A Look Inside
Fisk Opus #134

Covenant Presbyterian Chuch
Nashville, Tennessee

Soaring nearly fifty feet *above the top choral riser, the red-oak case of the Fisk Sanctuary Pipe Organ provides an impressive backdrop for worship at Covenant. However, the façade's burnished tin and hammered pipes only hint at the complexity and size of the full instrument. Less than two percent of the organ's pipes can be seen from the sanctuary, and the keydesk's array of stopknobs and controls are only a small part of the organ's mechanical control system.*

Born of a relatively simple concept (after all, the largest differences between a single organ pipe and a tin whistle are simply size and sophistication), a full pipe organ is the most complex musical instrument ever created. Here's a look at a few of the key components of Covenant's organ:

1 ***Keydesk:*** *The keydesk contains the four keyboards used to play the organ. The three played by the hands are called manuals (61 keys each), while the one played by the feet is the pedal (32 keys). Each keyboard controls a separate group of pipes within the organ, known as a division. The divisions in Covenant's organ are the Great, Swell, Positive, & Pedal.*

Each pipe in the organ can only make one sound, on only one pitch. Therefore for every type of sound that the organ can play, there is at least one pipe for every key. Together, a set of pipes that create a sound throughout a keyboard's range is known as a stop. Knobs on each side of the manuals control which stops are played when a key is pressed. Additional computerized controls operate preset combinations of stops.

2 ***Organ Case:*** *Crafted of red-oak, the organ case acts as a type of orchestral shell for the organ's pipes, simultaneously concealing mechanical parts and acoustically projecting the sound of the pipes into the nave. Internally, the case is divided into four levels, essentially creating a small four-story building towering over the chancel.*

3 ***Support Steel:*** *The wood of the organ case is supported by a framework of structural steel. This steel frame also supports the walkways and equipment inside the organ.*

4 ***Great Division Façade Pipes:*** *The 31 large burnished tin pipes are drawn from the Great Division's principal ranks (8', 16', and 32' pedal extension). The Great Division provides the main sound for the organ, sized to fill the nave with sound and support congregational singing.*

5 ***Great Division Pipes:*** *With only 31 pipes of the Great displayed on the façade, another 1,089 pipes are found in ranks immediately behind them (for clarity, only a small portion of them are shown in the diagram!). The pipes are made with in various sizes, shapes, and materials (mostly lead/tin alloys for metal pipes, and poplar for wooden ones) to create a variety of musical tone colors.*

6 ***Positive Division Façade Pipes:*** *The pipes of the Positive are located directly over the keydesk, close to the choir, which supports the Positive's role as an accompanimental division. These pipes are hammered lead, and so have a very different tone than the burnished tin of the pipes of the Great above. The main chorus of the Positive is an octave higher, and more gently voiced, than the chorus of the Great. Similarly, most of the other stops of this division are softer in order to support ensemble singing. (An exception to this is the Tuba Mirabilis, which is the most powerful treble stop in the organ, and has been positioned in the Positive so that can clearly call down the nave in festival music.)*

7 ***Positive Division Enclosure Box:*** *Since the volume of an individual pipe cannot be controlled by the organist, the pipes of the Positive (except those on the façade) are grouped together in a thick-walled wooden box. The front of the box is then equipped with vertical wooden louvers, which can be opened and closed by the organist using a foot pedal. As the louvers open or close, the apparent volume of the pipes changes in the sanctuary (889 of the organ's 3,394 pipes are contained within this enclosure).*

8 ***Swell Division Enclosure Box:*** *Unlike the other two manual divisions, the swell division has no pipes visible on the façade, and is entirely contained within an enclosure box. The Swell features stops that provide contrast and tonal color with combined with the sounds of the other divisions, and the enclosure box allows dynamic contrast in addition to tonal contrast. Like the Positive, the Swell box has wooden louvers that can be opened and closed to allow crescendos and decrescendos in the music. (1,084 of the organ's 3,394 pipes are contained within this enclosure).*

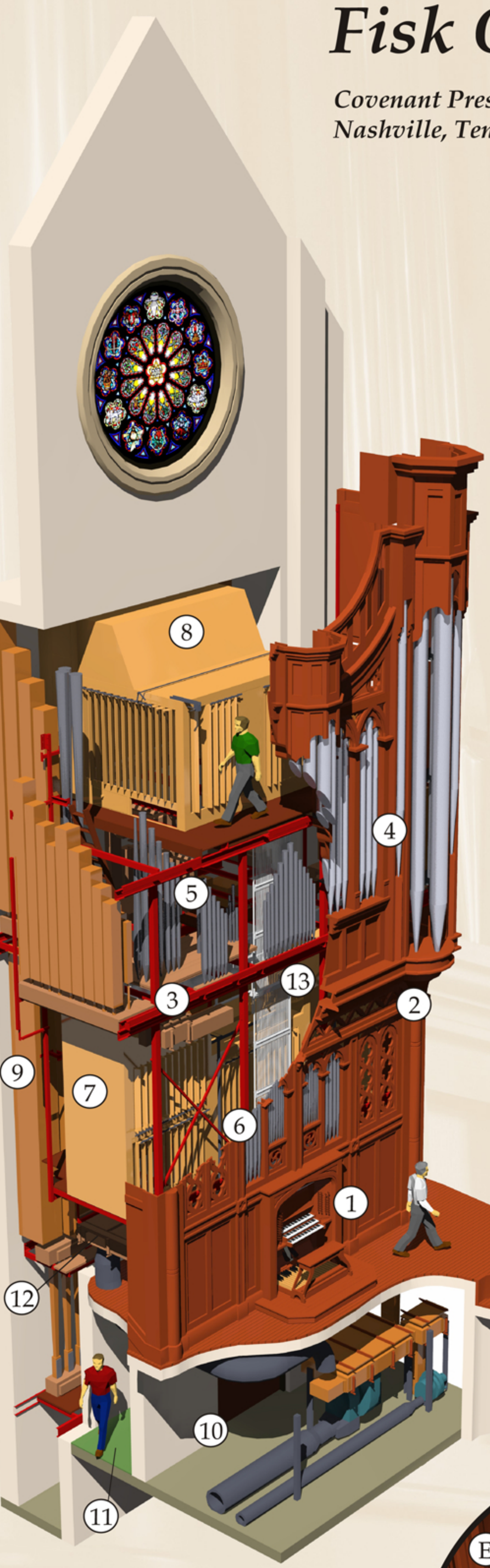
9 ***Pedal Division:*** *The Pedal division contains the largest pipes of the organ, which create the deepest pitches. The very lowest of these notes consist of vibrations nearly below the human ability to hear musical pitch. Instead, they create a profound vibration that can be felt as much as heard, and dramatically reinforce the sounds of the chords above. These large pipes (the longest is 32 feet, while the largest is about 24 inches square) wrap around three sides of the organ. An alcove beyond the chancel wall provides additional space. The bottom of some of the largest pipes (the 32' Contra-Bombarde) extend below the floor.*

10 ***Blower Motor Room:*** *Located below the choir risers, two blowers provide air to the pipes above.*

11 ***Ambulatory:*** *The ambulatory corridor behind the chancel steps down under the organ, and provides access to both the blower motor room and the base of the 32' reed pipes.*

12 ***Wind Ducts and Reservoirs:*** *Air from the blower motors is distributed via regulating reservoirs to pipe chests at the base of the pipes. The organ is equipped with a system that either provides slightly changing wind pressure to simulate hand-pumped bellows for older music, or constant wind for romantic and modern pieces.*

13 ***Tracker Key Action:*** *The keys of the organ are mechanically connected to a series of thin carbon-fiber elements called trackers. These trackers move when a key is pressed, and through a series of mechanical devices allow air into key channels below the pipes. This traditional method of mechanical connection allows the organist subtle control of the attack and release of each note played.*



Metal Flue Pipe

Wooden Flue Pipe

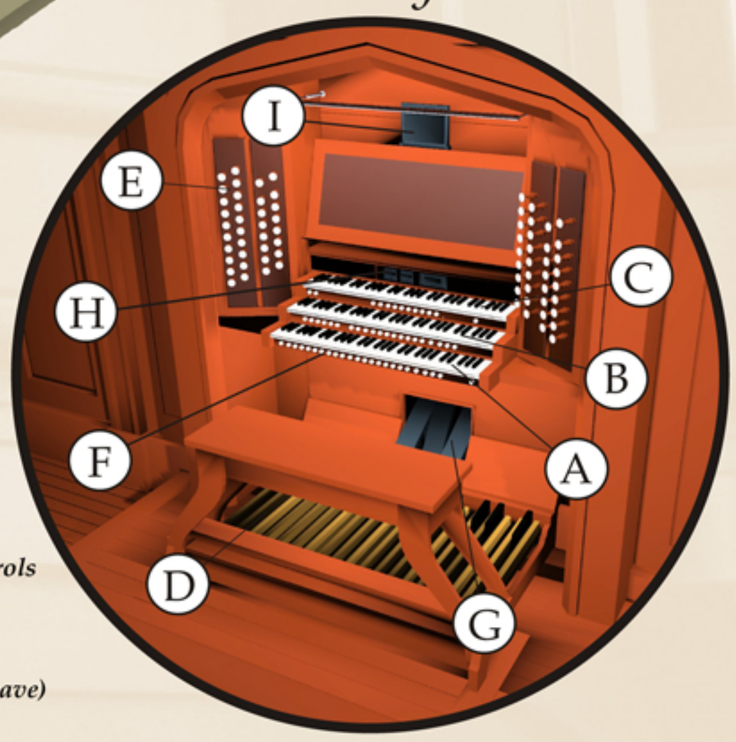
Reed Pipe

Organ pipes *can be grouped into two major families based on how they create their sound.*

Flue pipes *work much like a recorder or whistle, and do not have any moving parts. Air from the blower enters the base of the pipe, and is forced through narrow gap just below the pipe's mouth. A sheet of air is created across the mouth and upper lip of the pipe, vibrating the air inside the pipe to create sound. The length of the pipe then determines the pitch of the sound. Flue pipes can be made of metal or wood, and different shapes create different qualities of tone.*

Reed pipes *create their sound by a moving reed, somewhat similar to an orchestral clarinet. Air in the base of the pipe moves across a brass reed, causing it to vibrate. This vibration creates sound, which is then shaped in a pipe-like extension called a resonator. Resonators are also made of either wood or metal in a wide variety of shapes to create different tones.*

Keydesk Detail



A *Great Division Manual*

B *Positive Division Manual*

C *Swell Division Manual*

D *Pedalboard*

E *Stop Drawknobs*

F *Combination Pistons (control multiple stops)*

G *Expression and Crescendo Pedals*

H *Computer/Memory Controls*

I *Closed Circuit TV (to view conductor and nave)*