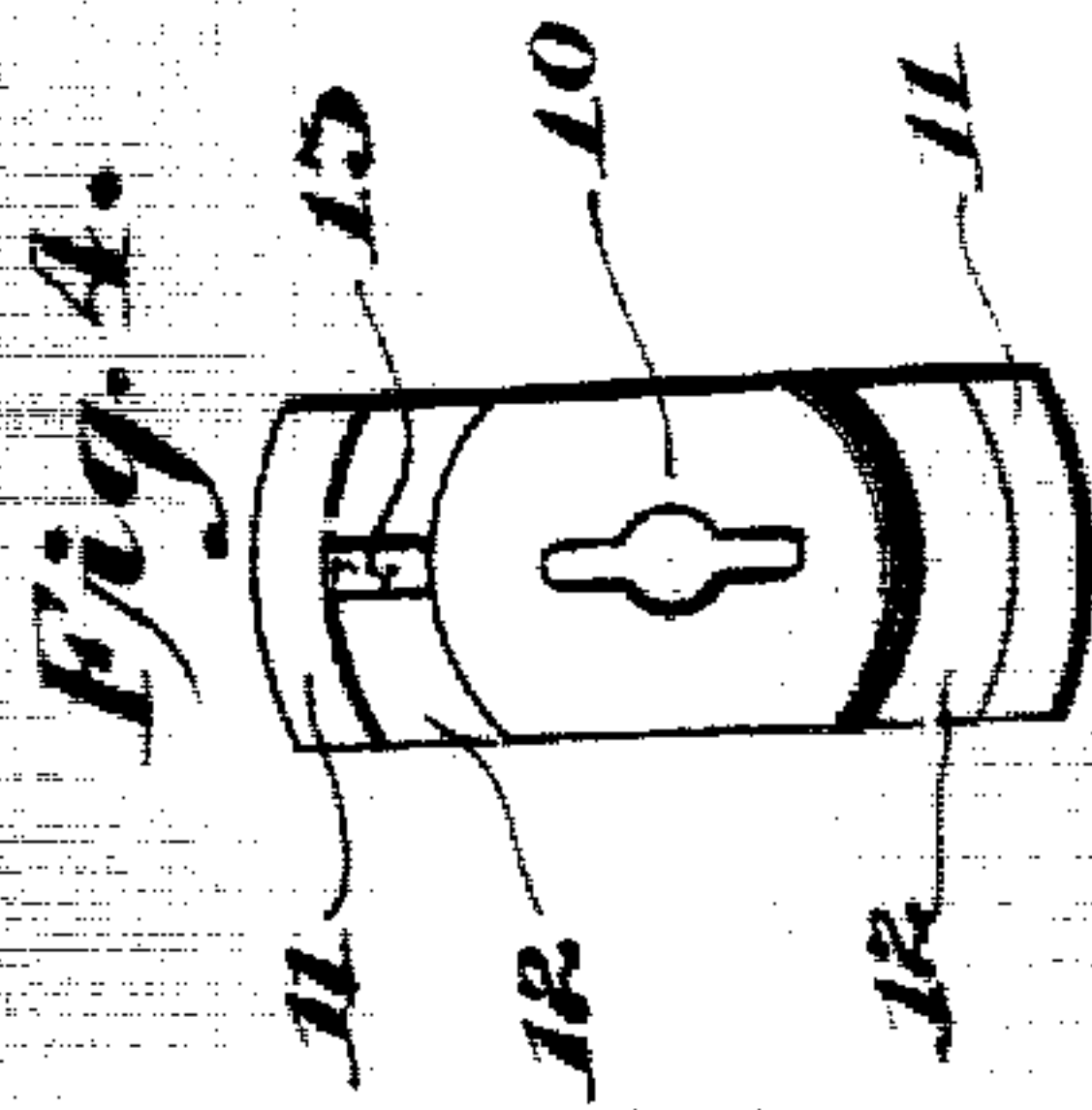
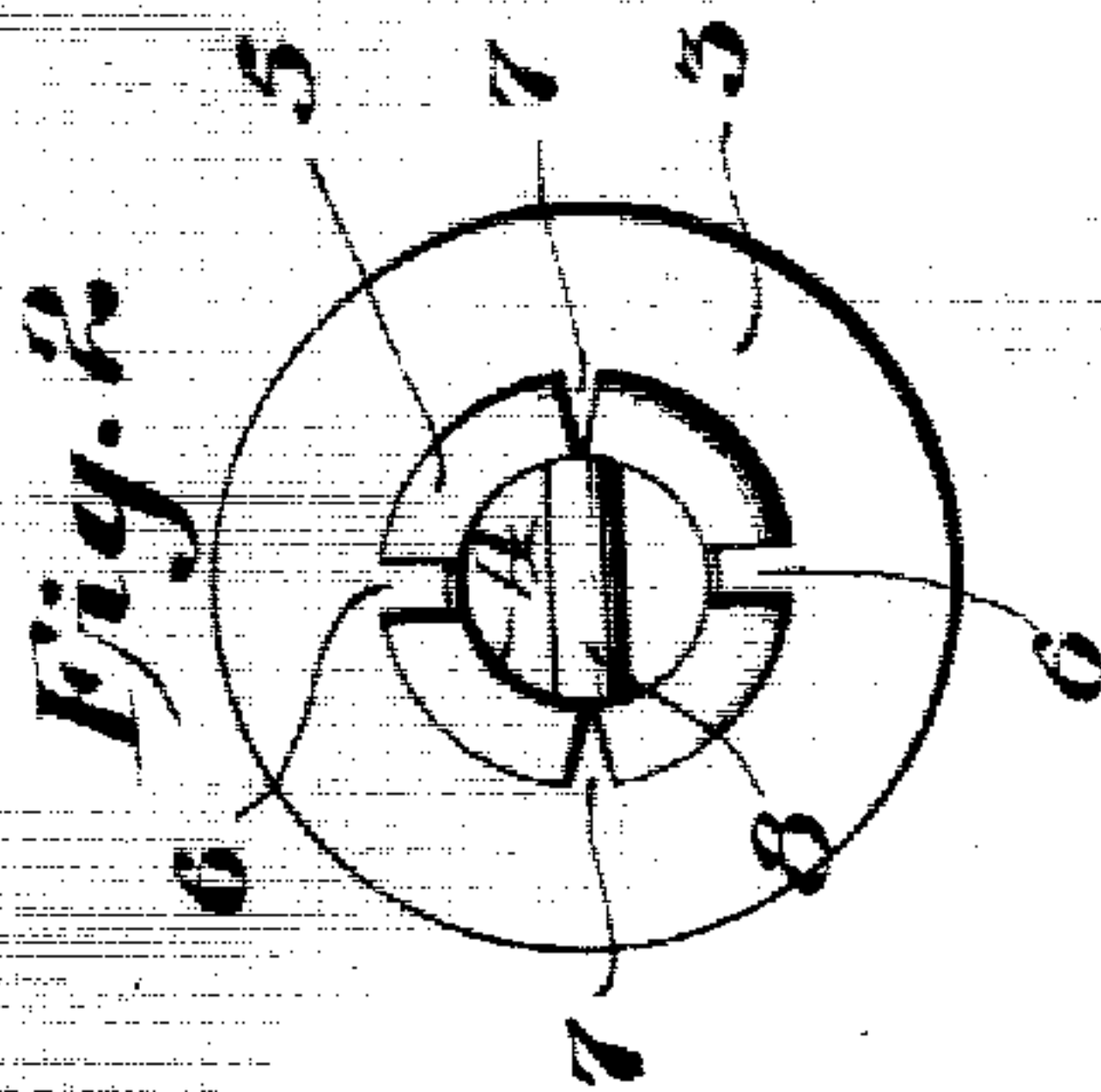
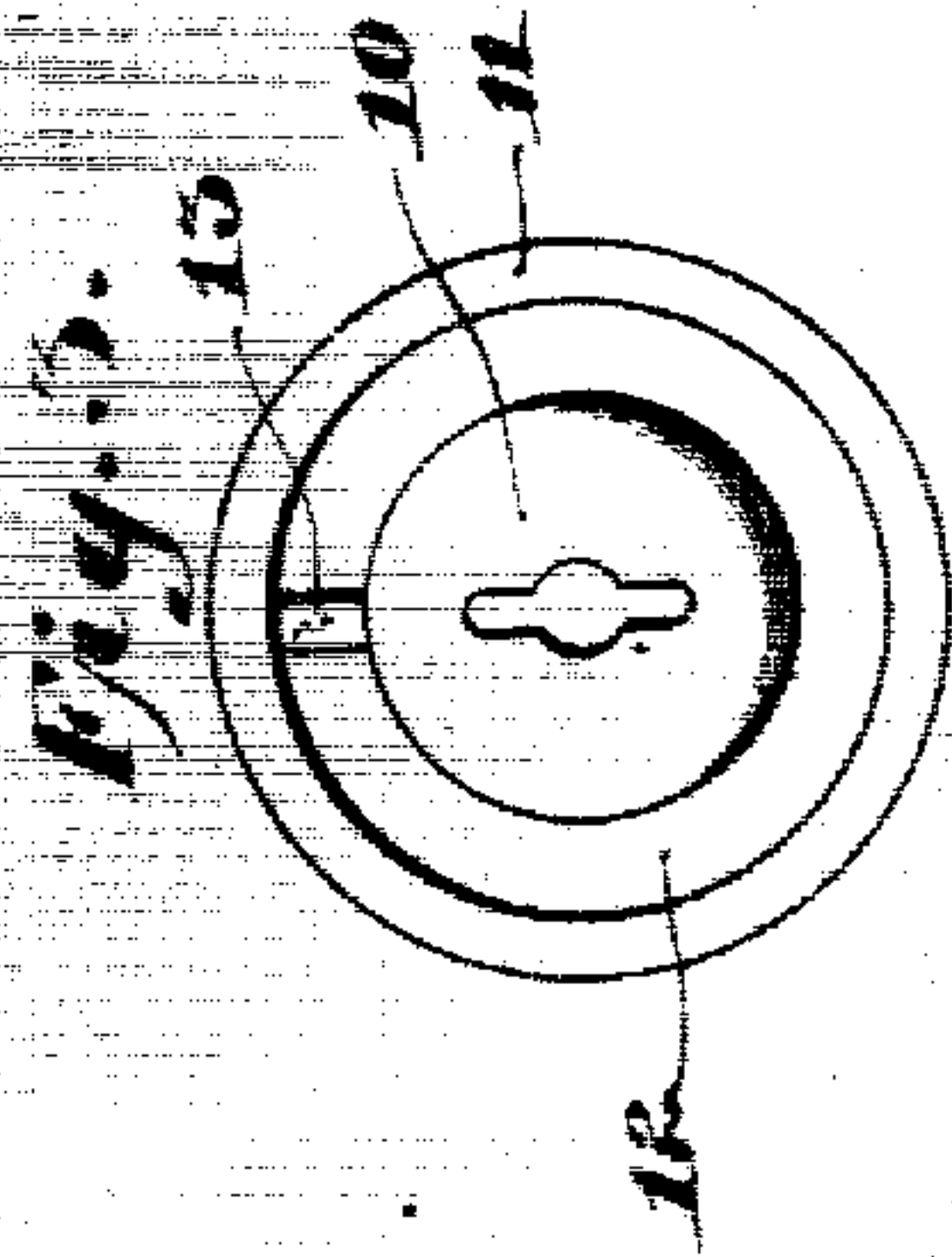
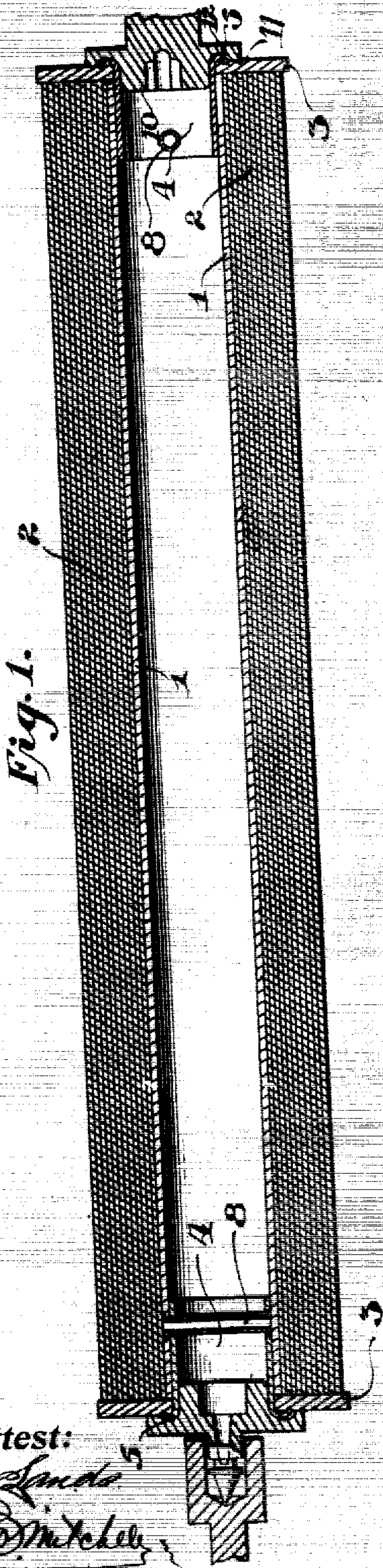


No. 865,664.

PATENTED SEPT. 10, 1907.

E. S. VOTEY.  
MUSIC ROLL AND SUPPORT THEREFOR.  
APPLICATION FILED OCT. 13, 1907.

2 SHEETS—SHEET 1.



Attest:  
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Attys.



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2 SHEETS—SHEET 2.

Fig. 5.

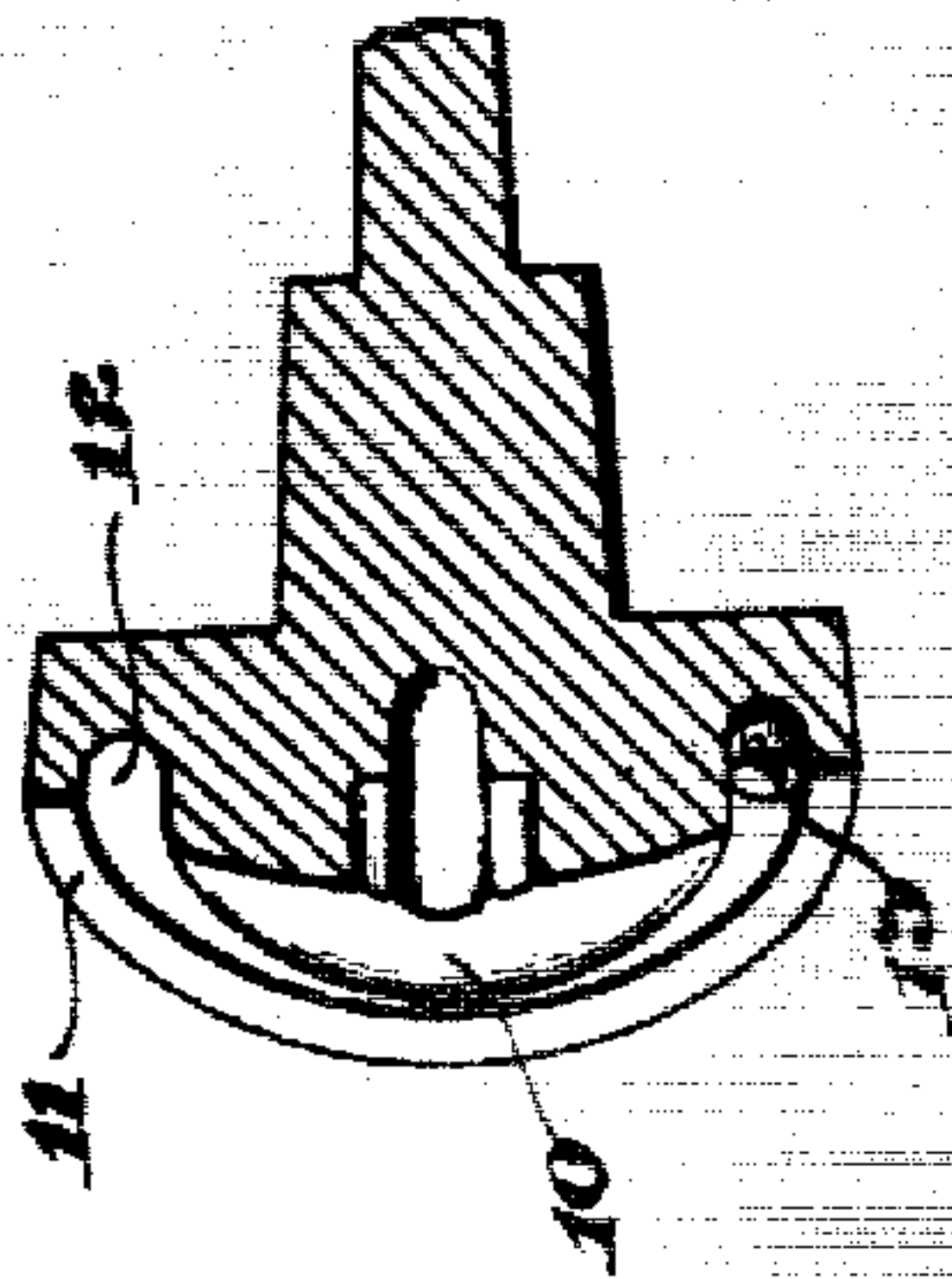


Fig. 6.

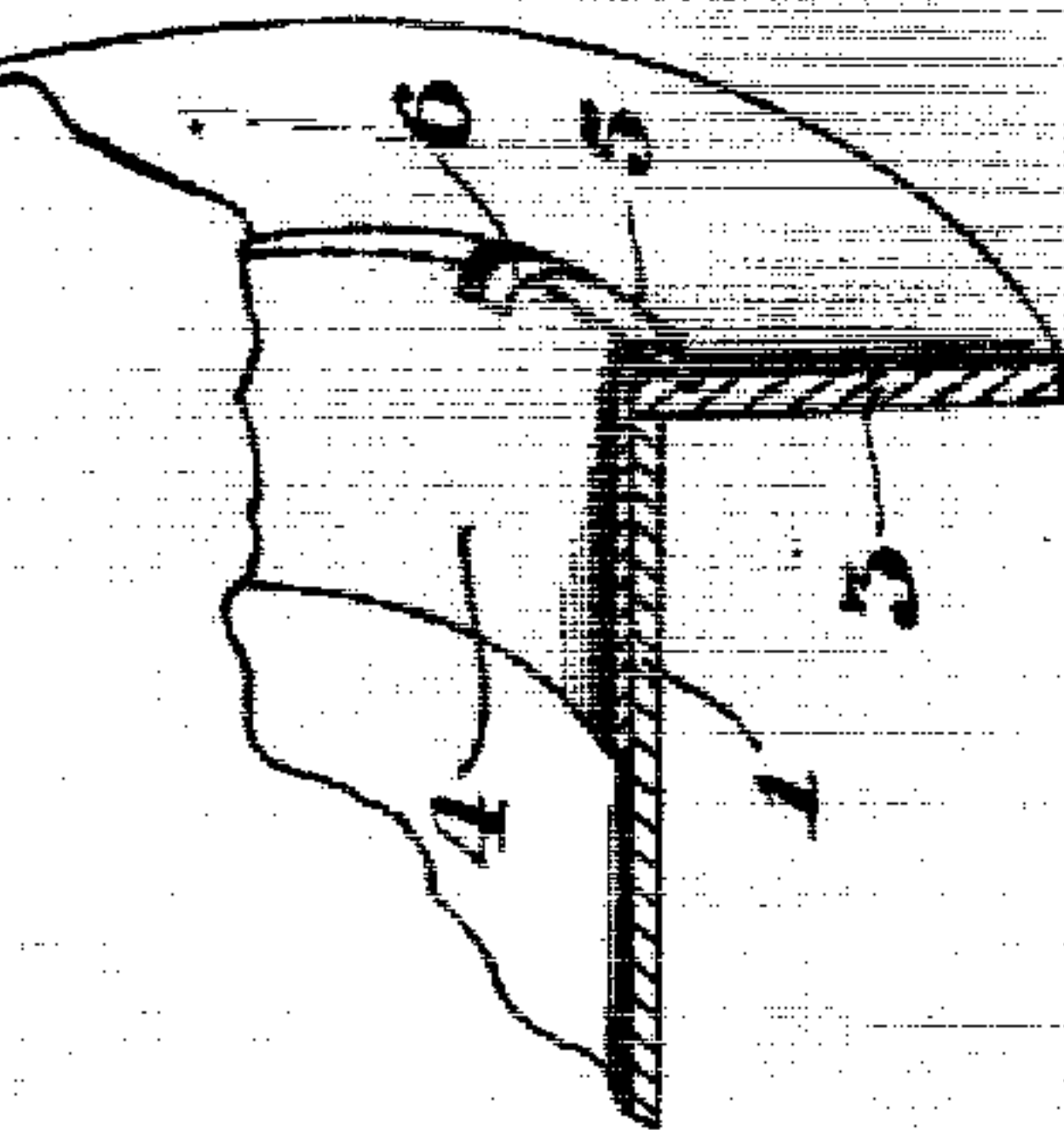


Fig. 7.

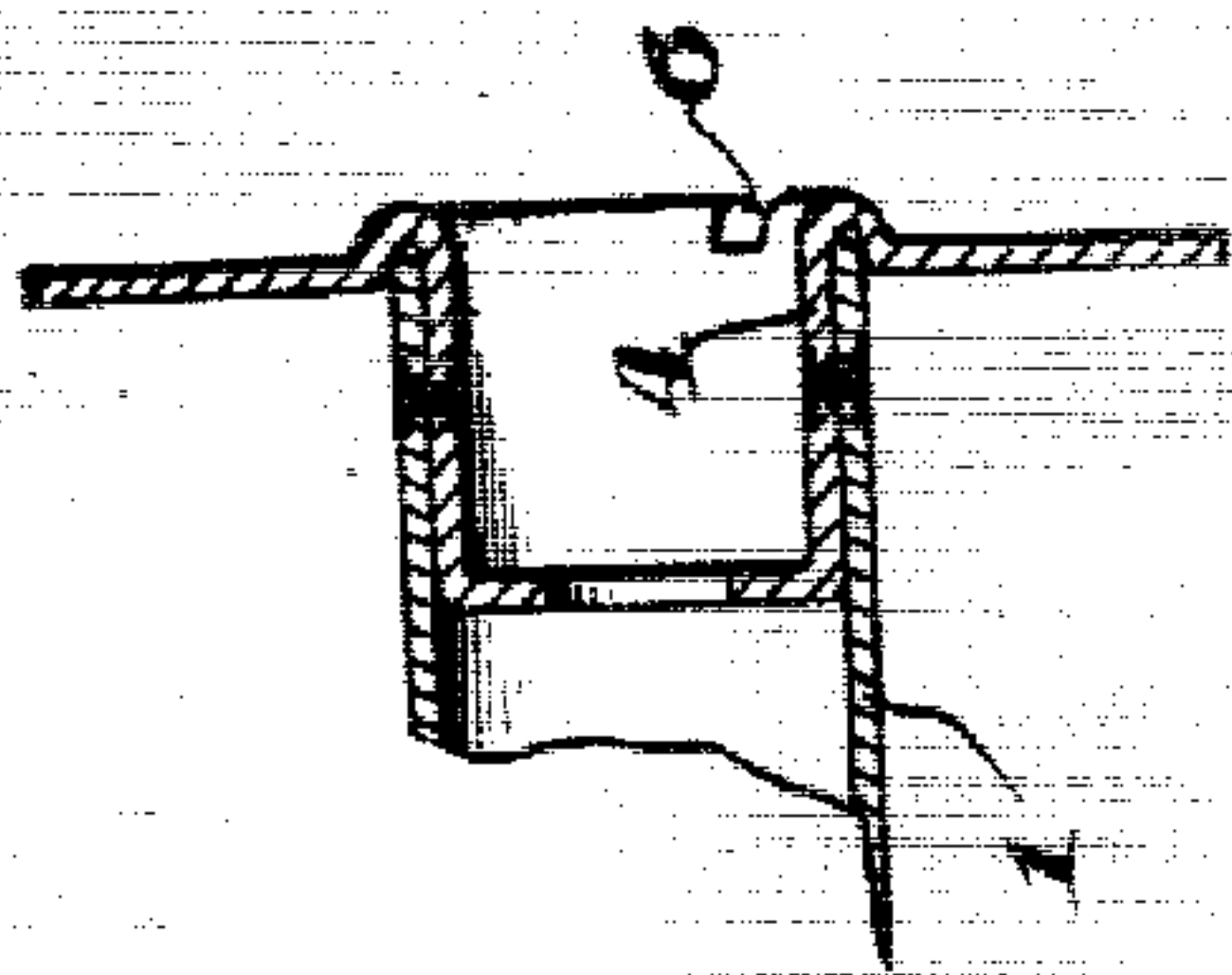
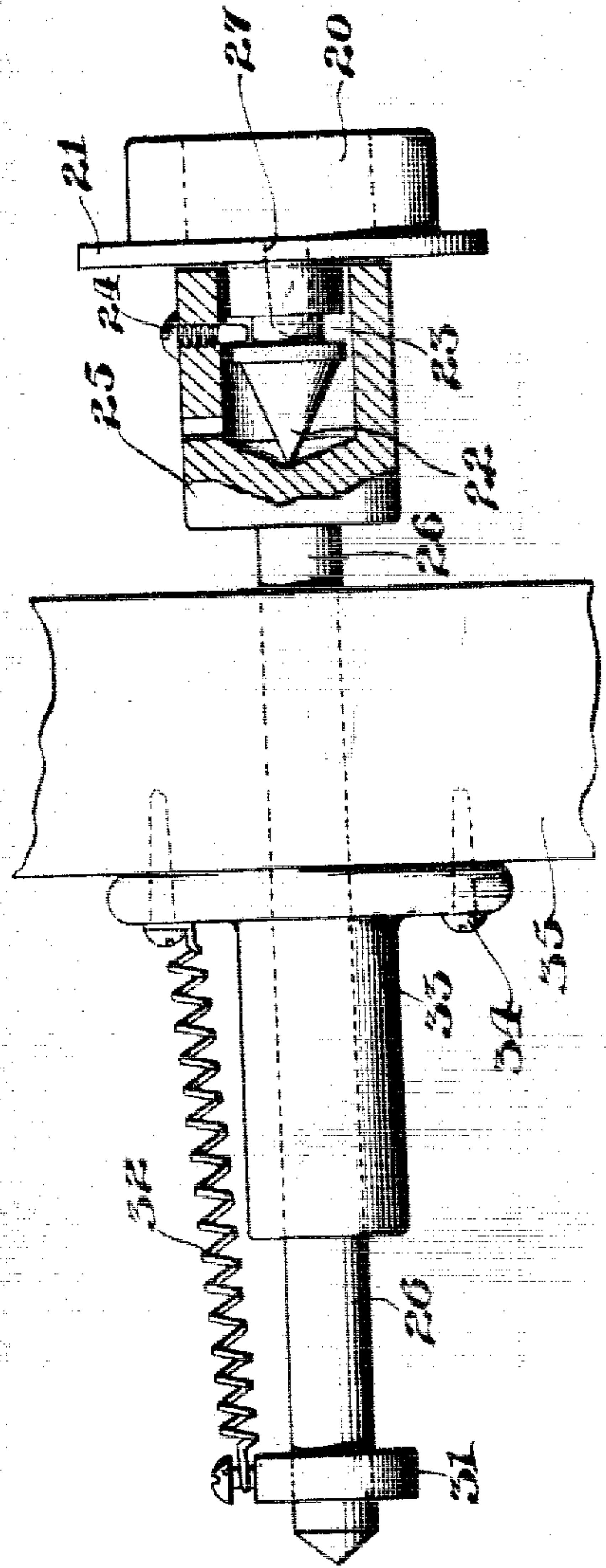


Fig. 8.



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# UNITED STATES PATENT OFFICE.

EDWIN S. VOTEY, OF SUMMIT, NEW JERSEY, ASSIGNOR TO THE AEOLIAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF CONNECTICUT.

## MUSIC-ROLL AND SUPPORT THEREFOR.

No. 865,684.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed October 13, 1905. Serial No. 282,660.

To all whom it may concern:

Be it known that I, EDWIN S. VOTEY, a citizen of the United States, and a resident of Summit, New Jersey, (post-office address Aeolian Hall, 362 Fifth avenue, New York,) have invented certain new and useful Improvements in Music-Rolls and Supports Therefor, of which the following is a specification, accompanied by drawings.

The invention relates principally to apparatus such as the pianola, orchestrille, aeolian grand and the like, in which a perforated music sheet is employed, and is drawn from and rewound upon a music roll.

The invention relates particularly to the construction of the roll and its mounting.

In the best form of the invention known to me and herein described, it affords a very inexpensive construction of roll; it permits the maximum width of music paper for a given distance between bearings of the supports for the ends of the roll; it simplifies and improves the mounting of the roll in the instrument and facilitates the ease with which a roll may be inserted and taken out.

It will be obvious that some parts of the invention may be omitted and the attendant advantages sacrificed while still incorporating some of my novel characteristics and combinations.

This application includes and is intended to supercede my application 258,210, filed May 1, 1905.

In the accompanying drawings: Figure 1 is a longitudinal section through a roll and its supports. Fig. 2 is an end view of such roll. Fig. 3 is a face end view of the driving clutch member, which is usually at the right end of the roll, as in the pianola. Fig. 4 shows a variation of the same. Fig. 5 is a sectional perspective view of the clutch member. Fig. 6 is a detail sectional view of the right hand roll end with the music paper removed. Fig. 7 shows a modification of the roll end adapted to cooperate in the same manner with the clutch member. Fig. 8 is a detail view partly in section, of the support or center for the freely turning end of the roll which is at the left hand end in pianolas.

These drawings are illustrative of the principle of my invention and it will be understood I am describing the best mode of which I have contemplated applying their principle, without intending unnecessarily to restrict myself to the details herein mentioned and shown.

The core 1 of the roll is preferably a tube of paper, paper board, cellulose, or other material that does not expand or shrink very differently from the paper 2 of the music sheet which is rolled upon it. The core may be hollow throughout with advantage, though it is sufficient for some purposes of the present invention if the ends of the roll are recessed or hollowed to an

extent sufficient to cooperate with the clutches or supports for the roll. Annular end flanges 3 are provided at each end. These are preferably of fiber or other suitable tough material so as to be made thin and not unnecessarily increase the length of the roll. They are preferably secured to the core by a sleeve 4 of thin sheet metal or suitable material having small flanges or a bead 5 which extends over the inner edge and onto the outer face of the flange 3 and confines and secures the flange or head 3 against the abutting end of the core 1. By the term "bead" I mean to include a perfectly flat flange as well as the raised or rounded form shown plainly in the figures. The advantage of the rounded form is that it provides a deeper recess or notch 6 for engaging the clutch member. I have shown two notches, recesses or intervals 6 for engaging the clutch member, as will be presently described; but it is immaterial to the principles of the invention whether one or several notches be used and whether the bead 5 be continuous or interrupted at several points, as for example at 7. The sleeve 4 is secured to the core 1 by suitable means, such as a tubular rivet 8. At one end of the roll, the left hand end for pianolas, where the roll is at all times to turn freely, the clutch recesses 6 may be omitted as they there serve no function and their omission serves as a means for preventing the accidental reversal of the ends of the roll when placing it in the machine, for without the clutch recesses the roll will not engage with the driving clutch member.

The driving clutch member or support for the end of the roll that is driven when the roll is being rewound, is provided with a central projection 10 which enters the hollow end of the roll, and with an outer or peripheral portion 11 which bears against the head of the roll and thereby fixes the position of the roll longitudinally in the machine; (it being understood that it is customary to have these rolls spring-pressed against the driving clutch at the right hand side of the machine by means of a spring-pressed support at the other or left hand end of the roll, as for example in the well known pianola) and a curved recess 12 between the peripheral portion and the central projection 10 for receiving and accommodating the bead 5, and with a pin or tooth 13, of which there may be several to engage with and drive the bead 5 and thereby impart rotation to the roll whenever the clutch member is driven, as in rewinding, though it will of course be understood that these various members may be interrupted or cut away, as in the variation shown in Fig. 4, without in any way modifying their characteristic functions. Where the various parts are accurately made by machinery, the peripheral portion 11, recessed portion 12, and central portion 10 may all snugly fit against the



opposing parts of the roll; in which case both the central portion 10 and the peripheral and recessed portions 11 and 12 will serve to center the roll and the recessed portion 12 bearing against the head 5 will also serve with the peripheral portion 11 to determine the position of the roll endwise. For less accurate fits the central portion 10 may preferably be the sole means of centering the roll on the clutch, and the peripheral portion 11 the sole means of bearing endwise against the roll and determining the position of it endwise.

The bearings in which the driving clutch member is mounted in the instrument and the means for driving it being well understood in the art, are neither shown nor described.

In order to provide for very great freedom of rotation of the roll, I provide a special friction reducing support for centering the other end of the roll. In the well known pianola construction there is provided a socket mounted on an endwise moving rod and spring-pressed so as to receive the pin in the end of the usual roll and support the roll while pressing it toward the right against the driving clutch member at its other end.

The present invention provides a freely turning member having central projection 20 similar to projection 10 for entering the hollow in the end of the roll, as already described, a peripheral flange 21 for bearing endwise against the roll, and a pivotal point 22 upon which the member freely turns with a minimum of friction against the head 25 of the spring-pressed rod 26. It will be an equivalent to this if the point 22 is on the head 25 and the seat for the point 22 is on the rotative member. The details of the mounting of the rod 26 and the manner in which it is spring-pressed toward the roll so as to accommodate different lengths of rolls, and so as to hold the roll in engagement with its supports at either end need not be further described as such functions are present in the well known pianola. The head 26 has a suitable bearing surface, preferably converging to a point, for receiving and centering the point 22, as shown, with a minimum of friction. In order to retain the freely rotating member in the head 25, a retaining screw 24 is provided which is screwed through the head 25, as shown, and enters freely into an annular groove 23 in the freely turning member of the support. The screw 24 prevents the parts from separating without in any way interfering with the rotation.

In order to adapt the supports to rolls provided with pins, the projection 20 has a central recess 27 shown in dotted lines in Fig. 8, which is preferably slightly tapered to receive and firmly fit the ordinary pin at the left hand end of the usual form of aeolian or pianola rolls; and similarly the right hand support or driving clutch may have an axial portion formed with lateral recesses, as shown in Fig. 3, for receiving the winged pin or clutch engaging device of such a roll.

It will be understood that considerably greater width of paper may be employed in the roll illustrated and described in cooperation with the driving clutch, than with the ordinary winged pin, which latter with the usual thickness of wooden head in which the pin is secured, occupies a very considerable length.

In Fig. 7 a modification of the roll is shown in which the flange and sleeve are formed integrally of sheet

metal but adapted to cooperate in the same way with the same supports as the form shown in Fig. 1. I lay no specific claim to this form, except so far as it corresponds with the other form shown and generically cooperates and combines in the same way with the roll supports.

The operation of my device is probably clear from the foregoing explanations. The roll is inserted in the instrument, as is shown, by placing its left hand end against the left hand support and pressing it to the left sufficiently to admit the right hand end of the roll opposite the right hand clutch, whereupon the roll is pressed to the right against the right hand clutch and thereby centered and the clutch members are engaged by rotating either the roll or the clutch member until they spring into engagement under the spring pressure which tends to press the roll to the right hand.

The removal of the roll is the reverse operation and is obvious.

It will be seen that the bead in both forms shown in Figs. 1 and 7, whether interrupted at one or several points, constitutes in effect a clutch engaging projection on the end of the roll, or a plurality of such projections, which is received in and engaged by the recess and tooth or teeth to drive the clutch member.

I claim and desire to secure by Letters Patent, together with such modifications and variations as may be made by mere skill in the art, or without departing from the principles of my invention, the following:

1. A music roll having a tubular core, a laterally extending flange at the end of said core, and a sleeve secured within the end of said core and having an out-turned bead extending over the inner edge of said flange for securing said flange in position.

2. A music roll having a tubular core, a laterally extending flange at the end of said core, and a sleeve secured within the end of said core and having an out-turned bead extending over the inner edge of said flange for securing said flange in position, said bead being provided with a clutch member.

3. A music roll having a tubular core, a laterally extending flange at the end of said core, and a sleeve secured within the end of said core and having an out-turned bead extending over the inner edge of said flange for securing said flange in position, said bead being recessed to engage a driving clutch member.

4. A music roll having a tubular core, a laterally extending flange at the end of said core, a sleeve secured within the end of said core and having an out-turned bead extending over the inner edge of said flange for securing said flange in position, said bead forming an annular projection upon the face of said flange and having a clutch engaging notch or recess formed therein.

5. A music roll having a tubular or hollow end, a laterally extending flange, and a clutch engaging projection adjacent to the said hollow, said clutch engaging projection being of annular form and notched or interrupted to cooperate with a suitable clutch.

6. A music roll having a tubular or hollow end, a laterally extending flange, and a rigid unbroken tubular sleeve portion separate from said flange, the said sleeve portion having means for securing said flange in position and extending within a hollow or recess in said hollow end, and means for securing the said sleeve portion in said hollow end.

7. A music roll having a hollow end, and a sleeve fitting into said end and having an out-turned bead at the end of said roll provided with a clutch engaging device, in combination with a mechanical musical instrument driving clutch formed with a centering portion adapted to fit into the end of said sleeve and with means for engaging the clutch member on said sleeve.

8. A music roll having a hollow end, and a sleeve fit-



ting into said end and having an out-turned bead at the end of said roll provided with a recessed clutch engaging device, in combination with a mechanical musical instrument driving clutch formed with a centering portion adapted to enter into the end of said sleeve and with a tooth for engaging the recess on said sleeve.

9. A music roll having a hollow end, and a sleeve fitting into said end and having an out-turned bead at the end of said roll provided with a clutch engaging device, in combination with a mechanical musical instrument driving clutch formed with a recessed portion for embracing the bead on said sleeve.

10. A music roll having a hollow end and a head or flange with a sleeve by which the head or flange is secured thereto, and a clutch engaging device, in combination with a mechanical musical instrument driving clutch having a central projection 10, a recess adapted to receive the clutch engaging device of the roll, and an outer portion 11 which when in engagement bears against the end of the roll.

11. A music roll having flanges and a hollow end provided with a clutch engaging device in combination with a mechanical musical instrument driving clutch having a central portion 10 and a recessed outer portion and formed to receive and engage the said clutch engaging device in the said recess.

12. The improved music roll driving clutch member combining a central projection and a recessed outer portion with a tooth or clutch projection in the said recess, in combination with a music roll having an end fitted to engage the said central projection, recessed portion, and clutch projection.

13. The improved music roll driving clutch member combining a central projection and a recessed outer portion with a tooth or clutch projection in the said recess in combination with a music roll having an end provided with a clutch engaging device cooperating with said projection.

14. The improved music roll driving clutch member combining a central projection and a recessed outer portion with a tooth or clutch projection in the said recess, said clutch member having also a central axial portion provided with lateral recesses for receiving and engaging a winged pin in combination with a music roll having a hollow end fitted to engage the said projections and recessed portion without interference with the portions adapted to receive a winged pin.

15. A music roll having hollow ends in combination with rotary supports for the rolls with central projections entering said ends, one of the said supports being provided with a clutch device for engaging and rotating the said roll and the other support combining a non-rotative member and a rotative member freely turning thereon, which latter member is provided with the said projection and directly engages the roll.

16. A music roll having a hollow end in combination with a support therefor combining a rotative member and a non-rotative member, the rotative member of which has a projection fitting into the hollow in the end of the roll.

17. A music roll having a hollow end in combination with a support therefor combining a rotative member and a non-rotative member, the rotative member of which has a projection fitting into the hollow in the end of the roll, and an axial point upon which it bears against and rotates on the non-rotative member.

18. A music roll having a hollow end in combination with a support therefor combining a rotative member and a non-rotative member, the rotative member of which has a projection fitting into the hollow in the end of the roll, an axial point upon which it bears against and rotates on the non-rotative member, and means for securing the members together.

19. A music roll having a hollow end in combination with a support therefor combining a rotative member and a non-rotative member, the rotative member of which has a projection fitting into the hollow in the end of the roll, an axial point upon which it bears against and rotates on the non-rotative member, and means consisting of an annular groove in one of the said members and a projection from

the other of said members entering said groove for securing the two members together.

20. In combination, a music roll and a support independent of the roll for permitting great freedom of rotation, said support including a member for supporting and rotating with the roll and a non-rotative member, one member of the support having a pivotal axial pointed journal and the other having a cooperating concave surface converging to a point at which the said pointed journal is centered with bearing contact substantially only at the tip of said pointed journal.

21. In combination, a music roll and a support independent of the roll for permitting great freedom of rotation, said support including a member for supporting and rotating with the roll and a non-rotative member, one member of the support having a pivotal axial pointed journal and the other having a cooperating concave bearing surface converging to a point at which the said axial pointed journal is centered with bearing contact substantially only at the tip of said pointed journal, and means for securing the members together.

22. In combination, a music roll and a support independent of the roll for permitting great freedom of rotation, said support including a member for supporting and rotating with the roll and a non-rotative member, one member of the support having a pivotal axial pointed journal and the other having a cooperating concave bearing surface converging to a point at which the said axial pointed journal is centered with bearing contact substantially only at the tip of said pointed journal, and means consisting of a projection and cooperating annular groove for securing the members together.

23. In combination with the driving support for receiving a music roll, the opposed support for the freely turning end of the music roll, having a rotative and a non-rotative member, the said rotative member having a central projecting portion 20 and outer portion 21.

24. In combination with the driving support for a music roll, the opposed support for the freely turning end of the music roll, having a rotative and a non-rotative member, the said rotative member having a central projecting portion for engaging the hollow end of a music roll and an outer portion for bearing against the end of such roll, and a substantially sharp axial point on which it turns upon the non-rotative member.

25. In combination with the driving support for a music roll, the opposed support for the freely turning end of the music roll, having a rotative and a non-rotative member, the said rotative member having a central projecting portion for engaging the hollow end of a music roll and an outer portion for bearing against the end of such roll, a substantially sharp axial point on which it turns upon the non-rotative member, and means for securing the two members together.

26. In combination with a driving support for one end of a music roll, an opposed support independent of the roll for the other end comprising a rotative member for turning with the roll, a non-rotative member on which the other member turns, and means for pressing the rotative and non-rotative members towards the driving support in order to engage a roll, one of said supporting members having a pivotal pointed journal and the other having a cooperating concave bearing surface for centering the said pointed journal.

27. In combination with a driving support for one end of a music roll, an opposed support independent of the roll for the other end comprising a rotative member for turning with the roll, a non-rotative member on which the other member turns, and means for pressing the rotative and non-rotative members towards the driving support in order to engage a roll, one of said supporting members having a pivotal axial pointed journal and the other having a cooperating concave bearing surface for centering the said pointed journal, and means for securing the said members together.

28. In combination with the driving support for a music roll, the opposed support for the freely turning end of the music roll, having a rotative and a non-rotative member, one of the said members having an axial point of bear-

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ing against the other of said members, and the rotative member having a central projection for engaging the hollow end of a music roll and an outer portion for bearing against the end of such roll, and an axial recess 27 in the  
5 said projecting portion for receiving and rotating with a roll phatle.

29. In combination with the driving support for one end of a music roll, and with the roll, an opposed support independent of the first for the freely turning end of the  
10 roll, said support comprising a rotative and a non-rotative member, one having a substantially sharp axial pointed journal and the other having a cooperating recess for

centering the said pointed journal when the same bears axially against it, the surface of said recess inclining and converging to the centering point thereof and making con- 15 tact substantially only with the tip of said axial pointed journal.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EDWIN S. VOTEY.

Witnesses:

W. C. MANSFIELD,  
A. W. SPENCE.