

MICROPHONE HAT -- hands-free recording

by **Thinkenstein** on August 19, 2009

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intro: MICROPHONE HAT -- hands-free recording

Digital dictation recorders are fairly cheap. They have lousy speakers, but very good microphones and can download their files to a computer for editing.

I have an interest in music and recording. I want to develop my voice and also record the instrumental music I make. In order to record the scat singing I do sometimes, I wanted a portable microphone, so that I can do other things while I sing.

At first I thought of wearing the recorder around my neck, like a necklace. Movement of the dangling microphone would bring it into contact with my chest and clothing; thus creating unwanted noise. About the only place to wear it that wouldn't have that problem was on top of my head.



step 1: Safety

We love plastics for what they do for us, but plastic manufacture and decay tend to pollute the environment and negatively affect our health.

Vinyl Chloride, one of the components of PVC, is carcinogenic. When it is locked up in the polymer, however, it is much safer to be around. In my years of experience working with PVC, I have not noticed any adverse effects on my health from being around it.

Always work in areas with good ventilation. If you do get caught in a cloud of smoke, hold your breath and move to clean air.

When heating PVC with a gas stove or propane torch, try not to let it burn. Smoke from burning PVC is bad. With experience one burns it less and less. Don't panic the first time you do burn some. It scorches, but doesn't immediately burst into flame. Move the material away from the flame and try again. Don't breathe the smoke. Smoke avoidance comes naturally for most people.

While heating PVC over a gas flame, keep the plastic an appropriate distance from the flame to avoid scorching the surface before the inside can warm up. It takes time for heat to travel to the center of the material being heated.

Keep the plastic moving, and keep an eye on the state of the plastic. When heated, the PVC material is flexible, like leather. Beyond this stage, you risk scorching it.

A word from James, the plastic engineer -- "Just a word of warning, PVC can handle some high heats but if it catches fire, you wont be able to put it out, it does not need oxygen to burn so don't do this inside".

I do work inside, but my house is made of cement and has good ventilation. MAKE SURE THAT YOU HAVE GOOD VENTILATION. PLAY WITH FIRE -- CAREFULLY.



step 2: Layout

I started out with a scrap piece of square PVC rain gutter material. I planned to somehow mount the dictation recorder to the flat surface and make the bottom contour itself to my head.

I decided to fold up tabs at either end, which would prevent the recorder from moving lengthwise. The tabs could be used to hold it all down with a rubber band.

I had already modified some of the molded clear plastic packaging material that the recorder came in. I made it so that I could hang it around my neck. I kept the record button pushed by means of a sliding nut on a stick held down by a rubber band.

At this point, I was still trying to keep all of my options open, so the necklace string is still attached. Later, I cut it off and replaced it with a short loop of string, for hanging the microphone overhead.



Image Notes

1. A sliding nut on a stick, held down by rubber bands, can be positioned to hold the record button down.
2. This rubber band helps hold the recorder in the molded plastic cradle. The cradle was cut from the same packaging material the recorder came in.
3. Strings attached to the clear plastic cradle allowed it to be hung around my neck like a necklace.

step 3: First Cuts

Here the tabs that were laid out in pencil have been cut. The tabs were heated with a propane torch and bend up to hold the recorder. Sharp corners were cut off with snips and were later filed round. A scraping tool is useful for smoothing edges.

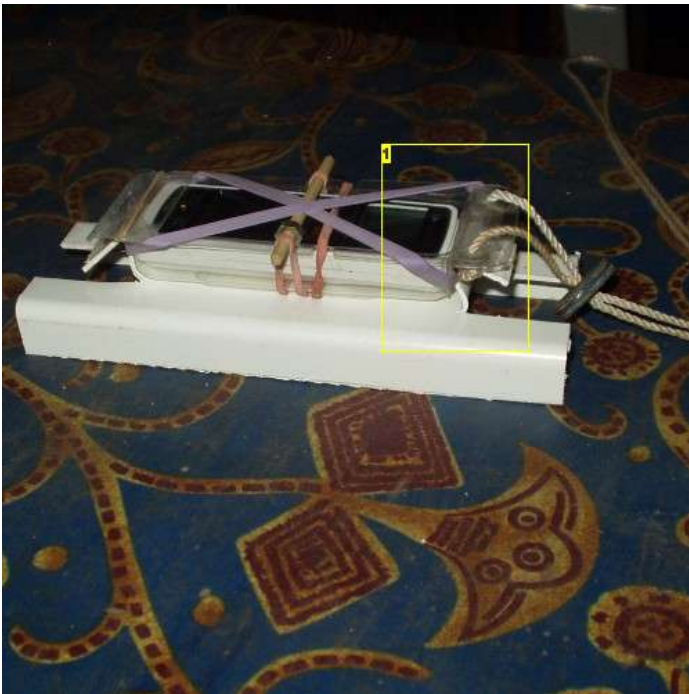


Image Notes

1. With the tabs folded up, the purple rubber band holds the microphone securely. Make sure the rubber band is in good condition. If it breaks, the microphone could fall off.

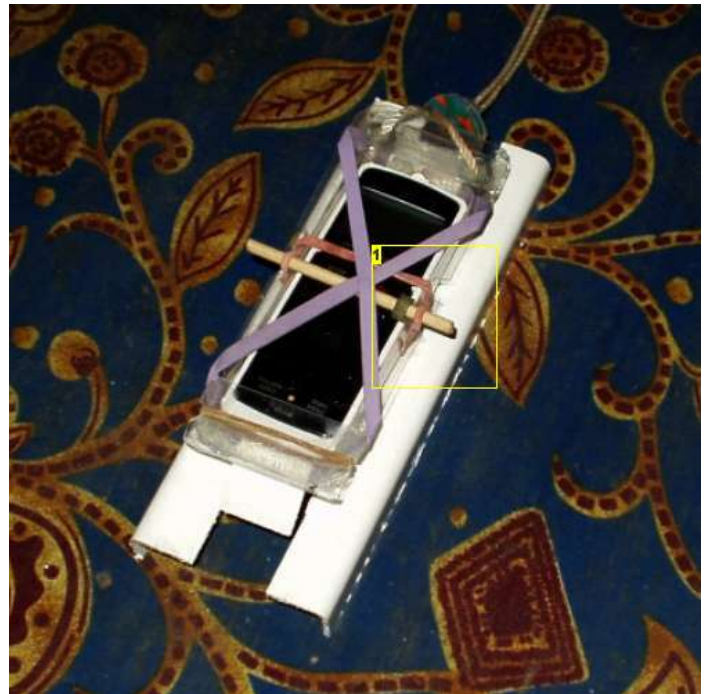


Image Notes

1. The sliding nut still can move over the record button. The purple rubber band adds additional downward pressure to keep the record button down.

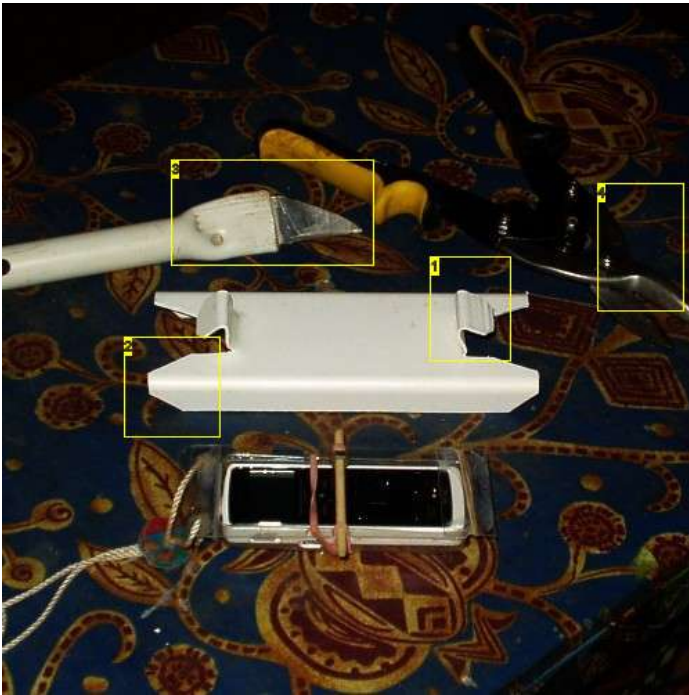


Image Notes

1. Tabs folded up.
2. Sharp corners starting to get rounded.
3. A scraping tool made from a broken knife blade in a PVC handle. Sometimes scrapers smooth edges better than files.
4. Universal snips cut PVC easily.

step 4: Heat Forming

If you are sensitive to the material, you can heat form it without burning it. I heated both sides of the plastic with a propane torch flame. The heat has to reach the center in order to achieve flexibility. That takes time. Impatience sometimes results in burned plastic.

You want the head piece to fit comfortably on your head. The contact surface is spread out by heat forming the plastic to take the contours of the head.

In this step, I heated the sides of the piece that made contact with my head and pressed them down over my hat. The hat protected my scalp from the hot plastic. When the plastic cooled, it hardened up again.

When the plastic was formed, I drilled four holes for passing the nylon string through that serves as a chin strap.



Image Notes

1. This area, on both sides, was heated with a propane torch to soften it and then forced onto my head. Spreading the contact surface out make it more comfortable

<http://www.instructables.com/id/MICROPHONE-HAT-hands-free-recording/>

to wear.

2. Hole drilled for string.

3. The end of the nylon string was "cut" with a match flame. Pulling it while it melted created a pointy end. The point helps it pass through the toggle's hole.

step 5: The Chin Strap

The chin strap is actually a double chin strap. The four strings that come down are actually two loops. They pass through the toggle (the sliding spring-loaded clamp under the chin that holds the strings firmly). So that the loops don't accidentally pull back through the toggle, I ran the string through some silicone rubber and cloth "beads". It would be simpler to just have four independent strings coming down, passing through the toggle, and ending in a knot. I may modify that later.

To keep nylon string from fraying after you cut it, use a match flame. The fused ends of the string don't fray. They can even be shaped a little while the plastic is still soft, but be careful not to burn your fingers.

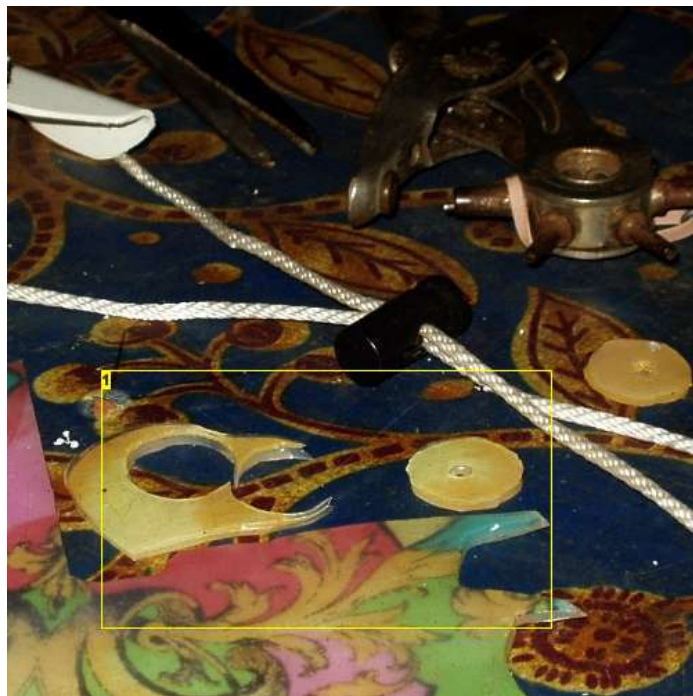


Image Notes

1. I make silicone rubber and cloth material on a non-stick polyethylene (trash bag) surface. I use a palette knife to spread the clear silicone.



Image Notes

1. Silicone rubber impregnated cloth makes a sliding "bead".

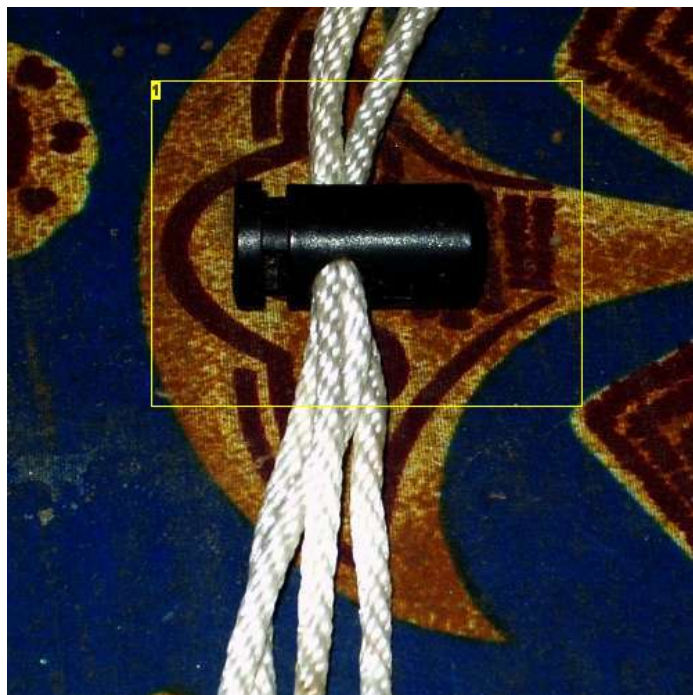


Image Notes

1. The toggle holds four strings at once.

2. The ends of the string go back through the toggle and up to the PVC recorder mount. The toggle holds the four strings at once.



Image Notes

1. Two knots keep the string in place. This is how I attached the center of the long string to one end of the PVC unit. The strap strings are actually one long string.

step 6: Don't Block the Microphone Hole

The digital recorder has a hole where the microphone is. You don't want the hole to be blocked or sound quality will be affected.

One of the tabs that was bend up to hold the recorder was blocking the microphone hole, so I drilled a hole in the tab.

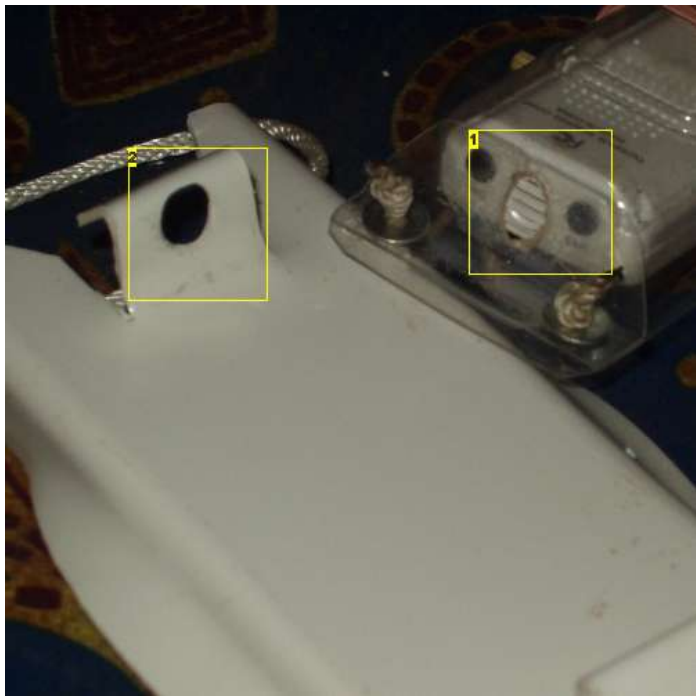


Image Notes

1. Microphone hole in the dictation recorder.
2. This hole in the tab lines up with the microphone hole.

step 7: Put It Together and What Have You Got?

This is the finished equipment. One sets the sliding nut over the record button first. That turns on the record function. Then, the unit is placed on the head and the chin straps are tightened.

The double chin straps hold the unit securely in place. It is light weight and not uncomfortable to wear.

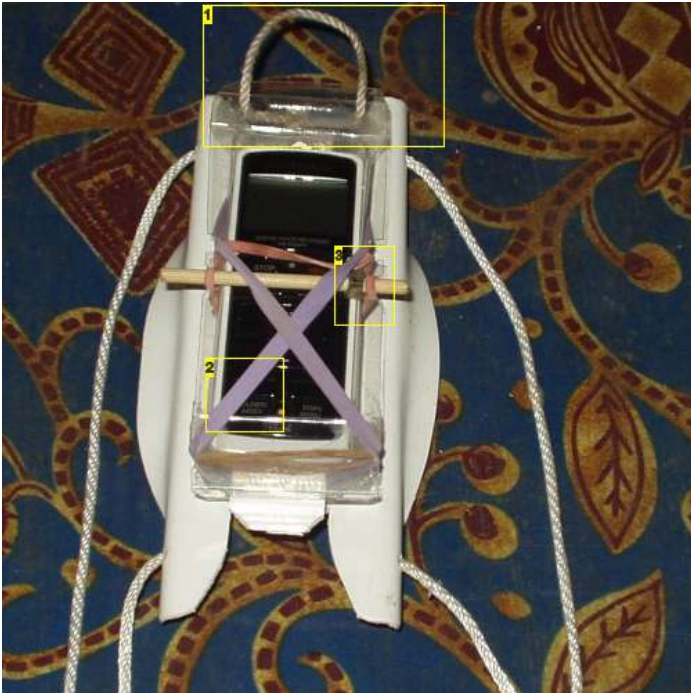


Image Notes

1. The necklace string has been replaced with a short string loop that lets me hang the microphone from the ceiling.
2. The rubber band can be placed in various positions that will still hold the recorder firmly.
3. The sliding nut still works when you move the nut to the left for holding down the record button. In this position, it does not rest on the record button.

step 8: Sample Recordings

There is the speaking voice and there is the singing voice. Click on the sample files and you should be able to download an audio recording of me sounding like an idiot in both categories.

At least the Microphone Hat was a success!



File Downloads



09-8-18 - SUNG NONSENSE.mp3 (1 MB)

[NOTE: When saving, if you see .tmp as the file ext, rename it to '09-8-18 - SUNG NONSENSE.mp3']



09-8-18 - SPOKEN NONSENSE.mp3 (473 KB)

[NOTE: When saving, if you see .tmp as the file ext, rename it to '09-8-18 - SPOKEN NONSENSE.mp3']

Related Instructables



format old school records to mp3 by slimguy379



Get Songs off the 'Net by modio



How to Legally "Download" Music for Free (Mac) by scikidus



Automated Answering System v1.0 by randofo



Speaker - Mircophone Recorder by barri_kid



PVC Recorder by howtern



Recording and Mastering a Demo at home:basics by Salyan



Dollar Store Parabolic Mic by jurtle

Comments

6 comments

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ry25920 says:

I hate to say it, but it's called a headset/ clip microphone... But you know what?? That's the glory of it, why do it when you can over do it. Nice job 4 stars.

Aug 19, 2009. 12:08 PM [REPLY](#)



Thinkenstein says:

Thanks. Of course, besides the microphone, it is also the recorder. Anyway, it's a backwoods solution. At least it works.

Aug 20, 2009. 11:08 AM [REPLY](#)



robotguy4 says:

Now the question is:
How do you get the microphones that the Bigfoots (Bigfeet?) implanted in mah teeth out?

Neat idea!

Aug 19, 2009. 5:36 PM [REPLY](#)



lemonie says:

The sound quality is very good. Dare I say you'd beat Rolf Harris in a battle of the one-man bands...?

L

Aug 19, 2009. 12:52 PM [REPLY](#)



bustedit says:

I love it! 11 stars!

Aug 19, 2009. 12:12 PM [REPLY](#)



pineapplenewton says:

and subtle too.

Aug 19, 2009. 11:20 AM [REPLY](#)