

Fig. 1.

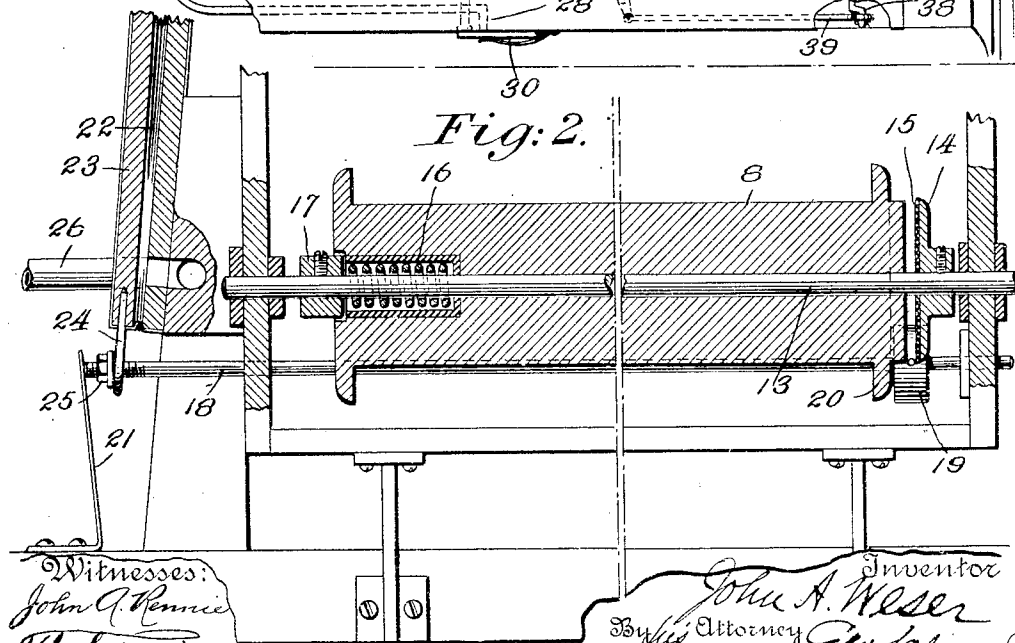


Fig. 2.

Witnesses:
John A. Kennie
Th. Springmeyer

Inventor
John A. Weser
 By *W. H. Glueck* Attorney

Fig:3.

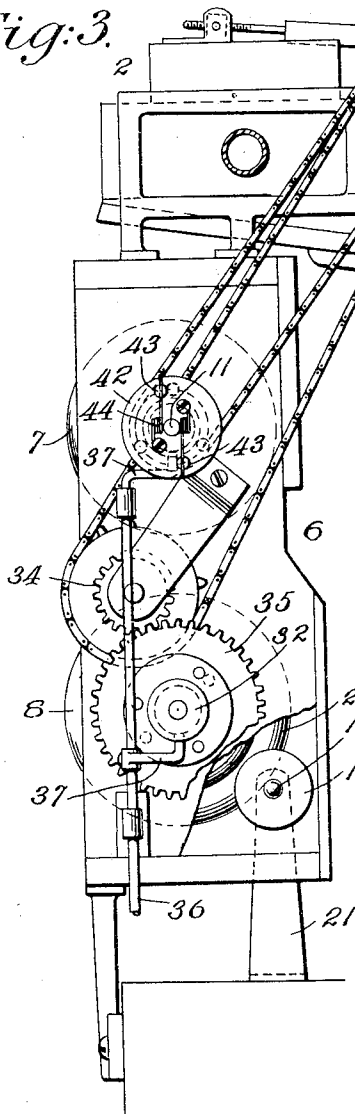


Fig:4.

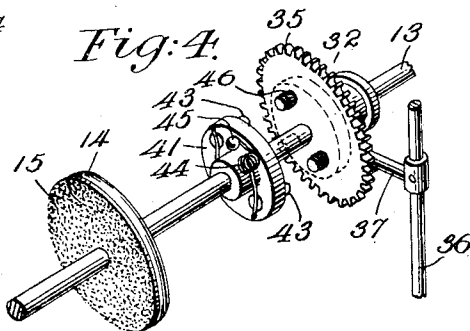


Fig:5.

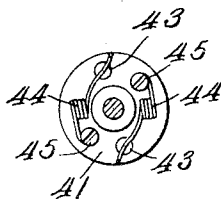


Fig:6.

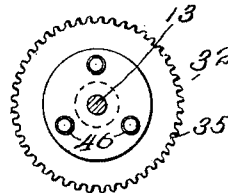
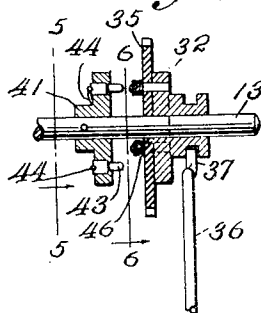


Fig:7.



Witnesses:
John A. Rennie
W. Springmeyer

Inventor
John A. Weser
 By his Attorney
E. W. Scherr & Co.

UNITED STATES PATENT OFFICE.

JOHN A. WESER, OF NEW YORK, N. Y.

AUTOMATIC PLAYER.

956,558.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed May 28, 1908. Serial No. 435,461.

To all whom it may concern:

Be it known that I, JOHN A. WESER, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Automatic Players, of which the following is a specification.

My present invention relates in general to improvements in automatic-players for pianos, etc., and more particularly provides mechanism by which the progression of the music sheet in forward direction upon the wind-on roller can be instantly stopped and reversed at high speed and vice-versa the forward progression can be instantly resumed likewise at high speed, and this without any injury to the mechanism. Thus the improvements secure among other results two objects, first, they permit the aforesaid ready and rapid manipulation and control of the music sheet, and second, prevent the mechanism from being injured when operated and reversed at high speeds, even by a reckless operator. In the next place, the improvements provide means by which the progression of the music sheet can be instantly stopped so as to hold or sustain any given note or notes as the operator may desire.

In the drawings which show only one of the forms which my improvements may take, Figure 1 is a front elevation of tracker-box mechanism and related parts in an instrument, only part of which is shown; Fig. 2 is an enlarged partly sectional and partly elevational view of a portion of the devices of Fig. 1; Fig. 3 is an end elevation of a portion of the devices of Fig. 1 as seen from the right of said figure; Fig. 4 is a perspective view on an enlarged scale of certain of the clutch parts; Fig. 5 is a view partly in elevation and partly in section of a correspondingly numbered part in Fig. 7 as said part would appear on a section taken through line 5—5 in said Fig. 7, looking in the direction of the arrow; Fig. 6 is a view partly in section and partly in elevation on the line 6—6 in Fig. 7, looking in the direction of the arrow; and Fig. 7 is a longitudinal section partly in elevation of certain of the clutch parts.

Describing now my improvements with special reference to the particular embodiment thereof shown in the drawings, 1 designates the instrument to be played, 2 is

any motor adapted to operate the moving parts for an automatic-player, said motor having shaft 3 upon which are mounted sprockets 4 and 5.

6 is a tracker-box adapted to receive in proper operative relation, first, a music roll, and second, a wind-on roller 8. The music roll may be operatively supported in any well known manner as for example by having the left-hand end of its spindle in Fig. 1 rotatable loosely in a socket 9 and its right-hand end receivable in another socket 10 carried by shaft 11, whereby the rotation of said shaft carries with it the music roll spindle and consequently the music roll itself.

The wind-on roller 8 is carried loosely on a spindle 13 supported across the tracker-box in suitable bearings. To carry said roller with the spindle as the latter rotates, a friction disk 14 is provided secured to the spindle to frictionally engage the end of the wind-on roller. For this purpose the contact face of the disk may be covered with felt 15 or any other suitable or preferred friction material. At its other end the wind-on roller may be recessed, although this is not essential, to receive a coil-spring 16 surrounding the spindle, one end of which spring contacts against the bottom of the recess in the roller and the other end against a collar or abutment 17 on the spindle. The result of the construction is that the roller is given a normal tendency toward the right of Fig. 2, to hold it in frictional contact with the friction disk whereby unless opposed, the roller is carried with said disk as the latter rotates with the spindle.

Manually controlled means is provided to take the wind-on roller at will out of contact with the friction disk and thereby to stop the travel of said roller and consequently of the music sheet, said means comprising in the devices shown, a stem 18 mounted slidably across the tracker-box and having collar 19 thereon adapted to contact with a portion of the wind-on roller, as for example the flange 20 thereof. Said stem is spring-pressed to bring the collar 19 normally out of contact with the wind-on roller by spring 21. A pneumatic 22 is adapted to be operated at will to oppose the action of the spring 21 by moving the stem in reverse direction to bring the collar 19 against the wind-on roller and to press same out of

contact with the friction disk to stop rotation of the roller. This pneumatic for the purpose has its movable-board 23 connected in the devices shown with the stem by a
5 loop projection 24 receiving through it the end of the stem and adapted to abut against a nut 25 adjustable on said stem. In the particular devices shown this pneumatic is
10 of the vacuum or exhaust type and as a comparison of Figs. 1 and 2 will show acts as it collapses under exhaust to pull the stem and collar to the left to take the wind-on roller out of contact with the friction disk and to stop rotation of said roller without
15 interfering with the rotation of the friction disk. The manual control for the pneumatic whereby the operator can instantly and at will cause its operation to stop the wind-on roller and the progression of the music sheet to hold any given note or notes
20 and then after any desired interval of time to release said roller to resume playing, may take a variety of forms, that shown comprising a tube 26 connecting the pneumatic through any well known or preferred form of valve-box 27 to the main exhaust bellows (not shown) of the automatic-player. From this valve-box another tube 28 as
30 usual may proceed to a convenient point within easy reach of the operator where a valve may be provided which may comprise a button-headed stem 29 capable of vertical reciprocation in an opening through the keyboard at its front edge, and a spring-pressed
35 valve-tongue 30 adapted, depending upon its position to cover or uncover the opening to the tube 28. Said tongue normally closes said opening and is adapted to uncover said opening at will by down pressure of the operator on the button-headed stem 29. Thus the effect of pressing said stem is to permit air to be sucked into the tube 28 to open the valve in the valve-box to put the pneumatic 22 into communication with the
40 main exhaust bellows (not shown) whereby said pneumatic instantly collapses to operate the connected mechanism as described to stop the wind-on roller and hold the music sheet stationary; whereas releasing the button-headed stem closes the tube 28, in turn operating the valve-box to shut off the pneumatic from the main bellows, thereby permitting the spring 21 (Fig. 2) to carry the stem and collar 19 out of engagement with
55 the wind-on roller to permit the latter again to contact with the friction disk and to be carried around with said disk.

Describing now the mechanism intermediate the motor shaft and the music roll and
60 wind-on roller, whereby the latter are properly operated either to unwind or rewind the music sheet, said mechanism may take the well known form shown of chain connections between the sprockets 4 and 5 on
65 the motor shaft and the movable members

31 and 32 of clutches respectively on the music-roll shaft 11 and the wind-on roller spindle 13, in the latter case said chain connection being indirect through reducing gears 34 and 35. Similarly the manually
70 controlled means for simultaneously throwing into clutch the wind-on roller 8 and out of clutch the music-roll shaft 11, to cause unwinding of the music sheet as in playing and reversely to throw out of clutch the
75 wind-on roller and into clutch the music-roll shaft to wind back the music sheet may be accomplished by any well known mechanism shown, as for example, the vertical rod or rock-shaft 36 suitably supported in bearings and having two extensions 37 each suitable to operate the movable members of the clutches into and out of engagement with the other members of the clutches and having
80 at its lower end an extension 38 acting as a crank in operative connection by a rod 39 with the finger lever 40 fulcrumed conveniently near to the key-board, whereby operating said finger-lever in one direction or the other throws one clutch in and the other out to progress or wind-back the music sheet as desired.

In the just described mechanism, the clutches are of the pin type and have the important feature that the pins of one member of the clutch are adapted to disappear
95 endwise into the base of the member carrying the pins. Thus as best shown in Figs. 4 to 7, where the disappearing pins are shown on the fixed member 41 of the clutch, it will be seen that said pins 43 are located
100 in openings through the clutch member, which openings are smaller at their forward ends so that the pins cannot drop or be forced out of the openings and which permit at their rear, springs 44 to press the pins forward into yieldingly projecting position. These springs may take the form shown in Fig. 5 where they will be seen to consist of
110 spiral springs, attached at one end by screws 45 to the back of the clutch member and having their free ends in spring-contact with the back ends of the pins. While Figs. 4 to 7 relate to the lower or wind-on roller clutch, the same feature of the disappearing
115 pins may be supplied as shown in Fig. 3 also to the upper or music-roll clutch, see member 42. The great advantage of said clutch to the combination of the present improvements resides in the fact that it becomes possible for the operator, irrespective of the speed at which he may be operating the player, to throw the mechanism into and out of clutch to unwind or rewind, or to resume unwinding of the music-sheet
120 instantly and if desired in rapid succession without possibility of injuring the mechanism. Thus in the first place the disappearing pins invariably and under all circumstances permit the members to go com- 130

pletely into clutch which would not be the case were the pins rigid. Thus in the latter event, should the pins strike end-on as they often do, the two members are kept out of clutch, and consequently the pins are caused to clash with resultant bending and often breaking off, when the player is in at all rapid motion or is suddenly reversed. The same circumstance of end-on contact between the pins occurring in the disappearing pin-clutch of my present invention merely causes said pins to be telescoped without at all preventing the members of the clutches from coming together into clutching position, whereupon as the player is operated, one part or other receives angular displacement permitting the telescoped pins to spring outwardly to engage the fixed pins on the other clutch member to bring about rotation. Thus the disappearing pin feature makes it possible to bring the desired clutch into operation instantaneously and without fail at any and every moment. Moreover the friction-disk control of the wind-on roller coöperates in combination with the disappearing pin feature to make it possible to effect the rapid forward and reverse clutching of the mechanism even when operating at high speed and this without injury to the instrument. This feature is contributed to by the friction disk due to the fact that said disk permits the wind-on roller to slip, thereby acting as a safety device to prevent injury to the clutch or clutches or other mechanism when the speed of operation and the strain of reversal becomes excessive. Thus assuming that the clutches are in the conditions shown in Fig. 1, and the player is being rapidly operated to wind the music-sheet upon the wind-on roller, and that then the mechanism is suddenly clutched reversely to rewind the sheet, it will be noted that great strain will come upon the pins of the upper or music roll clutch in stopping the momentum of the parts preparatory to the reversal. Moreover this momentum will be considerable, due to the weight of the music on the wind-on roller and would be sufficient to bend or even break the pins on the clutch were it not for the friction disk which permits the friction roller to slip thereon and so take the strain of its momentum off the clutch pins. Thus an important advantage is accomplished by the combination of my present improvement.

It may be noted that the disappearing pin feature likewise permits the clutch members having the fixed pins to have said pins sur-

rounded with thin leather or other sleeves 60
46 to lessen noise as the pins contact in the operation and running of the clutches.

The use of the aforesaid noise-deadening sleeves is impracticable with pin clutches having rigid pins because the sleeves materially increase the diameter of the pins and too often prevent the clutching-in of the clutch members because of the end-contact of said pins. 65

Having thus described my invention, 70
what I claim is:

1. In an automatic player, the combination of a continuously driven rotating part, a wind-on roller spring pressed to carry one of its ends against the end of the rotating part, and manually operable means acting on the wind-on roller to carry its end away from the rotating part and thereby stop further rotation of said roller without interfering with the rotation of the rotating part. 75
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2. In an automatic player, the combination of a driven spindle, a disk fixed on the spindle, a wind-on roller loose on the spindle, a spring acting on the roller to keep it normally in end-contact with the disk, a pneumatic, valve means adapted at will to operate the pneumatic, and a member operated from the pneumatic to contact with the roller and carry it out of its said end-contact with the disk. 85
90

3. In an automatic player, the combination of a motor, a music roll shaft, a rotating part, a wind-on roller in frictional end-contact with the rotating part, and clutch means for at will connecting the motor to the music roll shaft and disconnecting it from the rotating part as in rewinding the music sheet, and vice versa for connecting the motor to the rotating part and disconnecting it from the music roll shaft to drive the rotating part and wind-on roller to unwind the music sheet. 95
100

4. In an automatic player, the combination of a music roll shaft, a wind-on roller, a motor, a pin clutch between the motor and the music roll shaft, a second pin clutch between the motor and the wind-on roller, and a friction disk rotating with the driven member of the second pin clutch, said friction disk being in driving contact with the wind-on roller. 105
110

In witness whereof, I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

JOHN A. WESER.

Witnesses:

MAX LEVIAN,
W. H. KEATING.