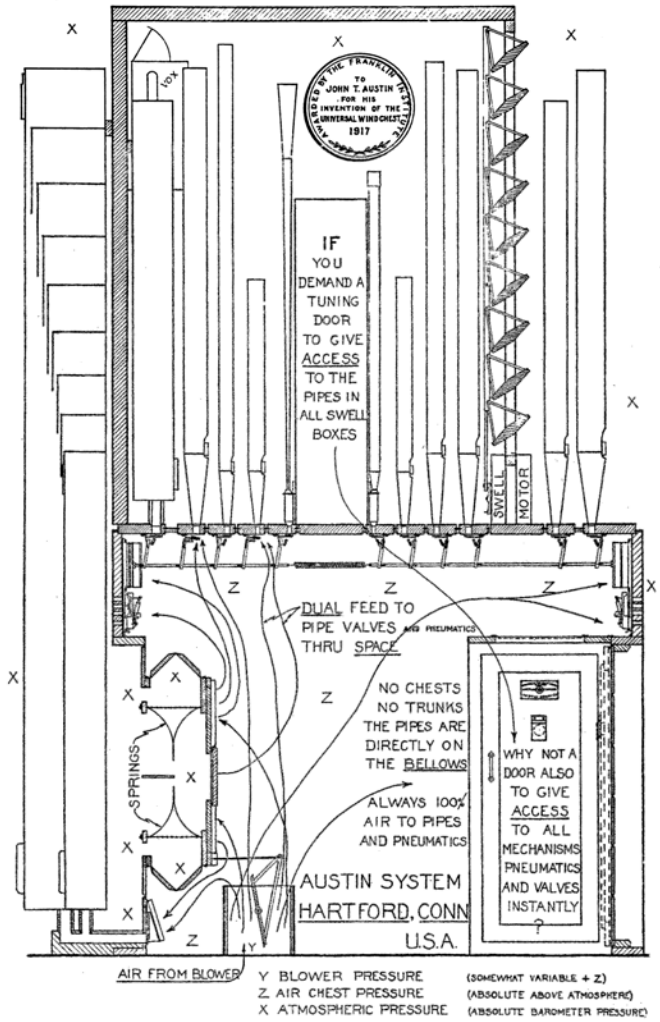
If, with the changing of fashions and ideals in tonal designs, it is ever desired to make changes, the individual bars can be removed and replaced with bars of different borings. This has often been done with older Austin's of the 'teens and 'twenties and can be a very economical way of salvaging most of the existing structure.

A fine action system, use of modern technology, craftsmanship and the best placement of the instrument are an important prelude to the organ's function as a fine musical instrument. Coupled with that are the important skills of the voicer working within the framework of intelligent tonal design to give the instrument its ultimate personality.



UNIVERSAL AIR CHEST SYSTEM
PATENTED
AUSTIN ORGANS, INC.
HARTFORD, CONN. U.S.A.
HARTFORD, CONN. USA
AUSTIN ORGANS, INC.

History Operation and Application

AUSTIN ORGANS, INC.
ORGAN ARCHITECTS AND BUILDERS
Since 1893
www.austinorgans.com
(860) 522-8293

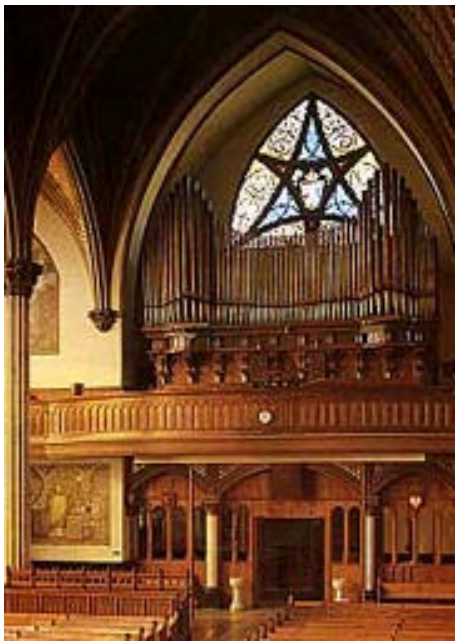
The Universal Airchest

The pipe organ is one of the oldest musical instruments, having been mentioned in manuscripts dating from well before 200 B.C. Organ building is one of the world's ancient crafts. Thus, the organ has a long history during which a great many developments have taken place. The best of these have been retained and have become part of the tradition.

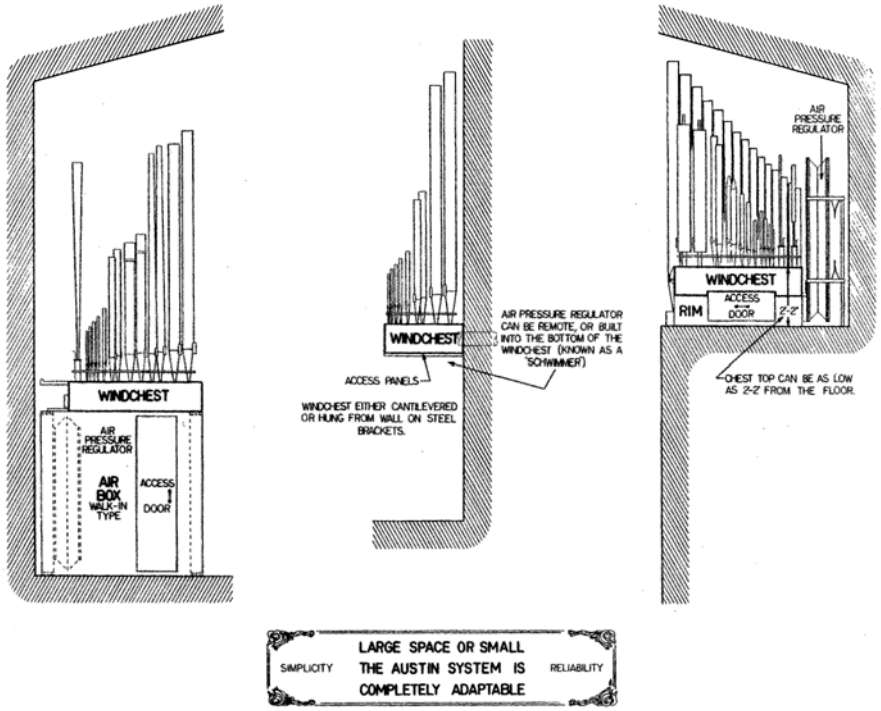
Periodically a builder of particular genius has come to the fore and made an outstanding contribution. Such a man was John Turnell Austin, founder of this company which still carries the family name.

Born in England, son of an inventive gentleman farmer who had built several pipe organs as a hobby, John T. Austin came to America, where he was employed by the Detroit firm of Clough & Warren, in whose shops the first organs were built under Austin patents in 1893.

His Opus 2 (1893) at Sweetest Heart of Mary in Detroit is still in regular use. Opus 22, built in 1898, brought him to Hartford where he finally settled. Austin organs have been built on Woodland Street ever since.



Based on simple concepts, the Austin windchest action is unique in the industry. Essentially mechanical, the chest action is lightweight, strong, extremely durable and very accessible. While it has been well proven in over 100 years of use, the company, nevertheless, carries on a continuing program of research and development.



The entire Austin structure is engineered to permit these changes without stress. Thus, humidifiers or dehumidifiers are NEVER needed in an Austin organ. This question has plagued many other action designs.

Such a system is obviously very flexible. In the layout of the instrument, first consideration is given to the best possible tonal egress, with the function of each division very much in mind. The adaptability of the system is a tremendous help in this regard, and the inherent accessibility of this type of action will often permit us to install more organ in a given space (when desirable) than can be achieved with other forms of action. Ready access for any future tuning and maintenance is a foregone conclusion with Austin designing.

Windchests are now made in six different standard lengths, 12'-0", 10'-6", 9'-5", 8'-6", 7'-9",and 6'-10", allowing further flexibility in layout. Chests may be chromatic, M style or A style, as the situation warrants. Up to ten stops are placed on one chest. With more than ten stops, two or more chests are used for each division.

The power pneumatics are made in standard sizes, depending upon the size of related valves, and are quickly interchangeable, if needed, by the removal of three screws and two soldered wire connections.

Modern technology has made possible many improvements through Austin's continuing research program. Armatures and magnet cores are now made of special alloys for efficient reaction to magnetic field, resistance to residual magnetism, and resistance to corrosion.

The entire chest mechanism is near the chest top and the chests themselves are completely open to the bottom. The entire mechanism in the chest is thus visible and accessible from the air chamber below or through large access panels on the underside.

When the chest must be placed high, at the level of a case sill, for example, the Austin windchests are sometimes placed on a room that is full of air called an "airbox", one wall of which is simply made moveable. Supplied with springs and connected to the intake valve, it serves as both pressure regulator and reservoir. Use of an "airbox" also permits easy servicing with the wind on. With less height available, the chest is placed on a low rim, which has easy crawl-in access. Adjustments can normally be made from inside with the wind on and the chest operating.

Chest tops can be as low as 26" off the floor (See drawing, opposite)

Use of an airbox or rim also permits the easiest possible winding of any offset pipes, with their actions attached directly to the inside of the airbox or rim.

The chest can also be placed on legs or brackets, and provided with panels (either solid or glass) on the underside which can simply be lifted out for any servicing.

While the pipe bars form the top of the chest, the spaces between the pipe bars are sealed with airtight strips of flexible material, thereby permitting the lumber to expand or contract with seasonal changes without affecting air tightness.

How the Austin Airchest Came to be Developed

In any standard pipe organ windchest, the pipes of the different stops are arranged on top of the windchest in rows, from large bass pipes to small treble pipes, each row of pipes typically representing a different tone color. There is a small hole in the top of the windchest under each pipe, and a valve under each hole.

The keyboard console controls valves which run across the windchest under the pipes, each key controlling all the corresponding valves for its note of the keyboard (Middle C, for example), of every stop.

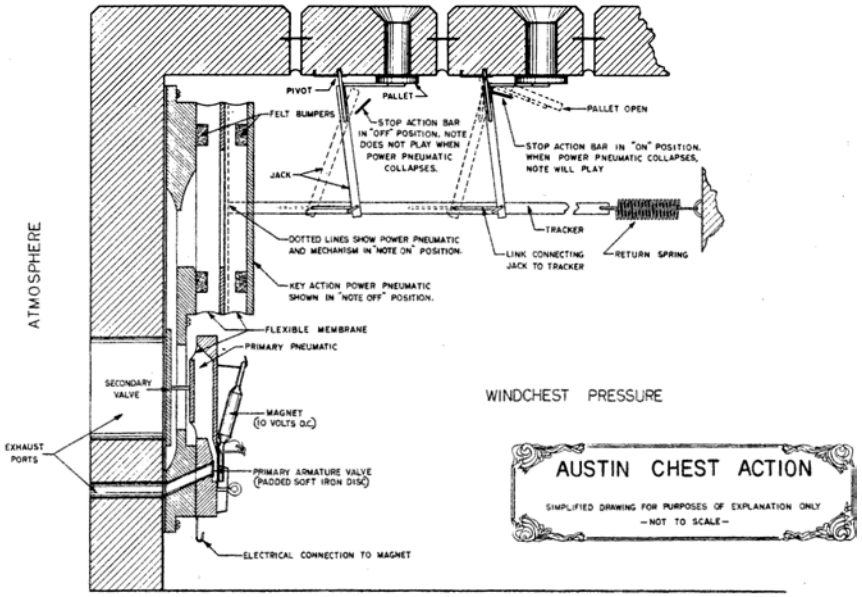
The stop controls are normally at one end of the chest controlling each full rank or row of pipes from bass to treble of a particular tone color making it ready to play or be silent (thus forming a matrix). In most windchests, this is channeled through masses of swelling and shrinking lumber.

It was this fact and the frustrating inaccessibility for servicing that led John T. Austin to develop the Austin Universal Windchest. From 1893 to the present day, it remains unsurpassed in efficient installation, trouble-free service and when the eventual renovation is necessary, it is accomplished with relative ease.

A study of the drawing on the next page will readily explain the operation of this simple, durable windchest.

How the Austin Airchest Operates

The heavy planks at the top of the chest are called **pipe bars**, and each is bored with a row of holes for a set of pipes. Each pipe has its own valve, connecting it directly to the universal airchest supply beneath it. Lightweight wooden trackers run across the windchest, connected to all of the valves of a given note (again, middle C, for example.) Stop actions (pivoted metal bars), run at right angles, lengthwise under each stop to turn it “on” or “off”.



When the playing of a note exhausts the power pneumatic, allowing it to collapse, the tracker moves to the left. If the stop action is off, the jack simply pivots on the valve wire, and the valve does not open. When the stop action is on, however, the stop action bar acts as a fulcrum for the jack, and the valve is pulled open. Since the pallets of a given note are all connected to the same tracker, they all open in unison when their stop actions are on. A small spring on each pallet insures its rapid closing when the note is released. The entire action is instantaneous in operation. **It is an extremely simple, lightweight mechanical system**. With a very light load on any individual part, the mechanism seems to last indefinitely.

The pipe bars are made of select poplar, which has no corrosive effect whatsoever on the metal pipe feet (such as some laminated pipe toeboards by other builders do.) The thick bars with generous borings yield expansion and a turbulence-free breath of air to the pipework, encouraging natural development of speech.

Also, it should be pointed out that there is only one pneumatic unit for each note, not one for each pipe. A little arithmetic will show the dramatic difference between The Austin Windchest and ordinary chest construction, in the number of pneumatics involved.

The power pneumatics and the stop actions operate in a manner common to any electro-pneumatic system. The small, low voltage electromagnet, operated by direct current from the console key action, raises a small steel disc, which functions as a small electric valve. This lets air exhaust from the primary pneumatic and windchest pressure causes it to collapse. In collapsing, it pulls over a large valve, letting the power pneumatic collapse. When the electric current is stopped, the valves return to their "at rest" position, allowing the pneumatics to refill.

With use of electricity to operate the primaries of the action, only a low voltage cable is needed between console and organ. The flexibility of the electrical connection permits placement of the console where the organist can hear both the organ and choir in balance.

The Austin magnets, of high resistance and drawing very little current for long contact life, are controlled by a 12-volt D.C. current from the silver contacts in the organ console. The magnets are wound on special high-speed arbors. Bending of the magnet into a horseshoe shape gives a much greater concentration of Magnetic flux where it is needed. With the Austin system, the magnet presents its flat side toward the steel armature, giving even greater force, allowing exhaust ports to be larger. Three smaller holes are used rather than one large hole, exposing greater periphery and permitting larger and quicker exhaust with less armature motion. The armature seats are molded with smooth, rounded exhaust ports for rapid air flow.