CASE REPORT

Joychandra S. Soraisam[1] *Ph.D. and Ruhindro S. Khangembam*[1] *B.Sc.*

Interesting Action Mechanism of an Improvised Firearm

REFERENCE: Soraisam JS, Khangembam RS. Interesting action mechanism of an improvised firearm. J Forensic Sci 1999;44(1): 208–210.

ABSTRACT: Manipur is a state in the northeastern region of India. A large number of various types of improvised firearms are involved in the crimes committed in this state. Many of these firearms have different action mechanisms. In this paper, we report a unique and simple action mechanism of an improvised automatic firearm that was received for examination in the Forensic Science Laboratory, Manipur, India.

KEYWORDS: forensic science, firearms identification, improvised firearms, action mechanism

There are many reasons that may cause the frequent involvement of firearms in crimes. In India, one of the possible reasons is the difficulty in obtaining licensed firearms (1). Another obvious reason is that firearms are cheap and easily available to criminals. It also depends upon the nature of crimes that are most frequently committed in the region/state (2).

The difference in size and look depends upon the motive and the mode of use of such firearms. It may be to fulfill the requirement of the user. For example, the user may want a short size firearm so that it can be easily concealed or prefer the look of a sophisticated firearm to frighten the opponents/victims. Moreover, the designer/gunsmith may want to make firearms as attractive as possible to get a high price from the customers.

Action mechanisms depend mainly on the knowledge and skill of the designer/gunsmith, available facilities, raw materials and the ammunition available for use plus the requirements of the user. For example, the user may require automatic firearms but the designer/gunsmith can design only automatic firearms of 9mm caliber since the available materials are of low quality. Even if the designer/gunsmith wants to imitate the mechanisms of sophisticated firearms, he might not have the sophisticated implements necessary to make the parts, which require high-level accuracy. In such situations he has to either modify the mechanism or use a different mechanism which can be made with the available materials and facilities. This might have given birth to indigenous firearms. In many cases their action mechanisms not only vary among themselves but also from those of standard firearms.

Manipur is a state in the northeastern region of India facing problems of insurgency and ethnic clashes in addition to the usual crimes. Various types of firearms are frequently used in these crimes and their sizes range from handguns to large cannon-type muzzle loaders. Large cannon-type firearms are frequently used in the thinly populated hills where concealment from infrequent passersby is hardly required. The look of these firearms varies from a pipe gun to sophisticated firearms that look like the AK-47.

In this paper, the characteristic features and interesting action mechanism of an improvised firearm received for examination at the Manipur State Forensic Science Laboratory are discussed in detail.

Characteristic Feature of the Firearm

The firearm has a length of 37.3 cm and a weight of 1.660 kg. It has a single column, box-type magazine with a capacity of 12 rounds and was designed to fire 9mm cartridges. Its appearance is somewhat between a carbine and an AK-47 but it is different from that of any standard firearm. However, the most interesting part lies in its action mechanism, which while very simple allows the firearm to fire in both a fully automatic or single-shot mode without a tripping (disconnect) lever.

Action Mechanism

The firearm has a sear engaged with two sear springs. This engagement has a tendency to rotate the sear in a counterclockwise direction. In the free (uncocked) position, the sear tail is barely in contact with the sear lever nose while the trigger nose rests on the sear lever tail. The trigger is supported by a trigger spring plunger. The trigger has an extended tail/arm area where the selector switch is present. The trigger and the selector switch have peculiar shapes and are main parts in the functioning of the action mechanism. A cross-sectional view of the selector switch is shown in Fig. 1. It has nearly a D shape structure with two flat surfaces. The wide flat surface, narrow flat surface and top of the curvy surface are identified as S (single shot), A (full automatic) and L (locked/safe), respectively, for easy explanation of the action mechanism.

For fully automatic firing, the A portion of the selector switch is at top. When the trigger is pulled rearward, the trigger spring plunger is compressed until the counterclockwise motion of the

[1] Forensic Science Laboratory, Pangei, P.O. Yangdong, Manipur, 795 114, India.

Received 3 March 1998; and in revised form 13 May 1998; accepted 18 May 1998.

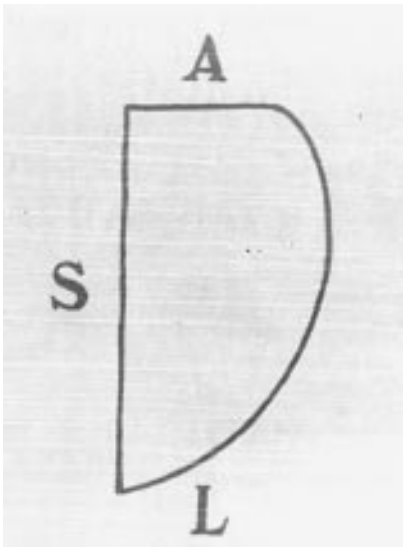

FIG. 1—*Cross-sectional view of selector switch.*

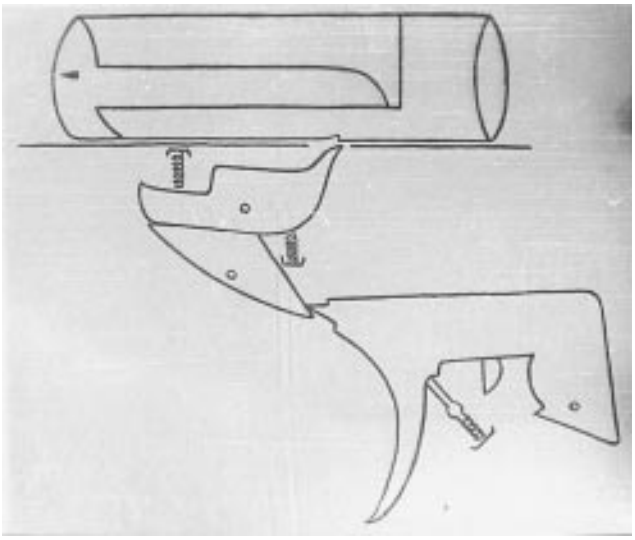

FIG. 2*a*—*Action mechanism during fully automatic firings (at the instant of disengagement between breech block and sear).*

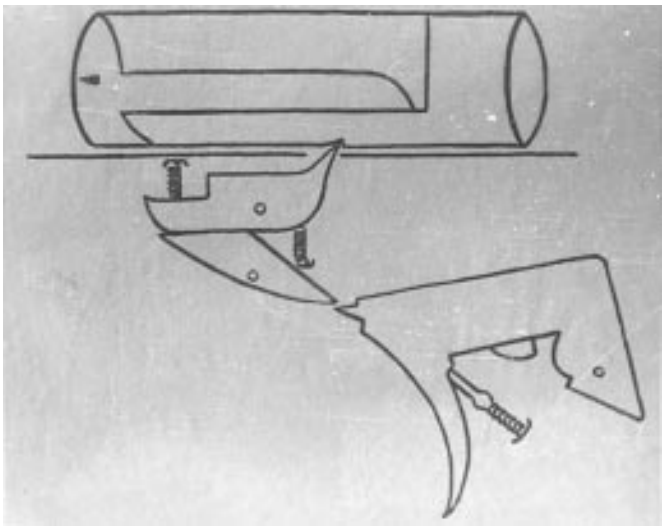

FIG. 2*b*—*Action mechanism of single-shot firings (at the instant of just firing before releasing the trigger).*

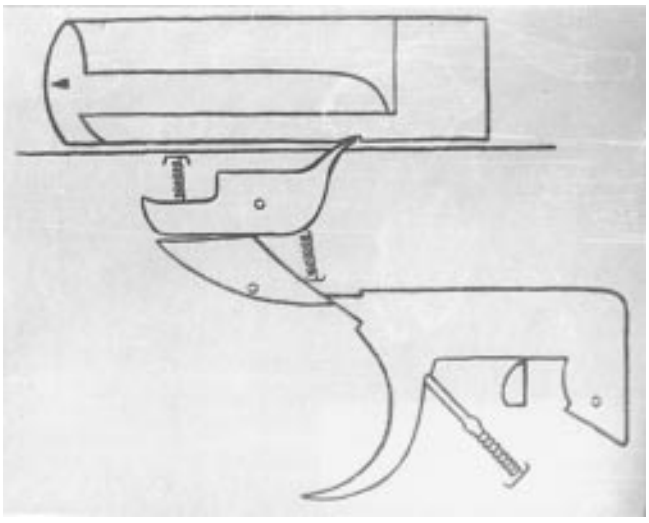

FIG. 2*c*—*Action mechanism in locked position.*

trigger arm is stopped by the selector switch. During this action, the trigger nose presses the tail of the sear lever while the nose of the sear lever pushes the sear tail. This action lowers the sear nose sufficiently so that the breech block can have a free to-and-fro motion during the firing sequence. The sear nose remains in this position until the trigger is released at which time the sear nose raises to the normal position. This action is shown in Fig. 2*a*.

For firing single shots, the S portion of the selector switch is at top. This position lowers the trigger, giving it more room to lower than during fully automatic firing. When the trigger is pulled, the tail of the sear lever is pressed down by the trigger nose until they disengage. The motion of the trigger nose continues until the trigger arm is stopped by the selector switch. When the sear lever disengages from the trigger nose, the sear tail lowers due to spring pressure which, in turn, raises the sear nose to block the forward movement of the breech block. When the trigger is released, the trigger spring plunger pushes the trigger nose upwards to engage the nose with the sear lever tail in its normal position. This action is shown in Fig. 2*b*.

In the locked (or safe) position, the L portion of the selector switch is at top. The trigger arm has no room to move downwards, which means the sear nose cannot be lowered by pulling the trigger. This action is shown in Fig. 2*c*.

Conclusion

The variation in the action mechanisms of improvised firearms is very large, and even if the basic components are the same, there may be minute variations in their actions. A study of the improvised firearms can never be completed as new types of these firearms are constantly in production. Such firearms are often of poor quality in comparison with standard factory-manufactured firearms. However, some of these action mechanisms are noteworthy and may provide useful data for use by firearms examiners.

Acknowledgments

Authors are thankful to S. Sahu, Kh. Hemanta, and L. Chandra for their help in the examination of improvised firearms.

References

1. Sharma BR. Firearms in criminal investigation and trials. 1st ed., Bombay: N.M. Tripathy Pvt. Ltd., 1976.
2. Singh SJ, Singh Kh R, Pratihari HK, Rao M.S. A profile on improvised firearms with ''direct blow back action'' (DBBA) mechanism in Manipur. Police Res Devel J 1997;April–June; Qr-II:34–8.

Additional information and reprint requests:
Joychandra S. Soraisam, Ph.D.
Forensic Science Laboratory
Pangei, P.O. Yangdong
Manipur - 795 114, India