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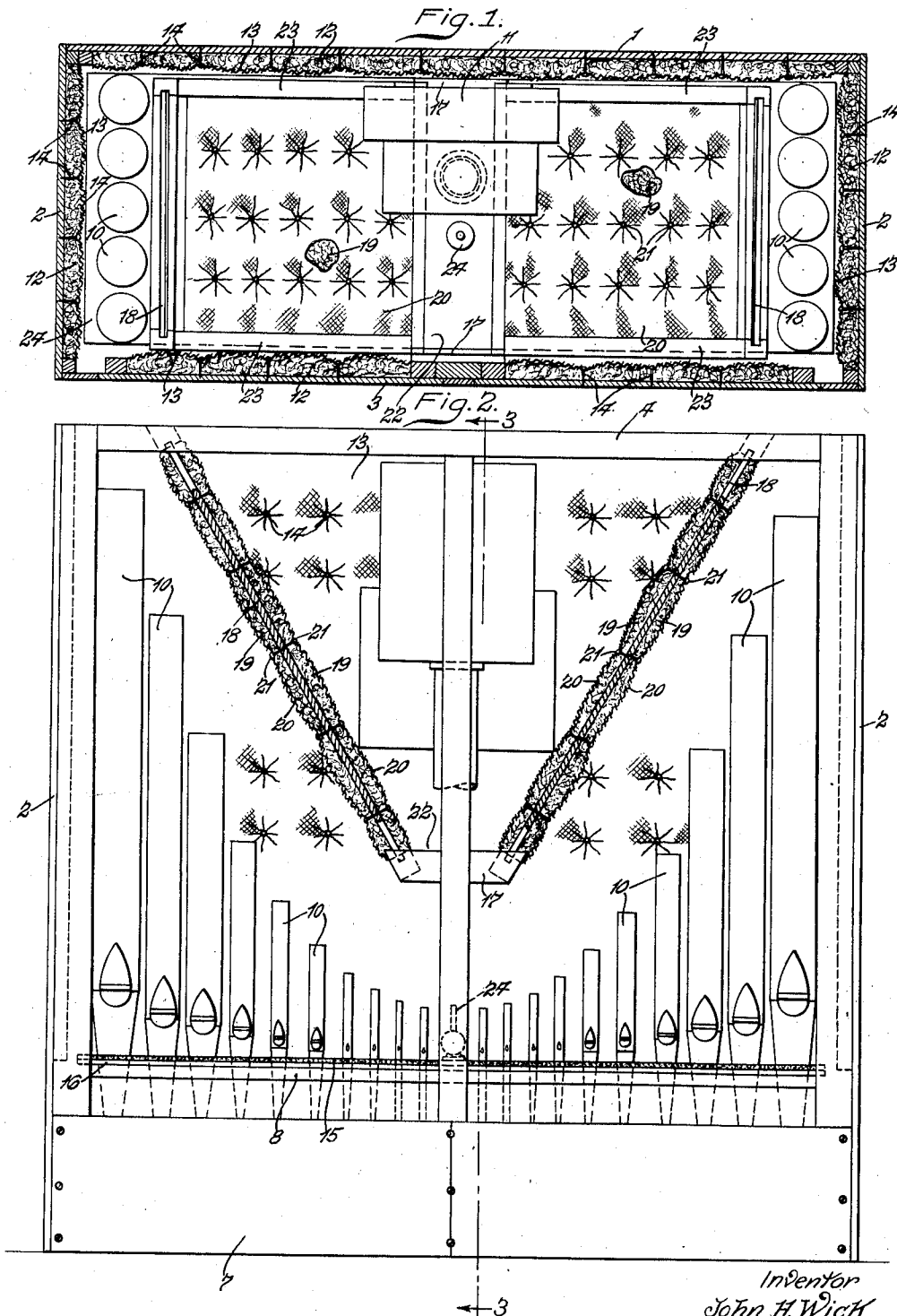
J. H. WICK

2,191,734

ORGAN

Filed March 4, 1939

2 Sheets-Sheet 1



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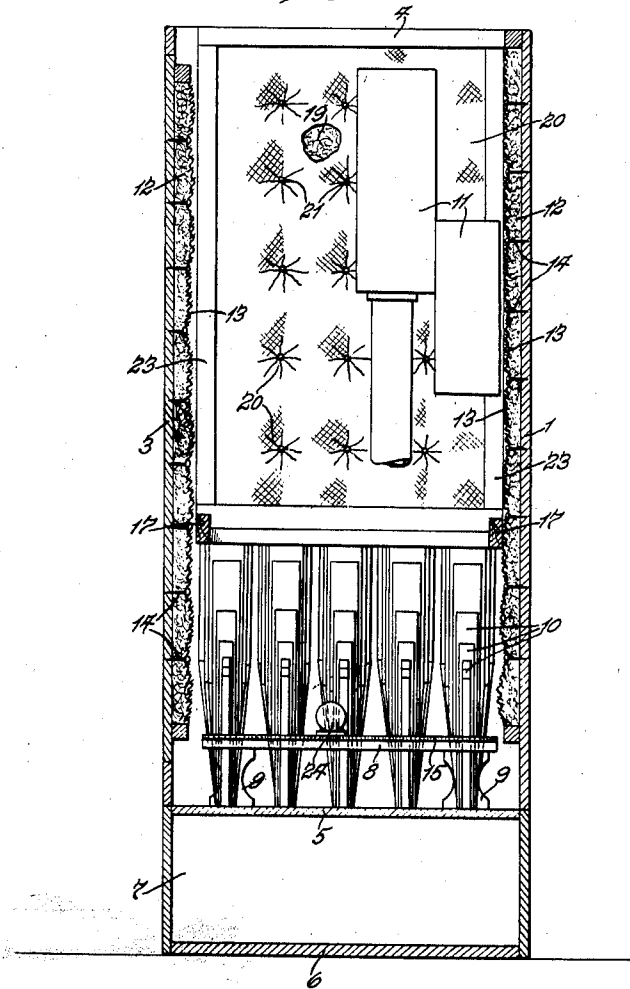
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Fig. 3.



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UNITED STATES PATENT OFFICE

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ORGAN

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Application March 4, 1939, Serial No. 259,726

9 Claims. (Cl. 84—331)

This invention relates to organs; and has special reference to pipe organs.

It is generally known that an acoustic problem must be overcome in order to obtain proper sound effects from pipe organs between the frequencies of fifty and one-hundred ninety cycles, regardless of the shape and size of the enclosures, rooms, or buildings in which the organs are located. It has been established that sounds between ± 2 db. are inaudible to most people and to the average person. The sounds produced by pipe organs have peaks and hollows which must be modulated and brought approximately to ± 2 db. in order to produce the desired melodic progression and tonality, irrespective of whether the organ music is transmitted through instruments remote from the organ, as when the entire pipe organ is located in some out-of-the-way place and only the console and the speaker are where the musical tones are to be heard; or the organ is located in the presence of the audience.

Objects of the invention are to provide an improved pipe chamber or enclosure having means therein for producing an even pick-up of tonality, approximately between thirty cycles and ten thousand cycles, thereby bringing the peaks and hollows approximately to ± 2 db.; to provide a nearly sound-proof enclosure for the pipes so that the sounds from the various pipes are modulated to nearly even relative strength and quality throughout the entire range of frequencies involved; to provide such an enclosure for the pipes that will dispense with the use of shutters or the like for effecting the different degrees of expression or power necessary for melodic tonality; to provide a novel baffle arrangement, and a microphone located and arranged in a novel cooperative relationship to the pipes and the baffles within the enclosure; to provide an enclosure having its vertical walls provided with linings of novel form and function and having a rack board covered with a pad of soft fibrous material; all of which features cooperate to prevent the development of uneven tones with undesirable peaks and hollows, and to modulate the sounds to that melodic progression and tonality necessary in perfect organ music.

Another object of the invention is to provide an improved pipe organ comprising an enclosure having the vertical walls thereof lined with soft and loose fibrous material, in combination with a pair of upwardly diverging baffles extending from front to rear of the enclosure and

composed of wall elements covered on opposite sides with soft fibrous material; all arranged in a novel cooperative relationship to a microphone supported upon the horizontal padded rack bar; so that, when the organ is played, the objections mentioned in connection with the problems herein stated are overcome and eliminated.

Other objects will appear from the following description, reference being made to the annexed drawings, in which—

Fig. 1 is a horizontal sectional view through the vertical walls forming the enclosure of my improved pipe organ.

Fig. 2 is a front view showing the front wall removed and the inclined baffles in section.

Fig. 3 is a front-to-rear vertical sectional view on the line 3—3 of Fig. 2.

The enclosure for the organ pipes may be movable as shown, and is provided with a vertical side wall 1, two vertical end walls 2, a vertical front wall which may be in the form of a door movable from closed position to open position to afford access to the inside of the enclosure, and vice versa; a top wall 4, a horizontal wall or partition 5, and a bottom wall 6 cooperating with the wall 5 and with the walls 1, 2 and 3 to form a wind chest 7. Within the enclosure the pipe rack 8 is supported above the floor or partition 5 by a series of legs 9. The numerous vertical pipes 10 extend vertically through the pipe rack 8 and open into the wind chest 7.

The special bass device 11 is located near the upper rear central portion of the enclosure in balanced complementary relationship to the two series of pipes 10 arranged in the manner shown in Fig. 2 with the smallest pipes of each series toward the center of the enclosure and the longer pipes toward the ends 2 of the enclosure.

Each of the vertical walls 1, 2 and 3 is lined with a soft and uncompressed layer 12 of cotton, a fibrous material possessing characteristics which I have found essential for the attainment of the best effects and results. The layer of cotton along each vertical wall is held in place by a light loosely woven textile fabric 13 and fasteners 14, such as small nails or brads, passing through the fabric 13 and the layer 12 of cotton and driven into the vertical walls 1, 2 and 3. These devices hold the layers of cotton spread uniformly against the walls, support the cotton permanently in proper position, and prevent the cotton from becoming disarranged. The top wall 4 is not provided with this fibrous

cotton lining, and I have determined by actual practice and tests that no such fibrous cotton lining for the top wall is necessary or needed, and that better results can be obtained without it. A layer 15 of felt, which is also a fibrous material possessing yielding and other characteristics necessary for purposes of the present invention, covers the upper surface of the rack board 8 and is provided with holes through which the pipes 10 extend. The layer 15 of felt may be secured to a section 16 of plyboard or the like to which it may be attached before the plyboard is placed upon the rack board 8.

Rigid horizontal supporting members 17 are located near the rear and front walls of the enclosure approximately midway between the end walls 2 and substantially above the subjacent pipes 10 and between the longer pipes of the two series and substantially below the bass device 11. The enclosure contains a pair of baffles each composed of a wall 18 of material so unyielding and inflexible that it will not bend under its own weight, and having attached to its upper and lower surfaces a layer 19 of soft cotton having approximately the same fibrous characteristics as the layers 12 that line the vertical walls of the enclosure. Each layer 19 of cotton is covered by a section 20 of light loosely woven textile fabric like the fabric 13, and secured to the walls 18 by nails or brads 21 passing through the fabric sections 20, the layers 19 of cotton, and into the stiff walls 18. In practice, I have found that plyboard may be used to form the walls 18.

Two baffles are provided in the enclosure and arranged so that they diverge upwardly from supporting engagement with the members 17 toward the end walls 2 to engagement with the top wall 4. This arrangement leaves the lower ends of the baffles separated by an intervening space 22, and presents padded wall surfaces toward the longer pipes 10 and toward the bass device 11. The borders of these baffles may be enclosed in frames 23 which cooperate to strengthen the baffles and to provide confining means for the edges of the layers 19 of cotton and the edges of the fabric sections 20.

A microphone 24 is located centrally within the lower portion of the enclosure upon the layer 15 of felt, and transmits the sound waves from within the enclosure to an amplifier (not shown) near the place at which the music is to be heard. This microphone is located upon the horizontal fibrous layer 15 between the vertical fibrous linings 12 and below the open space 22 between the lower ends of the baffle walls.

It will be understood that this organ is controlled by remote volume control devices for effective different degrees of expression or power. By this invention, the usual shutters for controlling expression are eliminated, the organ can be brought from the softest to any power desirable, depending upon the position of the usual swell pedal (not shown) attached to a familiar volume control device. The position of the microphone within the enclosure is an important factor; and, to produce best effects and results, the microphone must be located as shown, approximately at the lower central portion of the enclosure below the upper ends of the pipes and below the open space 22. The thickness of the fibrous cotton lining upon the walls and upon the baffles may be varied from the normal thickness of about two inches where different conditions permit. The location of the microphone

at the point indicated and the presence of the felt pad 15 eliminates undesirable resonant points in the higher frequencies.

The bass 11, sometimes referred to as "the sixteen-foot bass", in the rear upper central portion of the enclosure obtains a balance between it and the higher frequencies on the manuals, and it is necessary to locate the pipes and the baffles in the relationship thereto about as shown, in order to avoid any unevenness that would result from placing certain pipes in the way of others and preventing tones from developing properly, or preventing proper pick-up by the microphone.

Of course, the dimensions of the enclosure may be varied to suit specific requirements, in which case the dimensions of the baffles therein are changed and their locations with respect to the pipes properly determined.

By constructing and arranging the organ substantially in the manner disclosed, all of the desirable effects and results stated at the beginning of this specification are attained. The complete organ assembly, including the enclosure, may be made up at the factory and transported to the location desired, where the remaining equipment necessary, including the console and amplifiers, may be located and operatively connected with the organ as required.

The invention may be varied as widely as the scope of equivalent limits will permit without departure from the nature and principle of the appended claims.

I claim:

1. An organ comprising enclosing walls forming a compartment having two laterally disposed series of vertical pipes therein, layers of fibrous material lining the walls beyond the sides of said series of pipes, two upwardly diverging baffle walls having their lower ends separated by a space and their upper ends near the top of said compartment, layers of fibrous material covering the upper and lower surfaces of said baffle walls, a rack board near the bottom of the compartment, and a microphone mounted near the vertical axis of the compartment substantially below said space that is between the lower ends of said baffle walls.

2. An organ comprising enclosing walls forming a compartment having two laterally disposed series of vertical pipes therein, layers of fibrous material lining the walls beyond the vertical sides of said series of pipes, two upwardly diverging baffle walls supported in said compartment and having their lower ends separated by a space and their upper ends near the top of said compartment, a rack board near the bottom of the compartment through which said pipes extend, and a microphone mounted near the vertical axis of the compartment in balanced relationship to said two series of pipes and substantially below said space.

3. An organ comprising enclosing walls forming a compartment, a rack board above and near the bottom of the compartment, two laterally disposed complementary series of vertical pipes in said compartment extending downwardly through said rack board, layers of loose cotton lining said enclosing walls around the vertical sides of said series of pipes, two upwardly diverging baffle walls having their lower ends separated by a space and their upper ends near the top of the compartment and extending above the major number of the pipes of each series of pipes respectively, a layer of matted fibrous material covering the upper surface of said rack board, and

a microphone mounted near the vertical axis of the compartment substantially below said space between the lower ends of said baffle walls.

4. An organ comprising vertical top and bottom walls forming a compartment, a rack board near the bottom of said compartment, two laterally disposed complementary series of vertical pipes in said compartment extending downwardly through said rack board, two upwardly diverging baffle walls extending from front to rear in said compartment above said series of pipes respectively and having their lower ends separated by a space and their upper ends near the top of the compartment, layers of cotton covering the upper and lower surfaces of said baffle walls respectively, sheets of textile fabric covering said layers of cotton, means for supporting said sheets of fabric and said cotton in connection with said baffle walls and preventing displacement thereof, and a microphone mounted near the vertical axis of said compartment substantially below said space and spaced equidistant from the respective complementary pipes of said series of pipes.

5. An organ comprising enclosing walls forming a compartment, a rack board near the bottom of the compartment, a sheet of felt covering the upper surface of said rack board, two laterally disposed series of complementary vertical pipes in said compartment extending downwardly through said sheet and said rack board, two upwardly diverging cotton baffles having their lower ends separated by a space and their upper ends near the top of said compartment, means for supporting said cotton baffles in fixed positions within the compartment, a bass device located near the rear central portion of the compartment equidistant from said baffles and in balanced complementary relationship to said two series of pipes, and a microphone mounted near the vertical axis of the compartment substantially below said space.

6. In an organ having a rack board, two laterally disposed complementary series of vertical pipes extending downwardly through and upwardly beyond said rack board and having the pipes of each series of graduated lengths and the shorter pipes of the series toward each other, and walls forming a compartment containing said pipes and said rack board; layers of cotton lining said walls around said series of pipes, sections of textile fabric covering the inner surfaces of said layers of cotton, fasteners passing through said sections of fabric and layers of cotton and into said walls and loosely supporting said cotton and said fabric, upwardly diverging baffle

walls extending above said series of pipes respectively, a layer of cotton covering the lower sides of said baffle walls, means attached to said baffle walls supporting said layers of cotton in connection therewith and preventing displacement of said layers of cotton, and a microphone supported by said rack board below the lower ends of said baffle walls and below the planes of the upper ends of most of said pipes.

7. In an organ having a rack board, two laterally disposed complementary series of vertical pipes extending downwardly through and upwardly beyond said rack board and having the pipes of each series of graduated lengths and the shorter pipes of the series toward each other, and walls forming a compartment containing said pipes and said rack board; a layer of felt covering said rack board, upwardly diverging cotton baffle devices above said series of pipes respectively and having their lower ends separated by a space, and a microphone supported by said rack board below said space and below the planes of the upper ends of said pipes.

8. In an organ having a rack board, two laterally disposed complementary series of vertical pipes extending downwardly through and upwardly beyond said rack board and having the pipes of each series of graduated lengths and the shorter pipes of the series toward each other, and walls forming a compartment containing said pipes and said rack board; a layer of felt covering said rack board, two upwardly diverging cotton baffles above said series of pipes respectively having their lower ends separated by an intervening space, a bass device between said baffles, and a microphone supported by said layer of felt below said space near the vertical axis of the compartment.

9. In an organ having a rack board, two laterally disposed complementary series of vertical pipes extending downwardly through and upwardly beyond said rack board and having the pipes of each series of graduated lengths and the shorter pipes of the series toward each other, and walls forming a compartment containing said pipes and said rack board; two upwardly diverging baffles above said series of pipes respectively having their lower ends separated by an intervening space, a bass device between said baffles above said space, and a microphone supported by said rack board below said space and below the planes of the upper ends of said pipes near the vertical axis of the compartment.

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