

hold the primers safely edge-to-edge in single rows. Extensive tests and long experience have shown the outstanding safety of this packing method. Primers in cartons of these factory boxes will not explode in bulk, even if individual primers should be exploded by a penetrating blow from outside. Therefore, *leave primers in the factory boxes until they are taken out for use.*

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Special Gas Cylinder Designs

In answer to a question as to whether rifles could be made with gas-operating systems compensating automatically for ammunition variables, like present gas-operated shotguns, The American Rifleman described the gas-relief valve designed for the T44 rifle (development model of the M14) as an example of such a rifle construction ("Special Gas Cylinder Designs," May 1969, page 67). The answer attributed this development to operating trouble from pressure differences among the ammunitions then also under development.



M14 rifle gas spindle (arrow), here shown at open setting for normal rifle operation, as indicated by direction of slot.

During the winter of 1952-53, the Arctic Test Board reported an excessive number of broken stocks when the T44 prototype was used to discharge rifle grenades with the rifle butt rested against frozen ground. To correct this fault, a steel liner was designed to reinforce the stock (this stock liner remains incorporated in the M14 rifle). A bleed-off valve was also developed "whose only function would be to relieve automatically the extra pressure generated when launching grenades; otherwise the

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DOPE BAG continued

valve was to stay shut." This information is taken from an unpublished history of the M14 rifle written by an officer who was stationed at Springfield Armory.

The American Rifleman thus was incorrect in stating the valve was developed because of pressure differences among development ammunitions.

Answer: The gas-relief valve described is covered in U.S. Patent 2,750,849, as noted in *The American Rifleman's* answer. That patent outlines both rifle-grenade and development-ammunition problems and gives as its objects to provide against the effects of each. The answer also took the trouble to mention U.S. Patent 2,715,858, which covers a relief valve for the T52 light machine gun, likewise designed for the stated purpose of regulating the operating gas pressure in the case of irregular ammunition; grenade launching is not mentioned. Copies of these patents are readily obtainable.

An obvious consideration also is that R. J. Hassett, who prepared the drawing for the published answer, was, until his retirement, actively engaged in just that work in the Armory and would not have provided incorrect information.

Nevertheless, for the sake of an exhaustive answer, *The American Rifleman* again consulted Mr. Hassett at the time, and also E. M. Harvey, who was chief of the appropriate Armory branch and took out Patent 2,750,849. Both confirmed immediately that the device was developed to provide for both the ammunition and grenade-launching problems. Mr. Hassett, who kept notes during the development, stated that the ammunition problem appeared first and caused the development to be initiated. Mr. Harvey was without notes and could not recollect which came first.

All the above is conclusive. The attribution of this valve to the ammunition problem is quite correct insofar as *The American Rifleman* dealt with the matter, and is all that was needed to answer the question as to practicability of such compensation in gas-operated rifles. Our correspondent above is mistaken in attributing it to grenade use only. He would have been correct if he had instead invited attention to that as one of the purposes.

As remarked in the answer, ammunition improvements eventually eliminated the excessive variabilities in that respect. These automatic gas regulators then were dropped. Grenade use in the M14 rifle was taken care of by the gas spindle, which has been described before in *The American Rifleman*. This is a simple valve (see illustration) which is closed with a cartridge rim to shut off operating gas when grenades are fired.—E.H.H.

Rifle-Musket Charges

Some shooters in my area use only 35 grs. of blackpowder in their cal. .58 rifle-muskets while others use up to 80 grs. What is a good average charge for target shooting? What was the standard charge for cal. .58 rifle-muskets used by the U.S. Army during the Civil War?