

No. 763,058.

PATENTED JUNE 21, 1904.

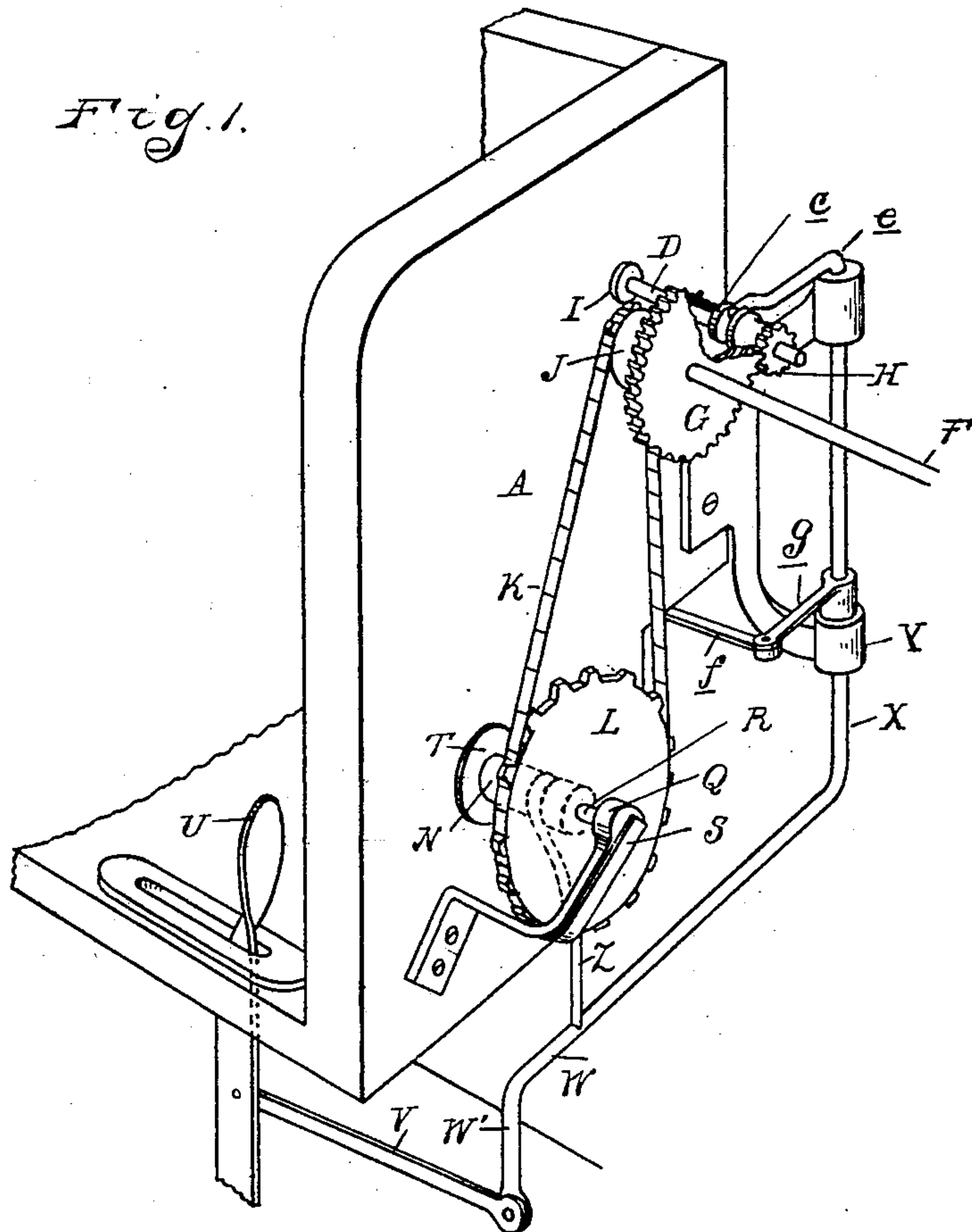
O. F. HINTZ.

WINDING AND REWINDING MECHANISM.

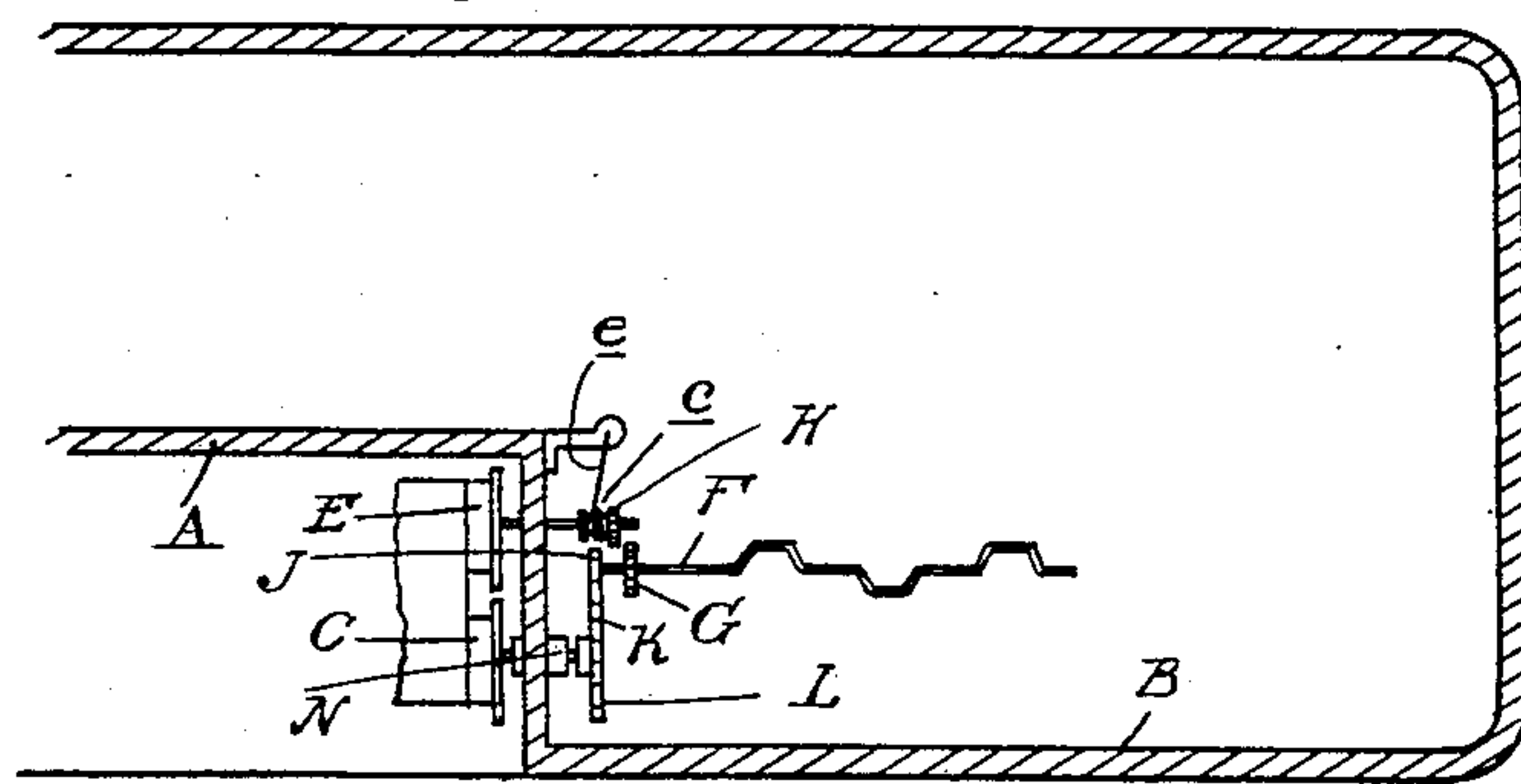
APPLICATION FILED MAR. 30, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Figs.



Witnesses
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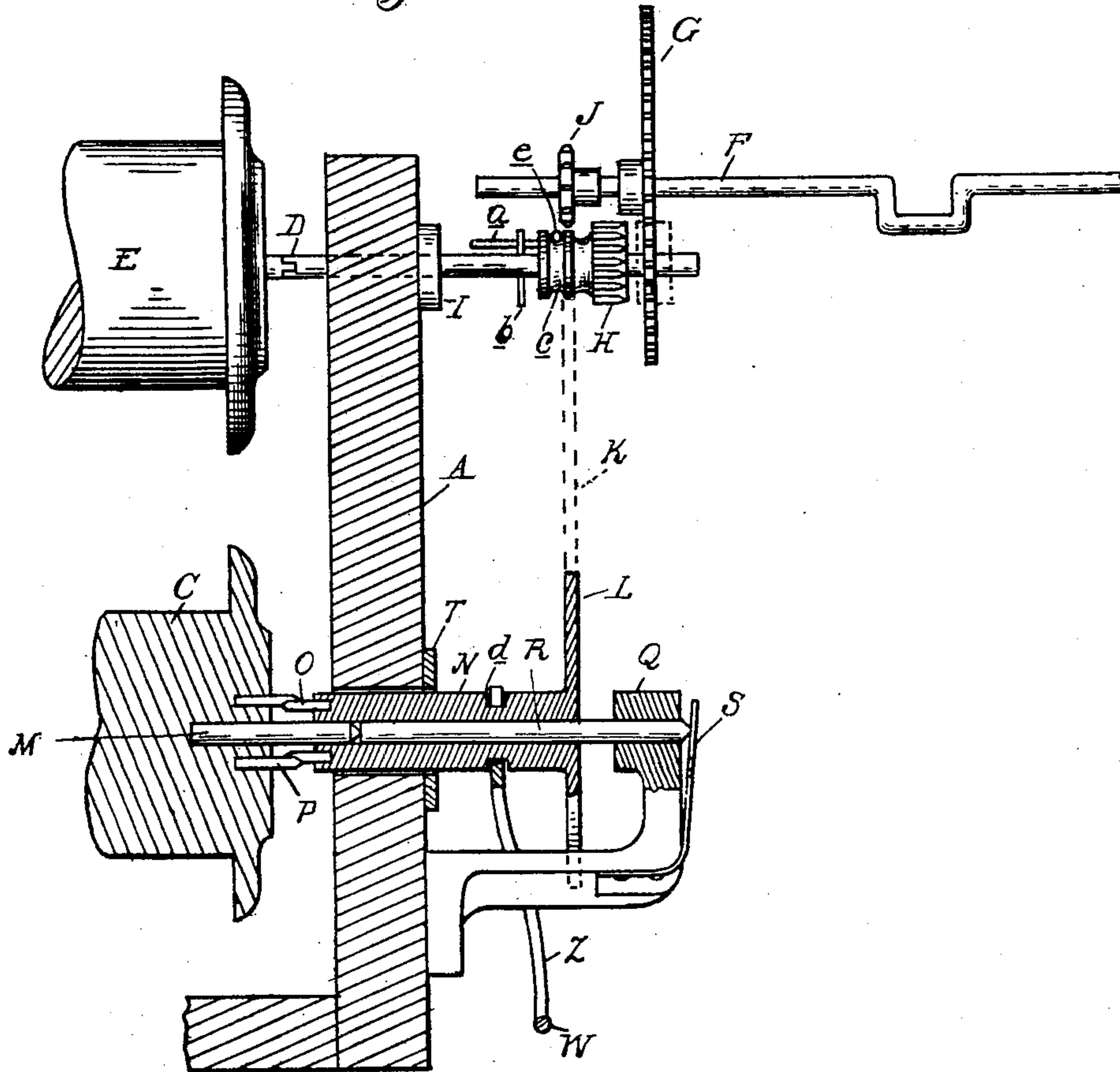
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WINDING AND REWINDING MECHANISM.

APPLICATION FILED MAR. 30, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

OTTO F. HINTZ, OF DETROIT, MICHIGAN, ASSIGNOR TO FARRAND ORGAN COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

WINDING AND REWINDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 763,058, dated June 21, 1904.

Application filed March 30, 1903. Serial No. 150,245. (No model.)

To all whom it may concern:

Be it known that I, OTTO F. HINTZ, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Winding and Rewinding Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to winding and rewinding mechanism for piano-players; and it is one of the objects of the invention to obtain a construction in which the noise of the mechanism is reduced to a minimum.

It is a further object to obtain a simple and inexpensive construction.

The invention consists in the peculiar construction, arrangement, and combination of parts, as hereinafter set forth.

In the drawings, Figure 1 is a perspective view of one end of the tracker-box, showing the mechanism attached thereto. Fig. 2 is a vertical section in the plane of the winding-roll, and Fig. 3 is a diagrammatic plan view illustrating the arrangement of parts within the casing of the instrument.

A is a box or casing in which the tracker and winding and rewinding rolls are located. This casing may be of any suitable construction, adapted to be open in front for the insertion or removal of the music-holding rolls.

B is the casing of the instrument in which the casing A is located, together therewith forming an inclosing housing for the motor and connections to the winding mechanism.

C is the winding-roll, and D is the rewinding-spindle with which the detachable music-holding roll E is adapted to engage.

The connecting mechanism for imparting rotary motion to the winding-roll and rewinding-spindle is located outside of the tracker-casing A and is inclosed in the casing B. Thus the noise occasioned by the intermeshing gears is deadened in passing through the casing, so as to be scarcely audible. The construction and arrangement of this mechanism are as follows:

F is the motor-shaft, which is preferably arranged parallel to the spindle D and the

axis of the winding-roll C. This shaft has secured thereon the gear-wheel G, adapted to mesh with the pinion H upon the spindle D, while the latter passes through a suitable bearing I in the walls of the casing A and projects beyond said wall. The pinion H is loosely sleeved upon the spindle D, so as to be free to be moved longitudinally thereon for the purpose of engagement or disengagement from the gear-wheel G. The pinion is, however, coupled to rotate with the spindle preferably through the medium of the pins *a* and *b*, respectively connected to the pinion and the spindle. For moving the pinion longitudinally of the spindle it is preferably provided with a groove-collar *c*, with which a rock-arm engages, as will hereinafter be set forth.

J is a sprocket-wheel upon the motor-shaft F, and K is a chain connecting the same with the larger sprocket-wheel L, which latter is arranged in axial alinement with the winding-roll C. This sprocket L is provided with a detachable coupling connection with the roll C, preferably of the following construction: M is a stub-axle projecting from the end of the roll C. N is a sleeve surrounding this stub-axle, passing through the bearing in the wall of the casing A. The outer end of this sleeve is connected with the sprocket-wheel L and the inner end is provided with one or more inwardly-projecting pins or lugs O. P represents pins projecting from the roll C, so as to be in the path of rotation of the pins O. With the arrangement just described the motion of the sprocket L will be conveyed, through the sleeve N and the pins O and P when in engagement, to the winding-roll C. To disengage the coupling, the sleeve N may be shifted outward, so as to withdraw the pins O from the path of the pins P, thereby permitting the sprocket L and sleeve N to rotate independently from the roll.

Q is a bracket secured to the wall of the casing A and having formed at its outer end a supporting-bearing for the sleeve N and sprocket L. Inasmuch as this bracket is secured to the wall of the casing A, which is made of wood, there is danger of the bearing being thrown out of exact alinement of the

roll C through expansion or shrinking of the wood. I therefore provide a construction in which the parts will be permitted to rotate freely even when the outer bearing is not in exact alinement. To accomplish this, the stub-axle M is terminated a short distance within the end of the sleeve N when in its outermost position.

R is a shaft forming an extension of the axle M and having its outer end journaled in the bearing Q. As the axle M and shaft R both engage with the sleeve N, they will be held in substantial alinement; but sufficient clearance is provided to allow them to assume a slightly-angular position without binding. To hold the shaft R in position, the bearing, such as the spring S, secured to the bracket Q, is arranged to engage with the end of the shaft. This end is preferably tapered to a point to reduce friction on the end of the stub. Axle M is also preferably pointed.

The bearing in the casing A is formed by a comparatively thin plate T of metal, and the aperture in the wood is formed large enough to provide clearance, so as to prevent binding.

In operation the winding-roll C is driven whenever the pins O and P are in engagement, and the rewinding-shaft D is driven to rotate in the opposite direction whenever the pinion H is in engagement with the gear-wheel G. These two couplings must be simultaneously operated, so that the one is disengaged before the engagement of the other, thereby preventing the roll C and spindle D from operating against each other. For accomplishing this an operating mechanism is provided, in which U is a lever under the control of the operator. V is a link connecting this lever with an arm W of a rock-shaft X, said shaft being vertically arranged near the rear edge of the casing A and preferably journaled in bearings in the bracket Y. The rock-arm W preferably extends in a substantially horizontal plane and at its outer end has a downwardly-bent portion W', which is connected to the link V. Z is an arm projecting upward from the arm W, which embraces the sleeve N and engages with the groove *d* therein. *e* is an arm projecting forward from the upper end of the rock-shaft X and engaging with the groove *c*. Thus whenever the rock-arm W is operated through the medium of the link V the arm Z will be moved to slide the sleeve N into or out of engagement with the winding-roll C. At the same time the rocking of the shaft X will swing the arm *e*, so as to slide the pinion H out of or into engagement with the pinion G.

It is usual in the construction of piano-players to provide a regulator for controlling the motor while it is operating the winding-roll, which regulator is thrown out of action during the rewinding. With the present construction the regulator (not shown) is con-

trolled in its operation by the actuation of a link *f*, which is connected to a rock-arm *g*, secured to the rock-shaft X. Thus the three rock-arms W, *e*, and *f* are all simultaneously actuated by the operation of the lever U.

What I claim as my invention is—

1. In combination with the tracker-casing, the winding-roll and rewinding-spindle therein, shiftable gearing instrumentalities for said spindle and roll located wholly without said casing, and a clutch intermediate said instrumentalities and the winding-roll disposed within the casing.

2. The combination with the tracker-case and the winding-roll therein, of a rotary driving member without the case in axial alinement with said roll, and a clutch for coupling said roll and drive member, one part of said clutch being carried by the driving member and the other part at the end of the roll.

3. The combination with the tracker-case, the winding-roll therein and the rewinding-spindle, of a drive-shaft, a rotary member in axial alinement with said roll arranged without said case, a sprocket-and-chain connection between said drive-shaft and driven member, a clutch for coupling said driven member with said roll and instrumentalities operatively associated with said spindle adapted to be engaged with and disengaged from said drive-shaft arranged axially of the roll and within the case.

4. The combination with the winding-roll and rewinding-spindle, of a drive-shaft, a rotary driven member in axial alinement with said winding-roll, a step-down drive connection between said shaft and driven member, a clutch for coupling said driven member with said roll in axial alinement with the roll and between the end of the same and the driven member, a step-up gearing between said drive-shaft and rewinding-spindle adapted to rotate the latter in the opposite direction from the rotation of said winding-roll, and means for coupling and uncoupling said drive connection to the spindle.

5. The combination with the winding-roll and rewinding-spindle, of a rotary driven member in axial alinement with said winding-roll, a clutch one member of which is at the end of the roll and the other carried by said driven member for coupling said member with said roll, a motor-shaft, a sprocket-and-chain connection between said motor-shaft and driven member, a gear-wheel on said motor-shaft, a pinion on said spindle adapted to mesh with said gear, means for moving said pinion longitudinally of said spindle to engage and disengage said gear-wheel, and means for alternately engaging said gear and pinion and coupling said driven member and winding-roll.

6. The combination with the winding-roll and the rewinding-spindle, of a rotary driven member in axial alinement with said winding-

roll, a drive-shaft, a sprocket-and-chain connection between said drive-shaft and rotary member, a gear-wheel on said drive-shaft, a pinion on said spindle, a rock-shaft, a rock-arm thereon having an engagement with said pinion, a clutch for coupling said driven member with said winding-roll, a second rock-arm on said rock-shaft having an operating connection with said clutch whereby said clutch and pinion are simultaneously operated to alternately couple said drive-shaft with said winding-roll and spindle.

7. The combination with the tracker-case, of the winding-roll therein, a stub-axle for said winding-roll, a sleeve upon said stub-axle passing through an aperture in said case, cooperating clutch members on said sleeve and roll, a rotary drive connection to said sleeve without said case, and means for moving said sleeve longitudinally to couple or uncouple the same with said roll.

8. The combination with the tracker-case, of a winding-roll therein, a sleeve projecting through an aperture in said case in axial alignment with said roll, a stub-axle projecting from said roll into engagement with one end of said sleeve, an extension-axle extending from the end of said stub-axle beyond the outer end of said sleeve, a bearing for the outer end of said extension-axle, cooperating clutch members for said roll and the adjacent end of said sleeve, a rotary drive connection to said sleeve without the case, and means for

moving said sleeve longitudinally to couple or uncouple the same from said winding-roll. 35

9. The combination with the tracker-case, and the winding-roll therein, of the sleeve N passing through an aperture in said case in axial alignment with said roll, the stub-axle M engaging the inner end of said sleeve, the extension-axle R, the bracket Q supporting the outer end of said extension-axle, cooperating pins O and P on said sleeve and roll, a sprocket-wheel on the outer end of said sleeve having a chain-drive connection, and means for moving said sleeve longitudinally to couple or uncouple the same from said roll. 40 45

10. The combination with the winding-roll and rewinding-spindle, of a rotary driven member L in axial alignment with said winding-roll, a clutch for coupling said member with said roll, a motor-shaft F, a sprocket-and-chain connection between said motor-shaft and driven member, a gear-wheel G on said motor-shaft, a pinion H on the rewinding-spindle adapted to mesh with said gear, means for alternately engaging said pinion and gear-wheel and coupling the driven member and winding-roll. 50 55

In testimony whereof I affix my signature in presence of two witnesses. 60

OTTO F. HINTZ.

Witnesses:

JAS. P. BARRY,
ROSE LEONE MORGAN.