Crutch Chair

by wholman on May 30, 2009

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**intro: Crutch Chair**

This chair is made from an old pair of wood crutches and some oak, held together with assorted fasteners.

Since crutches are designed to support the weight of an adult human (~180 lbs, give or take), it goes to reason that their weight-bearing structure could be re-arranged into a chair. The crutches don't have enough wood in them to make the entire chair, so I dug some white oak left over from another project. I had three pieces, 1"x3", about 48" long. I tried to waste as little material as possible, and re-used as many fasteners from the crutches as I could.

The design was derived by just cutting and hold pieces up, evaluating, then pre-drilling and screwing them together. Since I designed it as I made it, there are some things I would change if I were doing it over. For one, the dowels that run from the crutch armpit support back down to the feet like secondary legs could probably be eliminated if the front legs were pushed forward to sit at the very front of the horizontal feet. Then the feet would be long enough to resist the force of a reclining person from tipping the chair over backwards.

The angle of recline is rather severe; the back is also pretty short, providing only lumbar support. However, the chair is really very comfortable. Getting in and out is facilitated by the crutch armpit supports, which form handles to push up and off or a handhold for lowering yourself onto the seat. Overall, the front edge of the seat is about 14" off the ground, 26" to the top of the back, 16" wide, and weighs about twenty pounds. Both the seat an the back are 14" x 16".

All dimensions are approximate; since designed it on the fly, nothing was really measured. Everything can be roughly judged from the photos. Every pair of crutches is different, so you will have to experiment with your own materials. I used the oak because I had it; a number of materials could easily be substituted. After I built it, I took it apart, taped off the joints, stained and sealed it, then re-assembled, gluing the joints on the bare wood left by the tape as well as screwing them. Finally, I buffed in a coat of furniture wax.
step 1: Cuts
Separate the foam from the crutch armpit supports and handles. Disassemble the handles, adjustable legs, and armpit supports. Divide the long, curved side pieces into approximate thirds. Cut with a hand saw.

Chop up the 1"x3"s or similar into five pieces approximately 16" long for the seat and back, and two pieces mitered at 45 degrees about 10-12" from long point to long point. Reserve all the wood, including the triangles you cut off for later use.

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step 2: Legs!
The first picture shows the rough idea of the legs. The bottom end of the crutches, about 14" long, are paired together into a rough "Y" shape, then pinned to the adjustable leg with one of the bolts that originally held them together. Then, use the 12" mitered pieces to triangulate the "Y" with the foot and bolt through with the other bolt that once held the leg in place. Screw into the foot from underneath. Rinse and repeat for the other side.
step 3: Seat and back

There should be eight 14" pieces left from the long side sections of the crutches. Sandwich those around the oak pieces to make a slatted seat as shown. Pin together with one screw from the top and two from the bottom. The seat has four slats; the back has three.

Space the seat slats about an inch or two apart, with the end slats flush with the ends of the crutch pieces as shown.

For the back, use the top sections of the crutch sides, which should have pegs in the ends for interfacing with the armpit supports. Space the slats the same as the seat, but leave the fourth slat off at the pegged ends. Screw the same as the seat.

If you are not planning to disassemble, sand, and finish, then reassemble, glue as well as screw the pieces together.
**step 4: Assembly**

Drill two holes in the back end of the top side of the seat big enough to hold the pegs on the ends of the side supports of the back. Angle them off 90 degrees slightly. Glue the back to the seat.

Use the armpit supports to triangulate the back and seat joint. Attach with 6"x3/8" lag bolts drilled into the end grain of the seat slats.

Take the piece that would have been the fourth slat in the back and notch it to interface with the underside of the seat. Screw it to the bottom of the third slat from the front in the seat as shown.

Sit the seat assembly down into the open "Ys" of the legs. The support on the underside of the third slat should slide down the front slanted face of the legs. Screw and glue liberally. Use what leftover lumber you have to add a cross-brace between the legs and two wedges on the back of the bottom of the seat. I also put in the two long bolts that had held the hand grips in place underneath the seat on the front side as a further brace.

If necessary, run a 3/8" dowel from one of the peg holes in the underside of the armpit supports back to the feet, as shown.

Break down, sand, and treat with your finish of choice if so desired.

All the waste generated is show in the last photo.

[Image of the assembled chair]

[Image of the assembled chair back view]

[Image of the assembled chair front view]
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Related Instructables
porcupinemamma says:
totally cool! thanks for a great instructable.

iluvpandas4 says:
this is pretty neat, it reminds me of those folding TV dinner tables.

besttarzan says:
Very smart and nice project. I love this project.

Ninzerbean says:
Fantastic!

jessyratfink says:
The finished project looks really nice. Great work. :D