FIRST® LEGO® League Challenge UNEARTHED™ Building Instructions

Build 1: Angler Artifacts

This build is 134 pieces, and 52 building steps.

Welcome to text-based instructions from Bricks for the Blind. Before you start building, here are some terms we'll be using:
- In Front of/Front: towards you.
- Behind/Back: away from you.
- Up: towards the ceiling.
- Down: towards the floor.
- Stud: the bump on a LEGO brick. Example: A 2x1 brick has two studs on it.
- Vertically: going from front to behind.
- Horizontally: going from left to right.
- Upright: pointing up towards the ceiling.
- That one/ppp: previously placed piece.
- Plate: piece with studs.
- Tile: smooth piece without studs (unless otherwise specified)
- Symmetrically: a mirror image. Example: If you place a 2x1 brick with technic connector on the front wall at the right, connector to the front, and then place another such piece symmetrically on the back wall, at the right, the technic connector of the second piece should point to the back, since it will be placed symmetrically.
- Centered-vertically: even amount of space in front of and behind the piece
- Centered-horizontally: even amount of space left and right of the piece.
- Row: studs lined up horizontally (left to right/side to side).
- Column: studs lined up upright or vertically (top to bottom/back to front).
- Standing upright: the piece is perpendicular to the ground, like a wall.
- Lying flat: the piece is parallel to the ground, like a piece of toast which fell off the table.
- Anti-stud: the portion of a piece which accepts studs, like the bottom of a plate.
- Jumper plate: a 1x2 plate with a single stud on top, or a 1x3 plate with only two studs on top.

A note on LEGO Technic™ part names. These parts are somewhat different from regular LEGO bricks. Here are some definitions in case the builder or helper is not familiar with LEGO Technic™.

Axles - An axle is a connector which has an X shaped cross-section. Because their cross section is not round, anything connected to an axle using an axle-hole will rotate with that axle. Axles are longer than they are wide, and the length of an axle corresponds with how many bricks long it is. Aka a 3L axle is three bricks long. Axles come in a variety of lengths, with a 2L axle being the shortest available. They may be combined with pins, or have circular stops on them. A stop prevents the axle from sliding through an axle-hole at a specific point on the axle.

Pins - A pin is a connector which has a circular cross section and a flanged notch out of one or both ends. This flanged notch allows them to click into bricks with a pin-hole. Pins come with and without friction ridges, which are small bumps on the pin which prevent them from rotating freely. For standard pins, black is a high friction pin, and gray is a low friction pin. A standard length pin is two brick lengths long, with a stop in the middle. This prevents a brick from being pushed from one side of the pin to the other. A 1L pin is one brick long and still retains the stop, however it also includes a hollow stud at the other end. A 3L pin is three bricks long, and only contains a stop at one side, allowing two bricks to be pushed onto the other side of the pin. Pins may also have one side which is an axle.

Lift-arms - A lift-arm is a basic structural element, similar to a brick or a plate, but usually without any studs. It is a beam with rounded ends and with holes in it, with the same spacing as the studs on a LEGO brick. lift-arms come in a variety of lengths, including a 1x1 lift-arm which looks like a cylinder. Thick lift-arms are as wide as a LEGO brick, and thin lift-arms are half as wide as a LEGO brick, but not the same thickness as a LEGO plate! The holes in a lift-arm arm may accept axles or pins. They also come in a variety of shapes, including tees, ells and triangles.

Gears - A gear is a functional element. They are typically discs with teeth on the outside, there are also worm gears which look like a spiraling cylinder! Gears connected by axles transmit or even transform rotational motion!

Axle and Pin Connectors - These elements are typically smaller than lift-arms and are used to connect some combination of pins or axles. They might have pins or axles, as well as axle or pin-holes. They have a lot of different angle combinations! The simplest just connects two axles or pins together in a straight line.

Bushes/Bushings - LEGO Technic™ uses bushes largely as spacers, but they also can reduce friction between rotating parts, or can form useful elements such as handles. Bushes are typically light gray, generally cylindrical, and have an axle-hole running through the middle. They have a flange at the front and back to make them easier to pull on and off.

Technic™ Bricks and Plates – There are also regular bricks and plates that are adapted for use with Technic™ elements. Technic™ bricks have holes for either pins or axles on the sides and are only one brick wide. One of the most common of these is a 1x2 brick with a single pin hole. Most often, these bricks have pin holes, not axle holes. Technic™ plates have holes on the flat surface between the studs and are a minimum of two bricks wide. The holes in these plates can accept pins or can allow an axle to pass through and still spin.

For builders with low vision, or a sighted building partner who may want to follow along with the printed visual instructions that come with each set. As low vision users may benefit from viewing the instructions on a personal device where they can zoom in on content and use assistive technologies to enhance the visuals.

Sorting Instructions:

This LEGO set comes in the bags labeled 1-2 and some large pieces from bag 0. Sort the pieces into groups as described below. Note that where there are multiple colors of the same brick in a step, the colors will be split across two groups to make telling the difference easier for the builder! LEGO includes a few spare parts in case you lose something. Set these into their own group away from the rest, in case you need them later.

Build 1
Group A contains all of the black 2L pins from this bag. These pins have friction ridges.
Group B contains all of the blue 3L pins from this bag. These pins have friction ridges.
Group C contains all of the blue 2L axle/pin combos from this bag. These pins have friction ridges.

Bag 1 (3 groups of bricks)
Sub-build 1: Crane base and dig
Group 1 contains the pieces for steps 1-6. Include the two tan 2x16 plates from bag 0.
Group 2 contains the pieces for steps 7-11.

Sub-build 2: Artifact Container
Group 3 contains the pieces for steps 12-20.

Bag 2 (5 groups of bricks)

Group 4 contains the pieces for steps 21-23.

Sub-build 3: Crane
Group 5 contains the pieces for steps 24-30. Include a black 7x16 triangular girder and a yellow 15L liftarm from bag 0.
Group 6 contains the pieces for steps 31-38. Include a black 7x16 triangular girder and a yellow 15L liftarm from bag 0.
Group 7 contains the pieces for steps 39-46. Include the black string with two 1x1 round plates from bag 0.
Group 8 contains the pieces for steps 47-52.

Building Instructions:

Groups A, B, C and 1. You will use the pins from groups A, B and C throughout the build.

Sub-build 1: Crane base and dig

1. This build consists of a crane with a ratcheting winch which is used to lift artifacts out of the ground! We'll start by building the base of the crane. Place a dark gray 2x2 brick with a pin on two sides, with the pins facing left and right, in front of you.

2. Find a dark gray 1x2 technic brick with two 2L liftarms on one side. Push the pin hole of the brick portion, with the liftarms facing to the right, onto the right pin on the previous piece. Repeat symmetrically on the left side. The base of one side of the crane will be held in place by these liftarms.

3. Place the right six columns of a tan 2x16 plate, horizontally, under the assembly we just made. The liftarms on the right previous piece will overhang to the right.

4.1. Place the back two rows of a dark gray 2x8 plate, vertically, on the second and third rows from the right. These go on the raised portion of the crane base.

4.2. Place a yellow 1x4 tile with a diagonal caution stripe pattern, vertically and centered vertically, on each column of the previous piece.

5.1. Repeat steps 1-3 to make the second half of the crane base.

5.2. With the second half horizontal with the 1L liftarms on the right, place the second and third rows from the right under the front two columns of the dark gray 2x8 plate from step 4.1.

6. Push a red 2L axle, from the front, into both of the front liftarms on the front side of the crane base. Only push it in until it is even with the back of the front liftarm. Later, we'll put the legs of the crane in between the liftarms and then push these all the way in to hold the legs in place. Repeat symmetrically on the back side.

Group 2.

7.1. Place a tan 2x4 plate vertically in front of you.

7.2. Place the front two studs of the left two columns of a brown 4x6 tile with studs on three sides, with the studs on the left, back and right, on the back two rows of the previous piece. Repeat symmetrically on the front side.

7.3. Place the assembly we just made on the left six columns of the base.

8.1. Place a tan 2x2 slope brick, with the slope on the right, on the back two rows to the right of the 4x6 tiles.

8.2. Place a tan 1x2 slope brick, with the slope on the right, on the front row to the right of the 4x6 tiles.

8.3. Place the left two studs of a tan 1x4 slope brick, with the slope on the right, behind the previous piece.

9. Place a brown 1x8 brick, vertically, to the left of the previous three pieces.

10.1. Place a brown 1x4 technic brick, horizontally, in front of you.

10.2. Push a red 1L pin with a stud, with the stud at the front, from the front into the left and right holes on the previous piece.

10.3. Repeat steps 10.1-10.2.

10.4. Place one of the assemblies we just made, horizontally with the studs on the pins at the front, on the front row to the left of the 1x8 brick from step 9. Repeat symmetrically on the back side with the other 1x4 technic brick.

11.1. Place a brown 1x4 technic brick, vertically, in front of you.

11.2. Push a red 1L pin with a stud, with the stud at the left, from the left into the middle hole on the previous piece.

11.3. Repeat steps 11.1-11.2.

11.4. Place the assemblies we just made, vertically with the stud on the pins at the left, in a column on the leftmost column of the base. There should now be a row of bricks around the tile center of the two 4x6 tiles. The artifacts will sit in this smooth spot.

Sub-build 2: Artifact Container

Group 3.

12.1. Now we'll build the artifact container. Set the base aside for now. Find a light gray 4x6 double inverted slope. This piece looks like a 4x4 plate connected to two 1x4 inverted slope bricks. Place this, horizontally with the slopes at the left and right, in front of you.

12.2. Place a brown 1x4 plate, horizontally and centered horizontally, on the front and back rows of the previous piece.

13. Place a brown 1x4 plate, horizontally, on each of the previous two pieces.

14. Now we'll place the first artifact. Set a silver fork in between the two stacks of 1x4 plates.

15. Next, we'll close up the fork. Find a brown 3x4 triple curved slope tile. This is curved on three sides, and the straight side has two studs. Place this, with the studs horizontally at the front, on the left three columns of the artifact assembly. Repeat symmetrically on the right side. There should now only be a 2x2 of studs on top of the assembly.

16. Place a brown 2x2 plate on top of the assembly.

17.1. Place a black 2x2 round brick with holes on two sides, with the holes on the left and right, in front of you.

17.2. Push a white 1L pin with a stud on one side, with the pin on the left, from the left into the left hole of the previous piece. Repeat symmetrically on the right side.

17.3. Place a black 2x2 round tile with a hole on top, with the hole facing front and back, on the 2x2 round brick. This is where the crane will grab onto the container.

17.3. Place this assembly on the 2x2 plate on top of the artifact assembly.

18.1. Assemble a bucket by clipping the gold U-shaped handle onto the two small bumps on a light gray bucket.

18.2. Rotate the bucket so the handle is laying flat on the left and attach the bucket to the stud on the left side of the 2x2 round brick from step 17.3.

19.1. Place a brown 1x1 tile with a clip on top, with the clip fingers on the left and right, in front of you.

19.2. Clip the handle of a gold trident, with the three points at the back, into the clip of the previous piece. It should be centered on the 1x1 tile with a clip.

19.2. Place the 1x1 tile with a clip onto the stud on the right side of the 2x2 round brick from step 17.3.

20. Set the rest of the base in front of you so it is horizontal, with the tiled section at the left. Rotate the artifact assembly 90 degrees clockwise so the trident is at the front and set the assembly in the tiled section. It should fit perfectly.

Bag 2.

Group 4.

21.1. Now we'll make some rocks to go around the base. Place a tan 2x6 plate horizontally in front of you.

21.2. Place a tan 2x2x3 tall slope brick, with the slope at the front, on the left two columns of the previous piece.

21.3. Place a tan 1x2x2 tall slope brick, with the slope at the front, to the right of the previous piece.

21.4. Place a tan 2x2 slope brick, with the slope at the front, to the right of the previous piece.

21.5. Place a tan 1x1 slope tile, with the tall side on the left, on the back row to the right of the previous piece.

21.6. Rotate the assembly we just made so it is horizontal with the studs at the front with the 2x2x3 tall slope brick on the right. The slopes on the three slope bricks should be on the top. Place it on the two side studs on the front side of the base. The top and bottom sides of the rock assembly should be even with the top and bottom of the base, and the left side of the rocks should be offset half a stud to the right from the left side of the base.

22. Place a tan 2x6 plate symmetrically to the rock assembly on the back side of the base.

23.1. Place a tan 2x8 plate horizontally in front of you.

23.2. Place a tan 1x2 slope brick, with the slope at the front, on the rightmost column of the previous piece.

23.3. Place a tan 2x2x3 tall slope brick, with the slope at the front, to the left of the previous piece.

23.4. Place a tan 1x2x2 tall slope brick, with the slope at the front, to the left of the previous piece.

23.5. Place a tan 2x2 slope brick, with the slope at the front, to the left of the previous piece.

23.6. Place a tan 1x2 slope brick, horizontally with the slope on the left, on the back row to the left of the previous piece.

23.7. Rotate the assembly we just made so it is vertical with the studs at the left, with the previous piece at the front. The slopes on the first four slope bricks should be on top. Place it on the two side studs on the left side of the base. The top and bottom sides of the rock assembly should be even with the top and bottom of the base, and the front side of the rocks should be offset half a stud to the back from the front of the base.

Sub-build 3: Crane

Group 5.

24.1. Now we'll build the crane! Set the base aside for now. Find a black 7x16 triangular girder liftarm. This piece has two bent 16L liftarms which start out 7L apart on one side, and end up only 3L apart on the other side. Place this horizontally in front of you, with the wide side at the right.

24.2. Push a black 2L pin from group A, from the top, into the leftmost and third holes from the left on the top of both 16L liftarms of the previous piece.

25.1. There is a 1L gap between the two 16L liftarms on the left side of the 7x16 liftarm. Place the rightmost hole of a black 7L liftarm, horizontally with the holes facing the front and back, in this gap.

25.2. Push the pin side of a light gray 2L pin with a bushing on one side, with the bushing at the front, from the front into the leftmost hole on the front side of the 7x16 liftarm. Push it all the way back so it connects to the 7L liftarm from the previous step. This pin has friction ridges so it should not spin easily.

26.1. Leaving two free holes at the front, push a yellow 15L liftarm, vertically with the holes facing up and down, from the top onto the right pair of pins on top of the 7x16 liftarm. It should extend 8 holes to the back.

26.2. Push the back and third from the back holes of a yellow 11L liftarm, vertically with the holes facing up and down, from the top onto the left pair of pins on top of the 7x16 liftarm. It should extend 8 holes to the front.

27. Push a black 2L pin from group A, from the top into each of the front two holes of the previous piece.

28.1. Push the back two holes of a yellow 5L liftarm, vertically with the holes facing up and down, from the top onto the previous two pieces.

28.2. Push a blue 3L pin from group B, upright with the stop ring at the bottom, from the top into the second hole from the front of the 5L liftarm. It will extend 2L above the liftarm.

29.1. Next, we'll make the lever you push to reel in the crane. This has a counterweight on it so it returns to its neutral position when you let go of it. Place a black tire in front of you with the hole facing up.

29.2. Push a yellow wheel hub, with the recessed side at the bottom, down into the hole of the previous piece until it's securely in the tire. You might need to work the rubber of the tire around the edges of the wheel.

29.3. Push a black 2L pin from group A, from the top into the hole of the previous piece.

29.4. Find a red 3x11 panel. This piece has three pin holes on each short end, seven pin holes on each long side, and four pin holes on the top and bottom. One side is flat, and one side has a gap between the two long rows of pin holes. Rotate this so it stands upright, with the recessed side at the left and the 7 hole sides at the front and back. Push the center hole of the bottom side onto the previous piece.

29.5. Push a light gray 2L pin, from the front, into the middle hole on the row of seven holes on the front side of the previous piece. Repeat symmetrically on the back side. These pins do not have friction ridges and should spin easily.

29.6. Rotate the 7x16 liftarm so it stands upright with the wide side at the bottom, and the 11L and 15L liftarms horizontally at the front. The 15L liftarm should extend to the right. Rotate the lever assembly so the tire is at the bottom and the light gray pins at the front and back. Push the back light gray pin into the rightmost hole of the 15L liftarm.

30.1. Next, we'll make the part of the mechanism that advances the reel when you push the lever. Find a light gray 4x4 bent liftarm. This is two 4L liftarms connected at a 135 degree angle. The holes at each end are axle holes. Place this horizontally in front of you with the corner of the angle pointing away from you and the holes facing up and down. Push the axle side of a tan 2L axle/pin combo, with the axle on the bottom, from the top into the rightmost hole of the previous piece.

30.2. Push a blue 3L pin from group B, with the stop ring on the top, from the top into the left three pin holes of the bent liftarm. These will be the second, third, and fourth holes from the left since the leftmost hole is an axle hole. Push these all the way in so they extend 1L above and below the liftarm.

30.3. Push a light gray 3L liftarm, from the front, onto the front sides of the previous three pieces. Repeat symmetrically on the back side.

30.4. Push a light gray thin bushing onto the axle portion of a light brown 3L axle with a stud on one side. Push the bushing all the way back until it touches the stud. Push the axle side of the previous piece, with the axle at the front, from the back into the leftmost hole of the bent liftarm. Push it all the way forward so it extends 1L to the front.

30.5. Push the rightmost pin on the front of the bent liftarm into the top hole of the seven holes on the back side of the 3x11 panel of the lever. The thin bushing on the left side of the bent liftarm should rest on the 15L liftarm.

Group 6.

31.1. Now we'll build the other half of the crane. Set the first half aside for now. Place a yellow 11L liftarm, horizontally with the holes facing the front and back, in front of you.

31.2. Push a black 2L pin from group A, from the back into the leftmost and third from the left holes on the previous piece.

32. Push a black 2L pin from group A, from the front, into the two rightmost holes on the 11L liftarm.

33. Push the leftmost two holes of a yellow 5L liftarm, horizontally with the holes facing the front and back, onto the previous two pieces. It should extend 3L to the right of the 11L liftarm.

34.1. Slide a brown 5L axle with a stop at one end, with the stop at the back, from the back into the fourth hole from the left on the 11L liftarm. Slide it all the way forward.

34.2. Push a black thick bushing, from the front, onto the previous piece. Slide it all the way back until it touches the 11L liftarm. Don't push it tight against the liftarm, because we need to let the axle spin freely!

35. Push a light gray thin bushing, from the front, over the axle. Push it back until it touches the previous piece.

36.1. Push the center axle hole of a light gray 3x3 pulley wheel, from the front, over the axle. Push it back until it touches the previous piece.

36.2. Push a black thick bushing, from the front, over the axle. Push it back until it touches the previous piece.

37.1. Place a black 7x16 triangular girder liftarm vertically with the wide side at the front, in front of you.

37.2. Rotate the 11L liftarm so the two pins on the back side now point down and so the pulley wheel and axle are on top on the left side of the liftarm. Push the two pins on the bottom into the back two holes on the top side of the 7x16 liftarm.

38.1. Next up, we'll make a release lever. This lever lets whatever the crane is holding fall freely. Find a light gray axle and pin connector #2. This piece has two 1L axle connectors on opposite sides, and a perpendicular pin hole between them. Place this in front of you, with the axle connectors at the left and right and the pin hole pointing up.

38.2. Push the axle side of a light gray 1L axle with a ball on one side, with the ball on the left, into the left axle hole of the previous piece.

38.3. Push a red 2L axle, from the right, into the right axle hole of the axle and pin connector #2.

38.3. Push the left hole of a light gray 2L axle connector, from the right, onto the previous piece.

38.4. Push a red 2L axle, from the right, into the right axle hole of the previous piece.

38.5. Push the left hole of a light gray 2L axle connector, from the right, onto the previous piece.

38.6. Push a red 2L axle, from the right, into the right axle hole of the previous piece.

38.7. Find a light gray perpendicular axle and pin connector. This looks like a 2L liftarm where one hole is an axle hole which is perpendicular to the pin hole. Rotate this piece so the pin hole is at the top facing front and back, and push the axle hole, from the right, over the previous piece.

38.8. Push a light gray 2L pin, from the bottom, into the pin hole of the axle and pin connector #2 from step 38.1. This pin does not have friction ridges so it should spin freely.

38.9. Now, find the back free pin hole on top of the left liftarm of the 7x16 liftarm and attach the brake lever by pushing the previous piece into this hole.

Group 7.

39.1. Now we'll make the reel assembly for the winch. Set the second half of the crane aside for now. Place a yellow 15L liftarm, horizontally with the holes facing the front and back, in front of you.

39.2. Push a black 2L pin from group A, from the back into the third and seventh holes from the right side of the previous piece.

40.1. Slide a brown 5L axle with a stop at one end, with the stop at the back, from the back into the hole to the left of the left previous piece. Slide it all the way forward.

40.2. Find the smallest gear in this group. This is a dark gray 24 tooth gear. Push the center axle hole of this piece, from the front onto the front of the previous piece. Push it all the way back so it touches the liftarm, but don't push it too hard! We want the axle and gear to be able to spin freely.

41.1. Push a black thick bushing, from the front, over the axle. Push it all the way back until it touches the previous piece.

41.2. Find a black cog with four knobs. This piece has a center axle hole with four ball shaped knobs around it like an X. Push the center axle hole of this piece, from the front, over the axle. Push it all the way back until it touches the previous piece.

42.1. Slide a brown 5L axle with a stop at one end, with the stop at the back, from the back into the fourth hole from the right on the 15L liftarm. This should be to the left of a pin. Slide it all the way forward.

42.2. Find the remaining gear in this group. This is a light gray 40 tooth gear. Push the center axle hole of this piece, from the front onto the front of the previous piece. Push it all the way back so it touches the liftarm. Again, don't push it too hard! This gear should mesh with the first gear.

43.1. Now we'll add the string for the winch! Place a black 1x1 thick plate in front of you.

43.2. Find a black string with a 1x1 round plate on each end. Place one of the round plates on the previous piece.

43.3. Place the anti-stud of a green 1L pin with anti-stud on one end, with the pin portion on top onto the side of the previous piece that is attached to the thick plate.

43.4. Rotate the assembly with the string so the pin points to the back. Now, look at the 40 tooth gear from step 42.2. This gear has twelve pin holes on the sides, eight around the edges and four near the center. Push the pin into one of the holes near the edge.

44.1. Place a light gray 4x4 round plate in front of you.

44.2. Place a light gray 2x2 round brick, centered vertically and horizontally, on the previous piece.

44.3. Place a dark gray 2x2 round tile with a hole on the previous piece.

44.4. Rotate this assembly so the tile is at the back and the anti-stud is at the front. Push it onto the right 4L axle. This is the axle with the 40 tooth gear. The 4x4 round plate will connect to the 1x1 thick plate attached to the string.

45. Place the second half of the crane in front of you, with the wide legs of the 7x16 liftarm at the front and the 11L liftarm at the back. The axle with the pulley wheel should be facing up. Push the two pins on the assembly we just made down into the third pair of holes from the front on top of the 7x16 liftarm. Try to keep the string out of the way for now. The 40 tooth gear should be to the right of the 24 tooth gear and the left side of the liftarm should extend eight holes to the left of the 7x16 liftarm.

46.1. Now we will attach the first half of the crane. It will go directly on top of the second half. Take the first half and hold it so the 7x16 liftarm is on top with the wide part of the legs at the front. The lever with the tire should be on the left. There should be two pins on the bottom of the first half, one under the tire lever and one under the second hole from the right on the back liftarm. Push the pin on the tire lever into the leftmost hole on the front liftarm of the second half, and the other pin into the second hole from the right on the back liftarm of the second half. The two halves of the crane should be mirrors of each other.

46.2. Stand the crane up so the ends of the wide side of the 7x16 liftarms look like four feet. The tire of the tire lever should also stand on the ground. Rotate the crane 180 degrees so the tire lever is on the right. Pull the string all the way to the left. You may need to push down on the ball of the brake lever to let this happen.

46.3. Find the pulley wheel on the top of the crane. This wheel has a groove on the edge that the string will sit in. Pass the string between the two 7x16 liftarms and wrap it to the left around the pulley. It will make about a quarter turn around the pulley. Take the end of the string and pull it all the way to the left, then drape it over the pin between the ends of the two top liftarms and let it hang down.

Group 8

47. On top of the back 7x16 liftarm there is a 7L liftarm standing upright. Rotate this down towards you until it rests between the top holes of the front 7x16 liftarm.

48. Push the pin of a light gray 2L pin with a bushing, from the right, into the top hole on the left side of the front 7x16 liftarm. Push it all the way in until only the bushing extends to the left.

49.1. Now we'll attach the crane to the base. Place the base in front of you, horizontally with the artifact container at the left. Find the four 1x2 bricks with two 2L liftarms. These each have a 2L axle extending from them. Place the four feet of the crane in between each of these liftarms, then push the axles in to lock the crane in place.

49.2. Pull the string down and attach the round plate to the hole on top of the artifact container. You may have to push the brake lever to let this happen.

50. Push a light gray 3L pin with a stop on one side, with the stop at the front, from the front into the leftmost hole on the liftarm that the string is draping down from. Only push it in 1L so it extends 2L to the front.

51.1. Now we'll make a little guide for the string. Place a yellow 3L axle horizontally in front of you. Find a yellow axle and pin connector #3. This piece has two 1L axle connectors which form an angle almost 180 degrees, and a perpendicular pin hole between them. Push the right hole of this piece, with the pin hole on top and the left axle hole pointing slightly to the back, from the right onto the previous piece.

51.2. Find a yellow axle connector with an axle hole. This piece has a 1L axle connector on one side, and a perpendicular axle hole on the other. If you were to push axles through both holes they would form a T with the axle connector making the stem. Push the axle hole, with the axle connector at the top, from the right onto the axle. Push it all the way to the left so the axle extends 1L past it to the right.

51.3. Push the left hole of a yellow axle and pin connector #3, with the pin hole on top and the right axle hole pointing slightly to the back, from the left onto the axle.

51.4. Push a red 2L axle, from the top, into the top hole of the axle connector from step 51.2. Find a yellow axle and pin connector #6. This piece has two 1L axle connectors which form a right angle, and a perpendicular pin hole between them. Push the bottom axle hole of this piece, with the pin hole facing left and right and the axle holes facing the front and bottom, from the top onto the previous piece.

51.5. Rotate this assembly so the pin holes on the previous piece face the front and back and so the axle and pin connectors #3 point slightly to the right. Line up the pin hole from the previous piece with the 3L pin with a stop from step 50, then push the pin all the way back to connect the guide to the crane. The string should go between this assembly and the 3L pin with a stop from step 50.

52.1. Finally, we'll put a lever on the guide. Place a black 6L axle horizontally in front of you.

52.2. Push a light gray thin bushing onto the left end of the previous piece so the left sides are even.

52.3. Slide a blue 1L liftarm, from the right, onto the axle. This piece just looks like a hollow cylinder.

52.4. Push the right side of the 6L axle, from the left, into the left axle hole on the guide.

Congratulations! Now this build is complete!