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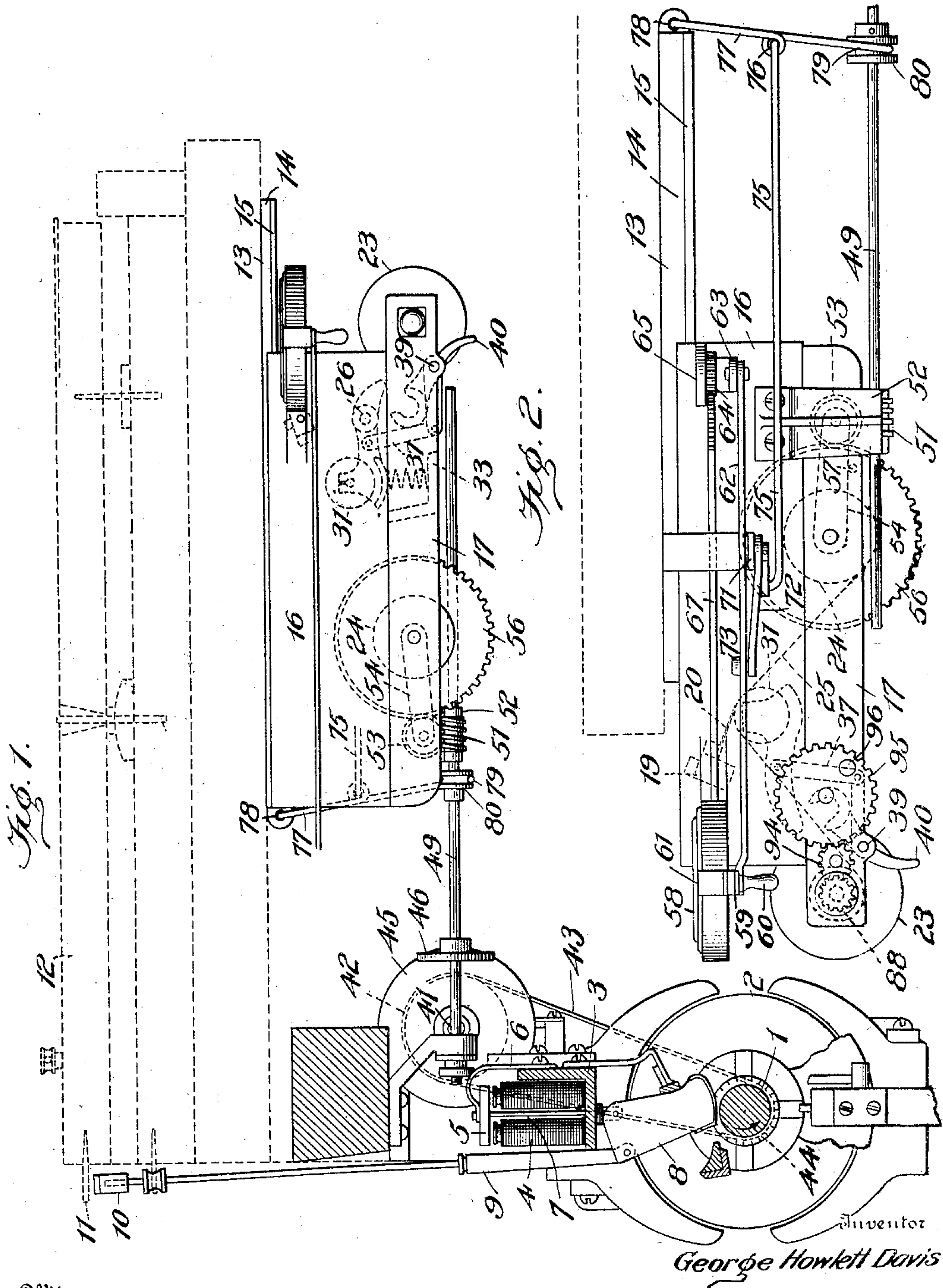
PATENTED MAY 21, 1907.

G. H. DAVIS.

CONTROLLING DEVICE FOR AUTOMATIC MUSICAL INSTRUMENTS.

APPLIOATION FILED SEPT. 27, 1905.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 3.

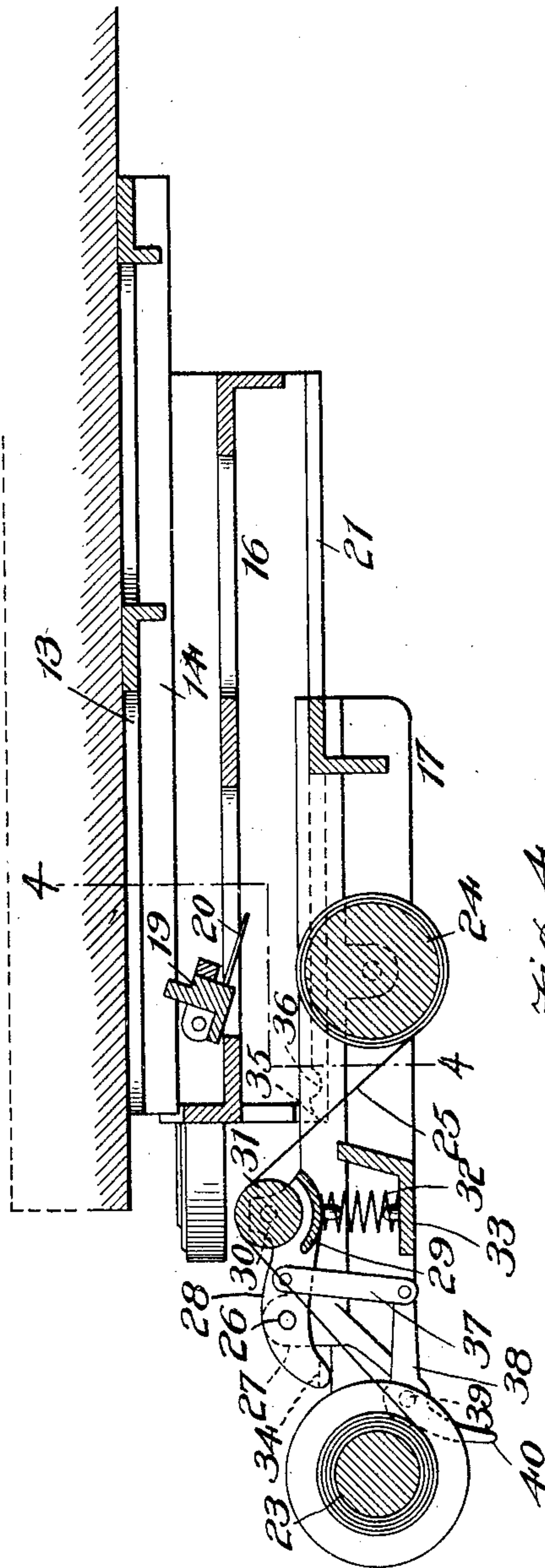
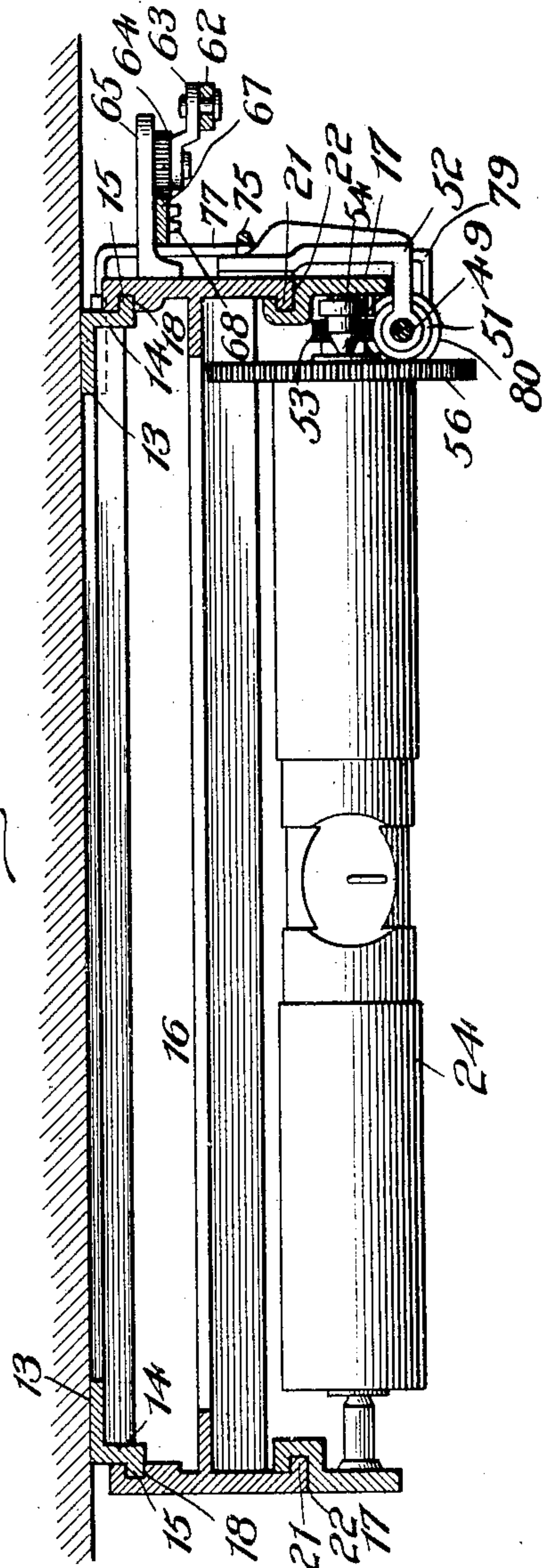


Fig. 4.



Witnesses

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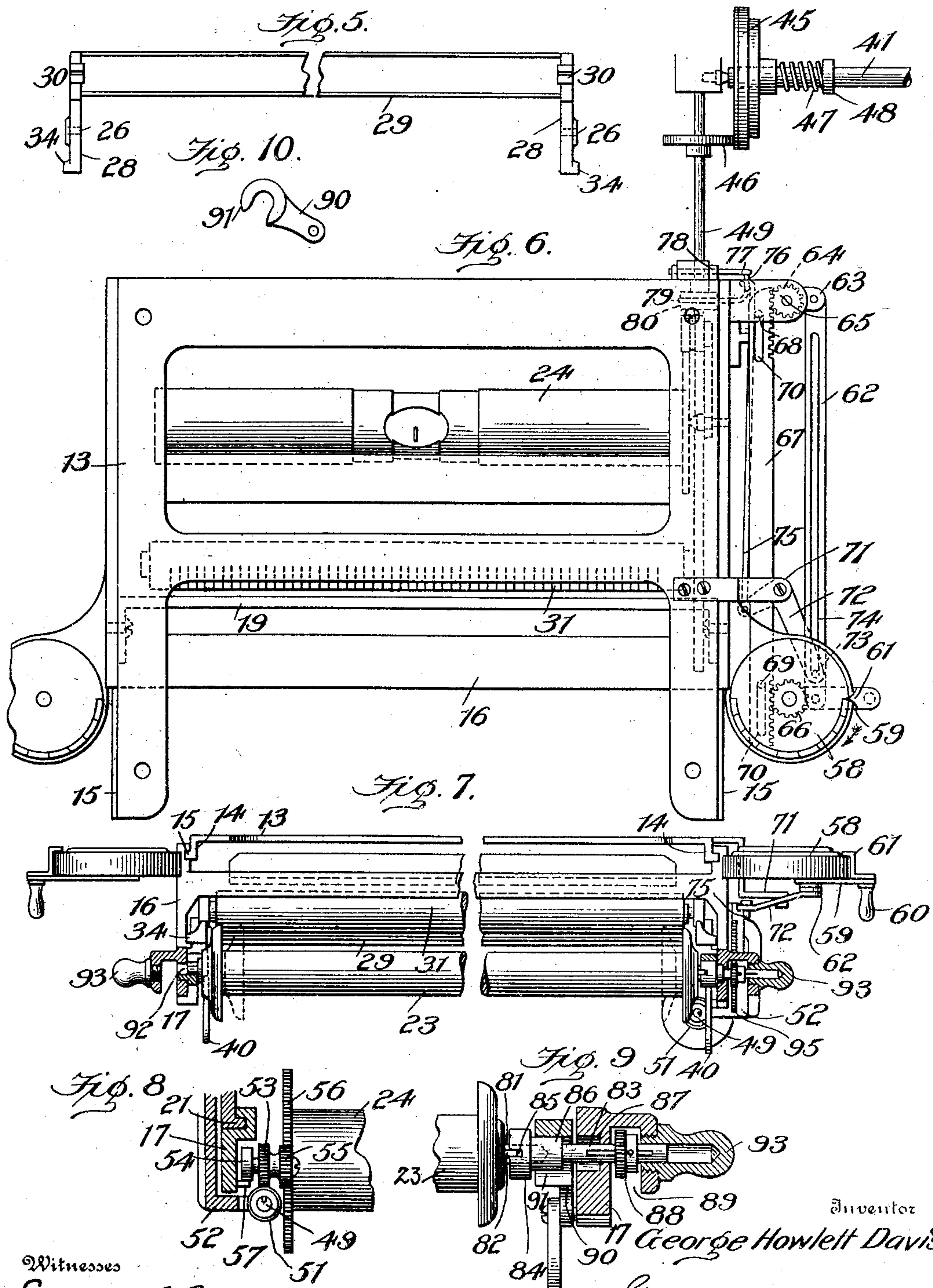
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE HOWLETT DAVIS, OF WEST ORANGE, NEW JERSEY.

CONTROLLING DEVICE FOR AUTOMATIC MUSICAL INSTRUMENTS.

No. 854,689.

Specification of Letters Patent.

Patented May 21, 1907.

Original application filed November 26, 1901, Serial No. 83,687. Divided and this application filed September 27, 1905.
Serial No. 280,334.

To all whom it may concern:

Be it known that I, GEORGE HOWLETT DAVIS, a citizen of the United States, residing at West Orange, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Controlling Devices for Automatic Musical Instruments, of which the following is a specification.

This invention relates to certain new and useful improvements in electrical self-playing musical instruments, and is a division of my application, Serial number 83,687, filed Nov. 26, 1901.

The present improvement relates more particularly to a novel construction of music roll holder, and to novel and improved means for winding and rewinding the music sheet on its delivery and take-up rolls.

The invention also has in view means associated with the roll holder for accommodating music rolls of varying width.

The invention has for its object further to provide novel and simple means for varying the speed of travel of the music sheet.

To these and other ends the invention consists in the novel features of construction and combinations and arrangements of parts hereinafter referred to in detail and then more definitely brought out in the claims.

In order to enable others skilled in the art to understand, make and use my said invention as provided for by the patent statute, I will proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings in which—

Figure 1 is a vertical transverse sectional view of my improved attachment, shown as applied to a piano the music roll holder being shown attached to the under side of the piano keyboard; Fig. 2 is a side view of the music roll holder showing the mechanism for varying the speed at which the music sheet is driven; Fig. 3 is a vertical longitudinal sectional view of the music roll holder, the same being shown partly drawn out or extended beyond the front edge of the piano key base; Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 3; Fig. 5 is a detail view of the frame carrying the metallic contact roller; Fig. 6 is a bottom plan view of the music roll holder; Fig. 7 is an end view of the same, portions being shown in section; Fig. 8 is a detail view showing the gearing connected to the

take-up roller; Fig. 9 is a detail sectional view illustrating the manner of journaling the delivery roller; and Fig. 10 is a detail view of the hook for holding the adjustable end bearing extended.

Before proceeding to describe the construction of my improved attachment, I will explain that it relates to that class of piano playing attachment wherein a perforated music sheet is caused to travel over a metallic roller which forms an electric circuit, a series of metallic fingers or brushes, termed "selectors" resting on the music sheet at a point where it passes over the contact roller. Said selectors are equal in number to the piano keys and a conducting wire leads from each selector to an electro-magnet, there being one electro-magnet for each piano key. Each of said magnets controls mechanism for actuating its corresponding piano key, the construction of which is such that when any particular magnet is energized it puts in operation the corresponding actuating mechanism and operates its piano key to sound a note. Conducting wires lead from each electro-magnet to a battery or other electric generator and from the latter a conducting wire-leads to the contact roller. It follows, therefore, that as long as an imperforate portion of the music sheet lies between the selectors and the contact roller the circuits will be broken by the music sheet and none of the piano keys will be actuated. Whenever a perforated portion of the music sheet, however, comes between the end of any of the selectors and the contact roller, said selector will immediately spring into contact with said roller and close the circuit through a corresponding magnet and actuate a corresponding piano key. This broad principle of operation is common in self-playing musical instruments previously patented to me, and is only briefly outlined herein to enable the present invention to be more readily understood.

I have shown my improved music roll holder in connection with the well known shoe and roller key actuating means, such as exhibited in prior patents granted to me. This actuating means is shown in Fig. 1 and in said figure the reference numeral 1 designates a drum journaled in suitable hangers pendent from the under side of the key base of

the piano. This drum is rotated by an electric motor indicated generally by the numeral 2. Supported above the drum 1 is an angle iron 3, carrying a plurality of electro magnets 4, one for each of the keys of the piano. The armatures 5 of the electro-magnets are each supported by a flat blade spring 6, and pendent from each armature is a rod 7, to the lower end of each of which is pivoted a friction shoe 8, said friction shoe being suspended above and normally held out of contact with the drum 1, by means of the springs 6. Pivoted to the upper outer corner of each shoe 8 is a vertically movable striker rod 9, the upper end of which is provided with a head 10, adapted to impinge the projection 11 driven into the rear end of the piano key 12, all as more clearly shown in Fig. 1. The drum 1 is continuously rotated in the direction of the arrow, Fig. 1, by the motor 2, and whenever one of the electro-magnets 4 is energized through the means hereinafter described, it attracts its armature 5, thereby depressing the rod 7 carried by it and forcing the curved lower face of the shoe 8 into contact with the drum. Owing to the rotation of the drum, the shoe is rocked about its pivotal connection with the rod 7, as a center, thereby thrusting the striker rod 9 upward against the extension 11 of the piano key 12, causing the rear end of the latter to move upward and through the usual hammer action sound the note.

My improved music holder comprises two horizontally sliding frames movable together and independently of one another and both supported by a fixed frame secured to the under side of the base of the piano keyboard, said music holder being constructed as follows.

The numeral 13 indicates a flat rectangular and open metallic frame secured to the under side of the key base in any suitable manner and having opposite parallel depending sides 14 provided with outwardly and horizontally extending flanges 15.

The music holder proper comprises an upper and a lower rectangular open metallic frame respectively indicated by the numerals 16 and 17, the sides of the frame 16 being provided with internal longitudinal grooves 18, into which the flanges 15 loosely project, said flanges forming ways on which the frame 16 may be slid in and out beneath the keyboard of the piano. For the convenience of description, I term the frame 16 the "selector frame." Mounted between the sides of the frame 16 is a transverse bar 19 in which are fixed the selectors 20, each consisting of a metallic brush the brushes being insulated from the selector-bar 19, and from each other, there being as many selectors as there are piano keys to be operated. The opposite lower edges of the sides of the selector frame 16 are provided with inwardly and

horizontally projecting flanges 21, which loosely project into corresponding grooves 22 formed in the upper outer portions of the sides of the frame 17, which I term the "roll-holder frame." The roll-holder frame may be freely slid back and forth on the flanges 21, or both the selector and roll holder frame may be slid in and out together on the flanges 15 of the fixed frame 13.

Journaled in the frame 17 in the manner hereinafter described, is a delivery roller 23 and a take-up roller 24, the delivery roller being the roller on which the perforated music sheet 25 is wound and the take-up roller operating to unwind the music sheet from the delivery roller. Pivoted as at 26, to lugs 27 formed on the outer ends of the opposite sides of the roll-holder frame 17, are two arms 28, united at their inner ends by a cross-bar 29, preferably formed integral with said arms. Journaled in bearings 30 formed on the inner ends of the arms 28, is the contact roller 31, consisting of a metallic roller or metal covered roller, over which the music sheet passes as it is unwound from the delivery roller onto the take-up roller, as most clearly shown in Fig. 3. A coiled spring 32 is arranged between the under side of the cross-bar 29 and a transverse integral web 33 uniting the two sides of the roll-holder frame, and operates to normally hold the contact roller in engagement with the ends of the selectors. On the outer or free ends of the arms 28 are formed outwardly and horizontally projecting lugs or projections 34, which are adapted to engage the upper sides of the flanges 21 of the selector frame 16. As shown by dotted lines in Fig. 3, the outer ends of the flanges 21 are beveled, as at 35, and have formed at their upper sides immediately in rear of said beveled portions grooves or recesses 36, in which the lugs 34 rest when the two frames 16 and 17 are closed together. Pivoted to the inner end portion of each of the arms 28 is one end of a link 37, the other end of which is pivoted to one end of a bell crank lever or trigger 38, pivoted as at 39, to the side of the roll-holder frame. The free or depending end 40 of the lever projects below the roll-holder frame and is formed to be conveniently engaged by a finger of the hand to draw out the roll-holder frame. When the operator engages said trigger-levers to draw out the roll holder frame, the pressure on said levers first rocks them on their pivots 39, and through the medium of the links 37 depresses the inner ends of the arms 28, and the roller 31, thereby lifting the lugs 34 out of the grooves or recesses 36, whereupon the roll-holder frame is released from the selector frame and may be freely drawn out. This movement also lowers the contact-rollers 31, away from the selectors 20, so that there is no danger of said selectors catching in the perforations of the

music sheet and being thereby broken, bent, or otherwise injured. When the roll-holder frame is pushed back into place beneath the selector frame the lugs 34 ride up the inclined ends 35 of the flanges, thereby lowering the contact-roller until said lugs settle into the grooves or recesses 36, upon which the spring 88 raises the roller into contact with the selectors and holds the lugs seated in said grooves, thus locking the roll-holder and selector frames together.

In order to cause the music sheet to travel over the contact roller at any desired speed, I provide the following means. Referring to Figs. 1, 2 and 6, the numeral 41 indicates a shaft journaled in any suitable manner beneath the piano keyboard, and having fixed thereon a pulley 42, which is driven by a belt 43 from a pulley 44 on the drum 1. Movably mounted on, but incapable of rotating independently thereof, is a relatively large friction disk 45, which is held in frictional engagement with a smaller friction wheel 46 by a coiled spring 47 arranged on the shaft 41 and bearing against a collar 48, on said shaft. As shown, the periphery of the friction wheel 46 bears against the face of the disk 45, and said friction wheel is fixed on a shaft 49, which is longitudinally movable in a bearing formed in a bracket pendent from the under side of the key-base and in a worm 51 which is rotatably mounted in a bracket 52 fixed to one side of the selector frame 16, said worm being splined on the shaft 49, so that it can slide thereon but not rotate independently thereof. The worm 51 gears with a worm wheel 53 (see Figs. 1, 2 and 8) journaled in one end of a swinging arm 54, the other end of said arm being pivoted on the journal of the take-up roller 24. Fixed on the journal of the worm wheel 53 is a pinion 55, which gears with a gear wheel 56 fixed on the end of the take-up roller 24 and thus rotates the latter to wind up thereon the music sheet 25. By mounting the worm wheel in the end of the swinging arm in the manner described, the former is permitted to rise and lower slightly when engaging and disengaging the worm, which it must do whenever the roll-holder frame 17 is moved in and out independently of the selector frame 16. A pin 57 is fixed in one side of the roll holder frame and acts as a stop or support for the swinging arm when said frame is drawn out. Fixed to or formed on the outer edge of one side of the selector frame 16 is a circular graduated dial or disk 58, pivoted centrally to the under side of which is one end of a lever 59, termed by me a "tempo-lever," said lever being provided at its outer end with a handle 60 (see Fig. 7) and with a pointer 61, which overhangs the graduations on the disk or dial. Pivoted to the tempo-lever is one end of a slotted bar 62, the other end of which is pivoted to the outer end of a lever 63, the inner

end of which has fixed thereon a pinion 64 (see Fig. 6) and is pivoted to a bracket arm 65 fixed to one side of the selector frame 16. The inner end of the tempo-lever in like manner has fixed thereon a similar pinion 66, and both said pinions gear with a rack-bar 67, that is supported to move longitudinally by headed pins 68 and 69, which project from the under sides of the bracket arm 65 and disk 58, respectively, and extend through the slots 70 formed in the ends of the rack-bar. Pivoted to bracket-arm 71 fixed to the frame 13, is a bell crank lever 72, the end of one arm of which is provided with a headed pin 73 which projects through the slot 74 in the slotted bar 62, and pivoted to the end of the other arm of said bell-crank lever is one end of a rod 75, the other end of which is hooked into a loop 76, formed centrally in a rod 77 which is pivotally connected at its upper end to an eye 78 on the rear end of the frame 13, and at its other end is loosely looped, as at 79, about a peripherally grooved collar 80 fixed by a set screw on the shaft 49. The operation of this part of the device is as follows. Let it be assumed that the parts are in the position shown in Fig. 6, wherein the selector and roll-holder frames are shown pushed in beneath the keyboard, and in which position the take-up roll will be driven at its fastest speed. Now if the lever 59 be swung about its pivot in the direction of the arrow, it will draw forward with it and at the same time move the slotted bar 62 toward the music holder or toward the left as viewed in the drawing. This movement of the slotted bar rocks the bell-crank lever 72 on its pivot and thrusts rearward the rod or link 75, thereby swinging the lever 77 rearward and moving the shaft 49 in the same direction, thus shifting the friction wheel nearer to the center of the friction disk 45 and consequently reducing the speed of rotation of the shaft 49. The shaft 49 being geared to the take-up roller through the gearing described, said roller will also, therefore, be driven at a slower speed and cause the music sheet to travel over the contact roller at a correspondingly slower speed. By gearing the slotted bar 62 to the rack-bar 67 in the manner described, said slotted bar will always remain parallel with the adjacent side of the music holder and hence a given movement of the tempo-lever will impart a corresponding movement to the bell crank lever 72 irrespective of the position of the tempo-lever. By connecting the tempo-lever to the bell crank lever 72 by means of the slotted bar 62 as described, the selector frame 16 may be freely moved in and out without in any manner affecting the position of the friction wheel 46 relatively to the friction disk 45, and said friction wheel may be moved toward and from the center of the friction disk to regulate the speed of travel of the music sheet

irrespective of the position of the selector frame whether it be entirely pushed in or drawn out or at an intermediate point.

In order to readily remove the delivery roller from its frame so as to change from one music sheet to another, and in order to rewind the music sheet thereon, I journal the delivery roller in the frame in the manner, and provide rewinding mechanism, which I will now describe. A trunnion 81 is fixed on each end of the delivery roller 23, (see Figs. 7 and 9) and is provided with one or more laterally projecting lugs or wings 82. Journaled in each side of the roll-holder frame 17 is a spindle 83, provided at one end with a head 84, and having a central socket in which the trunnion 81 is adapted to be loosely fitted, and also having a slot or recess 85 for the reception of the lugs 82, whereby the delivery roller and said spindle are caused to rotate together. The spindle adjacent to the head 84 is provided with an integral collar or enlargement 86, that is adapted to fit within a corresponding socket 87 formed in the inner side of the frame 17. Splined on the spindle 83 is a pinion 88 that is disposed in a recess 89 formed in the frame 17. Pivoted on the pivot pin 39, before referred to, is a hooked catch 90, the forked end 91 of which is adapted to hook over the collar 84, as hereinafter explained. On one side the frame 17 is provided with an open bearing 92. To journal the delivery roller in place, one of the trunnions 81 is inserted in the socket in the end of the spindle 83, and the opposite trunnion is dropped into the open bearing 92. There are two sizes of music roll holders on sale on the market and the shorter rolls are too short to be journaled in the manner described. When such rollers are to be used the spindle is drawn out, as shown in Fig. 9, and the hooked catch is swung up or over so as to hook over the spindle behind the head 84, thus holding the spindle in place to be engaged by the trunnion of the shorter roller. Knobs 93 are fixed on the end of the roll holder frame to furnish convenient means for drawing out both said frame and the selector frame from beneath the keyboard. Journaled on a stud shaft on one side of the frame 17, is a pinion 94, see Fig. 2, which gears with the pinion 88 before described, and also journaled on a stud shaft on the same side of said frame is a gear wheel 95, which gears with the pinion 94. A crank or handle 96 is fixed to the gear wheel 95. After the music sheet has been unwound from the delivery roller it may be rewound thereon by turning the gear wheel 95 by its handle 96, whereby, through the gearing described, the music sheet may be rapidly rewound onto the delivery roller. By unhooking the end of the music sheet from the take-up roller the delivery roller may be removed from the frame and another one inserted.

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

1. A piano having a music sheet holder movably supported beneath the keyboard thereof and adapted to be drawn out to bring the music sheet in view and to be moved in under the keyboard, a delivery and a take-up roll supported by said music holder, and means for driving the take-up roller when the music holder is in its drawn out or pushed in position or in any intermediate position, substantially as described.

2. A piano having a music sheet holder and means whereby said holder is movably supported beneath the keyboard of the piano and adapted to be drawn out to bring the music sheet in view and to be moved in under the keyboard, a delivery and a take up roller supported by said music holder, means for driving the take-up roller and mechanism for varying the speed of said driving means, said driving and speed changing devices being operative when the music sheet holder is in its drawn out or pushed in position or in any intermediate position, substantially as described.

3. A piano having a playing attachment, comprising a rotatable drum and means for rotating it, a bodily movable music-roll holder frame supported beneath the piano keyboard and carrying a delivery and a take-up roll journaled in suitable bearings, a rotary disk driven by the drum, a shaft longitudinally movable in a bearing on the frame of the music-roll holder, gearing intermediate said shaft and take-up roll, a friction wheel carried by said shaft and having its periphery in frictional contact with the rotary disk, and manually controlled means for moving the shaft longitudinally irrespective of the position of the music roll holder frame to shift the position of the friction wheel relatively to the disk whereby to vary the speed of the take-up roll.

4. A piano having a playing attachment, comprising a rotatable drum, means for rotating it, and means actuated by the drum for striking the piano keys, a music sheet holder comprising a frame slidable from and beneath the piano keyboard, a delivery and a take-up roll journaled in said frame, means deriving motion from the rotary drum for rotating the take-up roll, mechanism for changing the speed at which the take-up roll is driven; and means for manually operating said speed mechanism, said speed changing mechanism being operative at all times independently of the location of the sliding frame, substantially as described.

5. A piano having a playing attachment, comprising a rotatable drum, means for rotating it, and means actuated by the drum for striking the piano keys, a music sheet holder comprising a frame slidable from and

beneath the piano keyboard, a delivery and a take-up roll journaled in said frame, means deriving motion from the rotary drum for rotating the take-up roll, mechanism for changing the speed at which said take-up roll is driven, and means for operating said speed changing mechanism while the sliding frame is in any of its positions, substantially as described.

6. A piano having a playing attachment, comprising a rotatable drum, means for rotating it, and means actuated by the drum for striking the piano keys, a music sheet holder slidably arranged beneath the piano keyboard, a delivery and a take-up roller journaled in said holder, a friction disk driven from the drum, a shaft longitudinally movable in a bearing carried by said sliding holder, and in a fixed bearing, a friction wheel on said shaft having its periphery arranged in frictional contact with the face of said disk, a worm splined on said shaft and movable with the music sheet holder, gearing driven by said worm for driving the take-up roller, and means for longitudinally shifting the shaft to move the friction wheel toward and from the center of the friction disk, substantially as described.

7. A piano having a playing attachment, comprising a rotatable drum, means for rotating it, and mechanism actuated by the drum for striking the piano keys, a music sheet holder slidably arranged beneath the piano keyboard, a delivery and a take-up roller journaled in said holder, a friction disk driven from the drum, a shaft longitudinally movable in a bearing carried by said holder and in a fixed bearing, a friction wheel on said shaft having its periphery arranged in frictional contact with the face of said disk, a worm splined on said shaft and movable with the music sheet holder, a worm wheel and pinion-driven by said worm, a gear wheel on the take-up gearing with the pinion, and means for shifting said shaft longitudinally independently of the movement of the music sheet holder to move the friction wheel toward and from the center of the friction disk, substantially as described.

8. A piano having a playing attachment, comprising a music sheet holder consisting of two independently movable frames slidably arranged beneath the piano keyboard, one of said frames carrying a series of selectors, a delivery roller and a take-up roller carried by the other frame, a contact-roller arranged between said two rollers, a friction disk and means for rotating it, a shaft longitudinally movable in a bearing carried by the selector frame and in a fixed bearing, a friction wheel rigid on said shaft and having its periphery arranged in frictional contact with the face of said disk, a worm splined on said shaft and movable with the selector frame, a swinging arm carried by the roll-holder frame a

worm wheel and pinion mounted in the free end of said swinging arm, the worm wheel gearing with the worm and the pinion with the gear wheel on the take-up roller, and means for longitudinally shifting said shaft to move the friction wheel toward and from the center of the friction disk independently of the position of said music sheet holder, substantially as described.

9. A piano having a music sheet holder comprising two independently movable frames slidably arranged beneath the piano keyboard, one of said frames carrying a series of selectors, a delivery roller and a take-up roller carried by the other frame, a contact roller arranged between said two rollers, a friction disk and means for rotating it, a shaft longitudinally movable in a bearing carried by the selector frame and in a fixed bearing, a friction wheel rigid on said shaft and having its periphery arranged in frictional contact with the face of said disk, a worm splined on said shaft and movable with the selector frame, a swinging arm carried by the roll holder frame a worm wheel and pinion mounted in the free end of said swinging arm, the worm wheel gearing with the worm and the pinion with a gear wheel on the take-up roller, means for supporting said swinging arm when the two frames are separated, and means for shifting said shaft longitudinally, substantially as described and for the purpose specified.

10. A piano having a music sheet holder comprising two independently movable frames slidably arranged beneath the piano keyboard, a series of selectors carried by one of said frames, a delivery roller, a contact roller and a take-up roller carried by the other of said frames, a driven shaft, gearing driven by said shaft while the music sheet holder is in any of its positions for driving the take-up roller, speed changing mechanism controlled by the longitudinal movement of said shaft, a collar on the shaft, a swinging arm pivotally connected at one end to a fixed support and loosely connected at its other end to said collar, a bell crank lever, a rod connecting one end of said bell crank lever to the swinging arm, a pivoted lever, and means slidably connecting said lever with the other end of said bell-crank lever, whereby when the pivoted lever is turned the said shaft will be shifted longitudinally to change the speed of the driving mechanism independently of the position of the music sheet holder, substantially as described.

11. A piano having a music sheet holder comprising two independently movable frames slidably arranged beneath the piano keyboard, a series of selectors carried by one of said frames, a delivery roller, a contact roller, and a take-up roller carried by the other of said frames, a longitudinally movable driven shaft, gearing driven by said

shaft while the music sheet holder is in any of its positions for driving the take-up roller, speed changing mechanism controlled by the longitudinal movement of said shaft, a collar
 5 on the shaft, a swinging arm pivotally connected at one end to a fixed support and loosely connected at its other end to said collar, a bell crank lever, a rod connecting one end of said bell-crank lever to the swing-
 10 ing arm, a pivoted hand-lever, a slotted bar pivotally connected at one end to a swinging arm and at its other end to said pivoted lever, and a projection on the other end of said bell-crank lever and projecting into the
 15 slot of said bar, substantially as described and for the purpose specified.

12. A piano having a music sheet holder comprising two independently movable frames slidably arranged beneath the piano
 20 keyboard, a series of frames slidably arranged beneath the piano keyboard, a series of selectors carried by one of said frames, a delivery roller, a contact roller, and a take-up roller carried by the other of said frames,
 25 a longitudinally movable driven shaft, gearing driven by said shaft while the music sheet holder is in any of its positions for driving the take-up roller, speed changing mechanism controlled by the longitudinal movement of
 30 said shaft, a collar on the shaft, a swinging arm pivotally connected at one end to a fixed support and loosely connected at its other end to said collar, a bell crank lever, a rod connecting one end of said bell crank
 35 lever to the swinging arm, a pivoted hand lever, a slotted bar pivotally connected at one end to a swinging arm and at its other end to said pivoted lever, a projection on the other end of said bell crank lever and pro-
 40 jecting into the slot of said bar, and means for causing said bar to always move parallel to a fixed line passing through the fulcrum of the hand lever, substantially as described.

13. A piano having a music holder comprising two independently movable frames slidably arranged beneath the keyboard, a series of selectors carried by one of said
 45 frames, a delivery roller, a contact roller, and a take-up roller carried by the other of said frames, a longitudinally movable driven shaft, gearing driven by said shaft while the music holder is in any of its positions, for driving the take-up roller, speed changing
 50 mechanism controlled by the longitudinal movement of said shaft, a collar on the shaft, a swinging arm pivotally connected at one end to a fixed support and loosely connected at its other end to said collar, a bell crank lever, a rod connecting one end of said bell
 55 crank lever to the swinging arm, a hand lever, a slotted bar pivotally connected at one end to said hand lever and at its opposite end to an oscillatory arm, a projection on the other end of said bell crank lever projecting into
 60 the slot of the slotted bar, pinions fixed re-

spectively on the axes of the hand lever and oscillatory arm, and a longitudinally movable rack-bar engaging said pinions and operating to cause the slotted bar to always
 70 move in a direction parallel to a fixed line passing through the axis of the hand lever, substantially as described.

14. A piano having a music sheet holder formed of independent slidable members,
 75 means for slidably connecting said members to the underside of the piano keyboard, the arrangement being such that the members may be drawn out to bring the music sheet into view and moved in under the keyboard,
 80 a locking lever pivoted to the lower of said members and provided at one end with a detent, a beveled projection on the other of said members provided in rear of its beveled portion with a recess, a manually operated
 85 lever arranged when oscillated to rock said locking lever on its fulcrum and a handle on said manual lever adapted to be grasped to draw out the member carrying said locking lever, the arrangement being such that
 90 when the two members are brought together the detent will engage said beveled projection and will be guided by the latter into the recess to lock the two members together and when the handle of the locking lever is grasped and pulled upon to draw out
 95 the said member, said locking lever will be rocked on its fulcrum and raise the detent out of said recess, substantially as described.

15. A piano having a music sheet holder formed of independent slidable members, 100
 and means for slidably connecting said members to the underside of the piano keyboard, in combination with a locking lever pivoted to one of said members and provided at one
 105 end with a detent, a beveled projection on the other of said members adapted to be engaged by the detent and raise the latter when the two members are brought together, and having a recess in rear of its beveled portion for the reception of said detent, 110
 a manually operated lever pivoted to the member carrying the locking lever and provided with a handle for withdrawing the said member, a link connecting said manual lever with the detent end of the locking lever, 115
 and a spring arranged under the other end of said lever and operating to force the detent into the said recess, the handle when grasped and pulled upon to draw out the said member operating to raise the detent out of the recess 120
 and disengage the two members one from the other, substantially as described.

16. A piano having a music sheet holder formed of independent slidable members and means for slidably connecting said members 125
 to the underside of the piano keyboard, in combination with a series of selectors carried by the upper of said members, a delivery roller and a take-up roller carried by the other of said members, an oscillatory frame 130

carried by the lower member, a contact roller journaled in said frame, a spring for raising one end of said frame to move the contact roller into engagement with the selectors, and means for drawing out the member carrying said rollers, and arranged when the said means are operated to draw out said member to lower the contact roller out of engagement with the selectors, substantially as described.

17. A piano having a music sheet holder formed of independent slidable members, and means for slidably connecting said members to the under side of the piano keyboard, in combination with a series of selectors carried by the upper of said members, a delivery roller and a take-up roller carried by the other of said members, an oscillatory frame carried by the lower member and provided with means for interlocking with the upper member to lock said members together, a contact roller journaled in said frame, a spring for raising one end of said frame to move the contact roller into engagement with the selectors and to cause said locking means to lock the two members together, and means for drawing out the member carrying said rollers and arranged when said means are operated to draw out the said member to lower the contact roller out of engagement with the selectors and simultaneously unlock the two members, substantially as described.

18. A piano having a music sheet holder formed of independent sliding members, and means for slidably connecting said members to the under side of the piano keyboard, in combination with a series of selectors carried by the upper of said members, a delivery roller and take-up roller carried by the other of said members, an oscillatory frame carried by the lower member and provided with detents at one end adapted to interlock with recesses in the upper member to lock said members together, a contact roller journaled in said frame, a spring for raising one end of the frame to move the contact roller into engagement with the selectors and cause said detents to engage said recesses, handles pivoted to the lower member for withdrawing the latter, and links pivotally connecting said handles to the said frame, whereby when said handles are operated to draw out the lower member, said detents are raised out of said recesses and the contact roller is lowered out of contact with the selectors, substantially as described.

19. In a music roll holder for mechanically operated musical instruments adapted to be operated by a perforated music sheet, a frame, a take-up roll journaled in said frame, means for rotating said roll to wind the music sheet thereon, a tracker arranged parallel with said roll, and means carried by the frame for accommodating music spools of

different widths, comprising end-bearings, one of which is adjustable toward and from the other, means for holding said adjustable bearing extended, and means for rotating said bearing.

20. A music roll holder for mechanically operated musical instruments adapted to be operated by a perforated music sheet comprising a frame, a take-up roll journaled in the frame, means for rotating said roll to wind the music sheet thereon, a tracker mounted on the frame and over which the sheet passes in its travel to the take-up roll, a music spool, and a pair of end bearings therefor carried by the frame, a slidably mounted spindle carrying one of said bearings, a pinion splined on said spindle, and a gear wheel meshing with the pinion.

21. A music roll holder for mechanically operated musical instruments adapted to be operated by a perforated music sheet, comprising a frame, a take-up roll journaled in the frame, means for rotating said roll to wind the music sheet thereon, a tracker over which the music sheet passes in its travel to the take-up roll, a music spool, and a pair of end bearings therefor carried by the frame, a slidably mounted spindle carrying one of said bearings, means for rotating said spindle to rewind the music sheet on the music spool, and a spacer carried by the frame and adapted to be moved into and out of engagement with the slidably mounted end bearing to hold the latter extended or to permit the same to be retracted.

22. A music roll holder for mechanically operated musical instruments adapted to be operated by a perforated music sheet, comprising a frame, a take-up roll journaled in the frame, means for rotating said roll to wind the music sheet thereon, a tracker over which the music sheet passes in its travel to the take-up roll, a music spool, and a pair of end bearings therefor carried by the frame, a slidably mounted spindle carrying one of said bearings, means for rotating said spindle to rewind the music sheet on the music spool, and a hook pivoted to the frame and adapted to be swung in behind the head of the slidably mounted end bearing to hold the latter extended.

23. A music roll holder for mechanically operated musical instruments, comprising a frame and a tracker carried thereby, a take-up roll journaled in the frame, means for rotating said roll, a music spool, and a pair of end bearings therefor carried by the frame, a slidably mounted spindle carrying one of said bearings, a pinion splined on said spindle, a gear wheel meshing with said pinion, and a hook pivoted to the frame and adapted to be swung over the spindle behind the end bearing carried thereby to hold the same extended.

24. A music roll holder for mechanically operated musical instruments, comprising a

frame, a hollow knob projecting from one side thereof, a take-up roll journaled in the frame, and means carried by the frame for accommodating music-spools of different widths, comprising end-bearings, a slidable spindle carrying one of said bearings, said spindle being journaled in the frame and slidable into the said hollow knob, a pinion splined on the spindle, and a gear wheel meshing with the pinion.

25. A music roll holder for mechanically operated musical instruments, comprising a frame, a hollow knob projecting from one side thereof, a take-up roll journaled in the frame, and means carried by the frame for accommodating music spools of different widths, comprising end-bearings, a slidable spindle carrying one of said bearings, said spindle being journaled for rotation in the frame and having one end projecting into the said hollow knob, and means for rotating said spindle.

26. A piano having a music sheet holder comprising a frame movable from and beneath the piano keyboard, a delivery and a take-up roll journaled in said frame, means for driving the take-up roll, mechanism for changing the speed at which the take-up roll is driven, and means for operating said mechanism while the frame is in any of its positions, substantially as described.

27. A piano having a music sheet holder comprising a frame movable from and beneath the piano keyboard, a delivery and a take-up roll journaled in said frame, means for driving the take-up roll, mechanism for changing the speed at which the take-up roll is driven, and means for manually operating said mechanism, at all times independently of the location of the frame.

28. A piano having a playing attachment, comprising a rotatable drum and a motor for rotating it, and a controlling device comprising a music roll holder frame movable beneath the piano keyboard and carrying a delivery and a take-up roll, a rotary disk driven by the motor, a shaft supported by the frame and movable longitudinally and independently thereof, a friction wheel carried by said shaft and having its periphery in frictional contact with the disk, gearing to transmit rotary motion from the shaft to the take-up roll, and means for moving the shaft longitudinally to vary the position of the friction wheel relatively to the disk, for the purpose specified.

29. A piano having a playing attachment, comprising a rotary drum, a motor for driving the drum, and means actuated by the drum for operating the sound-producing devices of the piano, a music sheet holder comprising a frame movable from and beneath the piano keyboard, a delivery and a take-up roll journaled in said frame, means deriving motion from the motor for rotating the take-up roll,

mechanism for changing the speed at which the take-up roll is driven; and means for manually operating said speed mechanism, said mechanism being operative at all times independently of the location of the movable frame, substantially as described.

30. A piano having a playing attachment, comprising a rotatable drum, means for rotating it, and means actuated by the drum for operating the sound producing devices of the piano, a music sheet holder comprising a frame movable from beneath the piano keyboard, a delivery and a take-up roll journaled in said frame, means deriving motion from the motor for rotating the take-up roll, mechanism for changing the speed at which said take-up roll is driven, and means for operating said speed changing mechanism while the movable frame is in any of its positions, substantially as described.

31. A piano having a playing attachment, comprising a rotatable drum, a motor for rotating it, and means actuated by the drum for operating the sound producing devices of the piano, a music sheet holder movably arranged beneath the piano keyboard, a delivery and a take-up roller journaled in said holder, a friction disk driven from the motor, a shaft longitudinally movable in a bearing carried by said holder, and in a fixed bearing, a friction wheel on said shaft having its periphery arranged in frictional contact with the face of said disk, a worm splined on said shaft and movable with the music sheet holder, gearing driven by said worm for driving the take-up roller, and means for longitudinally shifting the shaft to move the friction wheel toward and from the center of the friction disk, substantially as described.

32. A piano having a playing attachment, comprising a rotatable drum, a motor for rotating it, and mechanism actuated by the drum for operating the sound producing devices of the piano, a music sheet holder movably arranged beneath the piano keyboard, a delivery and a take-up roller journaled in said holder, a friction disk driven from the motor, a shaft longitudinally movable in a bearing carried by said holder and in a fixed bearing, a friction wheel on said shaft having its periphery arranged in frictional contact with the face of the music sheet holder, a worm wheel and pinion driven by said worm, a gear wheel on the take-up gearing with the pinion, and means for shifting said shaft longitudinally independently of the movement of the music sheet holder to move the friction wheel toward and from the center of the friction disk, substantially as described.

33. A piano having a playing attachment comprising a music sheet holder and means whereby said holder is movably supported beneath the key-board of the piano and

adapted to be moved in under the key-board and moved out to bring the music sheet in view, a take-up roll and end bearings for a delivery roll carried by the holder, a rotary disk and means for driving the same, a friction wheel having its periphery in frictional contact with a face of the disk, and gearing between the friction wheel and take-up roll for driving the latter, said gearing being operable when the music sheet holder is in its inner and outer positions or in any intermediate position.

34. A piano having a playing attachment, comprising a bodily movable music-sheet holder carrying a take-up roll and end bearings for a delivery roller, and means for driving the take-up roller, comprising frictional gearing, said gearing being operable to drive

the take-up roller irrespective of the position of the bodily movable music-sheet holder. 20

35. A piano having a playing attachment, comprising a bodily movable music-sheet holder carrying a take-up roller and end bearings for a delivery roller, and driving means for the take-up roller, said driving means being operable to drive the take-up roller irrespective of the position of the music-sheet holder. 25

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 30

GEORGE HOWLETT DAVIS.

Witnesses:

MARGARET A. JACOBS,
J. FRED BERSTECHER, Jr.