INSTRUCTIONS FOR REBUILDING THE "MIGHTY MIDGET" MOTOR WITH THE "NYLONCASE"

Remove large gear and backshaft from old motor. Remove motor brushes by grasping with pliers and gently withdrawing straight out from case. Remove the two small screws that hold the case together and remove rear case. Stand motor on end in partially open vise. Use a short piece of .050 (smaller than shaft diameter) piano wire and a small hammer and gently tap end of shaft to remove pinion gear from shaft. Remove the armature and magnet from old case.

The commutator on the motor armature should be cleaned and polished with a small piece of 600 grit emery paper. Make certain the commutator segments are equally spaced and rigid in their holders.

Clean and polish the brushes. Bend them downward (toward the armature) slightly to assure adequate brush pressure when reassembled. Make certain the brushes are square with their holders and not twisted or out of line.

Assemble the armature in the case without the magnet. Assemble the rear cap and check for freedom of armature rotation and end play; 1/32 end play is normal. Too little end play will cause binding of the motor. Too much end play will cause the armature to "float" and may allow the brushes to hit the ends of the commutator. A tight bearing may be opened up by drilling with a No. 52 (.0635) drill.

After the armature has been fit, remove the rear cover and slip the magnet in place. Masking tape shims should be used to assure a snug fit. The notch in the magnet should be toward the rear and about 10° left of top center. The small pilot pin in the rear case will locate it. Replace the brushes and the pinion gear. The motor should be ready to run.

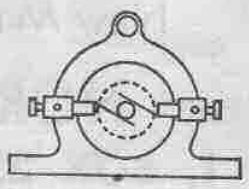
Your finished motor should draw about 175 mils free running on 3 volts (two flashlight cells). Some motors run better in one direction than the other. This can and should be corrected. This problem is caused by an incorrect position of the commutator on the armature shaft. To correct, remove the rear cover and rotate the entire commutator in one direction. The commutator is pressed on and can be rotated easily. Reassemble the motor and test. If the performance has improved, you are moving in the right direction. If the motor is worse, reverse the direction of rotation of the commutator. Repeat until you find the best position. WARNING: a very small movement may make a great deal of difference.

Some nylon gears as originally found on this motor are undersize and out of round. If an improper backshaft gear mesh is found, replace the large gear with one of proper size and concentricity.

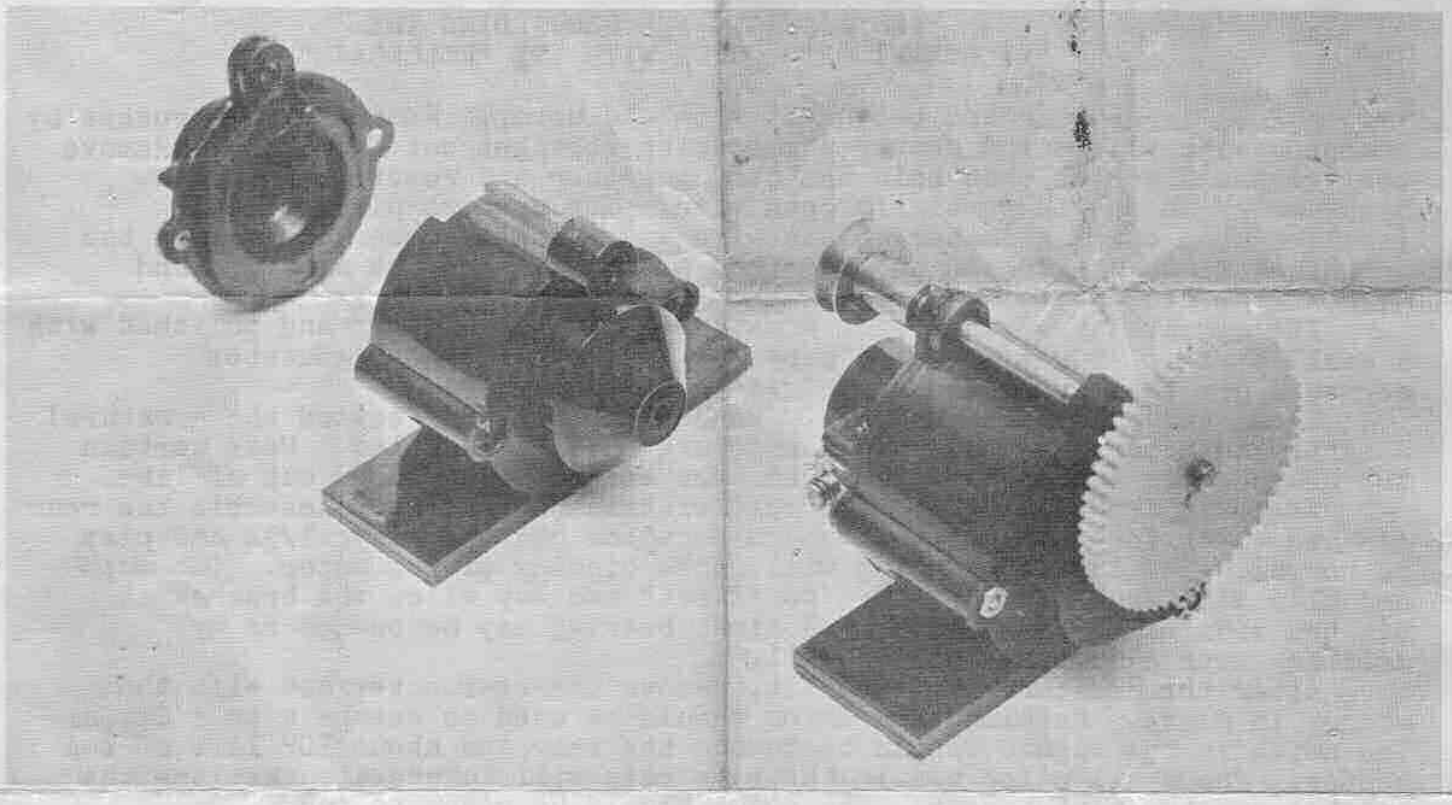
A small quantity of very light sewing machine oil will quiet the operation of the motor and improve its running. This motor can be run dry, without any lubrication for cold weather operation.

Nyloncase	1.50	Brass gear (large)	.75
Brushes per set	.50	Armature	1.25
Nylon gear	.75	Magnet	.75
Pinion gear	.25		

CAUTION: Remove brushes from motor housing before soldering to lead wires.



correct brush assembly
rear view



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