Fowler

INTERIM REPORT 9/15/48

SUBJECT: FUNCTIONAL AND ENDURANCE TEST OF STANDARD FIRE CONTROL AND ALTERNATE SAFETY TYPE #1 FIRE CONTROL FOR M/721-722 RIFLES

INTRODUCTION

Firing of M/721 rifles when the Safety is moved to the "off" position is the complaint received from three customers, which resulted in an investigation of the present fire control. As a result of this investigation an alternate design incorporating a ball bearing between the Trigger and Connector and an extension on the Sear was constructed and submitted for test.

OBJECTIVE

The objective of this test was to determine if the gun will fire when the Bolt is cocked and the Safety is moved to the "off" position by submitting the standard fire control and the alternate Safety Type I Fire Control to a functional and endurance test.

CONCLUSIONS

1. Both fire controls will not fire when the Bolt is cocked and the Safety is moved to the "off" position after 20,000 dry cycles of cocking and firing, and 10,000 dry cycles of functioning of the Safety.
2. That the Trigger Stop Screw in both Fire Controls needed adjusting and cementing during the test.

COMMENTS

Correct adjustment of the M/721 Fire Control is essential in providing a clean, crisp trigger and one with enough Sear engagement to prevent accidental discharge caused by a "jar off" condition. The adjustment in the present fire control is variable and is determined by the assembler, whereas the adjustment in the alternate Safety Type I Fire Control is determined largely by dimensions of the various parts and a control of the adjustment by the limiting dimensions of a ball

RECOMMENDATIONS

It is recommended:

1. That use of the present M/721 Fire Control be continued as results fail to indicate any need for a change.
2. That the Type I Safety (ball bearing between the Trigger and Connector) be considered in any future design change of the M/721 Fire Control as its adjustment characteristics are superior to the Fire Control now used.
3. That the present practice of cementing the Trigger Screws be supplemented with a positive locking mechanism and that this locking mechanism be sealed with a sealing compound before shipment of the gun to the customer.

TESTING DETAILS

1. One of each of the subject fire controls was tested functionally by three individuals of the Test Group. These tests were as follows:
   a. Drop Test - The gun was dropped and allowed to fall freely for a distance of 10". Repeat 10 times.
   b. Cock the gun, position the Safety to the "on" position, pull the Trigger, release the pressure exerted by the finger on the Trigger, and position the Safety to the "off" position. Repeat 25 times.
   c. Cock the Bolt and slam the Bolt forward. Repeat 25 times.
2. Both fire controls were then subjected to 10,000 functions in the dry cycle machine which cocks the Bolt and fires the Trigger. The Safety was then functioned 10,000 dry cycles. Repeat a, b, and c of Test I.
3. Both fire controls were subjected to a standard dust test after which an additional 10,000 dry cycles of Bolt, Trigger and Safety functioning were performed. Repeat a, b, and c of Test I.

RESULTS OF TEST

1. It was not possible in this test to fire either of the fire controls by moving the Safety to the "off" position when the fire controls are in adjustment.
2. Both Fire Controls would not stay in adjustment until after a second application of cement was made during the first 10,000 dry cycle period.