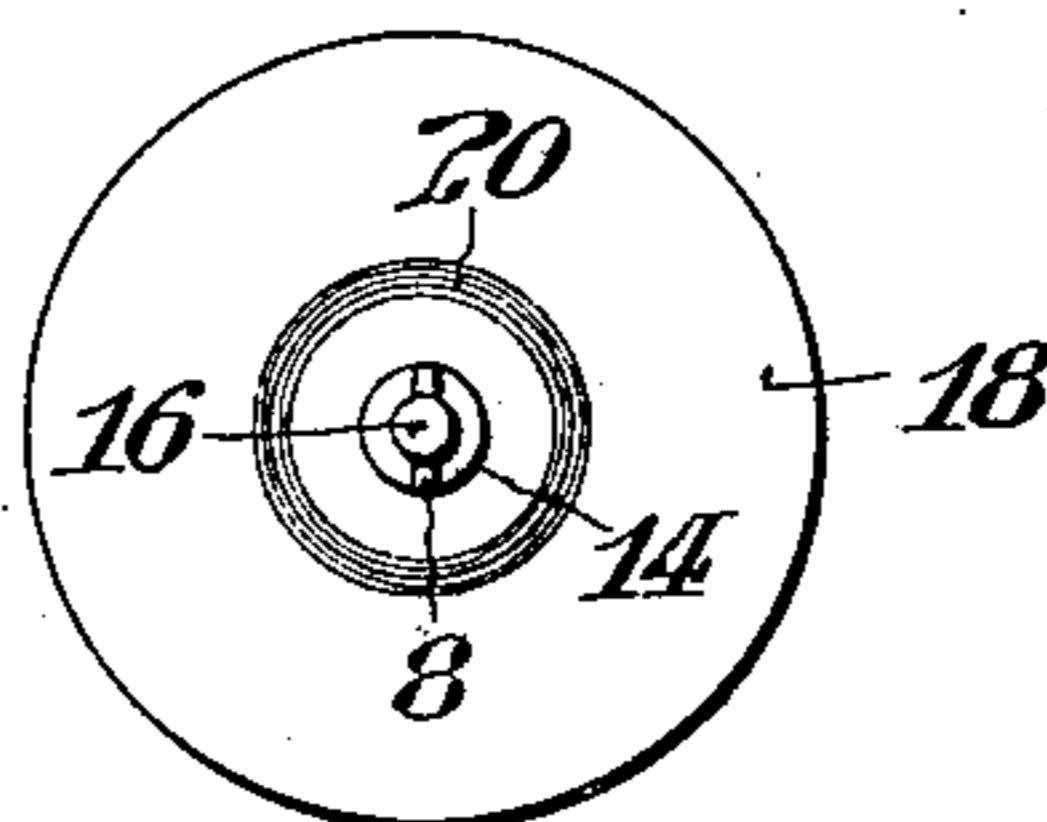


FIG. V.

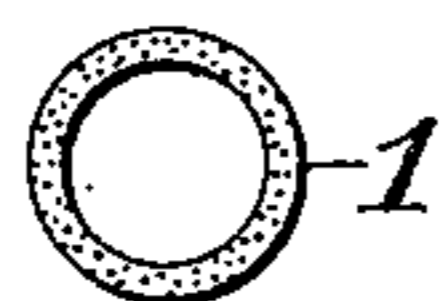
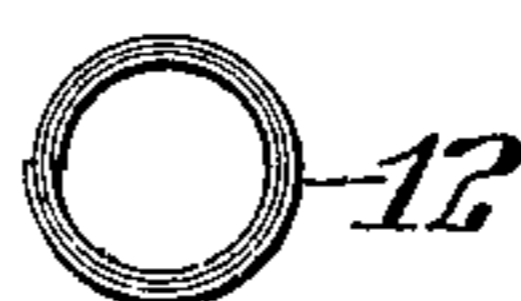


FIG. VI.



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2 SHEETS—SHEET 2.

FIG. VII.

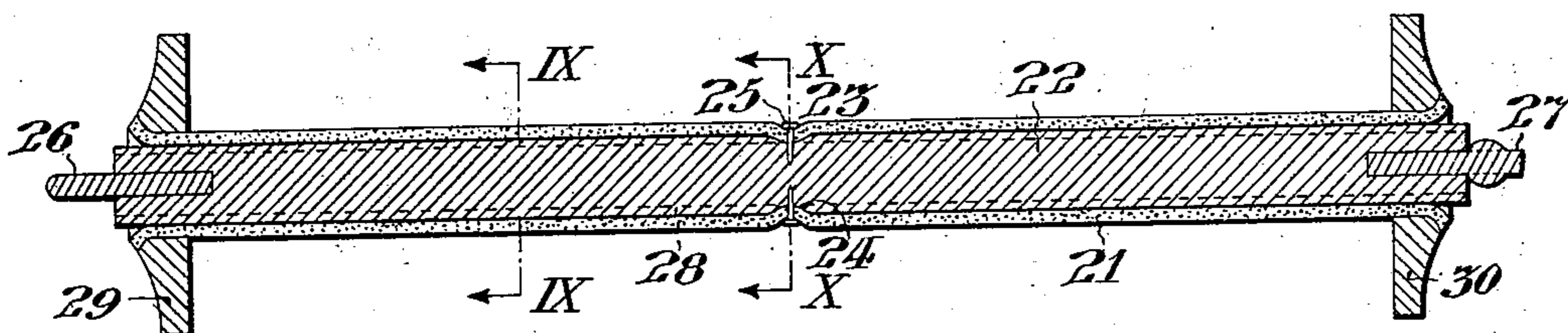


FIG. VIII.

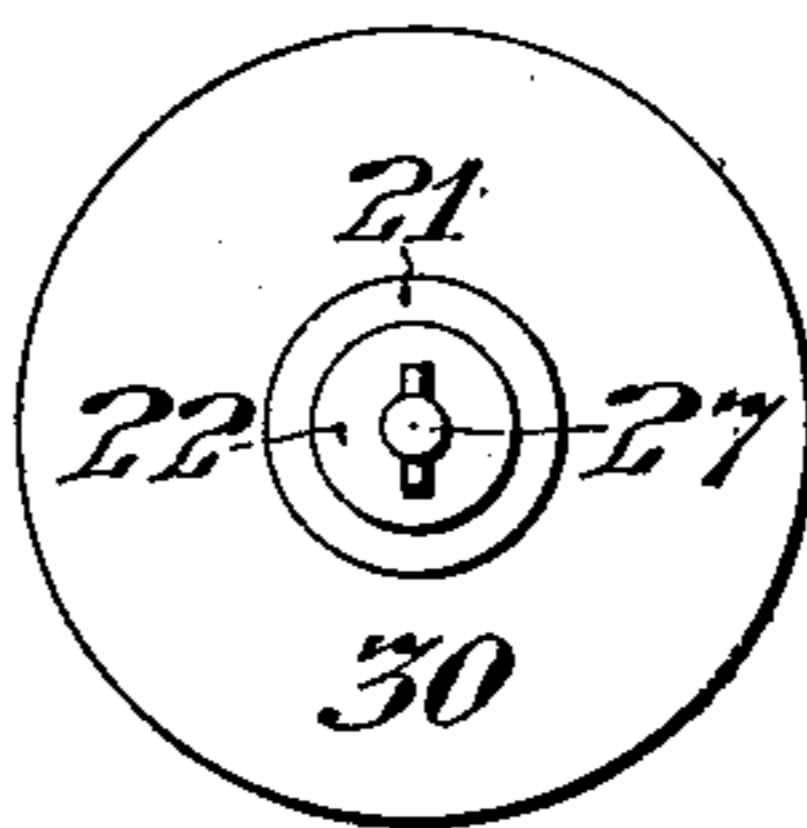


FIG. IX.

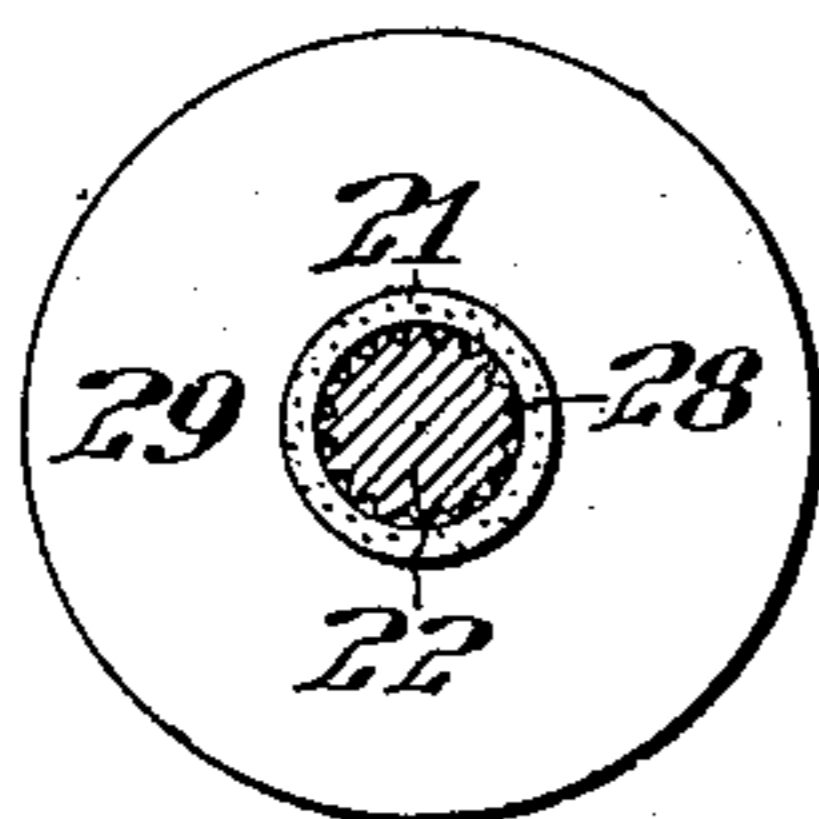
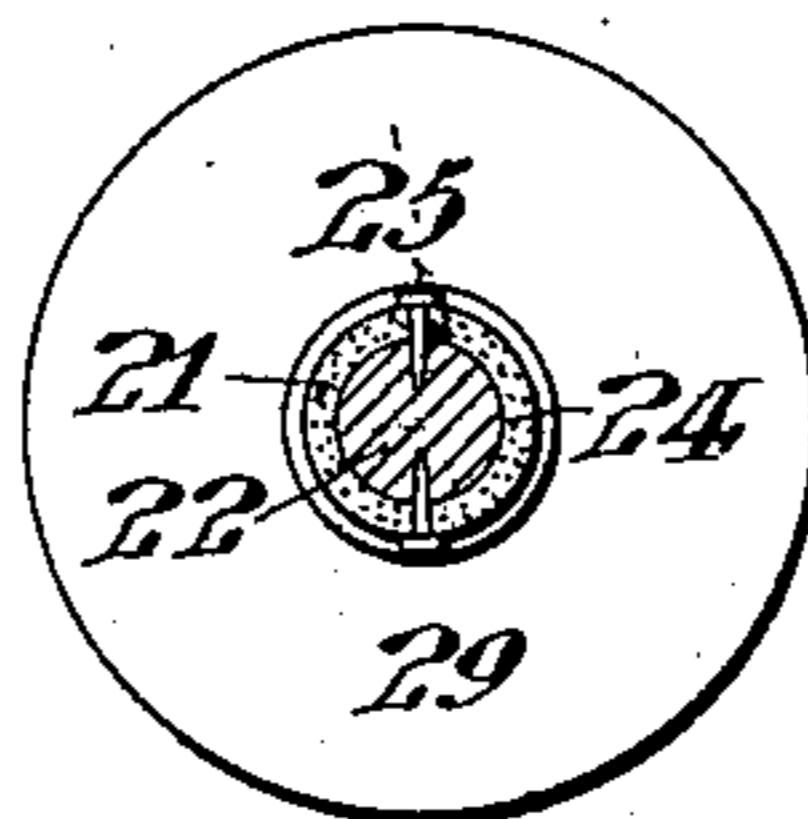


FIG. X.



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UNITED STATES PATENT OFFICE.

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C. J. HEPPE & SON, OF PHILADELPHIA, PENNSYLVANIA, A FIRM.

AUTOMATICALLY-ADJUSTABLE SPOOL FOR MUSIC-SHEETS.

SPECIFICATION forming part of Letters Patent No. 731,261, dated June 16, 1903.

Application filed January 11, 1902. Serial No. 89,257. (No model.)

To all whom it may concern:

Be it known that I, PHILIP WUEST, Jr., of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Automatically - Adjustable Spools for Music-Sheets, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to the class of mechanical musical instruments, including automatic piano-players, whose operation is controlled by a perforated web of paper termed a "music-sheet," which is progressed with respect to a tracker-bar provided with a series of apertures corresponding with the scale of sounds which are to be produced. Ordinarily such a tracker-bar comprises a series of sixty-five apertures separated by partitions one thirty-second of an inch thick and so proportioned that there are six apertures to each inch of length of the series. The perforations in the music-sheet being spaced in correspondence with the apertures in the tracker-bar, it is of course necessary that they shall be maintained in accurate registry therewith during the progression of the sheet to enable the sheet to cover and uncover the apertures in the tracker-bar in precisely the sequence for which the sheet is designed. Each of said sheets is ordinarily mounted upon an individual spool consisting of a wooden core provided with wooden flanges intended to guide the sheet into proper registry with the tracker-bar. However, the paper sheet and wooden spool being exposed together to ordinary changes in atmospheric conditions the result of such exposure is that the paper sheet is contracted and expanded from time to time, so that it varies in width to the amount of three-sixteenths of an inch, while the wooden spool remains of substantially constant length between its guiding-flanges. Therefore if the spool is made of sufficient length between its flanges to permit of the maximum expansion of the sheet the latter is free to shift from side to side when contracted. Likewise if the spool is made to fit the sheet when contracted when expanded it shifts laterally and curls at its edges against the spool-flanges. In either event the sheet is delivered over the tracker-bar with its perforations out of

registry with the apertures therein, and failing to uncover all of said apertures which it is designed to uncover causes the suppression or omission of parts of the musical composition being played.

It is the object of my invention to provide a carrier-spool for a music-sheet of the class described so constructed and arranged as to automatically vary its length in correspondence with the expansion and contraction in the width of the sheet which it supports, so that regardless of the aforesaid variation in width of said sheet the guiding-flanges upon the spool are automatically and continuously maintained in such relation therewith as to deliver the sheet with its perforations in registry with the apertures in the tracker-bar.

I am aware that it is old to provide a mechanical musical instrument with a music-sheet take-up roll whose opposite end flanges are relatively adjustable independently of each other and of the body of the roll which connects them. It is to be noted, however, that such a roll requires the manipulation of the operator to adjust its flanges to the width of the music-sheet in accordance with every variation in the latter, and therefore such devices of the prior art are differentiated from my present improvements, which provide a rotatable carrier whose length is automatically varied in correspondence with variations in the width of the music-sheet which it is designed to support.

My invention comprises a rotatable carrier of the class described consisting of a flanged spool provided with a core formed of material having a coefficient of expansion corresponding with that of the music-sheet which it is designed to support throughout the range of variation of temperature and moisture to which said sheet is ordinarily subjected, whereby the space between the spool-flanges is automatically varied in correspondence with the variations in the width of the music-sheet.

My invention also comprehends the various novel features of construction and arrangement hereinafter more definitely specified and claimed.

In the accompanying drawings, Figure I is a side elevation of a spool conveniently em-

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bodying my improvements, the left-hand end thereof being sectioned to show the internal construction. Fig. II is a view similar to Fig. I, showing a modified form of my invention. Fig. III is a left-hand end view of the spool shown in Fig. I. Fig. IV is a right-hand end view of the spool shown in Fig. II. Fig. V is a sectional view of the spool-core, taken on the line V V in Fig. I. Fig. VI is a sectional view of the spool-core, taken on the line VI VI in Fig. II. Fig. VII is a longitudinal sectional view of a spool, showing a modified form of my invention. Fig. VIII is a right-hand end view of the spool shown in Fig. VII. Fig. IX is a sectional view of the spool, taken on the line IX IX in Fig. VII. Fig. X is a sectional view of the spool, taken on the line X X in Fig. VII.

Referring to Figs. I, III, and V, 1 is the tubular core of the spool, formed of paper-pulp identical with that employed in the music-sheet. The flange-heads 2 and 3 are respectively fixed in the opposite extremities of said core 1 and provided with annular guide-flanges 4 5, so spaced as to fit the music-sheet which is to be carried by the spool. The heads 2 and 3 are respectively provided with the cylindrical trunnions 6 and 7 in axial alinement with the core 1. Said trunnions support the spool during its operation, and the trunnion 7 comprises lateral extensions 8 to engage the mechanism by which the spool is rotated in the musical instrument to progress the music-sheet with respect to the tracker-bar. Said heads 2 and 3 are preferably provided with vents 9 10, through which the interior of the core 1 is in communication with the atmosphere.

In the form of my invention shown in Figs. II, IV, and VI the core 12 consists of a volute coil of sheet material identical with the material employed in the music-sheet which it is designed to support. Said core 12 is provided with the flange-heads 13 14, having respective trunnions 15 16, similar to the trunnions 6 and 7. In order that the core 12 may be firmly secured between said heads 13 14 and their respective annular flanges 17 18, I so shape said heads and flanges that the ends of the core 12 are upset between them, as indicated at 19 20 in Fig. II.

Musical instruments employing carrier-spools of the class specified being provided with a bearing for the right-hand end of the spool in fixed relation to the tracker-bar and a bearing for the left-hand end of the spool arranged to yield in the direction of its axis, the expansion and contraction of a music-sheet supported by the spool shown in Figs. I and II is manifested to the maximum extent at the left-hand end of the tracker-bar, while the right-hand edge of the sheet remains practically undisturbed with relation to the corresponding end of the tracker-bar. In order to equalize the variation of the sheet with respect to the tracker-bar, I find it de-

sirable to maintain the center of the sheet in registry with the center of the tracker-bar and to permit the expansion and contraction of the sheet on both sides of the center. Therefore I prefer to employ the form of my invention shown in Figs. VII to X, inclusive, wherein the core 21 is mounted upon the supporting-spindle 22, to which it is fixed solely at its central portion 23. The spindle 22, being provided with a circumferential recess 24, the core 21 is crimped in said recess to form a seat for the heads of the tacks 25, which are entered in said recess. I do not desire to limit myself to such fastening devices, as any suitable means may be employed to secure the core to said spindle. Said spindle 22 is provided at its opposite extremities with trunnions 26 and 27, respectively, similar to the trunnions 6 and 7 shown in Figs. I and II, and the arrangement above described is such that variations in the width of the music-sheet carried by the core 21 are accompanied by variations in the length of said core, and said variations are equalized upon opposite sides of the center of the tracker-bar.

In order that the inner circumference of the core 21 may be exposed to the atmosphere, I prefer to provide the spindle 22 with longitudinal corrugations 28, as shown in Fig. IX and indicated in Fig. VII. It is to be understood, however, that air-spaces of different form may be provided between said core and spindle. Said core 21 is provided with flange-heads 29 and 30, which of course are shifted in and out upon said spindle 22 by the contraction and expansion of said core. All of the flange-heads above described may be conveniently formed of wood and fixed to their cores by any suitable means, such as adhesive compound.

It is to be understood that I do not desire to limit myself to the materials specified or to the particular construction shown, as it is obvious that various modifications may be made therein without departing from the essential features of my invention.

I claim—

1. A rotatable carrier for a music-sheet, comprising a tubular core constructed and arranged to automatically vary in length in correspondence with the variations in width of said sheet; opposed annular flanges fixed to the opposite extremities of said core; a spindle within said core, of such diameter as to support the latter throughout its length; and, means securing said core to said spindle intermediate of their length, substantially as set forth.

2. A rotatable carrier for a music-sheet, comprising a tubular paper core; opposed annular flanges fixed to the opposite extremities of said core; a spindle within said core, continuous throughout the length of said core, provided with longitudinal corrugations in its periphery and of such diameter as to support said core throughout its length; and,

means securing said core to said spindle in a single zone intermediate of their length, substantially as set forth.

3. A rotatable carrier for a music-sheet, comprising a tubular core constructed and arranged to automatically vary in length in accordance with the variations in width of said sheet; opposed annular flanges fixed to the opposite extremities of said core; a spindle within said core of such diameter as to support the latter throughout its length; a circumferential recess in said spindle intermediate of its length; and, means within said recess securing said core to said spindle, substantially as set forth.

4. A rotatable carrier for a paper music-sheet, comprising a tubular paper core; opposed annular flanges fixed to the opposite extremities of said core; a wooden spindle within said core, provided with longitudinal corrugations in its periphery, and of such diameter as to support said core throughout

its length; means securing said core to said spindle solely at a central zone thereof; and metal trunnions mounted axially in the respectively opposite ends of said wooden spindle, substantially as set forth.

5. A rotatable carrier for a music-sheet, comprising a tubular core formed of an integral mass of paper-pulp; said core being primarily separate from said sheet, but arranged to automatically vary in length in accordance with the variations in width of said sheet; and opposed annular flanges fixed to the opposite extremities of said core, substantially as set forth.

In testimony whereof I have hereunto signed my name, at Philadelphia, Pennsylvania, this 9th day of January, 1902.

PHILIP WUEST, JR.

Witnesses:

FLORENCE J. HEPPE,
ARTHUR E. PAIGE.