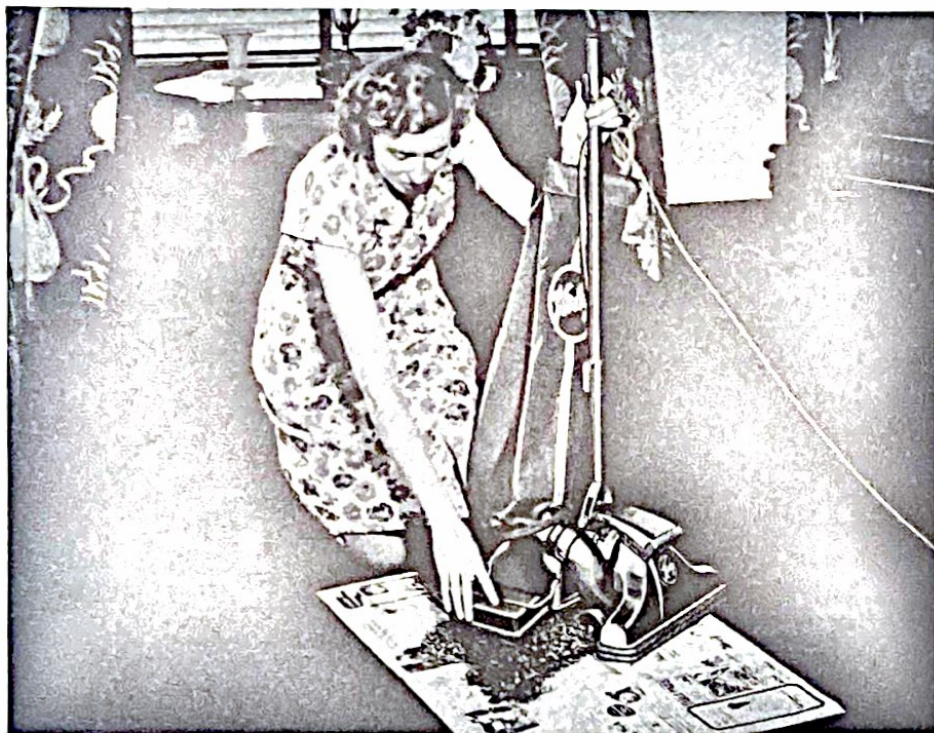


# Five Plastics in a Cleaner

The Kirby vacuum cleaner incorporates plastics for lighter weight, greater strength, better appearance, and improved fit of parts



Dirt trap lid is injection molded of polystyrene. The material was chosen because of its color, light weight, and speed of production

**T**WENTY years ago, The Scott & Fetzer Co., Cleveland, Ohio, maker of the Kirby Sanitation System, designed the first "crystalator," a device used on a vacuum cleaner to disperse and grind moth crystals. The complicated unit was first made of cellulose nitrate, then compression molded from acetate, and later became one of the first injection-molded parts made by General Industries Co., Elyria, Ohio. It has been redesigned since, but is still produced from cellulose acetate because of that material's resistance to paradichlorobenzene and its impact strength.

Over the past two decades, the Kirby cleaner has undergone several design changes and engineering improvements, each one embracing the use of more plastics components. Lighter weight, increased strength, improved appearance, and better fitting in assembly were the requirements in most cases.

Prior to 1940, the Kirby brush nozzle was made of a wood back with tufted hairs stapled into it, a stamped steel attachment piece, and an aluminum die casting. The post-war shortage of wood led to redesign for plastics—with notable improvement and economy. It was decided to use a length of Fuller metal-back strip brush; accordingly, a suitable holder was designed in Ethocel.

The method of anchoring the strip brush in the plastic is interesting. Six cylindrical plastic lugs are deformed against the side of the metal back by a punch press at room temperature, taking advantage of the flexural and impact strength of the plastic. The new unit, molded by General Industries Co., weighs less

Old brush nozzle was a complicated assembly of aluminum, steel, and wood with hairs stapled to it. Ethyl cellulose nozzle is built around metal-backed strip brush



Modern Plastics

APR. 1950

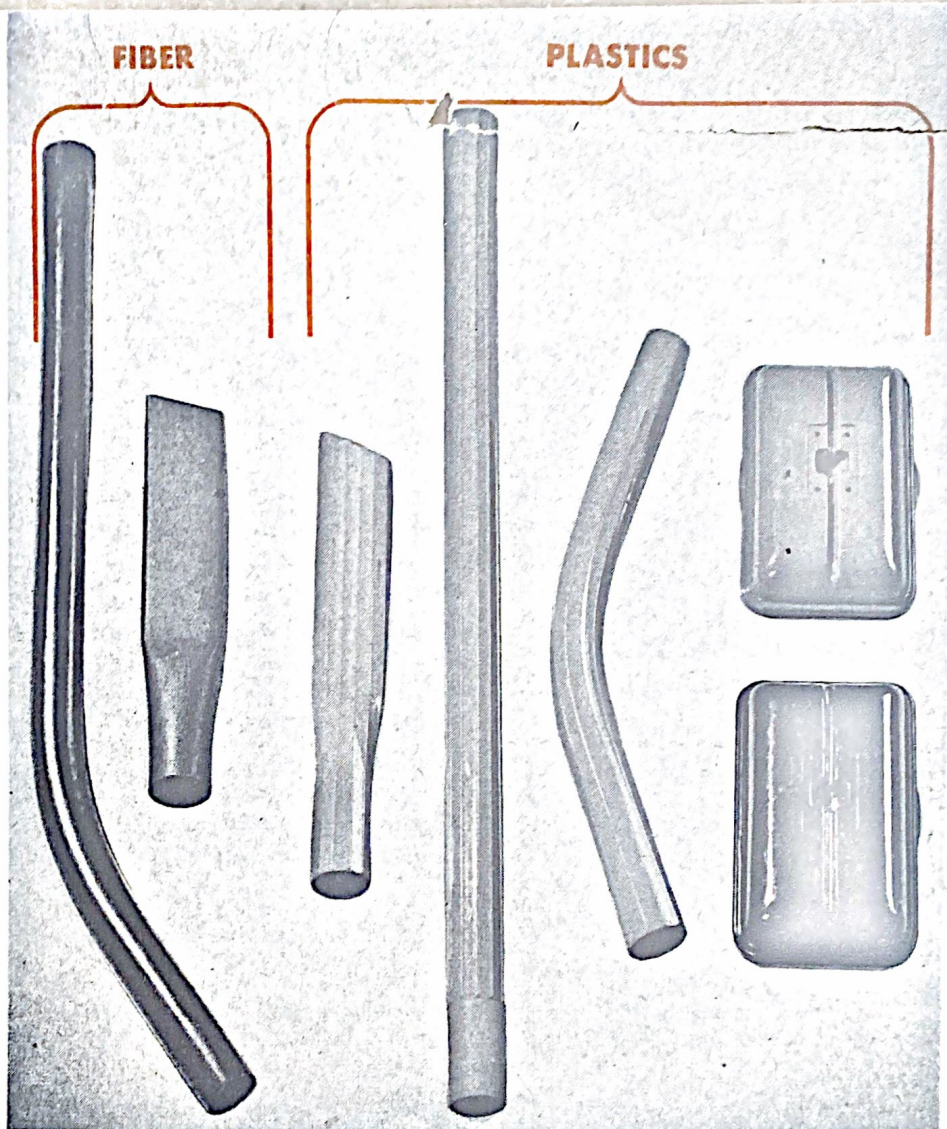


than half as much as the old part.

The former vulcanized fiber extension tubes, both straight and curved, and the radiator tool, have been replaced by Ethocel units made by Yardley Plastics Co., Columbus, Ohio, and Carter Products Corp., Cleveland. Using a material formulated especially for this job, Yardley and Carter extrude the tubing (heavily ribbed on the outside for additional strength and to resist slipping), and swedge it into shape in a heat postforming operation. About 11½ oz. of this extrusion is used in each Kirby cleaner, and the sales force is enthusiastic over the better taper fits, improved finish, and dimensional stability.

Kirby has in one part switched from one plastic to another. To cut weight from 4.35 oz. to 3.55 oz., get a preferred color, and obtain increased production speed, the dirt  
(Continued on p. 204)

Extension tubes formerly made of vulcanized fiber are now ethyl cellulose. Dust lid is polystyrene



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Moth-proofing attachment (inset)  
for cleaner is molded of acetate

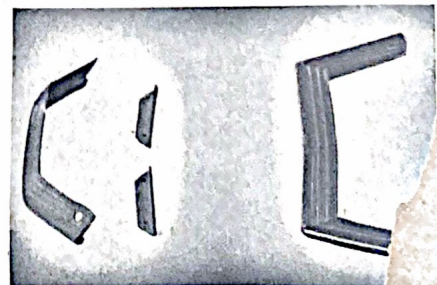
## Plastics in Cleaner

(Continued from pp. 102-3)

trap lid went from black phenolic to gray polystyrene, injection molded by Vlchek Tool Co., Cleveland, Ohio. Ribs were added to strengthen the polystyrene.

Before the war, the headlight bumper on the cleaner was made up of three pieces of extruded rubber. Redesign made a molded bumper imperative, but high mold costs made a one-piece bumper impractical in rubber because a 30-cavity mold would have been required to get adequate speed of production in rubber. Now, in a 2-cavity mold, available at reasonable cost, Yardley Plastics Co., supplies over 1000 one-piece vinyl bumpers every production day.—END

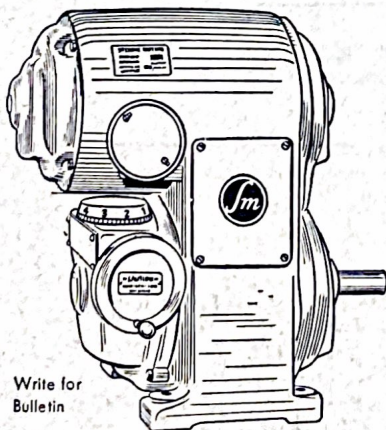
One-piece vinyl bumper (right) is molded. Rubber one was extruded



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