

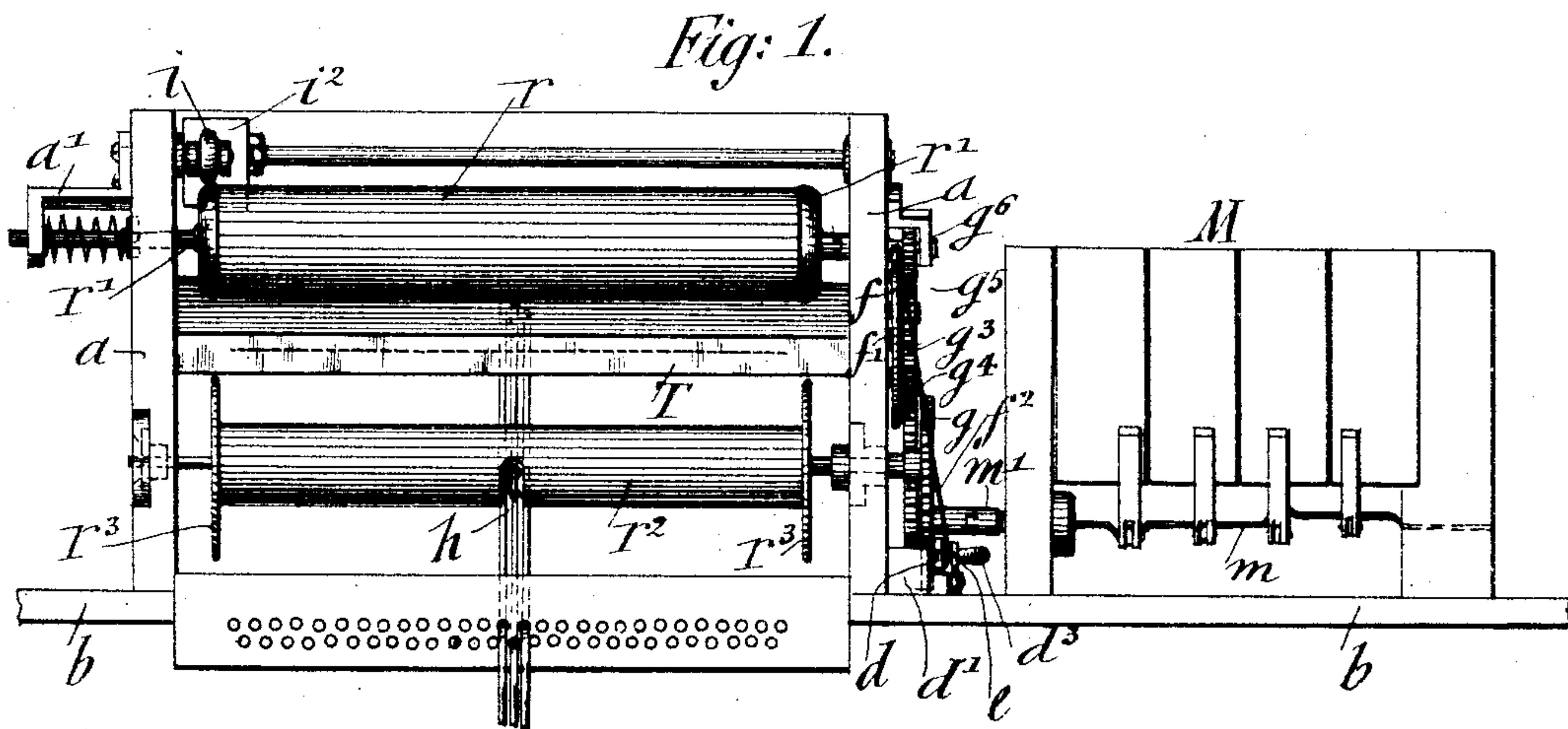
No. 790,164.

PATENTED MAY 16, 1905.

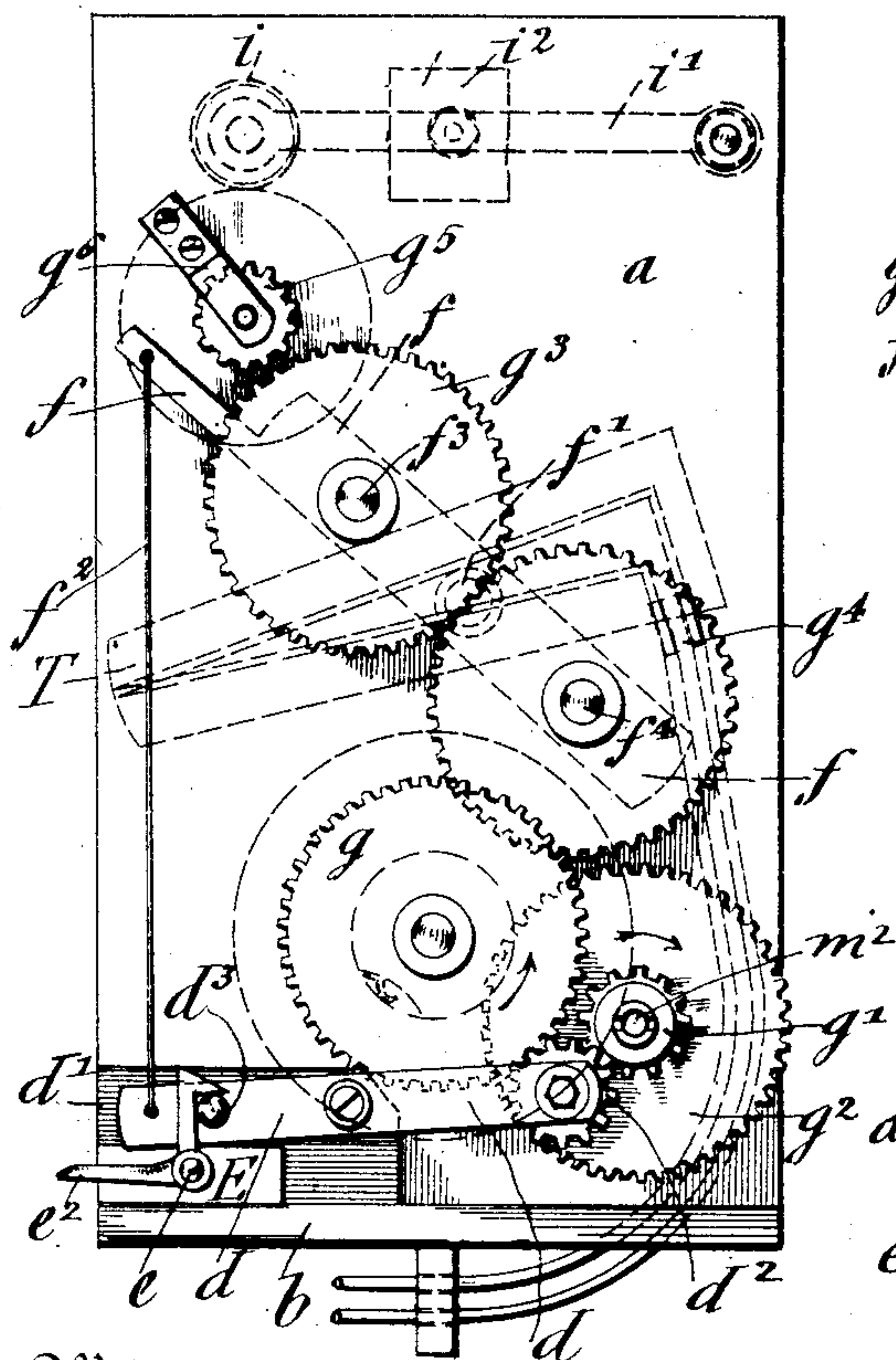
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MOTOR MECHANISM FOR UNWINDING AND REWINDING PERFORATED MUSIC SHEETS.

APPLICATION FILED DEC. 10, 1904.

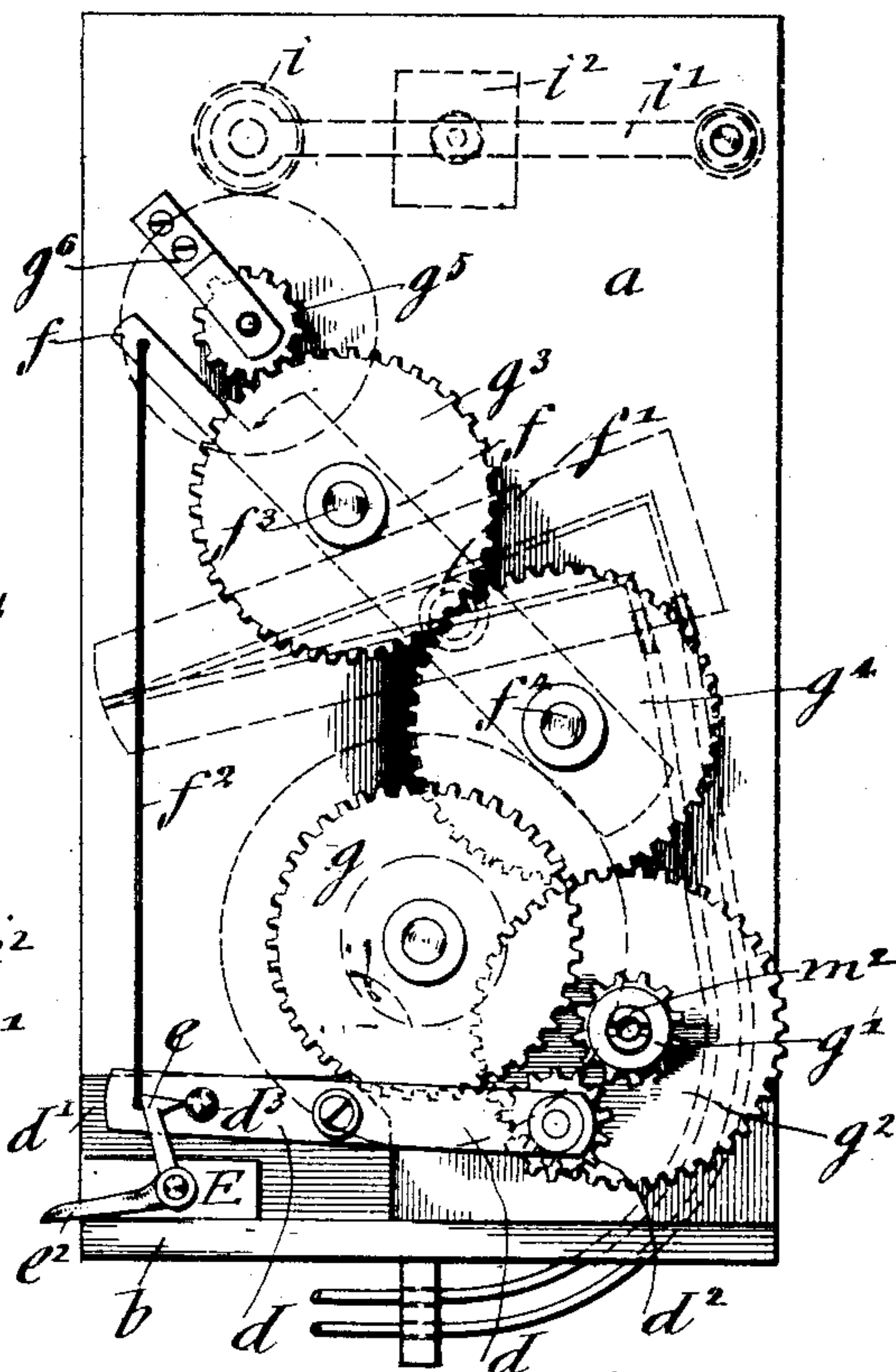


*Fig: 2.*



Witnesses  
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*Fig: 3.*



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# UNITED STATES PATENT OFFICE.

JOSEPH WIESER, OF NEW YORK, N. Y.

MOTOR MECHANISM FOR UNWINDING AND REWINDING PERFORATED MUSIC-SHEETS.

SPECIFICATION forming part of Letters Patent No. 790,164, dated May 16, 1905.

Application filed December 10, 1904. Serial No. 236,367.

*To all whom it may concern:*

Be it known that I, JOSEPH WIESER, a citizen of the United States, residing in New York, borough of Brooklyn, in the State of New York, have invented certain new and useful Improvements in Motor Mechanisms for Unwinding and Rewinding Perforated Music-Sheets, of which the following is a specification.

The object of this invention is to provide an effective mechanism for unwinding the perforated music-sheet from its roll and winding it upon the receiving-roll by a pneumatic-motor and intermediate motion-transmitting mechanism between the crank-shaft of the motor and the shafts of the music-sheet roll and receiving-roll, respectively, so that the music-sheet is moved at the desired speed over the face of the tracker and the orifices in the same, while the rewinding of the music-sheet after the selection has been played is accomplished in a very efficient manner at a greater speed than the winding up of the music-sheet on the receiving-roll while the piece is being played; and for this purpose the invention consists in the novel features and combinations of parts to be hereinafter described and finally recited in the claims.

In the accompanying drawings, illustrative of one embodiment of the invention, Figure 1 is a front elevation of the tracker, music-sheet roll, receiving-roll, pneumatic-motor, and transmitting-gearing between the pneumatic-motor and the music-sheet and receiving rolls, as arranged for use for self-playing pianos; and Figs. 2 and 3 are side elevations of the motion-transmitting gearing and the mechanism for shifting the power from the receiving-roll to the music-sheet roll, and vice versa, according as the music-sheet is to be wound up on the receiving-roll or rewound on the music-sheet roll.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, T designates the tracker, which is supported in inclined position between two uprights *a a*, supported on a suitable shelf *b*, which is arranged in the casing of the self-playing piano or other musical instrument. The tracker is provided

with the usual ducts, connected by flexible tubes with the pneumatic valve-actions of the instrument, the front ends of the ducts terminating in the face of the tracker and being opened or closed by the perforated music-sheet, which is passed over the face of the tracker. The music-sheet roll *r* is supported above the tracker and inserted into receiving-cups *r'*, of which one cup is preferably provided with a spring-actuated stem, while the other cup is connected with the shaft of the driving-pinion *g'* of the music-sheet roll. The stem or spindle of the spring-actuated music-holding cup *r'* is guided in one of the uprights *a* and a keeper *a'*, attached to the upper end of the same, a helical spring being interposed, so as to give the desired play to the cup *r'* for permitting the convenient insertion and removal of the music-sheet roll from said cups. The receiving-roll *r''* is located below the tracker and provided with end flanges *r'''* and with a central recess in which a hook *h* is located for engaging the hook of the music-sheet when placing the same in position for playing the selection of music embodied in the same. The receiving-roll is supported permanently in bearings of the upright supports *a*, one end of its shaft being extended through the upright *a* and provided with a gear-wheel *g* at its outer end.

The pneumatic-motor M, which is located alongside of the tracker, is made in any approved construction, the crank-shaft *m* of the motor being operated by the pneumatics of the same and connected by a clutch member *m'* on the end of the crank-shaft with a clutch member *m''* on the shaft of a pinion *g'*, said pinion-shaft also carrying a gear-wheel *g''*, as shown clearly in Figs. 2 and 3. In front of the pinion *g'* and below the gear-wheel *g* on the shaft of the receiving-roll *r''* is arranged a lever *l*, which is fulcrumed to a block *l'*, arranged alongside of the upright support *a*, said lever *l* carrying at its rear end a pinion *l''*, which meshes with the pinion *g'* when the front end of the lever *l* is lowered, the pinion *l''* being also placed in mesh with the gear-wheel *g*, as shown in Fig. 2. The front end of the lever is provided with a laterally-extending handle *l'''*, by which the lever is op-



erated so as to be engaged by a pivot-hook  $e$ , which is attached to a block  $E$  alongside of the block  $d'$ , the hook-shaped end engaging the handle  $d^3$ , so as to retain the lever  $d$  in position. The pivot-hook is provided with a forwardly-extending handle  $e^2$ , by which the hook can be released from the handle  $d^3$  or placed in locking connection with the same, as desired. A second lever  $f$  is fulcrumed at  $f'$  to the upright support  $a$  in upwardly-inclined position, its upper end being connected by a wire  $f^2$  or other suitable connection with the front end of the lower lever  $d$ . Equidistantly from the fulcrum  $f'$  of the lever  $f$  the latter is provided with short stud-shafts  $f^3$   $f^4$ , on which turn intermeshing gear-wheels  $g^3$   $g^4$ , respectively, which are equal in size with the gear-wheels  $g$   $g^2$ . The gear-wheels  $g^3$   $g^4$  are arranged in the same plane with the gear-wheel  $g^2$ , the gear-wheel  $g^4$  being adapted to be placed in mesh with the gear-wheel  $g^2$  when the lever  $f$  is oscillated on its fulcrum by releasing the lower lever  $d$  from the locking-hook  $e$ , as shown in Fig. 3. The pinion  $g^5$  on the shaft of the music-sheet roll is adapted to be placed in mesh with the gear-wheel  $g^3$ , as shown in Fig. 3, when the lever  $f$  is placed in its uppermost position, so that the lower gear-wheel  $g^4$  meshes with the driving gear-wheel  $g^2$ . The shaft of the supporting-cup  $r'$  is supported at its outer end in a bearing on a keeper  $g^6$ , attached to the upright support  $a$ , as shown clearly in Fig. 1.

When it is desired to play a piece of music, the music-sheet roll with the music-sheet thereon is inserted between the cups above the tracker and the hook placed on the hook of the receiving-roll  $r^2$ . The lever  $d$  is then lowered by placing the locking-hook in position over its handle  $d^3$ , so that the driving-pinion  $g'$  is placed in mesh with the pinion  $d^2$  at the rear end of the lever  $d$  and the pinion  $d^2$  placed in mesh with the gear-wheel  $g$  on the shaft of the receiving-roll  $r^2$ . The valve-action bellows, which supplies the motive power to the pneumatic-motor  $M$ , is then opened and the pedals of the self-playing piano depressed in the usual manner, and the crank-shaft of the motor is set in motion, so that by the clutch  $m' m^2$  and gear-wheel  $g$  the receiving-roll turns in the direction shown in Fig. 2, whereby it unwinds the music-sheet from the music-sheet roll and winds it on the receiving-roll in the usual manner. When the piece has been played and it is desired to rewind the same on the music-sheet roll, the lever  $d$  is released from the locking-hook, which places the pinion  $d^2$  out of gear with the pinion  $g'$ , but places the gear-wheel  $g^4$  in mesh with the gear-wheel  $g^2$  and the gear-wheel  $g^3$  in mesh with the pinion  $g^5$  on the shaft of the music-sheet roll. The levers and gear-wheels assume the position shown in Fig. 3. The full force of the motor-bellows

is then applied to the motor, so that by the clutch  $m' m^2$ , pinion  $g'$ , and gear-wheels  $g^2$   $g^3$   $g^4$ , the pinion  $g^5$ , and thereby the music-sheet roll, is operated so as to unwind the music-sheet from the receiving-roll and rewind it on the music-sheet roll. By working the motor at extra speed the rewinding is accomplished in a quick and reliable manner, so that the music-sheet roll, with the music-sheet wound thereon, can be removed from its supporting-cups and a new music-sheet roll inserted therein.

For steadying the motion of the music-sheet roll during the playing of the music, as well as during the rewinding of the music-sheet on the music-sheet roll, a tension-roller  $i$  is rotated in contact with one of the cups of the music-sheet roll, the tension-roller being arranged at the front end of a lever  $i'$ , which is pivoted at its rear end to the left-hand upright  $a$  and which is provided with an adjustable weight  $i^2$ , that can be shifted more or less forward or backward, so as to permit the adjustment of the tension of the roller  $i$  on the cup of the music-sheet roll and produce thereby a slight retarding action on the same for producing a uniform rotary motion on the music-sheet roll. This tension is essential for producing the winding of the music-sheet on the receiving-roll and the unwinding of the music-sheet from the receiving-roll and rewinding on the music-sheet roll, as it acts as a speed-regulator during the unwinding and rewinding of the music-sheet.

My improved motion-transmitting mechanism is of simple and reliable construction, readily shifted into action for winding the music-sheet on the receiving-roll and playing the piece of music or for rewinding it back onto the music-sheet roll, for the reason that the gear-shifting levers  $d$  and  $f$  are operated at the same time and shifted from one actuating position into the other actuating position, while accomplishing the proper intermeshing of the gear-wheels for either actuation in a reliable manner, so as to impart either rotary motion to the receiving-roll for unwinding the music-sheet from the music-sheet roll or rotary motion to the music-sheet roll for rewinding the music-sheet thereon after the piece has been played.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, in a self-playing piano, with a music-roll, a pinion fixed to the shaft thereof, a receiving-roll, and a gear-wheel fixed to the shaft thereof, of a driving-pinion, a driving gear-wheel rotatable therewith, a lever, means carried by said lever for transmitting motion from said driving-pinion to said receiving-roll gear-wheel, a second lever, means carried by said second lever for transmitting motion from said driving gear-wheel to said music-roll pinion, and means for con-



necting said levers so that when either is shifted into operative position the other is shifted into inoperative position.

2. The combination, in a self-playing piano, with a music-roll, a pinion fixed to the shaft thereof, a receiving-roll, and a gear-wheel fixed to the shaft thereof, of a driving-pinion, a driving gear-wheel rotatable therewith, a fulcrumed lever, a pinion carried at one end of said lever and adapted to simultaneously engage said driving-pinion and said receiving-roll gear-wheel, a second lever, means carried by said second lever for transmitting motion from said driving gear-wheel to said music-roll pinion, and means for connecting said levers and thereby permitting the simultaneous shifting of the same, one into operative position and the other into inoperative position.

3. The combination, with a music-roll, a receiving-roll, and a pinion and a gear-wheel fixed to the shafts of said music-roll and said receiving-roll respectively, of a driving-pinion, a driving gear-wheel rotatable therewith, a lever, means carried by said lever for transmitting motion from said driving-pinion to said receiving-roll gear-wheel, a fulcrumed lever, intermeshing gear-wheels journaled on said lever at opposite sides of the fulcrum and adapted to transmit motion from said driving gear-wheel to said music-roll pinion, and a connection between said levers for effecting the simultaneous shifting of the same, one into, and the other out of, operative position.

4. The combination, with a music-roll, a receiving-roll, and a pinion and gear-wheel fixed to the shafts of said music-roll and said receiving-roll respectively, of a driving-pinion, a driving gear-wheel rotatable therewith, a fulcrumed lever, a pinion carried by said lever, and adapted to simultaneously engage said driving-pinion and said receiving-roll gear-wheel, a second fulcrumed lever, intermeshing gear-wheels carried thereby and adapted to transmit motion from said driving gear-wheel to said music-roll pinion, and a connection between said levers for effecting

the simultaneous shifting of the same, one into, and the other out of, operative position.

5. The combination, with a music-roll having a pinion rotatable therewith, and a receiving-roll having a gear-wheel rotatable therewith, of a driving-pinion, a driving gear-wheel rotatable therewith, a lever, means carried by said lever for transmitting motion from said driving-pinion to said receiving-roll gear-wheel, a second lever, means carried by said second lever for transmitting motion from said driving gear-wheel to said music-roll pinion, a member connecting said levers, a handle on one of said levers, and a relatively fixed hook for engaging said handle.

6. In a self-playing piano, the combination, with the tracker, a music-sheet roll supported above the same, a receiving-roll supported below the tracker, a pneumatic-motor located sidewise of the tracker, a crank-shaft operated by said motor, of motion-transmitting gearing between said driving crank-shaft and the shafts of the music-sheet roll and receiving-roll, a driving gear-wheel, a clutch connecting said driving gear-wheel with the driving-shaft, a pinion on the shaft of said driving gear-wheel, a fulcrumed lever provided with a pinion meshing with the pinion on the driving gear-wheel, a gear-wheel on the receiving-roll, a second fulcrumed lever provided with intermeshing gear-wheels one of them being adapted to mesh with the driving gear-wheel, a gear-wheel on the shaft of the music-sheet roll, means for connecting the ends of the fulcrumed levers, and locking mechanism for locking the levers either in position for driving the receiving-roll or for driving the music-sheet roll.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOSEPH WIESER.

Witnesses:

PAUL GOEPEL,

HENRY J. SUHRBIER.