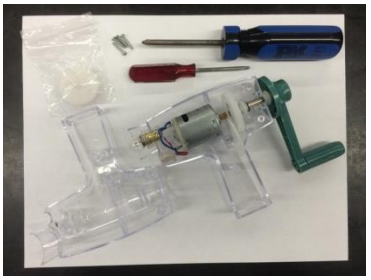
Hand Generator Replacement Gears
Part# SS4444A
http://www.sci-supply.com/Hand-Generator-Replacement-Gears-p/ss4444a.htm

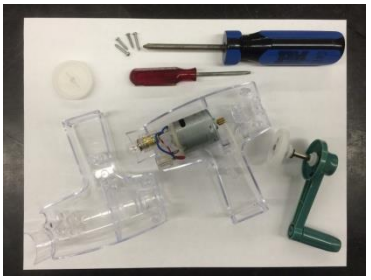
Tools needed:
Philips screwdriver, #1 point
Regular/slotted screwdriver, small tip

1. Remove screws: Use the Philips screwdriver to remove the 5 identical screws that are recessed into one side of the generator body, and set them aside.



2. Separate the body: Carefully pull the body apart, making sure that the lower half (on your work surface) retains all of the generator "guts": the hand crank assembly, the motor/generator, the lamp socket, and the electric lead connector. If any of these start coming off with the upper half of the body, just use a finger or screwdriver to push them back down into the lower half of the body.

NOTE: This would be a good time to lubricate the motor/generator, if you have some oil handy.



3. Replace the stepped gear: The stepped gear, which drives the metal gear on the motor/generator, is usually the one that breaks --- one or more teeth on the smaller gear will break off when a furiously cranking student manages to exceed the strength of the nylon teeth! Just lift the gear out, along with its axle. Slide the broken gear off the axle, and throw it out. Place the new stepped gear on the axle, and rest it back in its mounts. It will only fit in the correct way, but it won't be secure until you reassemble the body of the generator.

4. Replace the crank gear: If you're in a hurry, you can skip this step, since this gear will not usually break a tooth. However, the teeth on both nylon gears will wear together with use, so it's a good idea to replace both gears, even if the crank gear seems fine. Lift the crank assembly (crank, shaft, gear, etc.) up out of the generator body --- it won't separate into pieces without your help. To remove the gear, pry off the black retaining ring on the axle, using the small screwdriver tip. Because it's under spring tension, the ring can literally pop off and get lost, so restrain it with a finger or piece of tape so it doesn't fly away! Now that the ring is off, push the gear a few millimeters toward the crank. This will release the retaining pin from the groove in the gear; once this pin is removed (don't lose it!), you can slide the gear off the crank shaft and replace it with the new one. Make sure the groove for the retaining pin is on the proper side. Insert the retaining pin in the shaft, align the groove in the gear with the pin, and slide the gear back until the pin is seated in the groove. Now slide the washers and the nylon bearing back toward the gear, uncovering the groove for the retaining ring. Replace the retaining ring, pushing it into its groove until it snaps in place. You can use the tip of either screwdriver, or a pair of needle-nose pliers. Place the crank assembly back into the body of the generator, making sure that both nylon shaft bearings are seated in their slots.

5. Reassemble the body: Make sure that all of the various pieces are seated properly, and then replace the other half of the body. It should fit with no gaps anywhere along the seam. At this point, hold the two halves together firmly and shake the generator. If anything rattles around inside (like a broken gear tooth), reopen the case and dump it out. Any debris inside could get caught in the gears. You should also turn the crank a few times to make sure that it turns freely.

6. Replace screws: Replace the 4 screws, seating them firmly but not over-tightening them.

You're done, and ready to test your reconditioned generator!