

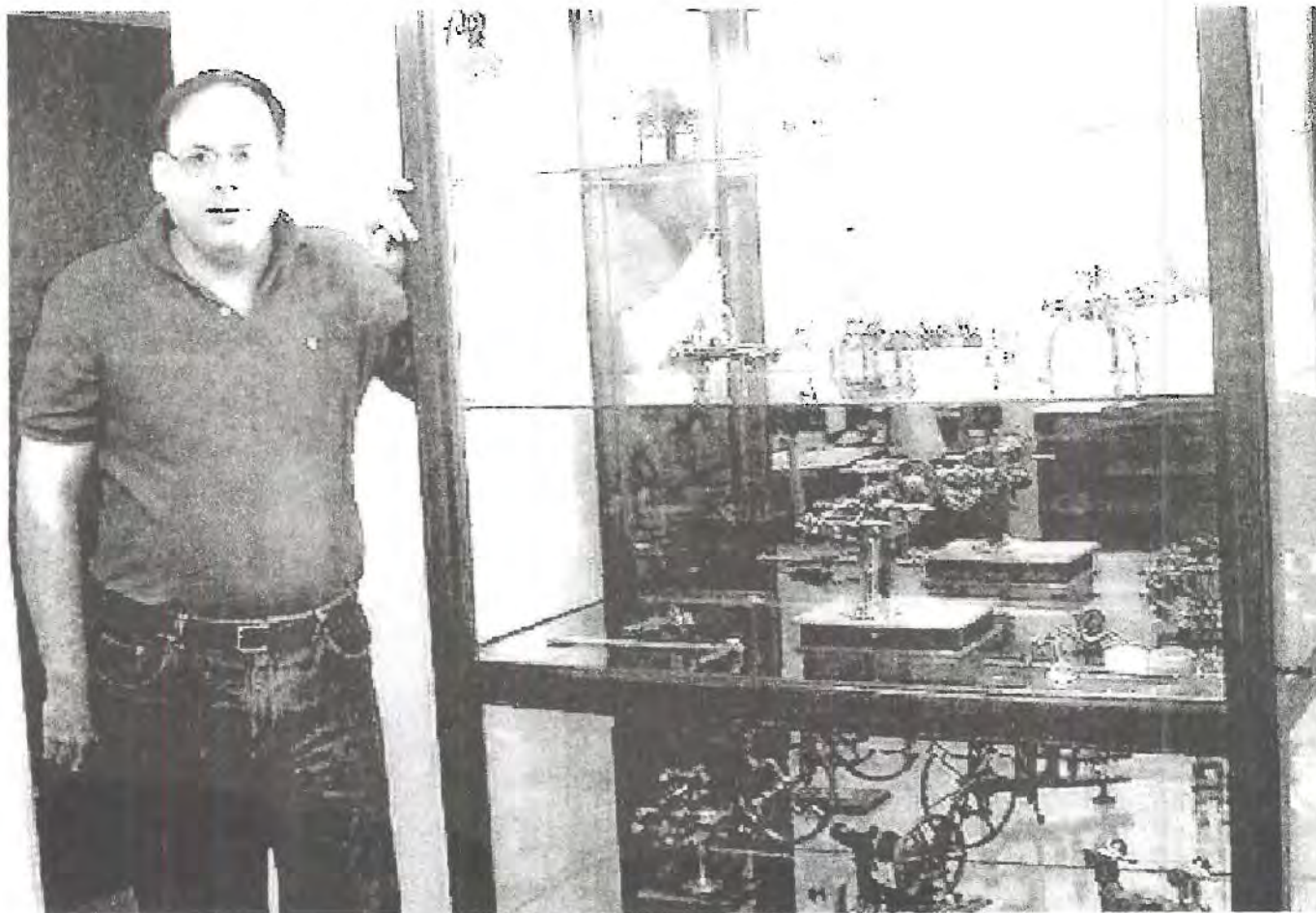
Tool Enthusiasts' Round Up -Chapter 173 of NAWCC

Round Up Volume VII Number 1 August 2006

Tool Chapter Newsletter

In This Issue: Bruce Forman, Machinist and tool collector is profiled and discusses 19th century wheel cutting in England

A True Tool Enthusiast!



Bruce Forman by cabinet of some of his highly prized Horologic tools

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Horological Tool Enthusiasts Newsletter purpose

The Tool Enthusiasts' Round-Up is the newsletter of the National Horological Tool Chapter #173 of the National Association of Watch and Clock Collectors, Inc., a non-profit educational organization. This is a national chapter, and is open to any member of the NAWCC.

This chapter and its newsletter are intended to foster interaction among NAWCC members who share a common interest in the use and collection of horological tools of all sorts. If you have an item you have researched, a book of interest, or notes on a project you have made, please consider sharing your knowledge with others through this newsletter. Editorial help and writing assistance are available to help you organize an article. Submissions should be sent to the Editorial Director.

Annual chapter dues of \$10 will ensure that members in the Horological Tool Chapter receive the newsletter and are included in the Membership Directory when it is published. Members are also entitled to one classified ad (see last page) in each issue. If you are interested in joining this chapter, which will meet at various large regionals and also at the National each year, please send your annual dues to David Kerns

Chapter 173 Officers:

President: Harvey Schmidt

75-80 179th St. n Flushing, NY 11366
(718) 969-0847

Secretary/Treasurer: Dave Kern

5 Hilltop Drive, Manhasset, NY 11030
(516) 627 1012

Email: dkern@optonline.net

Newsletter Staff:

Editorial Director: Harry Blair

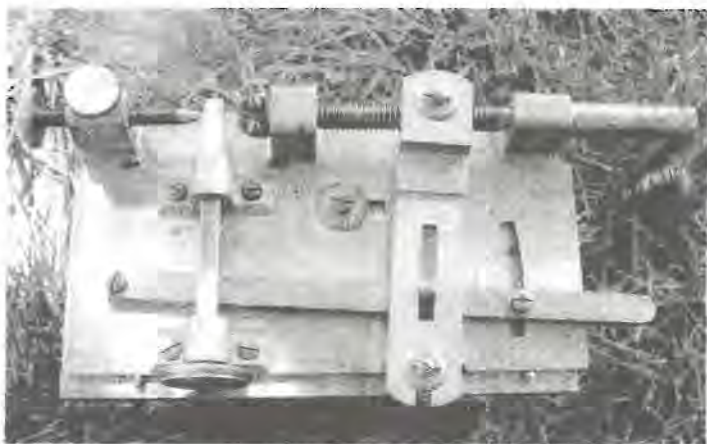
7 Hansom Lane Marlboro, NJ 07746 n
(732) 536-5328 Tolblair2@verizon.net

Presidents Message

Hello to all our patient members. I'd like to blame disease, bankruptcy, or other debilitating circumstances, for the lack of a Journal, but the truth is that we could not get started, and hence could not finish. We are working on reproducing an early Moseley Catalog, so bear with us and good things will come. We will have a tool chapter meeting at Syracuse in August, and will try to have one at Daytona in February.

Harvey Schmidt President

Newsletter Quiz



What is it? (See last page for answer)



NAWCC National Convention Mart 2006

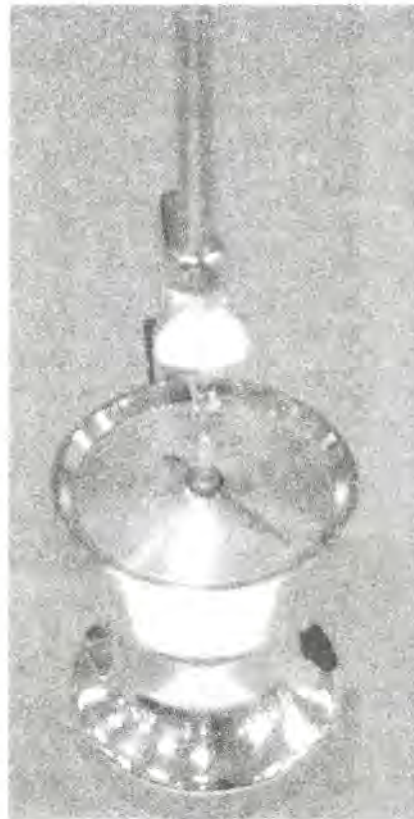
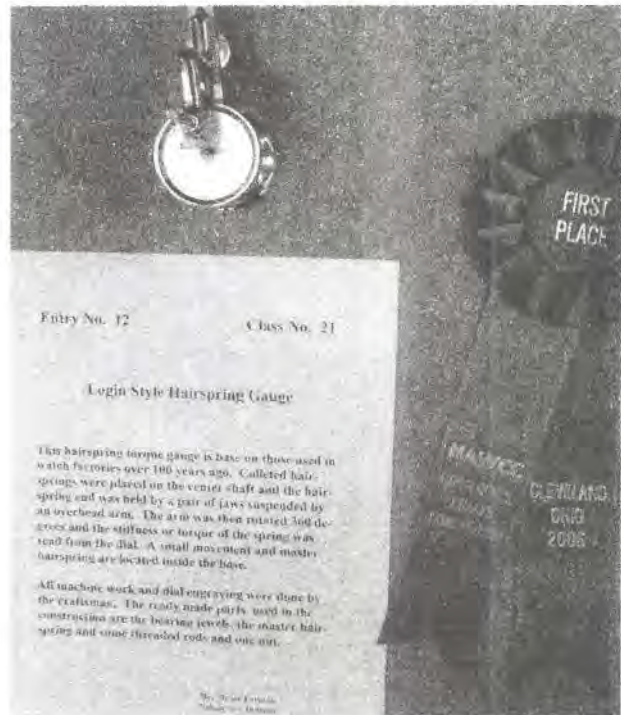
19th century wheel blanking as performed at Sagger-son shop Prescott England 1826-1900



**Bruce Forman
Tool Collector
Extraordinaire**

Bruce Forman has been collecting tools for over 20 years. He currently works for Mittal Steel USA in East Chicago but trained as a clockmaker before becoming a Mechanical Engineer. He is the past president of NAWCC Chapter #1 and the author of the book "Clockmakers of Montgomery County 1740-1840". Prior to moving to Chicago this year he was one of two clockmakers selected to conserve the famous David Rittenhouse Astronomical Clock owned by Drexel University. This clock is considered to be the most important example of 18th Century American clockmaking. The conservation took one year to complete and the clock plays 10 musical tunes as well as showing the motions of the known planets at the time it was made. Bruce is now developing machinery to make hair-springs for clocks.

Bruce as an adolescent was extremely interested in mechanics and constructed a clockmakers gear cutting engine as a high school project. After graduating school he set up his own business of supplying clockmakers with gears and other hand made parts. After earning an engineering degree he joined Bethlehem Steel research laboratories.



Bruce Forman 1st prize tool Award at NAWCC national convention Cleveland 2006

**NINETEENTH CENTURY WHEEL
BLANKING DIES**

Bruce R. Forman

Little has been written about the use of stamping dies to produce watches in the nineteenth century but blanking-out parts was the only method that could have produced the thousands of fusee watches made in Great Britain. One firm that supplied this trade for nearly 100 years was the Saggerson family of wheel cutters located in Prescott England. The original shop is still standing but the tools it once contained have long since been scraped or dispersed through-out several public and private collections. Aside from the wheel cutting engines used in their business, Saggerson also had a large quantity of die sets to punch-out the many wheel blanks before cutting,

**Sagerson vs modern wheel
blanking die**

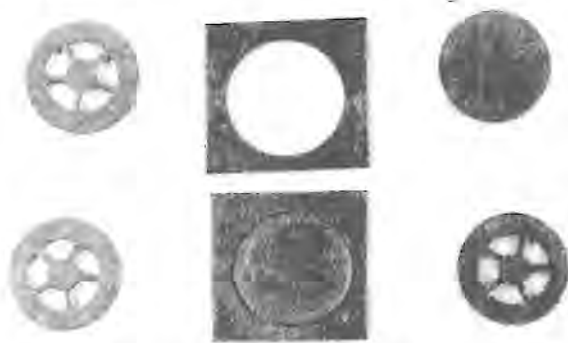


A Saggerson blanking die on the left and a modern example on the right made by the Author to punch-out small escape wheel blank

The author has a collection of about one-hundred die sets from the Saggerson shop and this hoard is probably only a small sample of their original inventory. The quality of these dies vary greatly but it appears that the earlier made dies were crude and fabricated from old files; file serration's can still be seen on their surface. Files are made of quality tool steel and the author also owns an early watch wheel cutting engine with a frame that was made from an

old file. Some dies appear to date from a more modern era and were standardized and apparently prepared in small lots. Several of these prepared blanks were included in the collection with their locating pin and closing screws already fabricated, Figure 2. This made more efficient their production and a die blank could be completed on short notice when a new size wheel was needed.

Three separate punching operations were needed to make a complete spoked wheel blank. The first step was to blank-out a round disc from sheet brass,



. These blanking dies were easily made as they were simply a hole bored in the die,

A small piece of brass was clamped into the die sandwich and a round punch was driven through using a hammer or press,



Unfinished Die blanks with closing screws



Before the spokes could be punched, a center hole was added using a fly press and an open stump, Figure 6.

Ball or Fly press to punch center hole in wheel blanks



Fly presses were commonly used to punch holes in metal and were used extensively well into the early twentieth century. The center holes in the wheels were small in diameter (some only 0.020 inches) and fit a fit provided in the spokeing dies used to center the blank. The hole was also necessary for mounting the wheel to the wheel cutting engine.

Dies used to press the spokes were more complicated to make than those used to make the round wheel blanks. The rough die was first drilled to the diameter of the interior wheel rim. Once this was done a bar with a star cross-section was driven into the hole. The star was the rough profile of the inner spokes of the wheel. The die plates were probably separated by a piece of thin metal. This could be removed which allowed a gap between the plates in which a saw could be inserted to cut the star bar in half. This left half the bar in each plate but both were aligned to each other. The star bar was then finished flat to either plate face in a lathe or with a hand file. Once reassembled the star was filed to the finished size of the spokes,

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Die opened to insert gear blank
and spoked gear after punching



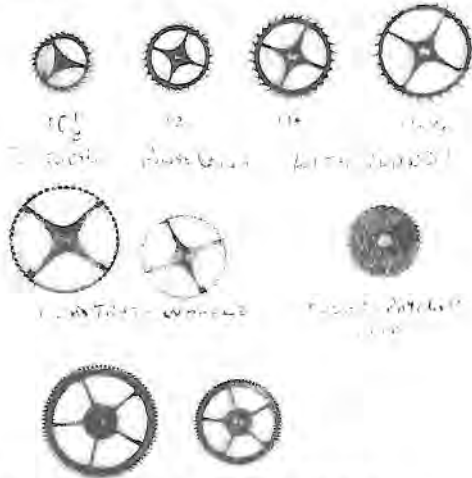
Punches were made to fit these openings. These punches were hand filed and because of slight variations were not necessarily interchangeable between different spoke holes in the die. This meant that each punch must be kept in the proper spoke hole during the assembling and disassembling of the die, a some what aquard task. Often a thin sheet of brass (about the same thickness as the wheel blank) was added between the plates. This ensured that when the blank was clamped the die faces would clamp evenly as the brass deformed slightly. Without this brass shim, the dies can cock slightly if the pressure on the thumb screw bolts is not applied evenly. Often the area around the wheel is relieved to create more clamping force near the rim fig 8. -any wheels can be made in a single hour using these die sets. Special punches were also designed and used for crossing-out crown wheels,

Special dies to Cross out crown
and contrate wheels



The Saggerson shop used these traditional methods of wheel production from their founding in about 1826 until the business closed in the early 1900s. As the demand for English watches decreased the firm spent most of its later life supplying replacement escape wheels of all sorts for the repair market; this included the chronometer and duplex type. A sample of their products is shown in Figure --“One wholesale account they supplied was the firm of R. Haswell & Sons. They were founded in 1812 and located at 39 Moreton End Lane, Harpenden, Herts (fomerly of Clerkenwell) and were suppliers to the horological and kindred trades. James Eric Haswell (d. 1967) knew that his firm had considerable business dealings with the Brothers Saggerson before his time, and until the 1st World War. He visited the last surviving Saggerson in 1915 when business was getting very drab. Saggerson was dying of consumption and had nobody working with him. He had his machines wrapped in cosys and only a few escape wheels to cut and was said to be giving up the business. When asked by Haswell what he was going to do with all his nice tools, Saggersons morbid reply was “Oh! I think I’ll just drop ‘em down the bottom of a coal mine”. Later, Haswell herd that Saggerson did go out Sunday afternoons and throw bits and pieces over the hedges during his walks.

Samples of wheels made



Samples of the types of wheels made in the Saggerson shop.

Although some small pieces of the Saggerson shop may still lie buried under hedgerows the shop remained virtually intact following the death of the last Saggerson; then the shop passed to a daughter. The British antique tool dealer Charles Alex stopped by the Saggerson compound in 1967 and was greeted at the door by a woman who seemed to have been expecting his arrival. She invited him in believing he was the local scrap metal merchant there to clear away some old tools from the shop. The lady of the house had died about a month earlier and the executors were settling the estate. The wheel cutting shop was still very much intact and looked as though it had not been touched for some 60 years. The only exception was a large can that had been filled from the many compartments storing the carefully sorted watch wheels held in inventory. The executors were segregating the “valuable” brass from the other equipment and one can only guess how many thousands if not millions of small wheels filled this tin that weighted some thirty pounds. Mr. Alex promptly bought the “valuable” brass and other shop contents many of which have now been donated to museums or have found their way to private collections.

Die set from Saggerson shop Prescott & Wheeler



Three stages of die making, left to right A) hole bored in die B) star shaped bar pressed into position, C) finished filing of the arms.

Die opened to insert the gear blank (left) and the spoked gear after punching (right). The die was often undercut around the hole to increase the clamping force on the wheel rim during punching

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Although the primitive stamping methods used by the Saggersons changed little over the 100 years they were in business, American watch factories continued to develop stamping methods to a much greater level of precision. The Hamilton Watch Company in the 1900s had many small press operations in their Lancaster watch factory. Everything from gear blanks to watch dials and plates started out as stampings. Dies were often used with a subpress that allowed for greater precision. Without these developments it would not have been possible to produce the many high quality watches in America at such a reasonable cost. Although nearly a forgotten tool, the foundation of the mass-produced watch as we know it today, can be traced to the die and punch, the same technology used some 200 years ago in Great Britain during the era of the fusee watch.

Figure 2, Three unfinished die blanks with closing screws already fabricated. These blank dies were held in stock and could be finished quickly when a new size wheel was needed Figure 6. Close-up of the open die or stump used to align the brass wheel during punching in the fly press.

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Wanted:

Levin 30 instrument lathe. A very precision mill. For vintage jewelry tool and horology. Gradascopy type GD #7. John Barrs, 3924 SW Holden St., Seattle, WA 98136.

Bench drill press, variable speed Rockwell or similar. John Bentz. Tel: 215-295-2132, e-mail: Jbentz@bellatlantic.net

Metric 10mm "D" collets and other 10mm tooling plus name of shop to replace bearings in Levin grinding spindle. David Blocker, POB 75003, Dayton, OH 45475-0003.

Derbyshire Elect model lathe attachments — pivot polisher, screw cutting attachment, roller file rest, screw feed tailstock. Will trade. J. Dill, Box 5044, Greeley, CO 80634. Tel: 970-353-8561.

Antique clock and watch tools before 1900. Bruce Forman, 521 15th av. Bethlehem, PA 18018. Tel: 610-691 0793.

Lower suspension block for Tiffany never wind clock. Ed Foxworthy, 526 Sussex Dr. SW, Huntsville, AL 35824-1306. Tel: 256-772-3393.

Deckel FP2mill, Aciera milling mach.accessories. Pix of swiss or german machine mfg. facilities

Small Vintage Milling Machines and Rivett lathes Mark Fulmer, 3044 So. Kramer St. NE Hartsville, ohio 44632 call 330-877-2021 or e-mail: markusfu@hotmail.com

Serial numbers and other details of unusual lathes, attachments and accessories made by Faneuil Watch Tool Co. or Rivett Lathe. Also Rivett "ideal" collets, .325 in. shank. Tom Hammond, 3258 Forest Gale Dr., Forest Grove, OR 97116. Tel: 503-359-1134, e-mail: thamm10502@aol.com

Webster Whitcomb well equipped lathes & original lathe and tool catalogs with prices. Greg McCreight, 1336 Allentown Rd., Lima, OH 45805.

Watchmakers lathe accessories: cross slides, milling attachments, 3 & 4 jaw chucks, collets. Harvey Schmidt, 75-80 179th St., Flushing, NY 11366.

ManSon/Master lathes. They are small, black, gray or aluminum and of unusual shape. Were current in the '50s. Daniel Semel, 245 E. 80 St., New York, NY 10021-0515.

Pieces of wheel cutting engines for parts/restoration. Mel Smith, 2631 Amawalk Rd., Katonah, NY 10536.

Epicycle hobs for clock gears .6 to .8 module John Wilman 239 East Hook rd. RD 3 Hopewell Junction NY 12533

Offered:

Small Vintage milling machines, Rivett lathes Mark Fulmer, 330 877 20213044 Smith Kramer St., Hartsville, OH 44632.

Castings for making reproduction Rivett counter-shafts, \$40 to \$55. Other machining services. Tom Hammond, 3258 Forest Gale Drive, Forest Grove, OR 97116. Include a SASE if reply is needed.

Swiss 8mm milling machine from Benrus factory . Equipped with DC mptor \$1500 Bernard Haley 1456 River Road Arlington Vt. 05250

Send ad copy to:
Horological Tools, NAWCC Chapter #173
c/o Harry Blair
7 Hansom Ln. Marlboro, NJ 07746
Toolblair2@verizon.net
Include a SASE if reply is needed.

General Information:

Answer to "What is it?"

A fusee cutting engine of 18th century