

Summer 1964

Filing .22 Firing Pin Impressions

Stanton O. Berg

Follow this and additional works at: <https://scholarlycommons.law.northwestern.edu/jclc>

 Part of the [Criminal Law Commons](#), [Criminology Commons](#), and the [Criminology and Criminal Justice Commons](#)

Recommended Citation

Stanton O. Berg, Filing .22 Firing Pin Impressions, 55 J. Crim. L. Criminology & Police Sci. 290 (1964)

This Criminology is brought to you for free and open access by Northwestern University School of Law Scholarly Commons. It has been accepted for inclusion in Journal of Criminal Law and Criminology by an authorized editor of Northwestern University School of Law Scholarly Commons.

FILING .22 FIRING PIN IMPRESSIONS

STANTON O. BERG

Stanton O. Berg has been a consultant for the past 15 years in firearms identification problems and maintains his laboratory in Minneapolis, Minnesota. He is a member of the Minnesota Identification Association, the National Rifle Association, and the International Cartridge Collectors Association. Mr. Berg's special interest is the .22 caliber firing pin impressions. He has previously contributed to this Journal and a number of articles in the Identification News.—EDITOR.

Many firearms laboratories maintain a reference file or collection of firing pin impression data of one sort or the other. The purpose of this file is to check evidence .22 fired cases for a clue as to the type of weapon involved. Does the file however just take up space or is it of practical value and frequently referred to. To be practical the file should be relatively simple both to file and check impressions and yet provide sufficient subdivisions, or breakdown so that no section is unduly congested. The system described herein is both simple in application and practical in use.

PRIMARY CLASSIFICATION

First, all firing pin impressions are classified into one of six different types according to the shape or geometric outline of the impression.

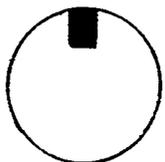
1. Rectangular
2. Circular
3. Semi-Circular
4. Wedge
5. Double
6. Odd

Examples of the different types are shown in figure 1.

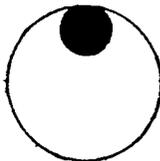
This listing is also in order of frequency of occurrence. The rectangular shape is without question the most frequently encountered. Next appears to be the circular shape followed closely by the semi-circular shape after which would come the wedge shape, double, and odd. The "odd" classification is intended to cover those types that appear to be a cross between two other shapes or any type that would not fit into one of the other five basic types.

SUB CLASSIFICATIONS

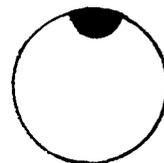
The sub classification is based on a simple breakdown by obvious physical characteristics of the impression. At all times the fired case should be held with the firing pin impression in an upwards or 12 o'clock position. All classification is done with the impression in this position regardless of the position of firing pin impression might be in the gun itself. This does away with any



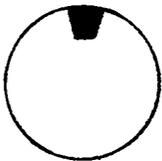
RECTANGULAR



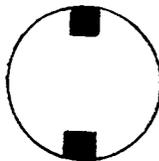
CIRCULAR



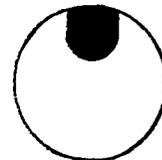
SEMI-CIRCULAR



WEDGE



DOUBLE



ODD

Figure 1
Major Classifications

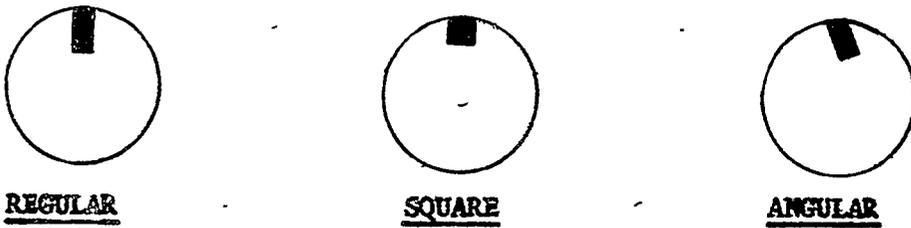


Figure 2
Sub-Classification of Rectangular Impressions

confusion in attempting to orient the case to its position in the gun.

RECTANGULAR SUB CLASSIFICATION

The rectangular impressions are classified into the following three types.

1. Regular
2. Square
3. Angular

Those impressions that exhibit the usual oblong and commonly accepted idea of a rectangular shape are filed under the classification of "regular." Those impressions that appear to be square or approximately so are filed under the classification of "square." All impressions which appear to be inclined from a vertical position when the impression is at 12 o'clock would be filed under "angular." It would make no difference whether the impression would normally qualify as a regular rectangular shape or whether it would be a square shape. As long as the impression is inclined or at an angle from the vertical it would go into this subclassification. (See figure 2 for examples of this group.)

CIRCULAR SUB CLASSIFICATION

Circular impressions are divided into one of the following two types.

1. Flat
2. Hemispherical

The firing pin producing the circular impression usually has either a flat, round striking surface or a round striking surface with a rounded or hemispherical face.

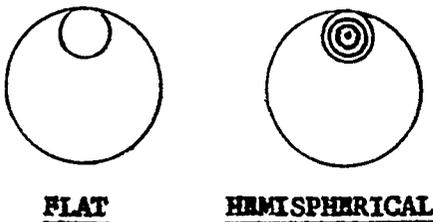


Figure 3
Sub-Classification of Circular Impressions

Guns with a firing pin of the flat, round type leave impressions of the same type and are filed under the "flat" sub classification. On the other hand those impressions exhibiting a cup shape are filed under "hemispherical." (See figure 3 for examples of this group.)

SEMI-CIRCULAR SUB CLASSIFICATION

The same sub classifications are used for the semi-circular impressions as are used for the circular. The same types of firing pins are usually involved. The only difference in most cases between the circular and the semi-circular impression is that in the semi-circular impression only about one half of the firing pin strikes the rim edge. (See figure 4 for examples of this group.)

WEDGE SUB CLASSIFICATION

There are not too many impressions to be filed under the "wedge" classification. If however this group should become too bulky or congested, it may be broken down into the following three types.

1. Regular
2. Reverse
3. T type

In the "regular" category would be filed the normal wedge shaped impressions where the widest part of the wedge is at the rim edge. In the "reverse" category would be the impressions with the narrow end of the wedge at the rim edge. Into the "T type" would go those types exhibiting a shape somewhat resembling a "T." (Some examples of this type can be found in the Savage

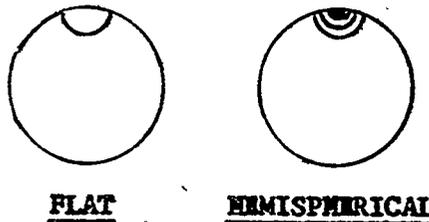


Figure 4
Sub-Classification of Semi-Circular Impressions

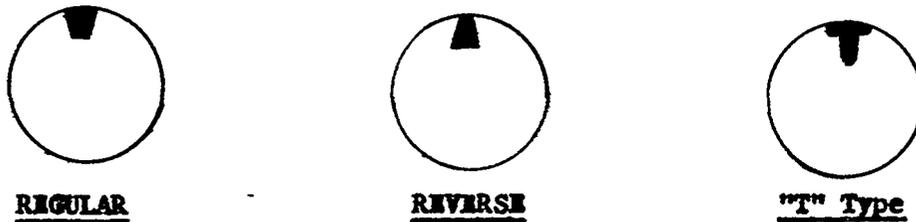


Figure 5
Sub-Classification of Wedge Impressions

Models 29, 29A, and 298.) (See figure 5 for examples of this group.)

DOUBLE SUB CLASSIFICATION

Again there are so few firing pin impressions falling into this category that there is no real need for sub classification. However if so desired, this section could be subdivided into the following two types.

1. Bar
2. Points

The double classification includes all impressions where the ignition is accomplished at two separate points of the rim edge. In some cases this is done by a firing pin in the form of a fixed bar that crushes a narrow area of the head of the case from one rim edge across the head to the other rim edge. In others it is done by a firing pin with two points that strike opposite sides of the cartridge rim. (See figure 6 for examples of this type.)¹

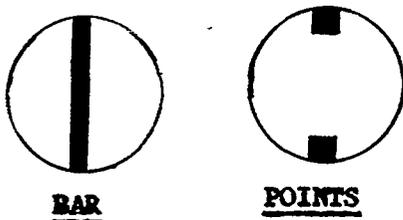


Figure 6
Sub-Classification of Double Impressions

ODD SUB CLASSIFICATION

There are so few firing pin impressions that do not fall into one of the above 5 types that this classification does not require further sub classification.

FURTHER SUB CLASSIFICATION BY EXTRACTOR LOCATION

The large majority of the firing pin impressions will be found to fall into the Rectangular primary

¹Also see Double Impressions in the August-September 1961 issue of IDENTIFICATION NEWS.

classification. Even with the three subclassifications, there will be sufficient impressions to require further subclassification especially in the Rectangular-regular classification. In the writer's file all of subclassifications are further broken down as outlined below.

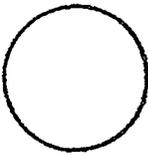
The additional sub classification is based on the location of the extractor markings in relation to the firing pin impression. The location is then indicated by degrees from the firing pin impression. If the extractor markings are located behind the firing pin impression, then the classification would be 0°. If the markings are located at right angles to the impression, it would be 90°, etc. The fired case is always held so that the firing pin impression is uppermost. For classification purposes it is not necessary that the extractor marking be at exactly 90° or exactly 45° but approximately so. The index guides would be spaced 45° apart. The impressions would then be classified to the closest approximate position. Where there are no extractors the classification would be "none". Where there are two extractors the classification would be "double". In the writer's reference file the Rectangular-regular classification is broken down as follows.

1. 0°
2. 45°
3. 90°
4. 135°
5. 180°
6. 270°
7. 315°
8. Double
9. None

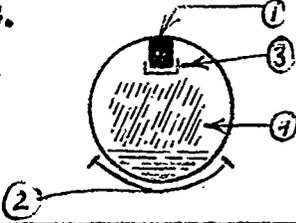
All of the sub classifications will not need this many index subdivisions because all of the above possible extractor locations may not be involved.

ORDER OF FILING

The order of filing behind each subdivision is by width of the impression. The narrowest is filed first, and then progressively wider until the widest

FIRED CARTRIDGE CASE & BREECH FACE REFERENCE CARD		
<u>Imp. Type :</u>		<u>Case Dent :</u>
<u>Width Imp :</u>		<u>Case Swell:</u>
<u>Length Imp:</u>		<u>O. of Round:</u>
<u>Width Hole:</u>		<u>Breech Markings:</u>
<u>F.P. Drag :</u>		
<u>Extractor :</u>		
<u>Ejector :</u>		
<u>Date Obtained:</u>	<u>Appearance:</u>	
<u>Caliber:</u>	<u>Reference #:</u>	<u>Serial #:</u>
<u>Make & Model:</u>		
<u>NOTES:</u>		

Blank Card

FIRED CARTRIDGE CASE & BREECH FACE REFERENCE CARD		
<u>Imp. Type :</u> RECTANG.		<u>Case Dent :</u> None
<u>Width Imp :</u> .0415		<u>Case Swell:</u> None
<u>Length Imp:</u> .068		<u>O. of Round:</u> None
<u>Width Hole:</u> N/A		<u>Breech Markings:</u>
<u>F.P. Drag :</u> None		Semi-vertical &
<u>Extractor :</u> 180°		Horizontal
<u>Ejector :</u> N/A		Markings(4)
<u>Date Obtained:</u> 9/20/62	<u>Appearance:</u> Clean	
<u>Caliber:</u> .22 S.L. &LR	<u>Reference #:</u> 219	<u>Serial #:</u> Unknown
<u>Make & Model:</u> IVER JOHNSON Model 66, Top Break Revolver		
<u>NOTES:</u> Fired cases furnished by the Iver Johnson Co. (1)RECTANGULAR Firing pin impression(2)Etched extractor outline on case wall next to head.(3)Outline of firing pin hole from recoil plate.(4) Semi-vertical and horizontal markings from finish of breech face.		

Completed Card

Figure 7

Example of File Cards

mpression is filed at the end of the subdivision. All of the impressions are measured, and they are then filed by the numerical measured width in thousandths. The width of an impression is found to be more uniform in a particular make and model than the length of the impression. Normally, the firing pin impression with a flat point on the firing pin will produce impressions with a reasonably uniform width and within the manufacturing tolerances for that particular model. (Of course if production changes occur the width of impressions from that model will also be varied.) Firing pins with rounded or hemispherical points will vary the width of the impression in accordance

with the hardness of the cartridge head and the strength of the blow on the firing pin. The length of the impressions particularly the rectangular impressions may greatly vary due to the following. Usually by design, only a major portion of the length of the firing pin will actually strike the cartridge rim. Some of the factors determining how much of the length of the pin will be involved are.

1. Tightness or looseness of the chamber on the cartridge.
2. The positioning of the bolt face or breech face against the head of the cartridge.
3. The positioning of the firing pin hole in the bolt face or the breech face.

4. The tightness or looseness of the firing pin in the firing pin hole.
5. The tolerances employed in manufacturing the firing pin.

All of these factors have a bearing upon how much of the firing pin will strike the rim of the cartridge head. It can accordingly be easily seen why there may be considerable variation in the length of the impression.

TYPE OF FILE CARD

The type of card used is illustrated in figure 7. You will notice that the writer utilizes drawings and lists many descriptive factors that may assist in identifying the possible gun that fired the cartridge. In addition to the characteristics already discussed you will note that breech face markings,

case dent, case swell, out of round, firing pin drag and ejector location are noted.²

CROSS REFERENCING

There are some impressions that may not precisely fall into a certain primary classification. The most common examples are crosses between the circular and the semi-circular impressions. When this problem arises the impression should be cross referenced under both classifications. It is a good practice to cross reference or key all impressions to an alphabetical index card file by make and model. This facilitates checking the types of impressions to be found for a certain make and model gun.

² Further discussion of this system of filing and classification can be found in the July-August 1961 issue of this Journal and in the May 1958 issue and November 1961 issue of the IDENTIFICATION NEWS.