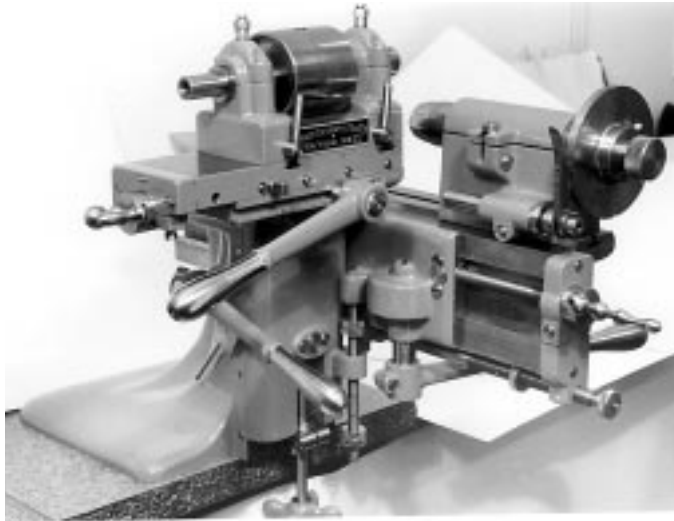


American Watch Tool Company Milling and Gear Cutting Machine¹

J Malcolm Wild FBHI restores an interesting machine and discusses its place in history



1. Two views of the AMERICAN WATCH TOOL COMPANY milling and gear-cutting machine after restoration.

DURING RESEARCH on later machines used in wheel and pinion cutting for my book², my friend in Pennsylvania, David Lindow, a very good clockmaker, said he had noticed a small machine in a very dirty and distressed condition at a local tool dealers, which looked extremely interesting. Further investigation proved the small milling or gear-cutting machine was made by the AMERICAN WATCH TOOL COMPANY and had previously been in use at K AND D MANUFACTURING, which produced staking tools. A father and son had purchased it, along with other machines, to produce dental burrs. The machine in question, 1, was now surplus to their requirements and was subsequently purchased by David Lindow on my behalf.

When the machine duly arrived in the

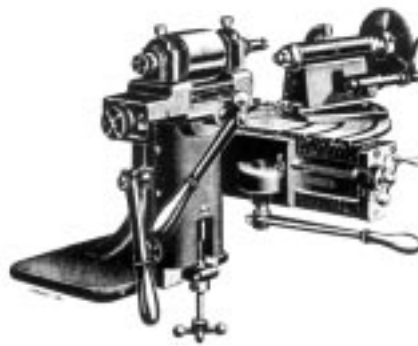
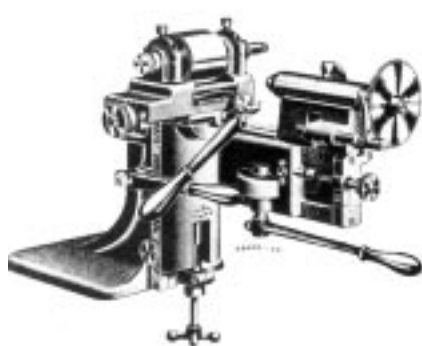
UK it was in a sad state of repair, with many parts missing, but its potential could be seen. Regrettably I did not take any photographs when the machine arrived.

The history of the AMERICAN WATCH TOOL COMPANY has been well documented in: *Waltham Industries* by Edmund L Sanderson and a copy of the relevant section on machines that were manufactured by the AMERICAN WATCH TOOL COMPANY is reproduced in an excellent reprint of an original trade catalogue (circa 1890) by KEN ROBERTS PUBLISHING in conjunction with ADAMS BROWN. This small catalogue covers the many lathes and accessories produced as well as the small bench-milling machine shown in 2. It is excellently produced and until recently was available from ADAMS BROWN CO.

Manufacture of the lathes commenced in 1872. Co-founders were George F Balou, John E Whitcomb and Henry N Fisher. These were former employees of the WALTHAM WATCH COMPANY who saw a potential market for small precision machines. Mr Balou left the company in 1874 and in 1876 Ambrose Webster joined the partnership and the name the AMERICAN WATCH TOOL COMPANY was adopted.

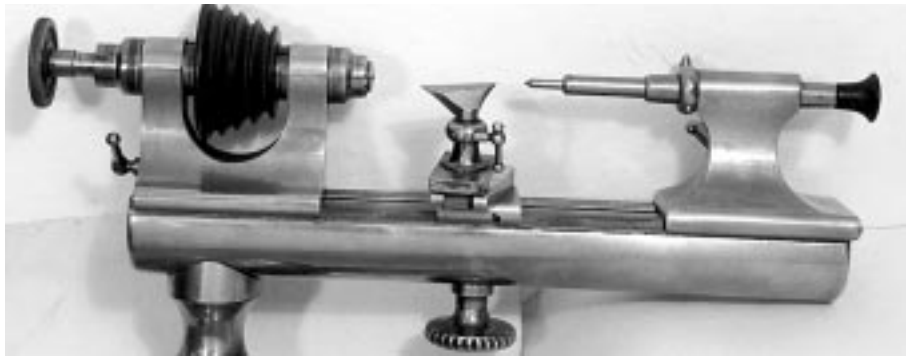
The addition of Mr Webster to the partnership produced new design ideas and the now famous Webster-Whitcomb or WW lathe was born. This was originally designated the 1¹/₂ size, being between the original No. 1 and No. 2 lathes. With its distinctive rigid lathe-bed, 3, it proved so popular that the previous lathes were discontinued.

The bed section of the AMERICAN WATCH TOOL machine is shown in 4. As anyone who has used this type of lathe will appreciate, its excellent qualities make it far superior to the Swiss or German-style watchmakers' lathes with the 'D-bed'



2. No. 2 Milling Machine. From the AMERICAN WATCH TOOL COMPANY catalogue c. 1890, reprinted by KEN ROBERTS PUBLISHING and ADAM BROWN.

1. This article was first published in *Horological Times*, May 2003, and is reproduced by kind permission of the American Watchmakers'-Clockmakers' Institute.
2. *Wheel and Pinion Cutting in Horology*, CROWOOD PRESS 2001, ISBN 1 86126 245 0.
3. The AMERICAN WATCH TOOL COMPANY produced the interferometer used by Michelson in his measurement of the standard metre, 1892/3.



3. The famous 'W-W', or Webster-Whitcomb, watchmaker's lathe. The bed is 45mm across, much more rigid than the Swiss version (20mm).



4. The substantial bed-section of the American Watch Tool Company milling machine (40mm across flats).

construction available at the time.

The Webster-Whitcomb partnership was to survive some 40 years, producing many precision machines'.

The rebuilt milling and gear-cutting machine shown in 1, was completely stripped down. Although many parts were missing it was obvious the machine had been extremely well designed and made; the slides were in very good shape considering the machine was approximately 100 years old and had seen some abuse.

New bearings were produced for the main spindle and the spindle was built up with hard chrome and re-ground. One of the main handles was missing and a casting was taken from the original and machined, 5. A number of the adjusting



6. The company name, cast in the pulley bearing block is highlighted in black enamel.

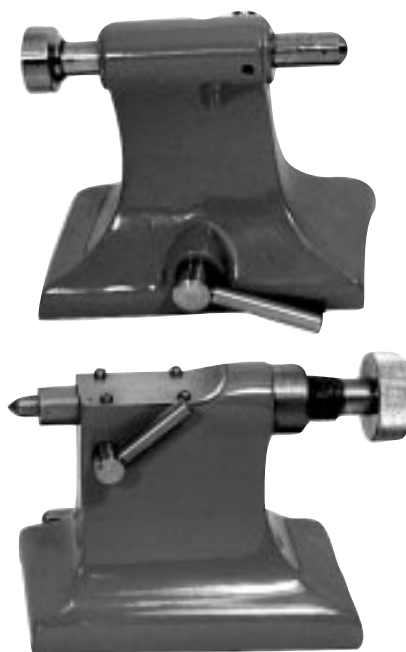


5. Casting made for replacement handle (above) and after machining and painting (below).

screws for the slide-ways were damaged and proved difficult to remove. They were eventually replaced.

The vertical capstan style handle was missing and was replaced by a spare, originally from a LORCH lathe, which can be seen in 1.

Only one notched division plate was with the machine when it arrived. Various plates were machined and then notches



7. The two tail stocks.

cut on a dividing head mounted on a BRIDGEPORT mill. When all the missing components had been made, the machine was painted, 6.

Automotive body filler was used to fill all the castings and then a primer was applied. Finally the finish was with aerosol paint. Many of my small machines have been restored in this manner. If one is fortunate enough to own a spray gun and compressor this can be used, but aerosol paint cans from your local automotive suppliers are excellent and most companies will mix any colour.

All steel items were polished either by hand or in the lathe.

Two tailstocks, 7, were included with the machine as well as a good range of collets. These proved to be special as the nominal body diameter was 15mm and thread diameter of 13mm x 1mm pitch. This size is not shown in the reprinted HARDINGE BROS catalogue c. 1913. Many of the screws were metric sizes. Perhaps some serious tool collector or historian on American horological machines can comment on this, when in fact the metric system is still not totally accepted in the USA some 100 years later! Various mandrels for the headstock to hold cutters were also enclosed.

A most useful feature for the operation of the slides is the option of using either screw feed or lever feed. To use lever feed the feed screw nut is released. All slides are also fitted with stops. These are features usually found on much later machines such as the ACIERA F1. As well as the usual two-axis slides and vertical height adjustment found in most milling machines, there is a facility for angular movement of the milling spindle.

The restoration of the AMERICAN WATCH TOOL COMPANY milling and gear cutting machine proved very worthwhile and extremely important as a piece of American watchmaking history.

I would be pleased to hear from anyone with similar machines manufactured by this company. □