This invention is directed to an improved method of manufacture and construction of incendiary and tracer bullets wherein to provide a better balanced bullet and simplicity and reduce the cost of manufacture.

The invention is directed primarily to a method of sealing the base with a view to eliminating trimming for special length jacket and also the usual base soldering, with the result of greatly improving the accuracy and balance of the bullet as compared with the usual methods of manufacture.

It has been heretofore proposed in the finishing of bullets of this type to spin over the end of the base of the shell, and in this spinning if the shell is of a few thousandths extra length, a central burr is thrown up encasing the case by spinning, necessitating the buffing off of the end or the base of the bullet in order to permit the bullet to feed properly in the loading machines. If the shell is of such length that the base is not completely closed by the spinning operation, additional soldering is necessary, tending to throw the bullet out of balance and thus interfering with accuracy in firing.

The improved method consists in the insertion of a plug of fusible metal which, under the heat of the spinning tool, serves to fill in the end of the base perfectly in the event of a slightly longer case, and in the event of a slightly shorter case tending to leave a central opening in the end, the material of the plug, due to its low fusibility and the heat of the spinning operation, melting into and completely filling the opening smoothly to provide a perfect base, with the bullet in desired and perfect balance.

The method is illustrated more graphically in the accompanying drawing, in which:-

Figure 1 is a view of the shell completed, except for the finish of the end, with the improved plug in place.

Figure 2 is a similar view showing the shell completed, the illustration being of a slightly reduced length shell which in the spinning provides a central opening which is filled by the material of the plug.

Figure 3 is a face view of the plug.

Figure 4 is a side elevation of the same.

The plug or solder disk of the invention is indicated at 1, and in the preferred detail is made up of six parts of lead, six parts of tin, and one part of bismuth. The case 2 filled with the usual ingredients, indicated at 3 and having the opening for the fusible alloy, is opened at the end, as indicated, and completed after the insertion of the ingredients by spinning the end down onto a plug usually forced into the shell behind the materials therein.

Owing to the low fusibility of the solder disk or plug of this invention, it is apparent that if the case is a few thousandths short of an exactly predetermined length, when the spinning operation is completed the end 5 will present a central opening 6, which opening under the melting of the solder disk or plug incident to the spinning friction will be automatically filled evenly with the material of the plug, as indicated at 7. Of course, the plug itself will, by reason of its fusibility, completely fill the end of the shell or case as the latter is closed, and if the length is a few thousandths in excess of the predetermined length, the plug will obviously fill the end.

With the solder disk or plug of the invention, the accurate balance of the bullet is provided for as, of course, the weight of the fusible plug is such as to insure this balance. Under the spinning action to complete the end of the bullet, the plug by reason of its low fusibility serving to completely fill the end even under slightly excess length of the shell and to completely fill the opening resulting from a slightly diminished length of the shell, insures that the spinning operation completes the shell without the necessity of additional work or materials. Thus the product is produced at a minimum cost, while at the same time maintaining the perfect balance desired and determined by the particular solder disk or plug used.

The improved solder disk will, in the shorter bullet jacket or shell, fill the opening resulting in the base end and thus complete and form a perfect base, while in the case of a slightly greater length jacket or shell, the additional thickness of the plug is just sufficient to take up the slack and the end of the finished product requires no further operation as to trimming, smoothing or the like, operations which are ordinarily hand jobs, delay manufacture, and add to the cost of the product.

With the method described, each bullet is of that perfect length and formation necessary to feed through the hoppers of the loading machines, and owing to the lack of disturbances incidental to the present methods of manufacture and a consequent imperfect accuracy in firing, the improved method results in a perfectly balanced bullet, with a consequent perfect accuracy in firing.

The method, while primarily designed for use in connection with tracer and incendiary bullets,
and the drawing illustrates bullets of that calibre and type, is obviously applicable to heavier ammunition or other types of ammunition of various gauges, rifle or artillery, and its use in such is intended to be within the scope of the present invention.

I claim:—

1. The method of completing the manufacture of a bullet of the type including a casing designed to be loaded and the end thereof moved into final position by spinning, consisting in sealing the casing behind the load with a plug in the form of a disk susceptible to the heat of the spinning operation for flowing to automatically compensate for irregularities in closing the end of the casing.

2. A method of automatically compensating for irregularities in closing the open end of a loaded shell or bullet by spinning, consisting in sealing the end of the shell or bullet with a fusible solder plug of a weight predetermined the accuracy of the shell or bullet, and utilizing the heat of the spinning operation to flow the plug to compensate for irregularities in the shell or bullet closing.

3. A method of automatically compensating for irregularities in closing the end of the loaded shell or bullet, consisting in sealing the open end of the shell or bullet with a fusible plug, turning in the sides of the shell or bullet to close the end of the same, and simultaneously fusing the plug, whereby the plug under such heat-responsive flowing will automatically compensate for shell or bullet closing irregularities.

4. A method of completing the manufacture of a loaded shell or bullet, consisting in sealing the casing behind the load with a plug of lead, tin, and bismuth, and spinning the end of the shell or bullet onto the plug, the heat of the spinning operation fusing the plug for sufficient flowing to compensate for closing irregularities.

THOMAS L. PAGE. [L. S.]