Oct. 28, 1941. C. F. STEIN 2,260,348

MOVABLE REST RAIL FOR PIANO ACTION ABSTRACTS

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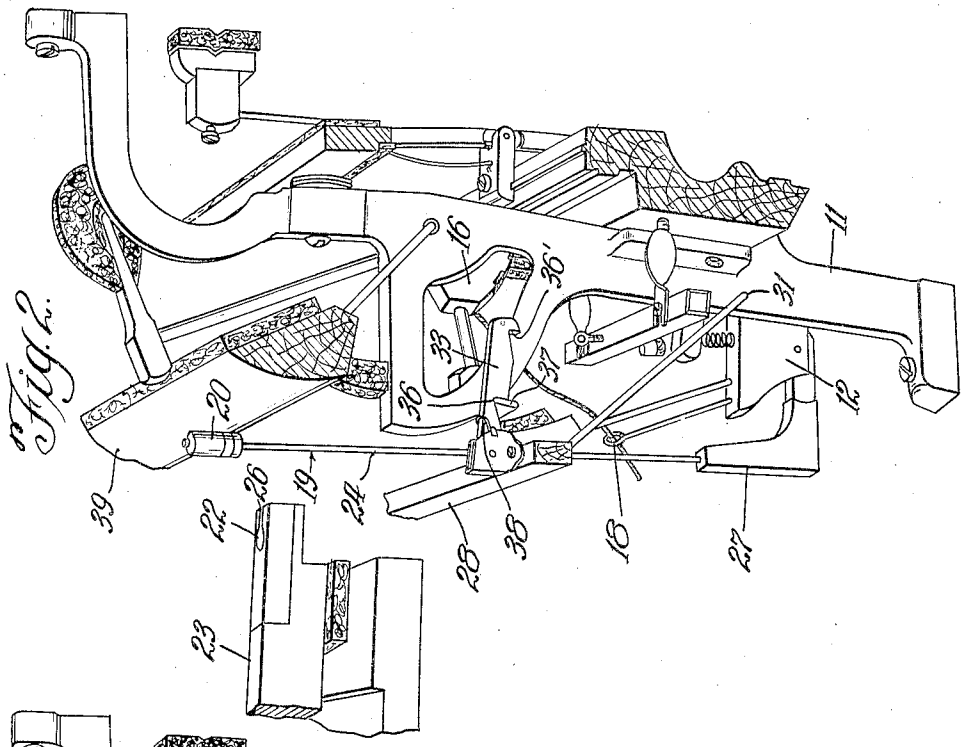


Fig. 2.

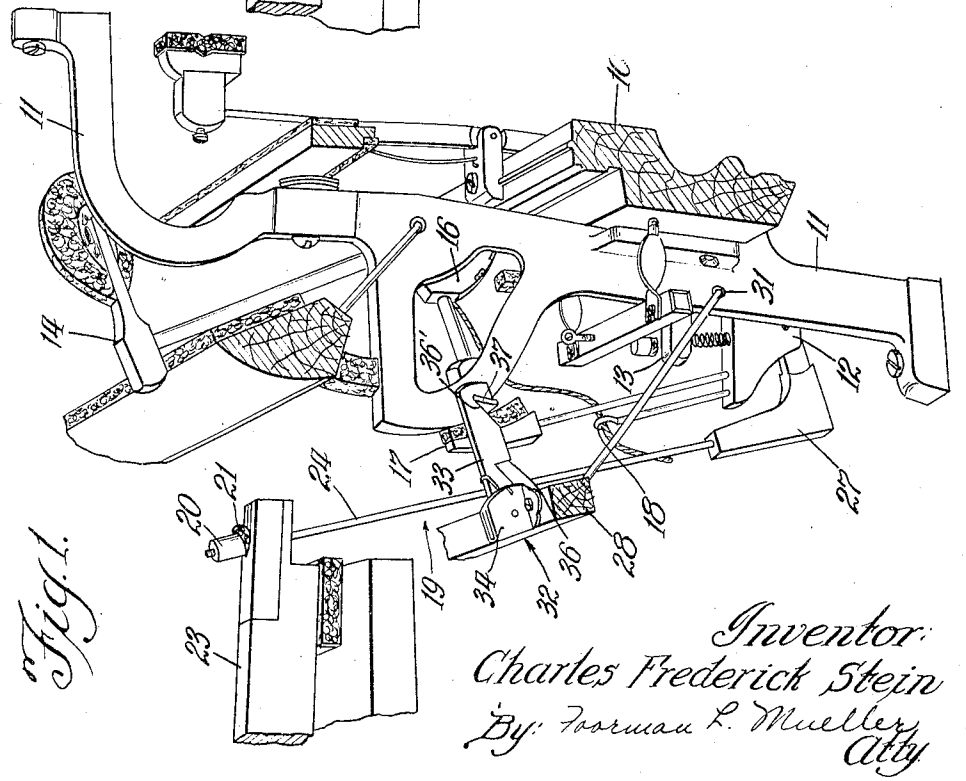


Fig. 1.

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Fig. 3.

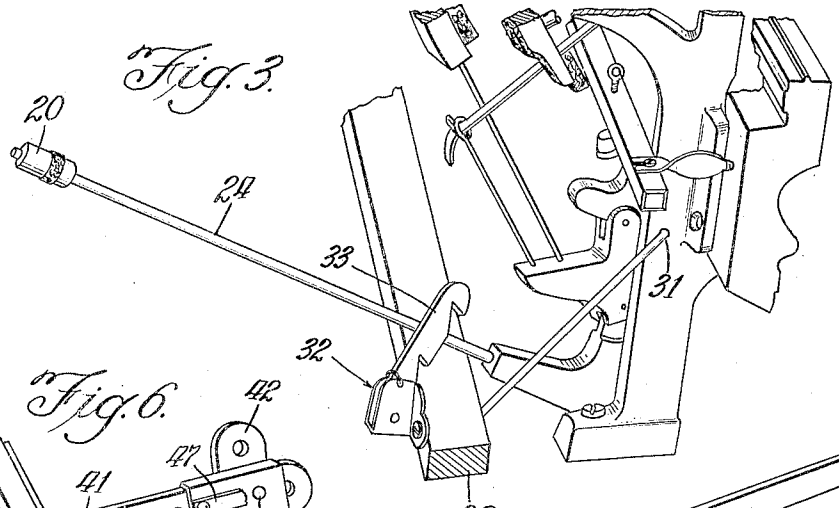


Fig. 6.

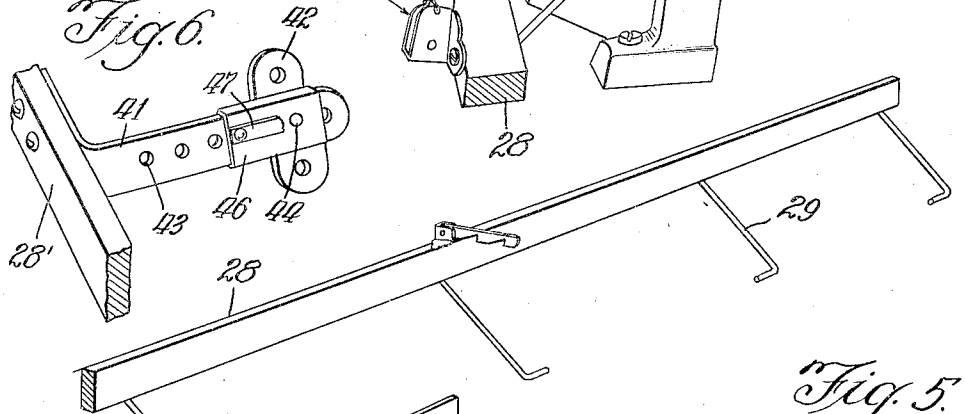


Fig. 4.

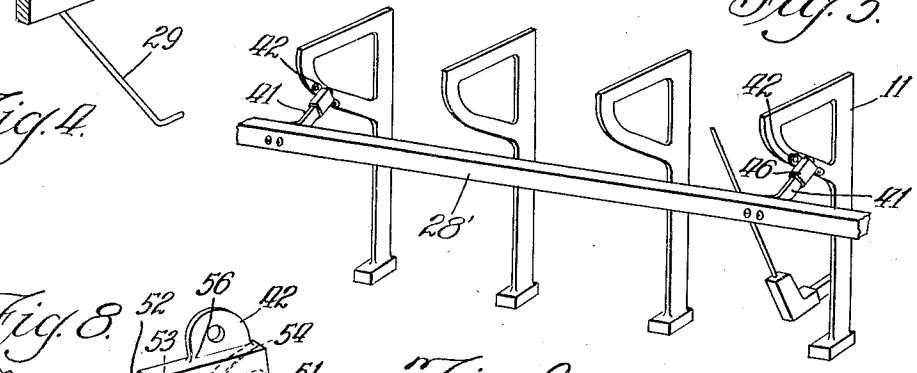


Fig. 5.

Fig. 8.

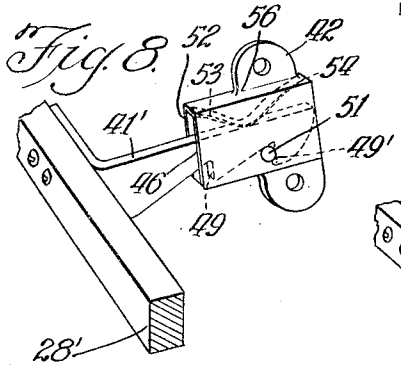


Fig. 9.

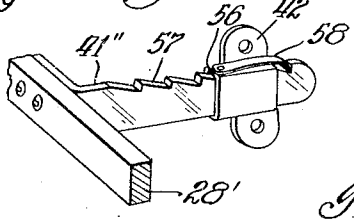
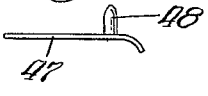


Fig. 7.



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UNITED STATES PATENT OFFICE

2,260,348

MOVABLE REST RAIL FOR PIANO ACTION ABSTRACTS

Charles Frederick Stein, Chicago, Ill., assignor to Pratt, Read & Co., Inc., Ivoryton, Conn., a corporation of Connecticut

Application September 26, 1940, Serial No. 358,497

9 Claims. (Cl. 84—240)

This invention relates in general to piano actions and in particular to an improved rest rail for the abstracts of a piano action.

In drop-type actions of the prior art for low upright pianos, the abstracts are normally pivotally connected to the whip and extend upwardly therefrom. Since the upper ends of the abstracts in some types of these actions are free of the remainder of the action, the abstracts tend to fall forwardly away from the action. The abstracts may thus be in the way throughout the final manufacturing steps in the assembly of the action, and may be particularly awkward and clumsy to handle and pack for shipping. The same difficulty applies when unpacking and getting the action ready for assembly in a piano case. This condition affects the cost of manufacturing, and assembling the action and the remaining portions of the piano, and also affects the labor and material costs for packing and shipping.

It is an object of this invention, therefore, to provide an improved drop-type action for low upright pianos.

Another object of this invention is to provide an improved rest rail for the abstracts of a piano action.

A further object of this invention is to provide a simple rest rail for the abstracts of a drop-type action which serves to reduce shipping, installation, and servicing costs of the action to a minimum.

Another object of this invention is to provide a supporting rail for the abstracts which is movably carried by a part of the piano action in a position normally free of the abstracts during operation of the piano action. The rail is operable on disengagement of the abstracts from their corresponding keys to hold the abstracts in a position adjacent the action to facilitate handling and shipping of the action and assembly and service work of the key frame.

A feature of this invention is the provision of a rest rail for the abstracts which is operable to retain all of the abstracts in a supported position adjacent the action and which is assembled as a part of the piano action so as to be included therewith for shipment as a single unit.

Another feature of this invention is the provision of a rest rail for the abstracts which is movably carried by a part of the piano action and which has a spring tensioned locking arm thereon releasably engageable with a catch member on the piano action in a plurality of rail locking positions. The rail is operable to support the abstracts in a plurality of fixed positions relative to the piano action, with the rail being positioned free of the abstracts whenever they are operated for playing.

Yet another feature of this invention is found in the provision of a rail for holding pivoted abstracts which is slidably supported on a part of the piano action for movement laterally of the action. The rail is arranged transversely and forwardly of the abstracts so as to pivotally move the abstracts toward the action on a lateral movement of the rail toward the action. Releasable locking means for the rail provides for a holding of the abstracts adjacent the action when the action is not being operated, and for a fixed positioning of the rail free of the abstracts when the action is being operated for playing.

A still further feature of this invention is the provision of a locking device for an abstract rest rail which is of simple and rugged construction and easily manipulated to positively lock the rail in a plurality of fixed positions relative to the piano action.

Further objects, features and advantages of this invention will become apparent from the following description when taken in connection with the accompanying drawings in which:

Fig. 1 is a view in perspective of a piano action showing the assembly of the abstract rest rail thereon;

Fig. 2 is a view illustrated similarly to Fig. 1 showing parts thereof in a changed position;

Fig. 3 is a fragmentary view illustrated similarly to Fig. 1 showing parts thereof in a changed position;

Fig. 4 is a view in perspective of the abstract rest rail;

Fig. 5 is a somewhat schematic view in perspective of a modified form of the invention;

Fig. 6 is a perspective view of a locking device for the rest rail shown in Fig. 5;

Fig. 7 is a detailed view of a latch for the locking device of Fig. 6;

Fig. 8 is a further modified form of locking device for the rest rail of Fig. 5; and

Fig. 9 is yet another modified form of a locking device for the rest rail of Fig. 5.

Piano actions are commonly handled apart from the piano case for both adjustment and shipping purposes. Since the abstracts in some of the drop-type actions of the prior art are pivotally connected to the whip and hammer assembly and freely swingable from the top when disconnected from the keys, they are apt to fall forwardly away from the action when not con-

nected with their corresponding keys. As explained above, this difficulty normally results in inconvenience and higher labor costs. Inasmuch as one of the most important advantages of a low upright piano is its low cost, assembly and shipping costs must be maintained at a minimum. These difficulties have been overcome in the present invention by the provision of a rest or supporting rail common to all of the abstracts, which is movably carried on the action mounting means in a manner to be substantially laterally movable of the action, and engages the abstracts intermediate the top and bottom thereof. The rail is assembled as a part of the action and is operable to pivotally move the abstracts into a position substantially adjacent the piano action, so that the action, including the rest rail, is handled as a complete and compact unit. Locking means for the rest rail serve to positively hold the rail and hence the abstracts in an adjusted position whereby to eliminate any possible chance of the abstracts falling down during the handling or shipping of the action, and various adjusted positions are provided for the various normal positions of the abstracts.

With reference to Figs. 1 and 2, the action is shown as supported principally on a rail **10** which in turn is mounted on a plurality of mounting brackets **11**. A whip **12** is pivotally connected in a suitable manner to the rail **10** and in turn pivotally supports a jack or fly **13**. The jack is in engagement in the usual manner with a hammer **14** at the butt **16** for such hammer, and as the whip **12** is raised, this motion is transmitted through the jack to pivot the hammer into striking engagement with the corresponding piano string. A back-check **17** and bridle-strap wire **18** are both supported on the whip.

The abstract designated generally as **19** includes a button-like head structure **20** with a felt pad **21** for seating in a mating cavity **22**, the cavity being formed at the rear end of a key **23**. The head **20** is threadably secured to a lifter rod **24** which is illustrated as being provided in wire. The rod **24** and head **20** are connected to the key **23** by raising the head sufficiently to clear the top of the key and sliding the rod in the longitudinally extending key slot **26** until the head is positioned in the cavity **22**. Since, during normal operation of the action, the head is not raised above the key, the abstract is thus operatively secured in the key **23**. Arranged at the lower end of the lifter rod **24** is a pivot or foot member **27** which is of substantially L-shape, the upwardly extending leg portion being permanently secured to the lifter rod in any suitable manner and the other leg portion of **27** being suitably pivotally connected to the whip **12**.

The abstracts are thus seen to be arranged along the entire width of the piano action and forwardly thereof, their connection to the action being only at the whip **12**. On disengagement of the abstract **19**, therefore, from the key **23** as by lifting the abstract head **20** from the cavity **22**, the abstracts are free to fall forwardly away from the action so as to project substantially laterally therefrom. It is readily apparent that this projecting of the abstracts from the action renders difficult the job of removing or assembling the action in a piano case, and presents the same difficulty when the keys and action are separated for repair, and the like.

This difficulty is overcome in the present invention by a rest or holding rail **28** which extends over the entire width of the piano in a position forwardly or ahead of the abstracts **19**. Mounting arms **29** for the rail are bent at their free ends (Fig. 4) for pivotal connection to the action mounting brackets **11** at apertures **31** formed therein. As is clearly shown in Fig. 4, the corresponding arms **29** in each sectional half of the rail **28** are oppositely bent so that on their engagement with the mounting brackets **11** movement of the rail transversely of the action is substantially eliminated. The rail is thus pivotally swingable on the mounting brackets **11** so as to be movable relative thereto in a lateral direction to engage the abstracts intermediate their tops and bottoms and pivot them into the desired position of rest. The rail **28** is locked in a predetermined position relative to the piano action by a locking device designated generally as **32** and which will now be fully explained.

Locking device **32** includes a latch or locking arm **33** which is pivotally supported at one end in a mounting bracket **34** of substantially U-shape, which is attached to the upper side of the bar **28**, as viewed in Fig. 1, at a position substantially intermediate the bar ends. The latch **33** is provided with substantially V-shaped notches **36** and **36'** on its lower side, as seen in Fig. 1, which are of a form to engage a catch member **37** mounted on one of the brackets **11**, which may be arranged toward the center of the action unit. Arm **33** is retained in its engaged or locked position with the catch **37** by a spring **38** which is arranged between the bracket **34** and the arm in a manner to urge the arm against the catch **37**. The spring tension on the arm is sufficient to retain the bar **28** in a locked position for all handling of the piano action. Release of the arm or latch **33** is accomplished by lifting the arm out of its engagement with the catch **37**.

The operation of the bar **28** and locking device **32** is more clearly understood with reference to Figs. 1, 2, and 3. In Fig. 1 the abstract **19** is shown in its operating or playing position, the lifter rod **24** being in a substantially upright position. The bar **28** is arranged forwardly of the abstract **19** so as to be entirely free thereof, this rest or idle position of the bar **28** being determined by engagement of the catch member **37** at the notch **36'**. The idle position of the bar **28** does not, therefore, in any way affect the normal playing operation of the piano action. In Fig. 2 the abstract **19** is entirely removed from the key **23** and is held in an upright position adjacent the piano action by the bar **28**, with the abstract head member **20** substantially adjacent to the hammer rest rail **39**. This abstract supporting or operated position of the rail **28** is determined by engagement of the catch member **37** with the notch **36**. The action can be moved about, packed, shipped, and the like, with the abstract retained in this position, and it will not fall away from the remainder of the action. Since the bar **28** is arranged forwardly of the abstracts **19** it is readily apparent that the pivotal movement of the abstracts from their position in Fig. 1 to the position in Fig. 2 is readily accomplished by simply pivotally moving the bar **28** toward the piano action. By virtue of the form of the notches **36** and **36'**, the normally tensioned arm **33** engages the catch **37** immediately on alignment of the catch with the notch **36**.

In Fig. 3 the locking device **32** is shown in a completely disengaged position so that the bar **28** is free to fall away from the action to the extreme lowermost limit of its pivotal travel. Since the abstract **19** on disconnection from the

key 23 also falls forwardly away from the piano action, the abstract follows the bar 28. This position of the bar allows free access to the various action elements assembled back of the abstract for adjustment and assembly purposes while retaining the abstracts for ready movement to their normally substantially upright positions. The bar is thus seen to be free of the abstracts 19 when locked in its rest position and to retain the abstracts adjacent the piano action when locked in its operated position, the locking means 32 being automatically operable on movement of the bar 28 from its rest position to its operated position, by virtue of the normally tensioned latching arm 33 and form of the notches 36 and 36'.

A modified form of the invention is somewhat schematically shown in Fig. 5. The rail 28' (Fig. 5) extends along the entire width of the action and completely forwardly of the abstracts 19. Mounting arms 41 for the rail are slidably supported in tubular brackets 42 of rectangular shape, which in turn are mounted on certain of the brackets 11, the outer two brackets being indicated in Fig. 5. The bar is thus linearly movable in a lateral direction relative to the action and is operable to correspondingly position the abstracts relative to the action. Since the pivoted abstracts, upon disconnection from their corresponding keys, tend to normally fall forwardly away from the action, it is readily apparent that the abstracts follow the rail on its linear movement away from the action and are pivotally moved by the rail toward the action on a linear movement of the bar toward the action.

Each arm 41 is formed with spaced apertures 43 which correspond to an aperture 44 formed in one side 46 of the tubular bracket 42 (Fig. 6). A spring latch 47 (Fig. 7) is attached at one end to the bracket side 46 and is provided near its opposite end with a projection or dowel 48 of a length to extend through the aperture 44 and an aligned aperture 43 in the arm 41. Spring 47 is normally tensioned to urge the dowel 48 into the bracket 42 through the aperture 44, the spring end adjacent the dowel being slightly curved away from the bracket wall 46 to provide a finger grip for lifting the dowel out of engagement with an aperture 43 which may be in alignment with the aperture 44. It is readily apparent, therefore, that the bar 28' is locked in a predetermined position relative to the piano action, when the dowel 48 is extended through the aperture 44 and one of the apertures 43. Thus extension of the dowel 48 through the aperture 43 immediately adjacent the bar 28' may serve to lock the abstracts near the action to prepare the action for handling or shipping, while extension of the dowel through the aperture 43 at the free end of the arm 41 may serve to drop the abstracts to their lowermost supported position away from the action. In this instance the idle position of the rail 28' might be determined by several of the apertures 43 intermediate the above-noted end apertures, since in its idle position the rail need only be entirely removed from the abstract to permit a free operation of the abstract during playing of the action.

A modified form of locking and supporting means for the rest rail 28' is illustrated in Fig. 8. The mounting arm 41' has a pair of notches 49 and 49' formed in the lower side thereof, as viewed in Fig. 8, and extends through the bracket 42 but is vertically movable therein. The notches 49 and 49' are arranged for selective engagement with a pin or rod 51 which is mounted in the side walls 46 and 52 of the bracket so as to extend entirely across the cavity or opening in the bracket. Retention of the arm in engagement with the pin 51 is accomplished by a flat spring 53 which is arranged within the bracket 42 so as to slidably engage and normally push the arm 41' against the pin 51. The spring 53 is of substantially V-shape and is attached at its end 54 to the upper side 56 of the bracket 42, its opposite end being slidably engageable with the bracket side 56. Thus on movement of the arm 41' upward toward the bracket side 56 the spring 53 is somewhat flattened by virtue of the movement of its free end relative to the bracket so that movement of the arm 41' between the notches 49 and 49' is readily and easily accomplished without a complete removal of the spring pressure therefrom. Engagement of the pin 51 in the recess 49' locks the bar 28' in an idle position, while its engagement in the notch 49 defines the bar position at which the abstracts 19 are held immediately adjacent the piano action. It is to be noted that lateral movement of the bar 28' from its locked position at notch 49' to its locked position at the notch 49 is obtained merely by pushing the bar toward the right, as viewed in Fig. 8, the notches being formed to provide for a gradual lifting of the arm 41' for movement of the bar in this direction and the spring 53 serving to lock the bar immediately on alignment of the pin 51 with the notch 49. A direct lifting of the arm 41', prior to any movement of the bar 28' is necessary, therefore, only when it is desired to move the arm from its locked position at the notch 49 to its idle position defined by the notch 49'.

Another locking device for the rest rail 28' is shown in Fig. 9. The mounting arm 41'' is extended through the tubular bracket 42 and is formed along its upper side, as viewed in Fig. 9 with a plurality of serrations 57. A flat spring 58 is attached at one end to the upper side 56 of the bracket 42, its opposite end extending beyond the bracket 42. This spring extension is slightly bent to frictionally engage the arm 41'' at the serrations 57 formed thereon. By virtue of the formation of the serrations 57, it is readily apparent that the bar 28' may be pushed toward the right as viewed in Fig. 9 to successive locked positions. However, to move the bar or rest rail to the left, as viewed in Fig. 9, the spring 58 must first be raised sufficiently to clear the serrations 57 as is readily apparent.

It is to be noted that the locking or holding devices for the rest rail 28' disclosed in Figs. 6, 8 and 9, may be completely disengaged to permit the removal of the rest rail from the piano action. Ready access is thus had to any of the various elements which are assembled back of the abstracts.

The invention thus provides a movable rest rail for the abstracts which is movable in a substantially lateral direction relative to the action and arranged to slidably engage the forward side of the abstract to pivotally move the abstract into a position adjacent the action on movement of the rail toward the action. The rail is assembled as a part of the action, so that the complete action including the rail may be handled and shipped as a unit. The rail is readily applied to any action including a pivoted abstract which normally falls forwardly away from the action on its disconnection from its corresponding key. The invention further pro-

vides means for locking the rail to positively hold the abstracts in a position relative to the piano action to facilitate handling and servicing of the action. With the abstract disconnected from its corresponding key, the rail is thus operable to limit its pivotal movement away from the action and to retain it in a substantially upright position adjacent the action.

Although the present invention has been described and illustrated herein with reference to its preferred embodiments, it is to be understood that alterations and modifications thereof can be made which are within the full intended scope of the invention as defined by the appended claims.

I claim:

1. In a piano action having an abstract and action frame means, with the abstract pivotally connected at one end to said action and having a body portion free of the action at its opposite end so as to normally fall pivotally forwardly away from the action, the combination of means for limiting the pivotal movement of said abstract including a rail member arranged transversely of said abstract and engageable therewith at a point intermediate the top and the bottom of the abstract body, means operatively connected to said action frame means and to said rail movably supporting said rail for movement relative to said action, and in a position such that on movement of said rail toward said action said rail engages said abstract body at a point intermediate the top and the bottom thereof and pivotally moves said abstract body toward said action, and releasable latch means associated with said action frame means and said rail retaining said rail in a selected position forwardly of said abstract, with said latch means in latched-rail-retaining position being operatively connected with said rail and with said action.

2. The combination with a plurality of pivoted abstracts for a piano action having frame means therefor, of means for maintaining the abstracts in a substantially upright position and adjacent the remainder of the action so that the abstracts are prevented from falling when the action is moved independently of the remainder of the piano, including a rail extending transversely of said abstracts, said rail being arranged entirely forwardly of and intermediate the ends of said abstracts, means operatively connected to said action frame means and to said rail movably supporting said rail for movement relative to said action, said rail on movement toward said action slidably engaging a side of said abstracts intermediate the ends thereof to pivotally move the abstracts toward said action to a substantially upright position, and holding means for said rail associated with said action frame means and said rail to retain the rail in a selected position adjacent said action frame means, with said holding means in operating position being operatively connected with said rail and with said action.

3. In a piano action including frame means and an abstract pivotally connected at one end to said action and free of the action at its opposite end to as to normally fall pivotally forwardly away from said action, the combination of a supporting unit for preventing the abstract against falling away from said action including a rail means engageable with the abstract, connectors secured at one end to said rail means and at the other end to said frame means pivotally connecting said rail means to said frame means, a pivoted member on one of said means having a plurality of notches formed along one side thereof, and a catch member on the other of said means selectively engageable with said pivoted member at said notches, with said rail means being pivotally movable to a rest position away from the front of said abstract when the abstract is being operated for playing.

4. In a piano including frame means and an abstract pivotally connected at one end to said action and free of the action at its opposite end so as to normally fall pivotally forwardly away from said action, the combination of a supporting unit for preventing the asbtract against falling away from said action including a rail means engageable with the abstract, connectors secured at one end to said rail means and at the other end to said frame means pivotally connecting said rail means to said frame means, a pivoted member on one of said means having a plurality of notches formed along one side thereof, a catch member on the other of said means selectively engageable with said pivoted member at said notches, with said rail means being pivotally movable to a rest position away from the front of said abstract when the abstract is being operated for playing, and tension means on one of said two members operatively connected with the other member and acting to maintain said members in releasable locking engagement.

5. In a piano action having frame means and an abstract pivotally connected at one end to said action and free of the action at its opposite end so as to normally fall forwardly away from the action, the combination of a rest rail for said abstract supported on said frame means for movement in a substantially linear direction toward and away from said action, said rail being arranged forwardly and transversely of said abstract and slidably engageable with the front side thereof, means for supporting and locking said rail in a selected position relative to said action and the abstract therein including a tubular bracket mounted on said frame means, an arm attached to said rail having a portion within said bracket and slidably movable in said bracket, said arm being formed with a plurality of engaging portions thereon, and a catch member on said bracket selectively engageable with said engaging portions on linear movement of said rail.

6. In a piano action having frame means and a pivoted abstract retained in a substantially upright position when connected to a piano key, but free to fall forwardly away from the action on being disconnected from said key, the combination of means for retaining said abstract in said upright position on its disconnection from said key, including a rail member supported on said frame means for movement in a substantially linear direction toward and away from said action, said rail being slidably engageable with the forward side of said abstract to pivotally move the abstract toward said action on movement of the rail toward the action, supporting and locking means for said rail including an arm mounted on said rail and having a plurality of spaced apertures formed therein, a tubular bracket on said frame means having an opening in one side thereof, said arm being slidably movable in said bracket to selectively align said apertures with said bracket opening, and a spring member mounted at one end on said

bracket having a projection at the other end positioned in said bracket opening and of a length to engage said arm at a selected aligned aperture therein, with engagement of said spring member projection with the aligned arm aperture defining the substantially upright position of said abstract.

7. In a piano action having frame means and a pivoted abstract, the combination of means for maintaining the abstract in a substantially upright position independently of any connection with a piano key, including a rest rail extending transversely of said abstract and movable in a substantially linear direction toward and away from said action, said rail being arranged forwardly of and slidably engageable with the front side of said abstract, supporting and locking means for said rail including a tubular bracket mounted on said frame means, an arm on said rail longitudinally slidable and vertically movable in said bracket, said arm having a plurality of notches formed on one side thereof, a pin member mounted on said bracket and extending transversely of said bracket and selectively engageable with said notches on linear movement of said rail in said bracket, with linear movement of the rail toward said action pivotally moving the abstract to said substantially upright position, and spring means mounted on and positioned within said bracket in slidable bearing engagement with said arm within the bracket on a side of the arm opposite the notched side, acting to press the arm toward the pin and to retain the engagement of said pin with a selected notch.

8. In a piano action having frame means and an abstract pivotally connected at one end to said action and free of the action at its opposite end so as to normally fall pivotally forwardly away from said action, the combination of a rest rail for limiting the pivotal movement of said abstract away from said action, said rail being movable in a substantially linear direction toward and away from said action and arranged transversely and forwardly of said abstract to slidably engage the front side thereof, supporting and locking means for said rail including a tubular bracket mounted on said frame means, an arm mounted on said rail slidably supported in said bracket, said arm having a plurality of notches formed on one side thereof, and a spring member attached at one end to said bracket on the outside thereof and adjacent the notched side of the arm within the bracket and having a portion at the other end with a projection selectively engageable with said arm notches on linear movement of said rail to releasably retain said arm at a corresponding position within the bracket, said rail being movable to a position free of said abstract when said abstract is being operated for playing.

9. In a piano action transportable as a unit having frame means and having abstracts with bodies normally acting to fall away from the remainder of the action when they are not in connection with piano keys, the means for maintaining the abstracts adjacent the remainder of the action when the action is in transportable condition including movable rail means adapted to extend transversely of all the abstract bodies and adapted to engage the same intermediate the top and the bottom of said bodies, means supporting said rail means on said frame means in a position in front of said abstract bodies and in selected positions relative to said frame means, said supporting means having one portion operatively connected to said rail means and another portion on said frame means, and a still further portion including spring means having spring tension therein, said further portion being operatively connected with both said one portion and said another portion and said spring means mounted and positioned with said further portion to apply the spring tension on one of said first two mentioned portions.

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