A COMPACT, EASILY CONSTRUCTED WATER DIPPER FOR RATS¹

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This device resembles the Gerbrands Dipper Feeder. Like the Gerbrands, it consists of a water cup (W) mounted on a pivoted arm (A), a solenoid (S) to raise and lower the arm, a dashpot (D) to slow the movement of the arm, a water reservoir (R), and a chamber (C) into which the filled cup rises. All are mounted on an aluminum base plate (P). In the present apparatus, a rotary solenoid replaces the usual linear solenoid. The dipper arm is mounted on the solenoid shaft, eliminating the need for a separate hub and axle for the arm. When the solenoid is energized, the shaft rotates about 25 degrees, lowering and filling the cup. When the solenoid is de-energized, an internal spring returns the shaft to its initial position, raising the filled cup into the drinking chamber. Alternatively, the dipper may be made so that the cup is normally down and is raised to drinking position when the solenoid is energized.

The water cup is fastened to the end of an aluminum or stainless steel strip, which in turn is bolted to a square metal or plastic rod. The rod is mounted on the solenoid shaft and secured by two set screws. The piston wire of the dashpot is bent 90 degrees and its end inserted into a small hole in the square rod. The mounting bracket for the dashpot is a strip of sheet metal, bent at a right angle and bolted to the base plate.

The drinking chamber is made from a 2 in. copper pipe-cap, having in its side a $\frac{1}{2}$ in. hole, through which the drinking cup is presented. It is press-fitted into a hole drilled in the base plate. The terminal strip is fastened to the rear of the chamber with machine screws or with epoxy cement. The water cup may be a short length of $\frac{3}{8}$ in. or $\frac{1}{2}$ in. plastic rod, with a depression cut into one end. It is attached to the metal strip with epoxy cement. Alternatively, cups for the Gerbrands Dipper Feeder may be purchased from Ralph Gerbrands for \$1.50 each. These are available in several capacities and are readily interchangeable. The reservoir, a cover for an ordinary butter dish, rests on a pair of machine screws which are screwed into tapped holes in the base plate. It is held in place by an extension spring. The base plate is of $\frac{1}{8}$ in., or thicker, aluminum, $5\frac{1}{2}$ in. wide and $4\frac{1}{2}$ in. high.

The only components which cannot be obtained from suppliers of common parts and materials are the rotary solenoid and the dashpot. Suitable rotary solenoids are available for about \$2.50 in a variety of sizes, shapes, and operating voltages from Universal Relay Corp., 42 White Street, New York 13, N. Y. The dashpot is an "Airpot," sold by Electric Regulator Corp., Norwalk, Conn. The model used is the "two-way, stud-mounting type, with 6-turn coupling spring and 1-in. long glass tube."

Fig. 1. Water dipper incorporating rotary solenoid.
S. Solenoid. A. Dipper arm. W. Water cup.
D. Dashpot. C. Drinking chamber. R. Reservoir.
P. Mounting plate.

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