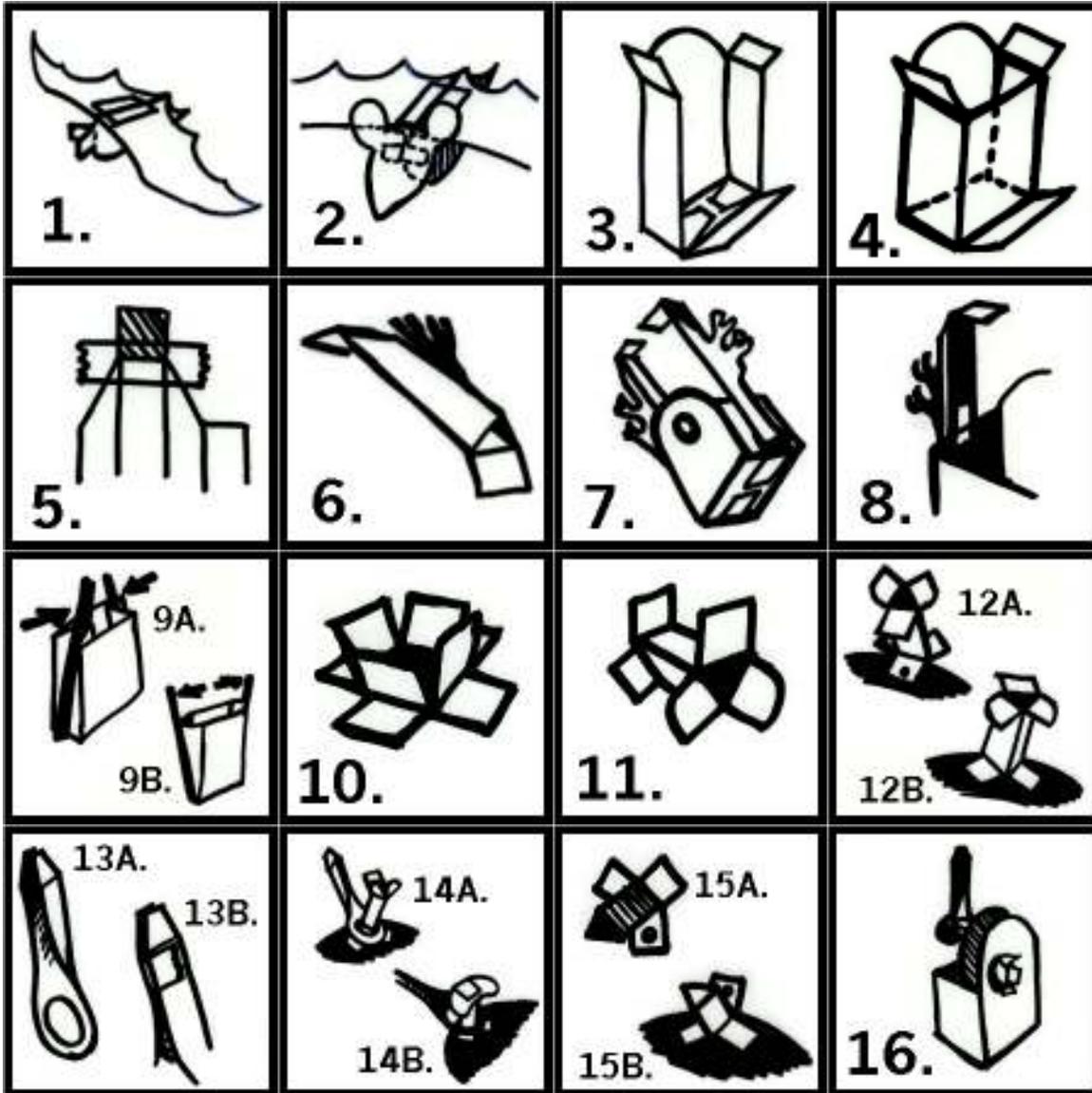


THE MECHANICAL BAT -ASSEMBLY INSTRUCTIONS- Page 1.



WHAT YOU'LL NEED: Scissors, Transparent Tape, Elmer's glue (or a glue stick), a ruler or other straightedge, and a few pennies or other coins for weight. An Exacto knife is helpful, and you may also want to use a black marker to darken a few white areas.

NOTE: The parts for this project should all be printed on HEAVY CARD STOCK.

BAT ASSEMBLY:

We'll begin by constructing the bat. Cut out the LEFT LOWER WING on page1, and the RIGHT LOWER WING on page2. For both pieces, fold the body UPWARD along the blue line. Then fold the body DOWNWARD along the same line. Fold the body both directions a few times so the wings will be able to flap loosely later. Fold the little green tabs UPWARD.

Now glue the two sides of the body together, being sure the wings lay flat across the top. Do NOT glue the green tabs together. Trim away any blank areas around either side of the body.

Next cut out the LEFT UPPER WING on page3 and the RIGHT UPPER WING on page4. Position the upper wings over the lower wings and glue them in place. The upper wings should meet in the middle without overlapping, and the wings should flap freely. You may wish to use a black marker to darken any white area between the upper wings. Then place a piece of tape between the wings to strengthen them, as shown in Figure1. Trim away any blank areas around either side of the wings.

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We'll finish the bat by adding the head. Cut out the HEAD on page1. Spread apart the two green tabs and glue them to the back of the head as shown in Figure2.

The top of the head should sit slightly above the surface of the wings. Be sure the head doesn't interfere with the wings flapping.

Bend the ears forward, bend the teeth downward, and bend the two sides of the head slightly along the center to give the head some depth. You now have your own adorable little pet bat.

BASE ASSEMBLY:

To build the base, we'll start with the headstone. Cut out the HEADSTONE FRONT on page5. Carefully cut out the white hole in the center (you may want to use an Exacto knife for this). Fold the two black tabs and the two blue tabs DOWNWARD. Then fold the two side panels and the two bottom panels DOWNWARD along the green lines. Line up the edges of the side panels with the blue bottom panel, and glue down the two blue tabs as shown in Figure3. Next cut out the FRONT DISC on page6 and set it aside for later (it'll be one of the last parts we'll need). Now cut out the HEADSTONE BACK. Fold the black top panel and the two side panels DOWNWARD along the green lines. Glue the black panel to the back (blank) side of the center panel. Place the HEADSTONE BACK inside the HEADSTONE FRONT (with the black tab towards the top) as shown in Figure 4. Glue the two blue panels on the HEADSTONE BACK to the inside of the side panels on the HEADSTONE FRONT. Then glue the bottom panel of the HEADSTONE FRONT to the center panel of the HEADSTONE BACK. To finish the headstone, fold the remaining two black flaps down and glue them to the inside of the side panels. Now you have an ominous headstone for your bat to hover above. Next we'll add the trees.

Cut out the LEFT TREE and the RIGHT TREE on page 7. For both trees, fold the blue bottom tabs UPWARDS. Strengthen both trees by placing a piece of clear tape over the top area, where the black tab joins the tree, as shown in Figure5. Tape both front and back sides of this area, and then trim away the extra tape. Next fold the black top tabs UPWARD. Now fold the four side panels DOWNWARD along the green lines. Position the blank brown panel directly behind the opposite panel (with the branches) and glue in place to form a triangular tree trunk as shown in Figure 6. You can slide a pencil into the tree trunk to help press the panels together when gluing. You may now want to use a black marker to darken the blank area inside the top of the tree. Don't darken the back of the black tab (that area connects to the bat later).

To connect the trees to the headstone, place the trees over the dark area in the center of each of the headstone's side panels, and fold the blue bottom tabs under the headstone as shown in Figure7. Glue the tree trunks to the side panels and tape the blue tabs to the bottom of the headstone. Finish connecting the trees by taping the trees to the inside of the headstone's side panels, as shown in Figure8. Cut away any extra tape.

For the bat to be able to move smoothly, we'll need the trees to wobble in and out a little bit. First collapse the sides of the headstone inwards around the tree trunks, as shown in Figure9A. This should be similar to the way a paper grocery bag folds closed at the top. Since the sides are rather thick, crease first the front part of each side panel, and then the back part. Collapse the sides about half way down from the top. Now straighten the sides back out and carefully fold them outwards as shown in Figure9B, again creasing first the front part and then the back part. Flatten the sides back to their original position and squeeze the two top rear corners of the headstone together to curve the headstone's back panel outwards. Now flatten the back panel back to its original position. The tops of the trees should now be able to move inwards and outwards a little bit. Your bat now has a gloomy little environment to call 'home', and it's time to build the mechanism that will make the bat fly!

CRANK ASSEMBLY:

Begin by cutting out the green INNER WHEEL and the four blue CONNECTER TABS. Fold each tab UPWARD along the black center line. Then position the four tabs over the four black squares in the center of the INNER WHEEL, lining up the folds with the inside edge of each square as shown in Figure10. Glue the tabs in place and then tape them down to strengthen them. Avoid lumps and creases in the tape. Next cut out the POST. Cut between the three black tabs and between the three green tabs, to separate them from each other. Then fold all three black tabs and all three green tabs UPWARD. Fold the black side panel and the three blue panels DOWNWARD. Now glue the black side panel to the back of the opposite blue panel, forming a triangular post as shown in Figure11. Wrap the center of the post once with tape, being careful not to leave any bumps or creases. One of the green POST tabs has a red dot. Place this tab over the outside black square on the INNER WHEEL, as shown in Figure12A. Glue in place and then tape down for added strength, cutting away any tape that extends outside the wheel. Now turn the wheel over and flip the post around to the blank side. Glue the two green POST tabs down as shown in Figure12B, and add tape for strength, again removing any tape that extends past the edge of the wheel.

Cut out the BRACE (But don't remove the white circles yet). Fold DOWNWARD along the green center line and glue the two sides together. Trim away any blank areas on either side.

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Now VERY CAREFULLY cut away the white circle. You may want to use an Exacto knife for this cut. This is probably the trickiest step in the construction of the model, so take your time and try to cut a smooth circle. If you accidentally cut the black ring, don't panic...you can tape it back together and cut away the extra tape. But it's best to avoid cutting the ring. Now fold a crease halfway down the center of the BRACE, along the blue line, as shown in Figure13A, and tape (but don't glue) the top part together just below the light area, as shown in Figure13B.

Now flatten out the opposite end of the brace so the ring lays flat. Slide the ring over the POST to connect the BRACE to the INNER WHEEL as shown in Figure14A. The folded edge of the BRACE should be face down when viewing the blank back of the wheel. The brace should be able to rotate around the post. Cut out the POST END. Glue the two black POST tabs that have curved corners to the POST END to prevent the BRACE from coming off the POST. Fold the remaining black POST tab down over the POST END and glue in place, as shown in Figure14B.

Next cut out the blue OUTER WHEEL. Very carefully cut out the white square in the wheel's center (an Exacto knife is handy here). Now cut out the HANDLE. Cut between the three blue tabs to separate them from each other, and bend all three blue tabs UPWARD. Fold the black triangle and both of its black tabs DOWNWARD, and then fold the four black side panels DOWNWARD along the green lines. Glue the panel with the green dot to the back of the opposite panel, and then fold the triangular panel down over the end of the piece and glue the two outer black tabs to the sides of the HANDLE, forming a triangular piece as shown in Figure15A.

Position the HANDLE over the black triangle on the outer edge of the blue OUTER WHEEL. The tab with the red dot should extend out past the wheel as shown in Figure15B. Fold the tab with the red dot down over the back of the wheel and glue in place. Then glue the remaining two tabs to the front of the wheel, and tape them down for strength. Cut away any tape that extends beyond the edge of the wheel. You may now want to use a black marker to block out the green 'fold lines' around the front of the HANDLE.

It's now time to combine the mechanism with the headstone.

Place the green INNER WHEEL inside the headstone, with the green side facing FORWARDS. Pull the four CONNECTER TABS carefully through the hole in the center of the headstone's front panel, being careful not to rip the edges of the hole. The INNER WHEEL should now be positioned as in Figure16, with the POST towards the top. Slide the blue OUTER WHEEL down over the four CONNECTER TABS, being sure the HANDLE is turned towards the top and sits opposite the POST. Press the INNER WHEEL and OUTER WHEEL together so both lay flat against the front panel of the headstone. Fold the four tabs down and glue them over the black squares on the OUTER WHEEL. Tape securely. Now gently turn the OUTER WHEEL until the POST and HANDLE are towards the bottom of the headstone. Grab the FRONT DISC from page6 and slide the triangular notch down around the HANDLE. Glue the FRONT DISC to the OUTER WHEEL, being careful not to stick either to the headstone's front panel. Since the triangular HANDLE would be clumsy to turn later, we'll now add a cover to make it round. Cut out the HANDLE COVER and curl it around a pencil. Then uncurl it and wrap it around the HANDLE. Try to get it as snug as possible while still keeping it fairly round, and wrap it with tape to hold it in place. If it slips off the HANDLE too easily, you can wrap the HANDLE with tape to thicken it until the HANDLE COVER stays put. You may now want to slide the HANDLE COVER back off and darken the exposed inner area with a black marker. Then place the HANDLE COVER back over the HANDLE and the Crank Assembly is finished!

Now it's time to connect the bat to the base. Place the bat upside down so the blue squares on the wings face upwards. You can fold the body and head sideways so the wings can lay flat. Turn the Headstone upside down and position the black tree tabs over the blue squares on the wings. Be sure the bat and headstone both face forwards. The black tabs should be folded INWARD. Glue the two black tabs down and then tape over them to secure them to the wings. Now turn the HANDLE about a quarter of a turn so the BRACE reaches the body of the bat. Slide the body between the two tabs at the end of the BRACE, and glue the tabs to either side of the body. Tape over the tabs to secure them.

Our final step in the construction of this toy will be to add some weight to the back of the headstone, since the toy tends to fall forwards otherwise. Place a few pennies along the bottom edge of the headstone's back panel and tape over them to hold them in place, and that should provide enough weight to stabilize the toy.

And now it's time for the big moment...your new pet bat is ready for it's first flight!

Holding the headstone by the bottom corners, grasp the HANDLE gently and slowly turn the crank. As the wheels turn, the brace should move the bat's body up and down, causing both wings to flap in a nice convincing manner. The more you operate the toy, the smoother the flapping motion should become. And once the parts have worn in a little you can increase the speed and give your bat a more vigorous flight.

And there you have it! A nifty life-sized bat that will flap its wings to entertain you whenever you wish.