J. A. WESER.

AUTOMATIC PLAYER.

APPLICATION FILED FEB. 8, 1909.

1,035,285.

Patented Aug. 13, 1912.

2 SHEETS—SHEET 1.

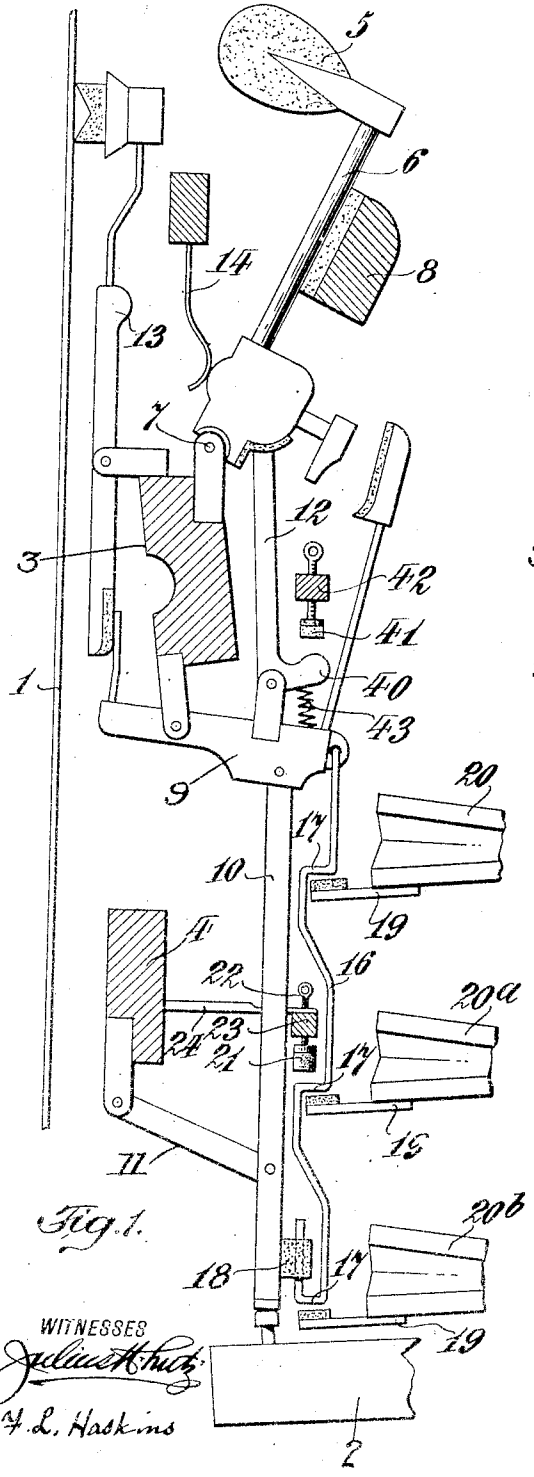

Fig. 1.

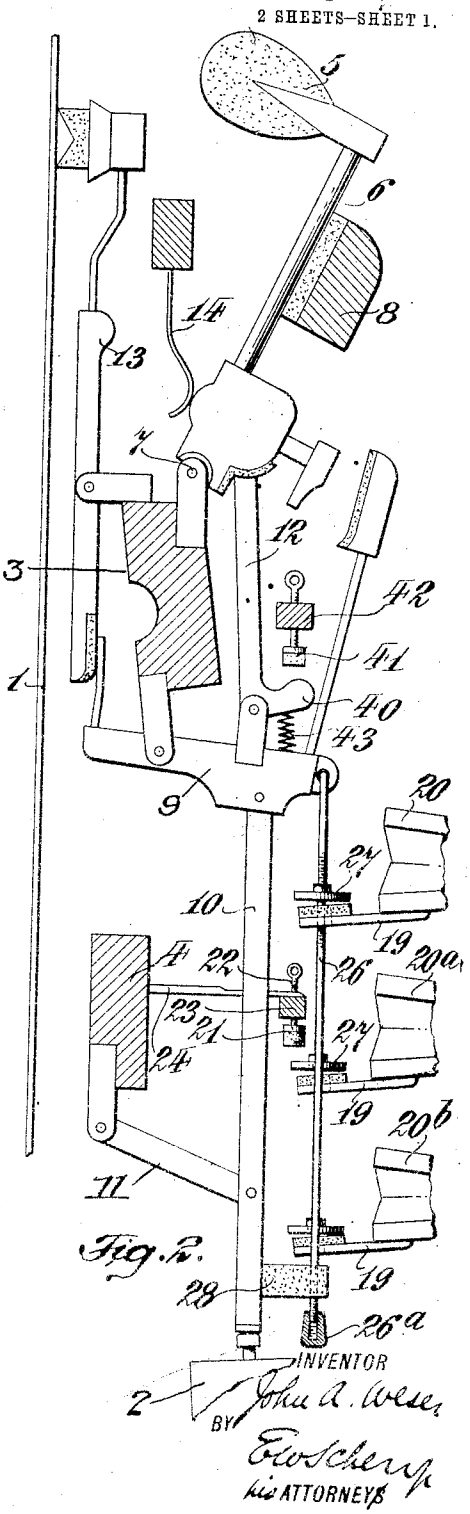

Fig. 2.

WITNESSES

Julius A. Stuck

F. L. Haskins

INVENTOR

John A. Weser,

BY

Bowsher & Co

his ATTORNEYS

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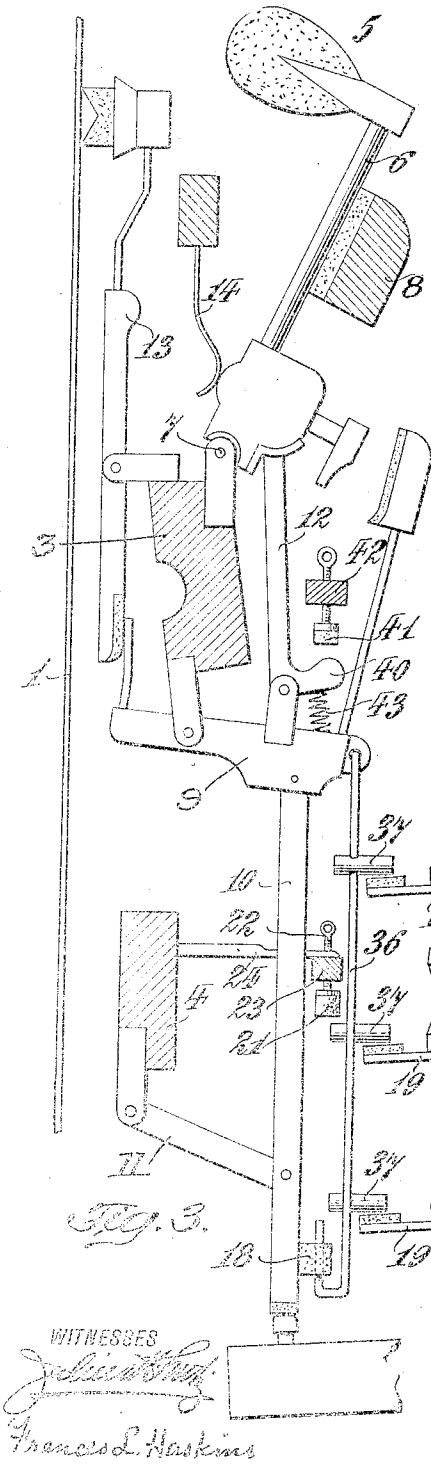

Fig. 3.

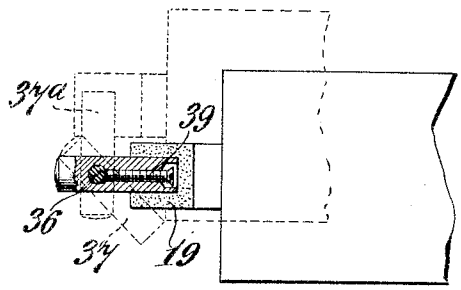

Fig. 4.

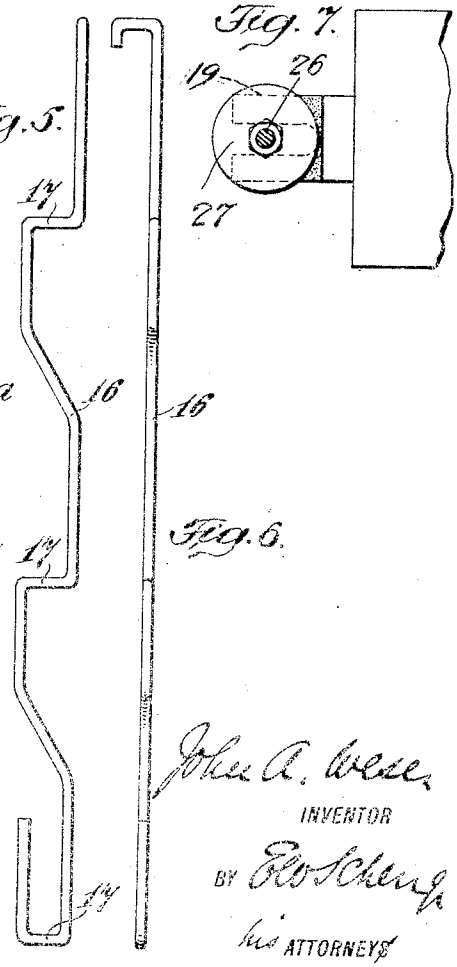

Fig. 5.

Fig. 7.

Fig. 6.

WITNESSES

Frances L. Haskins

John A. Weser

INVENTOR

BY Bakewell & Church

his ATTORNEYS

UNITED STATES PATENT OFFICE.

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

AUTOMATIC PLAYER.

1,035,285. Specification of Letters Patent. Patented Aug. 13, 1912.

Application filed February 8, 1909. Serial No. 476,778.

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 more particularly to the hammer action of mechanical players of pianos and the like.

In the drawings, which show three of the forms which my improvements may take, Figure 1 is a side elevation partly in vertical section of the hammer action of a piano embodying my improvement, and showing in connection therewith portions of two pneumatics of the mechanical player, Figs. 2 and 3 are the same, differing from Fig. 1 and from each other in showing additional modifications, Fig. 4 shows in full lines a top plan view, partly in section, of the corresponding parts in Fig. 3, and further shows in dotted lines certain of the parts in different location, Fig. 5 is a side elevation on an enlarged scale of the wire thrust member shown in Fig. 1, Fig. 6 is an edgewise view of the same, and Fig. 7 is a top plan view partly in section on the line 7—7 in Fig. 2.

I will now describe the particular embodiments of my invention illustrated in the drawings, and will reserve it to the claims to point out the novel features of the devices shown and to define the scope of the invention.

In the drawings, the three forms shown of the improvement are illustrated in connection with a well known form of hammer action which will, therefore, not require anything more than a general description. Thus, 1 is a piano string, 2 the rear end of a piano key, 3 is a rail extending horizontally across the instrument and forming the main support of the parts of the hammer action, and 4 is another stationary rail below the first and assisting in the support of certain parts of the action.

5 is a hammer, 6 is its stem fulcrumed at 7 to the rail 3; 8 is a rest rail supporting the stems 6 of the hammers when in their non-playing position away from the strings.

9 is the wippen pivotally connected to the under side of the rail 3; 10 is the abstract depending from the wippen 9 by a pivotal connection and having its lower end supported on the rear end of a key 2; 11 is a link pivotally connecting the abstract 10 with the rail 4 and serves to guide it in its vertical movements.

12 is the jack pivotally connected below with the wippen 9 and adapted at its upper end to contact with the hammer butt and to deliver upward thrust to the hammer to throw it against the string.

40 is a lug extension from the jack 12, coming in contact with the stop 41 supported from the rail 42 during the upward motion of the jack and swinging it out of contact with the hammer butt after it has thrown the hammer toward the string. The spring 14 depending from a stationary rail tends normally to cause retraction of the hammer, whereas compression spring 43 tends normally to replace the jack back into its hammer-propelling position. This brief description will suffice without mentioning such entirely irrelevant parts as the member 13 and connected parts belonging to the string damping mechanism.

Referring now more particularly to Figs. 1, 5 and 6, 16 is a wire (elsewhere herein generally called a secondary abstract) bent as shown to have overhanging shoulders 17, which wire is located in upright position in front of the abstract 10 (it being understood that there will be one of such wires for each abstract), and has its upper end pivotally connected with the forward end of the wippen 9, and its lower end slidingly connected with a lug extension 18 from the abstract 10. The described connection between the upper end of the wire with the wippen comprises a hook, made of the end of the wire, hooked into an opening or eye in the front end of the wippen. The sliding connection referred to between the lower end of the wire and the abstract 10 comprises a lug 18 fixed on the lower end of the abstract and having a vertical opening through it. In this opening is slidingly received the end of the wire 16 which, for this purpose, is bent upward to pass vertically upward through the opening. Intermediately, the wire 16 is bent at two or more places to provide the overhanging shoulders 17, one of which overhangs an extension 19 from the movable part of the hammer pneumatic 20 belonging to that particular unit of the action. In this connection, it is appropriate to explain that the other hammer pneumatics 20* and

20^b with their extensions 19, are not directly under the pneumatic 20 as appears from the drawing, but are to one side in position for their extensions 19 to engage under the shoulders 17 of the wires 16 belonging to the adjacent units of the action.

21 is a vertically adjustable stop consisting of a felt head on a screw 22 threaded through a horizontal rail 23 supported stationarily by arms 24 from the rail 4. There are a plurality of these stops, one for each wire 16, located over a shoulder 17 to limit the movement of the wire as it is carried upward by the corresponding hammer pneumatic. Each stop being vertically adjustable, its contact with the shoulder 17 of the wire to limit its movement at the proper point, can be regulated and fixed.

The operation of the described devices will now be apparent and consists of the striking of the string 1 by the hammer 5 when the pneumatic 20 or 20^a corresponding to that hammer has been collapsed, due to the working of the piano player whereby its extension 19 elevates the wire 16 by contact with its shoulder 17, raises the abstract 10 and the jack to throw the hammer against the string. During this elevation of the wire 16, its lower end slides in the extension 18 of the abstract. Furthermore, during this upward movement of the wire 16, contact is made between its shoulder and stop 21, limiting said upward movement beyond the point necessary to convey the proper thrust to the wippen 9 and jack 12 and the proper throw to the hammer.

Heretofore, the extensions from the hammer pneumatics have worked under blocks secured directly to the front sides of the abstracts 10. The advantages of the present improvement by which the wire 16 and other described parts are substituted for said blocks, may be stated among other respects as follows: First, the attaching and positioning of the blocks is always troublesome and they readily break off from the abstracts, whereas the wires 16 are easily attached with no danger of coming off, and moreover the desired shoulders are easily provided. Second, the wire 16 provides a convenient means for locating the shoulders at a considerable distance in front of the abstracts 10, so that the leverage of the hammer pneumatics to actuate the hammers is greatly increased, thereby increasing the effective power of the apparatus and subjecting it to less train. Third, the facility of moving and assembling is greatly increased and there is not the trouble formerly experienced in securing additional blocks to the abstracts 10. The foregoing advantages apply equally well to the other modifications shown in Figs. 2 and 3, etc., together with additional advantages that the shoulders are vertically adjustable in the modifications and in fact are, in addition, horizontally adjustable in the form of the improvement in Fig. 3.

Referring to Figs. 2 and 7, 26 is another form of secondary abstract, being a wire having hooked connection above with wippen and below sliding in a vertical opening through an extension or lug 28 on abstract 10. A head 26^a may be provided on the lower end of the wire 26 to prevent under any conditions the wire from coming out of the opening in lug 28. 27 designates buttons having threaded connection with the wire 26. Similarly to the shoulders 17 on wires 16, there may be a plurality of these buttons on the same wire 26, and it will be noted that due to their threaded connection they have vertical adjustment so that they can be brought in proper relation with the extensions from the hammer pneumatics. In other words, the buttons 27 serve as the shoulders 17 in the form of the device described in connection with Fig. 1 and will have the advantage of being vertically adjustable. In connection with Fig. 2, the same remark applies, which was previously made in connection with Fig. 1, that the pneumatics 20, 20^a and 20^b are not in the same vertical line but are spaced or staggered to correspond with adjacent wires 26 and to act upon the buttons 27 belonging to those wires. In Fig. 2, the extensions 19 from the hammer pneumatics are bifurcated to straddle the wires 26 as best shown in the detail view in Fig. 7.

In connection with Fig. 2, the same stop means 21 is provided described in connection with Fig. 1, and it engages the button 27 on the same wire 26 as the upper button against which the hammer pneumatic 20 acts.

The modification shown in Fig. 3 has the advantage of providing for lateral adjustment of the shoulder members designated in this modification by the numeral 37. The wire 36 being still another form of secondary abstract is shown mounted as in Fig. 1, but differs in having a straight intermediate portion upon which the shoulder members 37 slide for adjustment purposes, which shoulder members having been adjusted are secured stationary on the wires 36 by the set screws 39 with which each member is provided. Thus, in this case, the shoulder members 37 are adjustable not only vertically as in Fig. 2, but horizontally. The advantage is that in the assembling of instruments, it often happens that the hammer pneumatics or their extensions do not properly assemble relative to the lugs or shoulders on the abstracts for operating the hammers. Thus, as indicated by the dotted lines in Fig. 4, the particular hammer pneumatic relative to the wire 36 may be positioned both too far forward and too far

to one side. Such occurrences result in much trouble to the manufacturer but are rendered practically harmless by the present improvement, because it is only necessary to adjust the particular shoulder member or members 37 into the position 37^a shown by the dotted lines, whereupon the device works just as effectively as if in full line position.

In the foregoing description the members 16, 26 and 36 have been called secondary abstracts to distinguish them from the main or ordinary abstracts 10.

It will be understood that whereas the secondary abstracts are preferably made of wire, this is not necessarily the case, since they may be made of other materials.

In addition to the advantages, already pointed out, of the secondary abstracts, it may be noted as a feature of importance that, being comparatively heavy and at any rate hanging as they do from the front ends of the tilting levers 9, said members give normal downward tendency to the parts and thereby serve to quicken the retraction of said parts preparatory to impelling the hammers to again strike their strings. The result is that the action is considerably quickened, making it possible to strike a given note or notes in more rapid succession and with clearer utterance.

Having thus described my invention, what I claim is:

1. In combination, an action comprising abstracts, the wippens for said abstracts, secondary abstracts, one for each wippen in operative relation thereto, said secondary abstracts having vertically adjustable shoulders which, in addition, are horizontally adjustable into different angular positions about the individual secondary abstracts as an axis, and mechanical player means including hammer pneumatics arranged to operate against said shoulders to actuate the secondary abstracts, the wippens and action.

2. In combination, an action comprising abstracts, the wippens for said abstracts, secondary abstracts, one for each wippen with its upper end having pivotal connection with the wippen, and with its lower end having a connection with the particular main abstract permitting relative motion between the two abstracts, and mechanical player means in operative relation with the secondary abstracts.

Witness my hand this 27 day of January, 1909.

JOHN A. WESER.

Witnesses:
CONRAD HAINES,
MAX LEVIAN.