

No. 810,606.

PATENTED JAN. 23, 1906.

H. P. BALL.

MUSIC ROLL AND ADJUSTABLE DRIVING SUPPORT THEREFOR.

APPLICATION FILED OCT. 26, 1903.

FIG. 1.

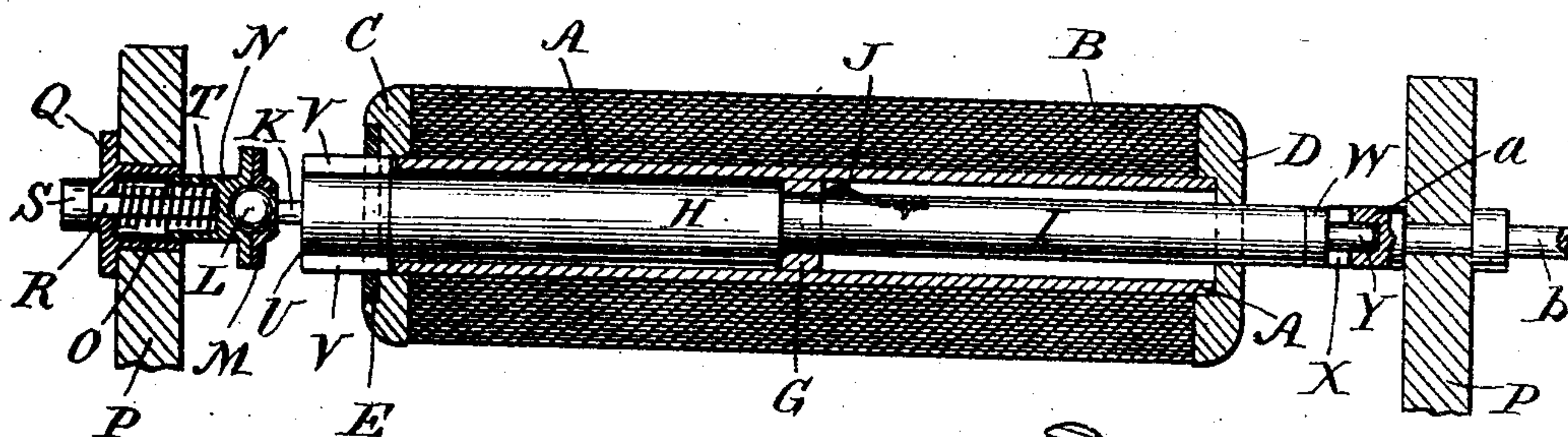


FIG. 2.

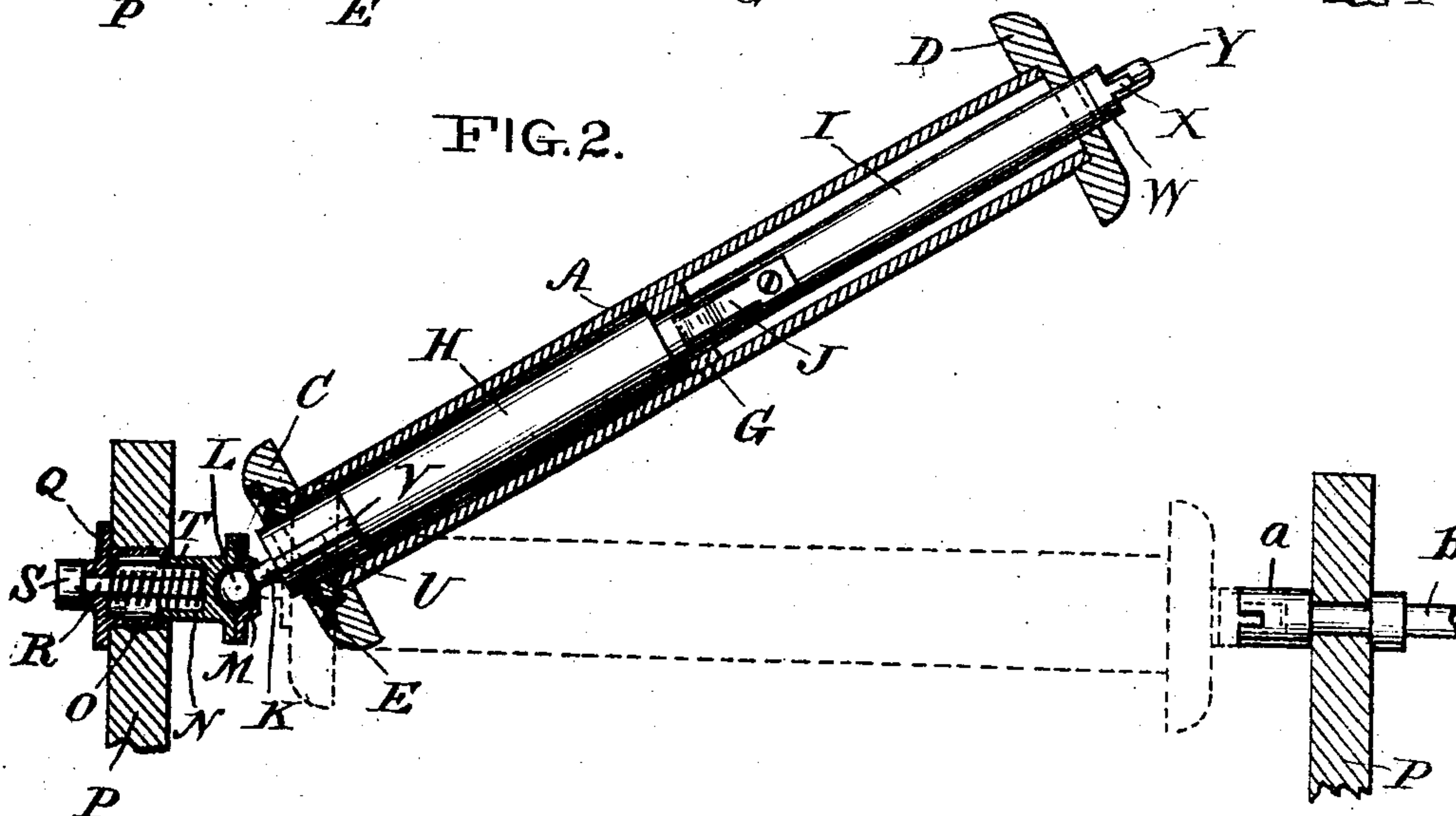


FIG. 3.

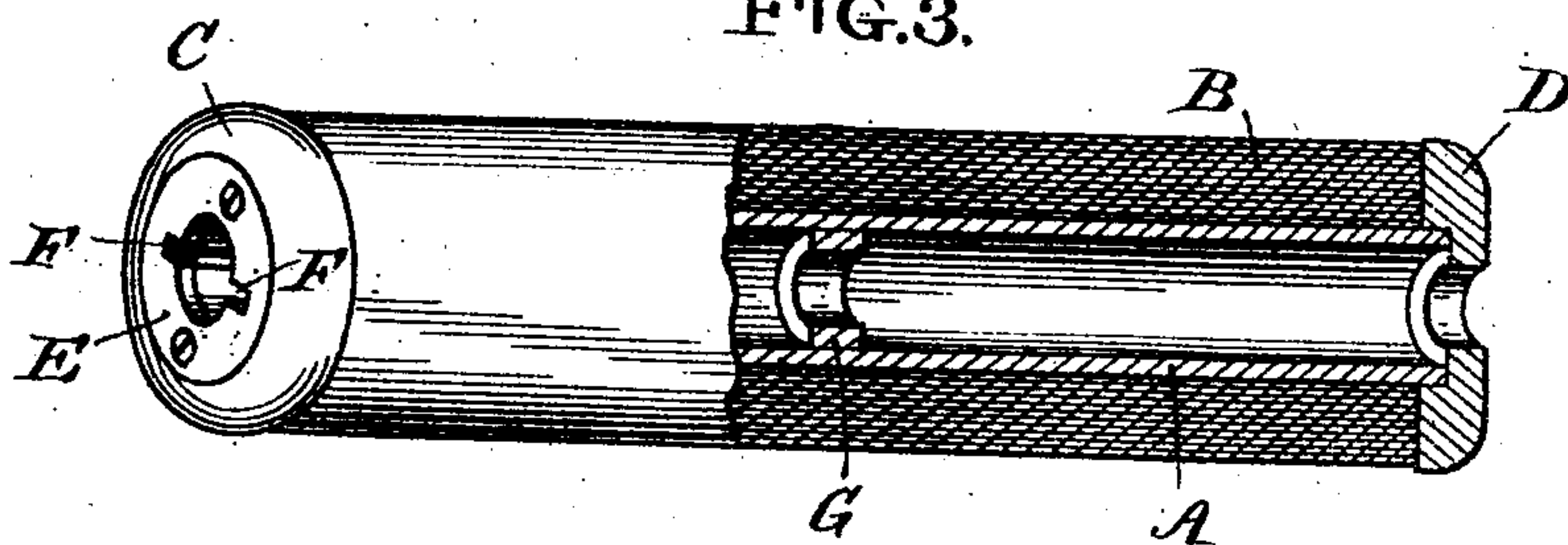


FIG. 4.

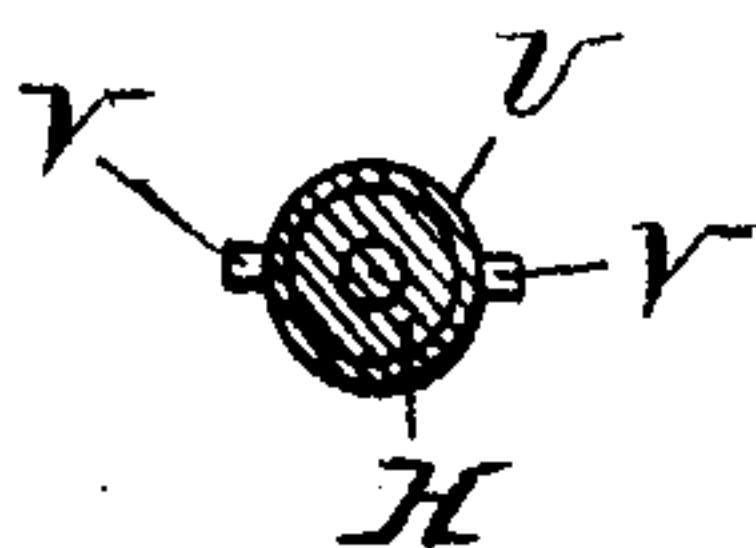
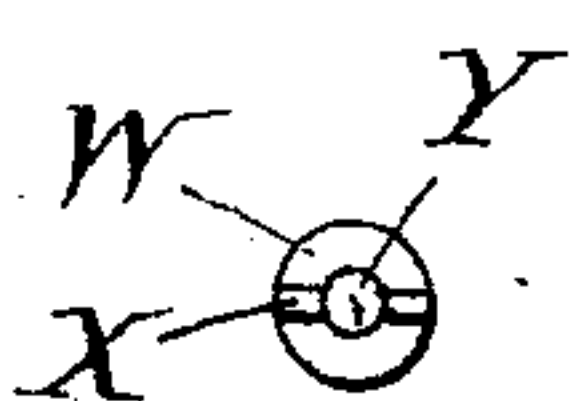


FIG. 5.



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# UNITED STATES PATENT OFFICE.

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## MUSIC-ROLL AND ADJUSTABLE DRIVING-SUPPORT THEREFOR.

No. 810,606.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed October 26, 1903. Serial No. 178,553.

*To all whom it may concern:*

Be it known that I, HENRY PRICE BALL, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Music-Rolls and Adjustable Driving-Supports Therefor, of which the following is a specification.

My invention relates to the construction of the music-roll and also to the construction of the support.

The objects of my invention are, primarily, to improve and cheapen the music-roll by doing away with the usual spindle or attaching means now furnished with every music-roll, and, secondarily, to provide means directly connected to a mechanical musical instrument by reason of which music-rolls not provided with such attaching means may be readily applied and driven.

The accompanying drawings will serve to illustrate my invention, in which—

Figure 1 is a view, partially in section, showing the relation of the music-roll to the spindle, bearings, &c. Fig. 2 is a similar view with the music-strip removed from the music-roll and the spindle in the position which it would occupy when it is desired to place a music-roll upon the spindle or remove it from the spindle. Fig. 3 is a view, partially in elevation and partially in section, showing the general construction of the music-roll with the music-strip wound thereon. Fig. 4 is a sectional end view of the spindle looking from the right. Fig. 5 is an end view of the spindle looking from the right.

I will first describe the music-roll. The music-roll is formed of a tubular body A, which is preferably of paper or other material which will have the same coefficient of expansion as the music-strip B, wound on it. Secured at the ends of the tubular body A are the annular flanges C D. Situated and secured in the end of the flange C is a metal plate E. The inner periphery of this plate E has oppositely-formed slots F, the purpose of which will hereinafter be described.

I do not limit myself in any wise to the manner of connecting the flanges C D to the body A. They may be glued on, crimped on, or otherwise fastened. The purpose of fastening the flanges C D to the body A is to provide that the flanges shall change their distance between each other as the body A and music-

strip B are expanded or contracted under atmospheric conditions.

Situated within the body A is a ring G, preferably formed of the same material as the body A.

I will now describe the support. The support or spindle consists of the cylindrical portions H I. The portion H, I prefer to make approximately the diameter of the bore of the tubular body A and the portion I approximately the diameter of the inner periphery of the ring G. Situated on the cylindrical portion I is a spring J, which when the tubular body A is in position is adapted to coact with the right-hand side of the inner periphery of the ring G, and thus prevent longitudinal motion of the tubular body A upon the spindle. Secured to the outer end of the cylinder H is a short shaft K, on the end of which is a ball L, carried in the bearing M on the end of a sleeve N. The sleeve N is situated within a second sleeve O, secured in the frame P of the machine. Connected to the sleeve N and passing through a plate Q on the rear of the sleeve O is a rod R, provided with a head S. Situated between the sleeves N and O and around the rod R is a helical tension-spring T. This spring serves to normally separate the sleeves N O, while the head S serves to limit the outward movement of the sleeve N. Surrounding the short shaft K and cylindrical portion H is a sleeve U, provided with the offsets or flanges V, which are adapted to coact with the slots F in the plate E. Situated on the forward end of the cylindrical portion I of the shaft K is a head portion, consisting of the cylindrical body W, having the flanges X and projecting pin portion Y, and which is adapted to coact with the usual driving-head a on the end of a driven shaft b.

It will be observed from the description so far as given that the music-roll consists of the tubular body A, flanges C D, and music-strip B and that it is not provided with any supporting spindle or means for mounting it in and connecting it with the driving-shaft of the mechanical musical instrument. The advantage of this construction is found in the fact that it is cheaper in construction and permits the access of air into the interior of the tubular body A, thereby providing for an equality of atmospheric influences.

The operation of the device will be readily



understood. When it is desired to place a music-roll upon or remove it from a spindle, the parts are in the position shown in Fig. 2. After the music-roll has been placed in position the spindle is brought into horizontal position and pushed to the left, which allows the sleeve N to slide in the sleeve O and the pin Y to enter the usual recess in the driving-head *a* and also the flanges X to cooperate with the driving-head. The flanges V on the sleeve U, coacting with the slots F in plate E, prevent movement of the music-roll relative to the cylindrical portions H I of the spindle.

Having thus described my invention, I claim—

1. A music-roll comprising a tubular body portion, flange portions secured to said body portion, and a music-strip portion wound upon said body portion, said body portion and music-strip portion having the same coefficient of expansion and contraction, in combination with a spindle having a hinged joint and forming a part of a mechanical musical instrument, and over which said body and music-strip portions may be placed and by which they may be driven.

2. A music-roll comprising a body portion, flange portions, and a music-strip-portion, in combination with a spindle hinged at one end to and forming a part of a mechanical musical instrument, together with means for securing said music-roll in position upon said spindle.

3. A music-roll comprising a body portion, flange portions and a music-strip portion, in combination with a spindle forming a part of a mechanical musical instrument, said spindle hinged at one end and coacting at the other end with driving means.

4. A music-roll comprising a tubular body portion, flange portions and a strip portion, in combination with a spindle forming a part of a mechanical musical instrument and adapted to enter said tubular portion, said spindle hinged at one end in a resilient bearing, and coacting at the opposite end with the roll-driving head of a mechanical musical instrument.

5. A music-roll comprising a body portion and a strip portion, in combination with a spindle forming a part of a mechanical musical instrument, and mounted at one end in a ball-and-socket joint carried by a resilient bearing, and provided at its other end with means for connecting said spindle with the usual roll-driving head of a mechanical musical instrument.

6. A music-roll comprising a tubular body portion, flange portions, and a music-strip portion, in combination with a spindle, a bearing for one end of the spindle permanently connected to a mechanical musical instrument and adapted to permit the opposite end of the spindle to be moved in a cir-

cular direction around the point of attachment of the bearing, together with means for driving said spindle.

7. In a mechanical musical instrument, a roll-spindle secured at one end of said instrument by a universal joint, and detachably connected at its other end with the usual roll-driving head of the instrument.

8. In a mechanical musical instrument, a spindle secured at one end to said instrument through a ball-and-socket joint mounted in a resilient sleeve, and at the other end through a device coacting with the usual roll-driving head of said instrument.

9. In a mechanical musical instrument, a spindle secured at one end to said instrument through a ball-and-socket joint mounted in a resilient sleeve, and at the other end through a device coacting with the usual roll-driving head of said instrument, together with a separable music-roll on said spindle having its body portion tubular, with flanges at the ends and carrying a perforated music-strip.

10. In a mechanical musical instrument, a spindle having two diameters, and connected at one end to said instrument through a universal joint, and detachably connected at its other end to said instrument through a flange-joint.

11. In combination in a mechanical musical instrument, a driving-spindle having two diameters and connected at one end to said instrument through a universal joint, means for driving said spindle, a music-roll adapted to coact with said spindle, and means on the spindle whereby the music-roll will be rotated when the spindle is rotated.

12. In combination in a mechanical musical instrument, a spindle attached at one end to said instrument through a universal joint, a longitudinally-movable bearing for said joint, a removable music-roll mounted on said spindle, means for securing said music-roll on said spindle, and means for driving said spindle.

13. In combination in a mechanical musical instrument, a driving-spindle connected at one end to said instrument through a universal joint, a longitudinally-movable bearing for said joint, said spindle of greater diameter at one end than at the other, a detachable music-roll on said spindle, a ring secured to the interior of the music-roll, a spring device mounted upon the spindle for effecting engagement between the spindle and the music-roll, and means for driving the music-roll.

14. In a mechanical musical instrument, a supporting-spindle for the music-roll universally mounted at one end in a longitudinally-movable bearing, a driver for the spindle, and means for connecting the spindle to the driver.

15. In a mechanical musical instrument, a



spindle having a ball-and-socket joint at one end, a driver therefor coacting with the opposite end of the spindle, and detachable means for detaching the spindle from the driver.

16. In a mechanical musical instrument, a spindle hinged at one end to the instrument, a driving means for the spindle, and detachable means for connecting said spindle to the driving means.

17. In a mechanical musical instrument, a spindle hinged to a longitudinally-movable bearing supported in the instrument, a driving means for the spindle, and detachable means for connecting said spindle with the driving means.

18. In combination in a mechanical musical instrument, a music-roll having a tubular body, a structurally-independent spindle hinged to the instrument, a driver for the spindle, and means for detaching the spindle from the driver.

19. In combination in a mechanical musical instrument, a music-roll comprising a body portion, flange portions, and a strip portion, a hinged spindle, a driver for the same, and detachable means for connecting said spindle with the driver.

20. In combination in a mechanical musical instrument a music-roll having a tubular body, a structurally-independent spindle, and means introduced between the two which will act to automatically center the music-roll longitudinally on the spindle and irrespective of the length of the music-roll.

21. In combination in a mechanical musical instrument, a perforated strip, a tubular body on which said strip is wound, a stop device inside of the tubular body, and a spindle carrying a device for engaging said stop device.

22. In a mechanical musical instrument, a music-roll having a hollow body and a clutch member at its center, in combination with a structurally-independent spindle passing through the body, and a resilient catch engaging the spindle with the body.

23. In a mechanical musical instrument, a music-roll having a hollow body of hygroscopic material and a clutch member at its center, in combination with a structurally-independent spindle passing through the body, and a clutch member on the spindle engaging with the first-named clutch member.

24. In a mechanical musical instrument, a music-roll having a hollow paper body and a clutch member at its center, and a structurally-independent spindle passing through the body engaging with the clutch member, and

means for driving the music-roll by the spindle.

25. In a mechanical musical instrument, a music-roll having a hollow body, a flange at each end thereon, and a clutch member at its center, in combination with a structurally-independent spindle passing through the body, and a clutch member thereon locating the body longitudinally on the spindle in one position.

26. In a mechanical musical instrument a music-roll having a hollow body, a structurally-independent spindle, and a clutching device situated between the two members and adapted, irrespective of the length of the music-roll, to secure said two members together at their centers, leaving the ends thereof free.

27. In a mechanical musical instrument a music-roll having a hollow body formed of hygroscopic material, a structurally-independent supporting spindle, a clutching device situated between the two members, said clutching device comprising a ring situated on the interior and at the center of the hollow body, and a spring device mounted on the surface and at the center of the spindle and adapted to center the music-roll on the spindle and irrespective of the length of the music-roll.

28. In a mechanical musical instrument the combination of a music-roll, an independent supporting-spindle, a clutching device situated between the center of the music-roll and the center of the spindle and adapted to hold the music-roll in a central position on the spindle and irrespective of its length.

29. In a mechanical musical instrument, a roll-spindle having a clutch device for detachably securing the roll in one position thereon, and means for transmitting motion from the spindle to the roll.

30. In a mechanical musical instrument, the combination of a music-roll comprising a hollow supporting-body, flanges at the end of said body, a slotted plate in one of said flanges, a separate supporting-spindle provided with keys at one end, which coact with the slots in the slotted plate, and means situated partially on the interior of the body at its center and partially on the exterior of the spindle at its center and adapted to coact to define the position of the body upon the spindle.

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

HENRY PRICE BALL.

Witnesses:

J. E. PEARSON,  
FRANK O'CONNOR.