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Authorized Amount: \$20,750 Total Expended to Date: \$12,985

Nature of Problem:

Development of a 12 gauge aluminum shot shell.

Summary of Progress from Inception:

Investigations to date have shown that the most economical and satisfactory method of producing such a shell would be:

1. To blank a slug from strip stock.
2. Cold extrude to finished diameter, wall thickness and length.
3. Trim
4. Head
5. Taper
6. Prime with military type primer obviating the use of the expensive battery cup type primer.

Small samples of shells which performed satisfactorily have been obtained by this process. The major problem confronting this development program at the present time is to develop a suitable manufacturing process with respect to perishable tools and production equipment.

This Quarter's Work:

Measurement of extrusion pressures by the strain gauge method showed that even with the best tool design obtained to date, pressures were approximately 65,000 pounds and thus a heavy duty press must be used. A caliber .50 case second draw press is being converted and equipped with a die set for accurate tool alignment. Work continued on the design and trial of various extrusion and heading tools to accomplish the following desired results:

1. Obtain suitable shell from minimum amount of cheapest stock (blank .800" diameter x 1/4" thick 3S aluminum).
2. Head to size without flash so that head turning is not necessary.

Considerable difficulty has been encountered in obtaining a head thin enough for maximum metal economy without producing cold shuts and folds in heading. This condition is aggravated by the necessity of using a pointed punch for maintaining wall concentricity. The die also presents a problem since the cavity is quite irregular to give proper metal distribution.

Proposed Next Quarter's Work:

It is proposed during the next Quarter to continue the investigation of the above outlined program with very little change.