Feb. 18, 1958 F. W. DOERR 2,823,569

PIANO-ORGAN PLAYING MECHANISM-PEDAL

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Fig. 1

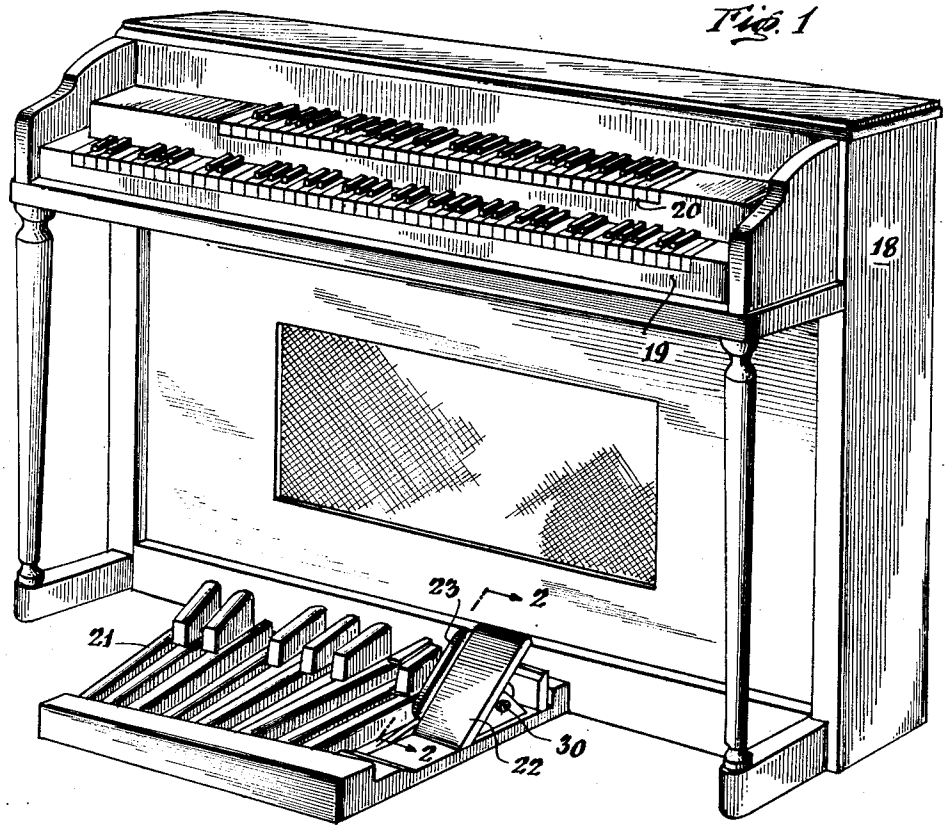


Fig. 5

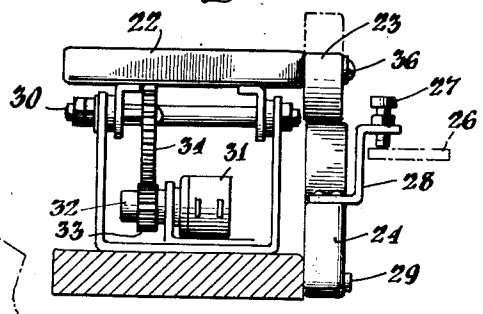


Fig. 6

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Fig. 2

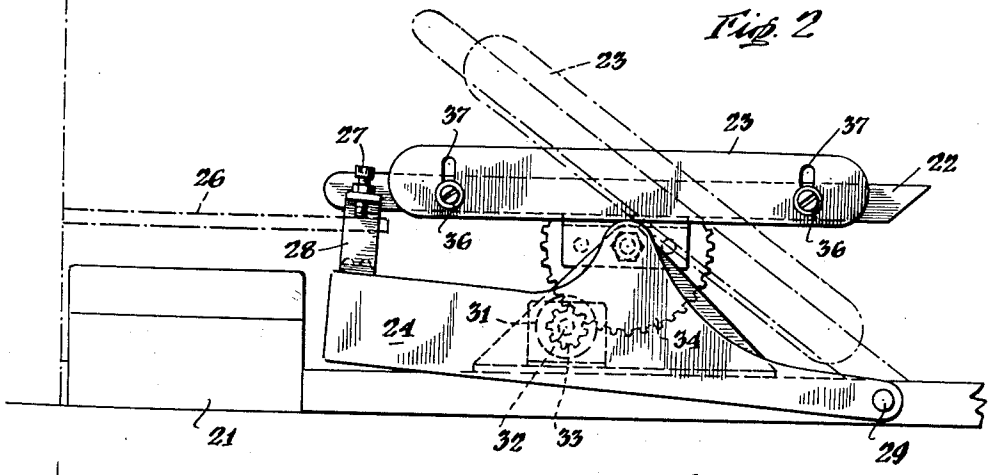


Fig. 3

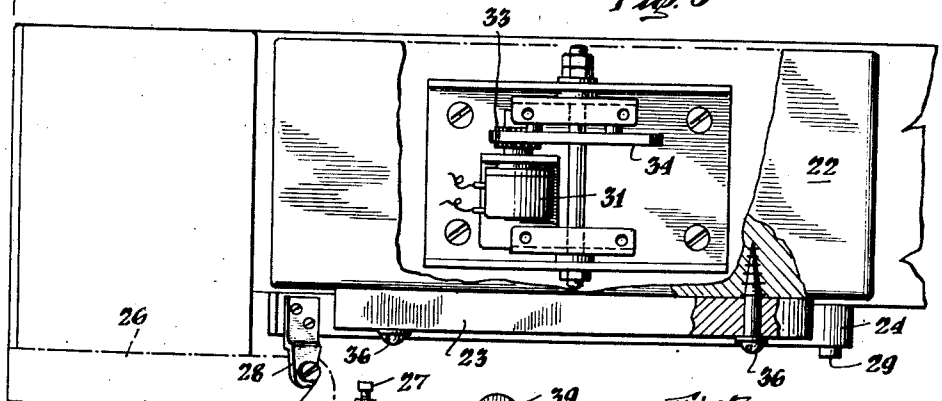


Fig. 7

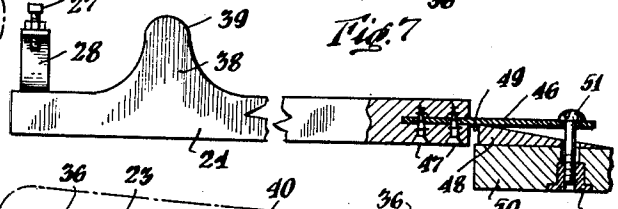
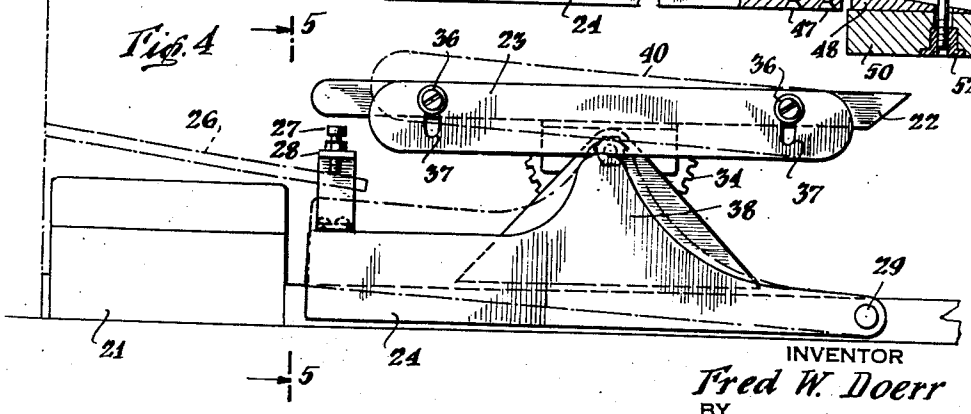


Fig. 4



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PIANO-ORGAN PLAYING MECHANISM-PEDAL

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Application April 26, 1956, Serial No. 580,878

7 Claims. (Cl. 84—172)

This invention relates to an improved construction of certain parts of a combined piano and organ as incorporated in a spinet type of case.

More in particular, the improved invention relates to a novel mechanism associated with the swell or expression pedal of the organ and with the loud or sustaining pedal of the piano whereby the sustaining pedal of the piano may be readily operated by the same foot of the player, irrespective of the position of the organ expression pedal.

In the broader aspects of this invention, it is desired to provide a successfully operating means assembled between an expression pedal of an organ or any other part of the organ, and the tone sustaining structures of the piano. Such a means may be of the remote control type of electrical apparatus or may be a definite mechanical means for transmitting a definite mechanical movement from the organ expression pedal to the tone sustaining structures of the piano. This latter mechanical means is preferred and the example of the invention herein will be described as directed to this mechanical means, although it is to be understood that other types of means may be substituted.

It is a feature of this novel invention to provide in a single piano-organ structure or case, an improved cooperating mechanism for controlling the tones of the organ and of the piano in a most finished and harmonizing manner.

It is a further feature of this invention to incorporate in a piano-organ musical instrument, a swell foot pedal for the organ and an easily operable mechanical construction connected with the swell pedal and with the loud or sustaining pedal of the piano for operating this loud or sustaining pedal, and to accomplish this end no matter in what position the swell pedal may be.

Another feature of the invention is to provide in a piano-organ instrument, a very definite novel mechanism controlled by the same foot of the player that controls the swell pedal of the organ and to assemble this improved mechanism with a connection to the swell or expression pedal and to the loud pedal of the piano.

Another feature of the invention herein is to provide a separate mechanism for operating the sustaining pedal of the piano and to have that mechanism controlled by an element carried by the organ swell pedal, and to have this additional element operate with ease in moving the separate mechanism and the piano loud pedal.

It is a further feature of this invention to provide a definitely designed mechanical part to be positioned between an operating element carried by the organ swell pedal and a piano loud pedal, whereby when the operating element on the swell pedal is moved, irrespective of the position of the swell pedal, the line of force or pressure on this intermediate part will be most direct and will operate the piano loud pedal with ease. The assembly of this intermediate part is such that it will function easily and without delay and without lost motion.

It is a further feature of this invention as related to a piano-organ instrument to provide a separate part, preferably of mechanical structure, which has one end engaging a piano loud pedal and the other end being mounted in a balanced manner on a support of the musical instrument and having an extended knob positioned between the two ends for engagement with an element on the organ expression pedal and having the knob so formed that there will always be a direct line of force from the operating element on the expression pedal and into the separate part to require the least mechanical force to operate the piano loud pedal quickly and without mechanical binding and without lost motion.

Other features and advantages of the improved invention herein will be appreciated when reading the detailed description in connection with the associated drawings, in which

Fig. 1 is a perspective view of a piano-organ musical instrument;

Fig. 2 is a sectional view taken on the line **2—2** of Fig. 1 and with the piano loud pedal in its uppermost or normal position;

Fig. 3 is a top plan view of Fig. 2 showing the loud or sustaining pedal, and a cut away portion under the organ swell pedal showing its operating apparatus;

Fig. 4 is a side view like that shown in Fig. 2, but with the loud or sustaining pedal of the piano in its down position as operated by the mechanism between the organ swell pedal and the piano loud or sustaining pedal;

Fig. 5 is a view taken on line **5—5** of Fig. 4;

Fig. 6 is a modified form of element carried by the swell pedal and of structure to permit its operation by the player from any convenient foot position; and

Fig. 7 is a modified side view partly in section of a part for operating the sustaining pedal of the piano.

Referring now to the drawings in detail, and especially to Fig. 1, there is shown a combined piano and organ musical instrument mounted within a single case **18** of the spinet type and it is provided with a piano manual **19**, and an organ manual **20**, and a series of organ pedals **21** operated by the foot of the player, and a swell pedal **22** carrying a foot operating element **23** which operates through a part **24** to engage the piano sustaining or loud pedal **26**.

In this preferred construction it will be noted that there is a mechanical combination of structures operated by the player for moving the piano sustaining pedal at any time, and from any position that the organ swell pedal **22** may be in to accomplish particular features of the organ tones and harmonics. These mechanical structures are preferably composed of the operating element **23** and part **24** and the adjusting screw **27** carried by angle **28** so as to provide an assembly or installation that has practically no lost motion in its operation and still being responsive to a light touch on the element **23** by the player's foot for causing quick and correct operation of sustaining pedal **26**. In the illustrations in Figs. 2 and 3, the part **24** is shown pivoted at **29**, but other ways of mounting this part **24** so that it functions with ease, may be employed, as for instance, the mounting shown in Fig. 7.

In obtaining the desired harmonics and tones of the piano and organ, it is desired that the swell pedal **22** be pivoted so that it may be operated by the player to give the desired result. It has been found desirable to mount the swell pedal **22** along its shorter axis **30**, Fig. 1, and have it operate a definite apparatus to control the organ tones. This apparatus may be of any particular type and particular structure, and in this case it is shown as an electric rheostat **31**, shown in block form, Fig. 3, and with its shaft movable about axis **32** by a small gear **33** driven by a large gear **34**, Fig. 2. Thus, the organ tones may be materially amplified or reduced, according to the player's control. In Figs. 2 and 4, it will be noted that the swell or expression pedal **22** may take any posi-

tion within a range of a few degrees, which in this case is approximately 45°.

In order to operate the piano sustaining pedal 26, when the swell pedal 22 is in any one of its various positions, it is preferred that the operating element 23 be mounted on the swell pedal 22 so that there is always possible a relative movement between the two, and in this preferred construction, it is a vertical movement of element 23 in respect to the surface of pedal 22. In accomplishing this end, the operating element 23 is fairly loosely mounted by screws 36 on the side of the swell pedal 22 and the vertical movement of element 23 is allowed by reason of the provision of slots 37.

In order to translate this vertical movement to the part 24 without binding and with the least amount of friction, it is preferred that this part 24 be provided with a knob extension 38 having a rounded knob or top 39, as clearly shown in Fig. 7. It will be noted from Fig. 2 that the normal preferred position of the axis of the curvature of this knob 39 preferably coincides with the axis 30 of the swell pedal. Thus, it will be noted that irrespective of the position of the swell pedal, the element 23 engages the knob extension 39 in a point or line contact which creates the least frictional engagement, and gives the most direct transmission of force from the foot element 23 to the part 24 which controls the positions of the sustaining pedal 26 on the piano.

Again referring to Fig. 2, it will be noted that the sustaining pedal 26 of the piano will normally maintain the part 24 in an up position about the pivot 29 and will maintain the operating element 23 in its up position. In Fig. 4 the down position of operating element 23 is shown pressed down and, therefore, part 24 and piano sustaining pedal 26 are down. The dotted line shows that the operating element 23 can be moved from any part along its length and in this Fig. 4 the element 23 is shown fully depressed, and the dotted line 40 shows that the rear end of this element 23 can be retained in depressed position while the front end may be raised.

It is well known in the production of musical instruments that it is desired to have the operating parts function with the expenditure of the least amount of energy and, therefore, it is desired to have all parts operate with as small an amount of lost motion as possible and thereby be subject to a light touch, or even to a heavy touch.

A modified form of the connecting part 24 is shown in Fig. 7 where the part 24 has one end arranged to engage the piano sustaining pedal 26 and be adjusted in that position by screw 27 carried by angle iron 28. This part 24 is also provided with the knob extension 38 and with the knob curvature 39. The other end of this part 24 is constructed so that its position may be balanced to give the least resistance to the operation of the element 23 in sending its force to the sustaining pedal 26. Any suitable arrangement may be incorporated for this purpose. A preferred arrangement is the provision of an extension 46 preferably inserted in or attached to the part 24 and held by screws 47 and mounted against a support 48 which has a point or line 49 of engagement with the extension 46. This support 48 is carried on a block 50 in the case 18, and there is provided a screw type adjusting arrangement 51 adapted to operate in a holder 52 so that proper adjustment may be readily made to balance the part 24 so that the spring maintaining the loud or sustaining pedal 26 is not subjected to too large a load. By means of this improved mounting, as shown in Fig. 7, a very light touch of the foot on the operating element 23 functions to move the sustaining pedal 26 quickly and easily with no lost motion.

Another modification of the apparatus available for the foot operation of the player is that shown in Fig. 6, wherein the operating element 23 has a longitudinal side edge 56, and a horizontal front edge 57 which is positioned at the front of the swell pedal 22. With this type of operating element 23, the foot of the player has considerable leeway in operating this element. The toe of the shoe of the operator may depress the front edge 57 or the player's shoe may be moved onto the side edge 56. all for the purpose of controlling the sustaining pedal 26 as desired.

It will be noted from the foregoing description that there is an easily and quickly operated mechanism provided between the swell or expression pedal of the organ and the sustaining or loud pedal of the piano in that no matter in what position the expression pedal of the organ may be the sustaining pedal of the piano may be moved to a desired position.

It will further be noted that the mechanism assembled between the swell pedal of the organ and the sustaining pedal of the piano is particularly assembled so that it will be readily adjusted and so that there will not be lost motion, and that the parts of the mechanism are subject to slight movement or slight pressure to give the desired harmonizing effects of the relation between the piano and organ tones and harmonics.

It will be understood that various modifications and changes may be made in the preferred form of the invention herein, and such modifications and changes are to be understood as part of this invention, as outlined in the following claims.

The invention claimed is:

1. In a piano-organ musical instrument, a swell pedal for controlling the organ tone volume and mounted to pivot about one of its axes, a piano tone sustaining pedal, an element carried by said swell pedal for operation by the same foot of the player, said element being flexibly mounted on said swell pedal at two points of engagement to allow only vertical relative movement between said element and the surface of said swell pedal, a part mounted between said element and said tone sustaining pedal of the piano for conducting movement to said piano pedal from said element, said part being in a balanced position to require only a slight pressure in operating the piano sustaining pedal.

2. In a piano-organ musical instrument, the combination of a piano sustaining pedal, an organ swell pedal for controlling volume of organ tones, an element mounted in association with said swell pedal for having relative movement therewith and to have its top surface always parallel to the surface of said swell pedal, a mechanical part mounted between said element and said piano pedal for engaging said element and said piano pedal and for being adjusted for engagement with said piano pedal, said part having a knob portion for engaging said element, said knob being rounded to engage said element from any position of said swell pedal throughout a 45° angle.

3. In a piano-organ musical instrument, the combination of a piano sustaining pedal, an organ swell pedal for controlling volume of organ tones, an element mounted in association with said swell pedal for having relative movement therewith, a mechanical part mounted between said element and said piano pedal for engaging said element and said piano pedal, and being adjusted for engagement with said piano pedal, and adjustable means at the other end of said part for balancing said part in normal engagement with said piano pedal, said part having an extension for engaging said element.

4. In a piano organ musical instrument, a swell pedal for controlling the volume of the organ tones, means for controlling the tone sustaining structure of the piano, an element mounted on said organ swell pedal and being operable by the same foot of the player, said swell pedal being pivoted to oscillate about an axis, a part mounted between said element and said piano tone sustaining structure, said part having a curved knob portion for engagement with said element, the center of said curved knob extension being normally in the same axis as the pivoting axis of said swell pedal.

5. In a piano-organ musical instrument, a swell pedal

for controlling the volume of the organ tones, a piano sustaining pedal for controlling the volume of the piano tones, an element carried by said swell pedal and having relative vertical movement therewith, a part positioned between said element and said piano sustaining pedal, an adjustment on one end of said part for firmly engaging said sustaining pedal, a metal extension mounted on the other end of said part, a support for receiving said extension at a position near said part, said support having a definite point of contact with said extension to allow oscillation of said part about said contact, and an adjustable means for engaging said extension and said support at a point away from said part for mounting said part in said piano-organ instrument in a balanced manner whereby slight movement of said element is transmitted with substantially no friction to said piano sustaining pedal.

6. In a piano-organ musical instrument, a swell pedal for controlling the volume of the organ, a piano tone sustaining pedal, a mechanism between said swell pedal and said piano sustaining pedal for operation by the player's foot that operates the swell pedal, a part included in said mechanism and having a curved knob to allow the mechanism to function with the least friction when the swell pedal is in any one of its various positions, said part having an adjustable mounting at one end for balancing its weight thereby allowing an easy transmission of power between said swell pedal and said piano sustaining pedal.

7. In a piano-organ musical instrument, the combination of a piano manual, an organ manual, a swell pedal for controlling the tone volume of said organ, said swell pedal being pivoted on its shorter axis, a piano sustaining pedal, a foot element mounted on the side of said swell pedal and operated by the same foot of the player as said swell pedal, said foot element having two slots therein to allow relative vertical movement between it and the surface of said swell pedal in whatever position said swell pedal may be in, a mechanical part mounted between said foot element and said piano sustaining pedal, an extension on one end of said part for mounting it in said piano-organ instrument in balanced fashion, a knob portion on said part for engaging said foot element with a substantially point contact and being operated thereby, the other end of said part being adjustably mounted to the piano sustaining pedal without any lost motion between it and said foot element, the top of said knob being curved and being normally positioned to have the center of said curvature aligned with the pivoting axis of said swell pedal, said foot element and said part conducting movement from said foot element to said piano sustaining pedal.

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