Disassembly and Study of a Single Use Camera

Functional Components

- **Lens**: it forms the image that is put on the film
- **Housing**: the back, front and internal housing help hold together all the components of the camera
- **Shutter**: allows the light to come in through the lens
- **Film/Cartridge**: where the images captured are stored
- **Viewfinder**: allows us to observe what the picture is taken of
- **Packaging**: the metal foil that stores the camera before use
- **Battery**: the power source for the flash
- **Shutter button**: opens the shutter so the film is exposed to light
- **Winding wheel**: used to turn the film so a new image can be captured

How the Camera Works

The first step in using a single use camera is turning the winding wheel. This pulls the film roll which in turn pulls the film to a blank section of film. Next, the user holds the flash button until the red light on top is lit. The red light shows the capacitor is fully charged and the flash is ready. The user now pushes the shutter button, which engages the shutter spring and opens the shutter flap to allow light in through the lens. The light shines onto the film and captures the image, which is the same as the user sees on the viewfinder. After the image is captured, the shutter spring disengages to its original position and the shutter flap closes. The winding wheel can now be turned again and the process can be repeated.

Materials Used for Parts

- **Packaging**: metal foil and cardboard
- **Camera housing**: polycarbonate compound
- **Power supply**: AA alkaline battery
- **Springs**: steel
- **Shutter**: plastic
- **All small components**: plastic
- **Viewfinder**: plastic

Assembly

Shutter Mechanism

- Add a white clicker piece to the black piece with teeth
- Then put that whole piece on the film holder side in a slot that it fits in
- Add a long black piece with a disc around it in the second biggest hole on the top of the camera. It should fit with the piece in the back slot.
- Add the largest spring o the white rigid T-shaped piece
- Next put the winding wheel in the largest hole at the top.
- Add view finders to correct locations
- Add the flat long piece the blue button and put it on top of the camera until it fits in place. Add screw to secure it. Add white teeth piece with numbers to the right of button.
- Rest of Camera
- Next add circuit flash into the camera. Long metal battery compartment fits in slim slots at the bottom of the front side of the camera.
- Add lens back plate next to circuit
- Add small spring onto the hook in the divot of the back plate. Hook other side onto the shutter
- Put piece with the round lens on top of the shutter and screw it in place.
- Add the film into the correct spots on the back and add battery to battery slot.
- Put all this back into the housing
Disassembly

- Remove housing shell and internal frame
- Remove AA battery
- Remove exposed film
- Wind the shutter up by turning the sprocket wheel until you hear a click.
  - Face the camera towards ground and click button. This discharges the camera
- Disconnect the circuit
- Remove 2 screws from round lens surface. That piece can be removed now
- Remove circuit from camera
- Remove shutter and little spring. The back place behind the lens may be removed
- Remove the screw at the top of the camera.
- A flat long piece with button can be removed
- Many small pieces will then be removed. All of them are part of the shutter mechanism.
Parts
Parts that are reused include plastic parts and paper. The Kodak company tests each part they reuse and will continue to reuse the parts until they fail the test.
**Redesign**

In order to reduce waste, the film needs to be replaced with a more efficient way of capturing the pictures. One way our group thought of, was to replace the film with a small SD card. These are efficient for storing pictures, and will produce much less waste. If an SD card is used instead of film, this will not only reduce the waste of the film, but other plastic parts such as all of the components used to wind the film and hold the film in place. The overall size of the camera can be reduced as well because of the small size of the SD card compared to the film, so there will be much less plastic used in the housing. The camera does not need a digital screen, the user can still look through the viewfinder to see the picture to be taken. The consumer will also like the change to SD cards because the pictures will become digital. There are two ways that the SD cards can be used in the cameras. The first method of use is to keep one SD card per camera. After the user fills the card, they return the camera back to the store, and the pictures can either be printed or put onto a CD or flash drive to be used in the future. After this, the SD will be wiped and ready to be reused for the next user. The other method is that each user will keep the SD card after returning it to the store and each new camera will contain a new SD card. The SD card in either case will be found deep inside the camera and held in with a special screw so that the user cannot access it and replace it on their own. The cameras will still have a “one time” use.
Sources

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