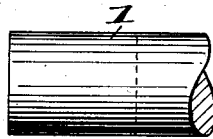


J. H. WESSON.  
PROCESS OF MAKING A CARTRIDGE SHELL.  
APPLICATION FILED NOV. 20, 1913.

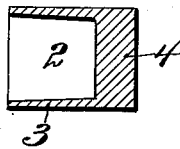
1,101,224.

Patented June 23, 1914.

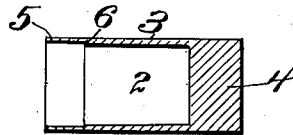
*Fig. 1.*



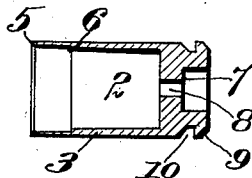
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Witnesses:*  
*Jas. J. Maloney.*  
*M. S. Maloney.*

*Inventor:*  
*Joseph H. Wesson,*  
*by [Signature] Attorney.*

# UNITED STATES PATENT OFFICE.

JOSEPH H. WESSON, OF SPRINGFIELD, MASSACHUSETTS.

## PROCESS OF MAKING A CARTRIDGE-SHELL.

1,101,224.

Specification of Letters Patent.

Patented June 23, 1914.

Application filed November 20, 1913. Serial No. 802,106.

*To all whom it may concern:*

Be it known that I, JOSEPH H. WESSON, a citizen of the United States, residing in Springfield, in the county of Hampden and State of Massachusetts, have invented an Improvement in Processes of Making a Cartridge-Shell, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to the process of making a cartridge shell, the shell to which the invention relates being of the type which is used in connection with automatic fire-arms, in which the flange which is operated upon by the ejector mechanism is substantially equal in diameter to the body of the shell.

The purpose of the invention is to facilitate the manufacture of the shell and also to improve the quality thereof, the shell constructed according to the invention having a solid metallic breech end, instead of a breech end which is composed of sheet metal which has been shaped from a flat blank wholly by a drawing process. In accordance with the method embodying the invention, moreover, the number of steps required to complete the shell is reduced, and the cost of manufacture thereby decreased. It has been the usual practice heretofore, in the manufacture of metallic shells, to use sheet metal, and to complete the shell therefrom by successive drawing processes, up to the final trimming of the shell and the cutting or shaping of the flange.

In accordance with the present invention, on the contrary, the shell is made from a solid rod of metal, the diameter of which is originally larger than that of the finished shell, the first step in the process consisting in removing a part of the metal, as by boring a tapered longitudinal hole in the rod, thus forming the part of the shell which eventually becomes the chamber, and at the same time cutting the said part from the end of the rod. The metallic cup thus formed is then elongated in diameter by displacing the particles of solid metal. In practice the blank is drawn lengthwise by means of a punch and die; a single drawing process being sufficient to reduce the metal to the desired diameter, and extend it somewhat beyond the length necessary for the

finished shell, after which the open end is trimmed. It is practicable, moreover, during the drawing process, by properly shaping the drawing punch, to draw the outer part of the open end of the cartridge somewhat more than the main body thereof, thus thinning the outer end, and forming a shoulder inside of the shell to constitute a seat for the bullet when the cartridge is loaded. The cartridge is then finished by trimming it to the desired length and forming an annular recess around the breech end by the use of an ordinary automatic screw machine, by means of which the annular groove, the finished rear end, and the primer seat and passage can all be formed at one operation.

Figure 1 is a side elevation of the rod or blank from which the cartridge is made; Fig. 2 is a longitudinal section in which the bore is shown as having been drilled and the blank cut to length; Fig. 3 is a similar view of the same after the drawing process has been completed; and Fig. 4 is a longitudinal section of the finished shell.

In carrying out the process, the rod or blank 1 which is larger in diameter than the cartridge which is to be constructed, is taken from a long metal rod which may be inserted in an automatic screw machine and at one operation cut to the desired length and bored endwise to form a tapered cavity 2 as shown in Fig. 2. A cup or shell is thereby formed having a relatively thin wall 3 and a solid closed end 4. After this step has been taken, the metal blank shown in Fig. 2 is reshaped by reducing it in diameter and increasing it in length. This may be accomplished by subjecting the blank to the usual drawing process, that is, forcing it through a die, the diameter of which is equal to that of the finished shell. By this drawing process, the blank shown in Fig. 2 is elongated and reduced in diameter to the proportions shown in Fig. 3. In connection with this step of the process an internal drawing punch is used, the shape of the punch being such that the open end of the shell is slightly reduced in thickness as indicated at 5 in Fig. 3, thus forming an annular shoulder 6 to constitute a seat for the bullet when the shell is loaded. The shell is then finished by boring the primer seat 7, and the primer passage 8, beveling the breech end of the shell as shown at 9, and cutting the annular channel 10; it being practicable to

perform all of these operations at the same time by means of suitable tools used in connection with an automatic screw machine.

What I claim is:

- 5 1. The herein described method of manufacturing a cartridge shell, which consists in removing from a solid metal rod a portion of the metal to form a cup; cutting the portion thus formed from the end of the  
10 rod; elongating the blank thus formed and reducing the diameter thereof; and cutting an annular groove and a longitudinal recess in the solid end of the blank to form a flange and primer seat.
- 15 2. The herein described method of manufacturing cartridge shells which consists in boring a solid rod of metal to form a cup; drawing the bored rod to a smaller diameter; and finally cutting an annular groove  
20 around the solid end of the bored and drawn

rod and forming a primer seat in the end surface thereof.

3. The herein described method of manufacturing cartridge shells which consists in boring a solid rod of metal to form a cup; 25 drawing the bored rod to a smaller diameter; expanding the open end of the bore to a larger diameter to form an annular internal shoulder; and finally cutting an annular groove around the solid end of the bored 30 and drawn rod and forming a primer seat in the end surface thereof.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH H. WESSON.

Witnesses:

GEORGE P. CHAPIN,  
EVERETT A. KINNEY.