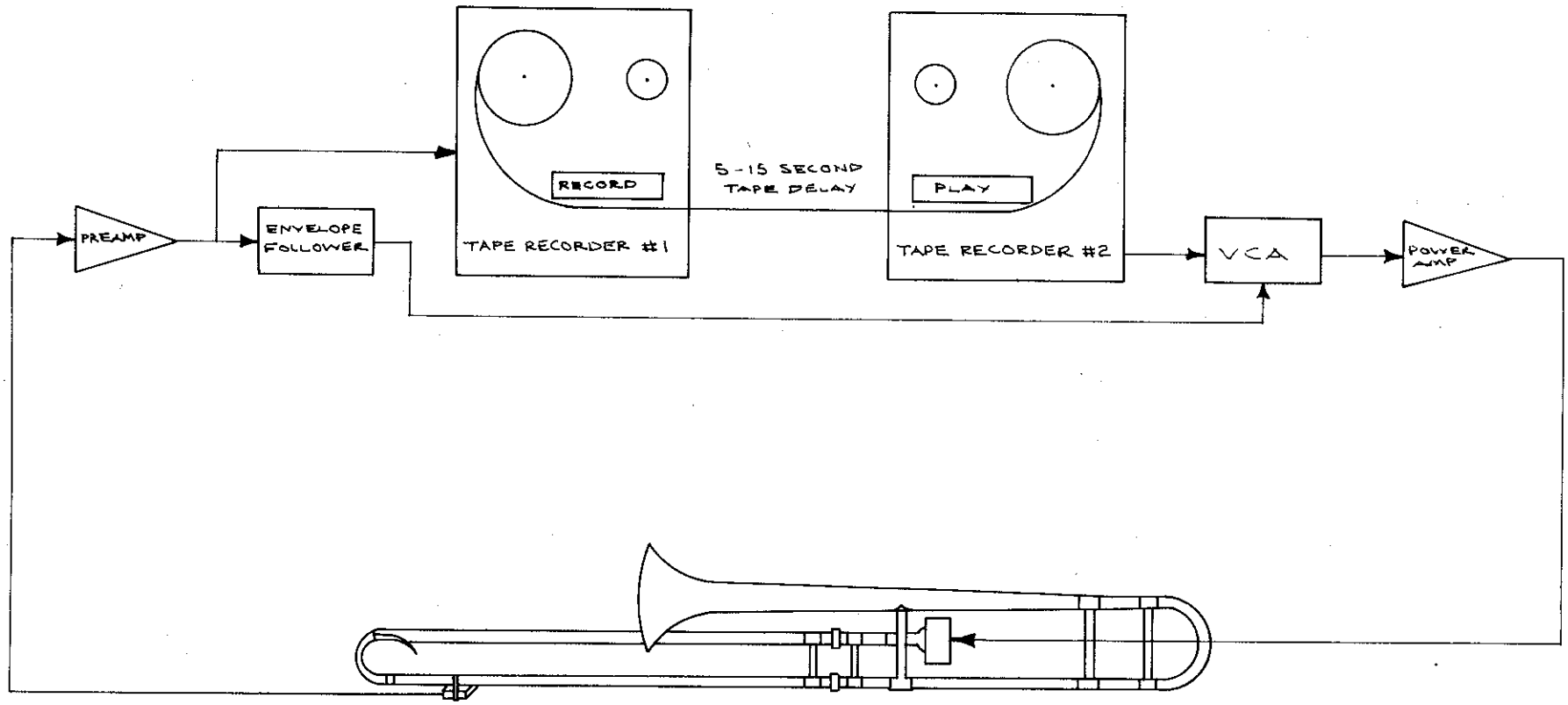
$12.00 OLD


PREAMP
ENVELOPE FOLLOWER
RECORD
TAPE RECORDER #1
5-15 SECOND TAPE DELAY
PLAY
TAPE RECORDER #2
VCA
POWER AMP
PHONO CARTRIDGE TAPED TO SLIDE
P.A. HORN DRIVER ATTACHED TO MOUTHPIECE

$12.00 OLD

for trombone and electronics

Preparation

Place a 5'-6' long table in the center of the performance space with its long side to the audience. Assemble on it the configuration of electronic components shown in the illustration. Put one Tape Recorder at either end of the table with its front facing the audience. Thread a reel of blank tape from Tape Recorder #1 to Tape Recorder #2. Place a chair a few feet in front of one corner of the table. Lay the trombone on the chair.

The Phono Cartridge picks up both the sound of the movement of the slide on which it is mounted and any sounds emanating from the Horn-Driver. The output of the Cartridge is preamplified and recorded on Tape Recorder #1; the Envelope Follower derives a control voltage that is proportional to the amplitude of this signal. The recorded signal is played back by Tape Recorder #2 after a 5-15 second delay. The output of Recorder #2 passes through the Voltage-Controlled Amplifier to the Power Amplifier and Driver only if the VCA is being held open by a positive control voltage from the Envelope Follower.

Initially the delayed sound of one movement of the slide is driven through the instrument only if at the moment that it is being played back by Recorder #2 the performer is moving the slide again, and thereby is

opening the VCA. The driven delayed signal is filtered by the trombone and projected to the audience. It is also picked up through the wall of the instrument by the Cartridge and re-recorded, along with the sounds of the movement used to gate it, on Recorder #1. Since the Envelope Follower extracts a control voltage from the "recycled" signal as well as from the actual slide-strokes, once the second movement of the slide has opened the VCA the delayed sound tends to keep it open for the remainder of its playback.

If the slide-strokes are short, intermittent and out of phase with the delay, this secondary control of the VCA simply extends the on-time of each event slightly by adding a slight breathing at the end. If the strokes are short and intermittent but in-phase with the delay and each other, the effect is more noticeable: with each recycling the initial sound is drawn out further and becomes more resonant -- the frequencies of the resonance being a function of the position of the slide. If the slide is moved continuously long enough to fill the delay and open the VCA for playback, the delayed sounds will keep the VCA open (whether or not the slide is still being moved), will recycle repeatedly, and as before will be filtered and resonated according to the position of the slide.

Tune the system so that it behaves as described

above, with the Power Amp driving the horn over the same dynamic range as an acoustic trombone.

Performance

Enter the performance space and walk to the table. Start the tape delay. Walk to the chair, pick up the trombone, and seat yourself facing the audience at a slight angle. Rest the trombone on your shoulder with the Driver in front of your mouth, as though you were going to play it "normally."

Begin by moving the slide in a short (<2"), fast, two-cycle stroke -- in-out or out-in. Repeat this pattern at regular intervals, as accurately as possible, and centered about the same position each time; the length of the interval separating repetitions should be less than 1/2 of the delay time. Soon you will begin to rearticulate the delayed signals. Maintain the same tempo of repetition while the sounds fragment and recycle -- do not attempt to move into phase with the delay. Continue the repetition until you feel a need to change the pattern, at which point you may do so in one of five ways:

1) extend the distance covered by the in- and/or out-stroke;

2) add an additional stroke to the pattern (so that a two-cycle pattern would become a three-cycle one);

3) move the center position of your pattern to a different point along the throw of the slide;

4) increase or decrease the repetition rate by a slight amount;

5) stop, wait for the delay to clear out, then begin anew.

Having made the change, sustain the new pattern until you feel the need to change again; do so, in any one of the five ways. Repeat this process several times. Try each of the five at least once. Then gradually shrink the interval separating the repetitions of the patterns -- by extending the throw, adding strokes, or increasing the tempo -- until the delay is filled and self-sustaining.

Stop the pattern and move the slide all the way in. Then move the slide outward as slowly as possible; you may do so without touching it by tilting the bell of the trombone slightly downward and allowing the force of gravity and the vibration of the sound to pull and push the slide along. When it reaches the end, pull it off of the horn. The sound should stop.

Stand up. Place the horn on the chair. Walk to the table and shut off the tape delay.

Further Suggestions

A short section of wide rubber tubing, or a large crutch tip with a hole cut for the stem of the mouthpiece, can be used to couple the Driver to the mouthpiece. The connection can be strengthened with a pair of adjustable hose-clamps.

If you use an integrated amplifier to power the Driver, you may adjust the tone controls to strengthen the bass response of the instrument.

April-May 1976
Notation: August 1976