

# Keep Your Lathe CLEAN

Good machinists are known by the way they take care of their equipment



**SOUTH BEND LATHE WORKS**

425 EAST MADISON STREET

SOUTH BEND 22, INDIANA, U. S. A.

# HOW TO GET THE MOST OUT OF YOUR LATHES

## *A Series of Bulletins on the Care and Operation of Metal Working Lathes*

These bulletins are supplied in any reasonable quantity without charge to shop instructors and others who are interested in the care and operation of the lathe.

**Bulletin H-1**—"Keep Your Lathe Clean". Shows how protecting the lathe from abrasive dirt will increase production, reduce scrap, and lengthen the life of the lathe.

**Bulletin H-2**—"Oiling the Lathe". Explains the importance of adequate lubrication.

**Bulletin H-3**—"The Installation and Leveling of the Lathe". Gives detailed information on the correct installation and leveling of the lathe for precision work.

**Bulletin H-4**—"Keep Your Lathe in Trim". Tells how to make all necessary adjustments, check power supply, protect lathe from abuse, and keep lathe in best operating condition.

# Keep Your Lathe CLEAN

*Prepared by*

Technical Service Department

South Bend Lathe Works

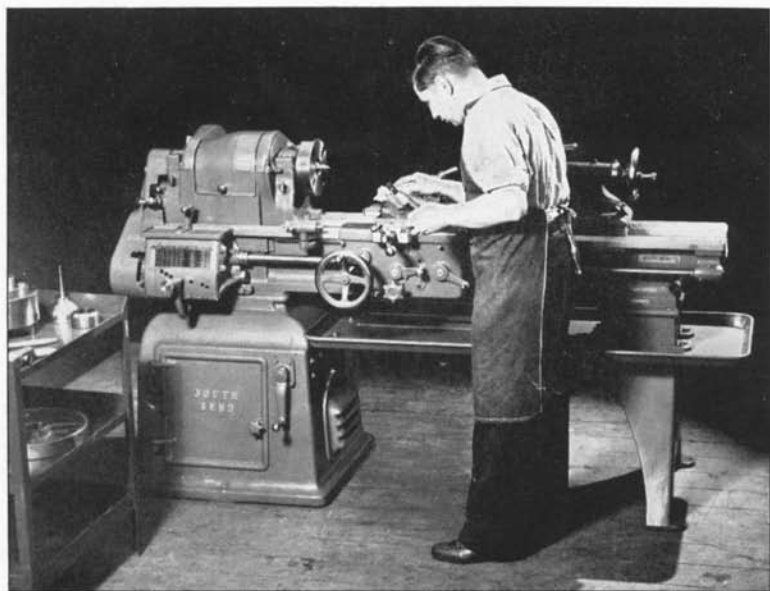
Bulletin No. H-1

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**SOUTH BEND LATHE WORKS**

425 EAST MADISON STREET

South Bend 22, Indiana, U. S. A.



Good operators take pride in  
keeping their lathes clean.

# KEEP YOUR LATHE CLEAN

## Importance of Cleaning the Lathe

The time required to keep the lathe clean is more than offset by the added life, increased production, and greater ease of operation. The lathe will retain its accuracy indefinitely if it is kept properly cleaned and lubricated. But if dirt is allowed to accumulate on the bed ways, dovetails, and other bearing surfaces, excessive wear will result and the serviceable life of the lathe will be shortened. The importance of keeping lathes and other machine tools clean can hardly be over-emphasized.

Unless brushed away frequently, the scale, grit, and fine chips produced by the cutting tool will mix with the oil on the V-ways, dovetails, and other bearing surfaces of the lathe, forming a dirty sludge. Because this dirt is extremely abrasive, it increases friction making the lathe hard to operate, and causing wear wherever it is allowed to collect.

If chips are permitted to work under the tailstock or saddle or into the spindle taper, the accuracy of the lathe may be seriously impaired. Small chips from tool steel are especially dangerous because they are very hard and sharp and may cut the bearing surfaces. The abrasive qualities of the sand and scale from the surface of cast iron, cast bronze and other sand cast metals are also very harmful.

## Don't Let Chips Pile Up

Adequate chip disposal is essential to keeping the lathe clean. If the chips are allowed to pile up underneath and around the lathe they get in the way and there is little incentive to keep the lathe clean. Chips should be removed at regular intervals, either by the operator or by men assigned to take care of that work. In some large factories a conveyor system provides continuous chip removal.

Steel shavings are razor sharp and must be carefully handled to avoid cutting the hands. Pliers or a hook are handy for pulling them away from the lathe. A coal fork or scoop shovel should be used for loading the shavings into a wheelbarrow or truck.

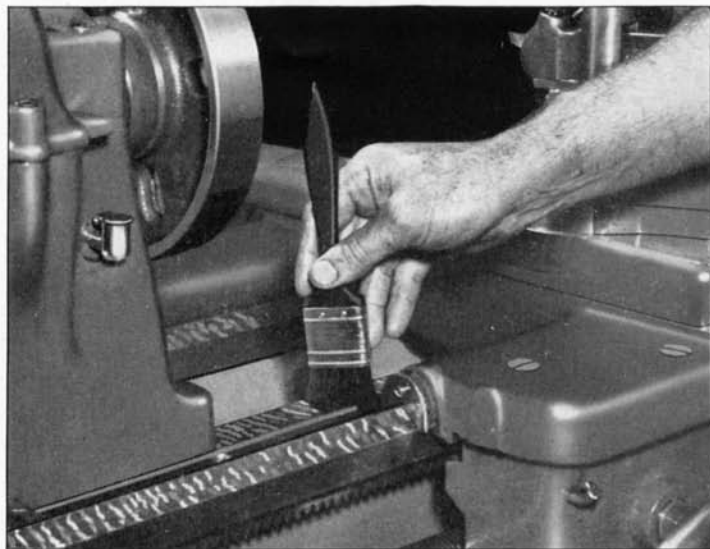


Fig. 3. A small paint brush is convenient for brushing loose dirt and chips off of the lathe carriage and bed.

### Use a Brush to Clean Lathe

A small paint brush is convenient for brushing loose dirt and chips off of the lathe carriage and bed. A cheap brush with stiff bristles is better for this purpose than an expensive one. A larger brush can be used for cleaning large surfaces on the lathe.

Compressed air is not recommended for cleaning the lathe because it may blow dirt and chips into oil holes and between bearing surfaces, causing more harm than good. The use of compressed air is also discouraged because of the danger of blowing chips and dirt into the eyes of the operator or other workmen.

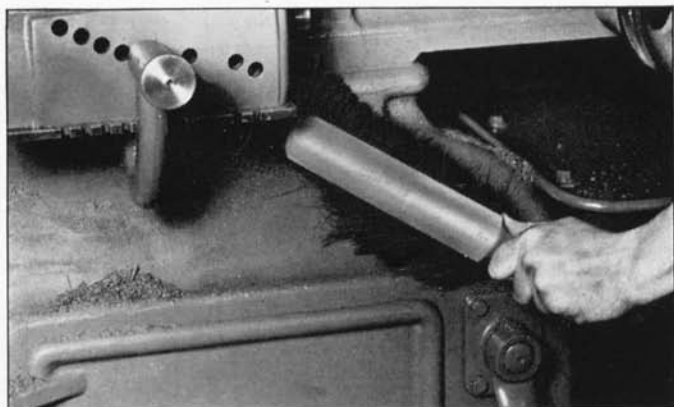


Fig. 4. A large brush can be used for cleaning large surfaces of the lathe.

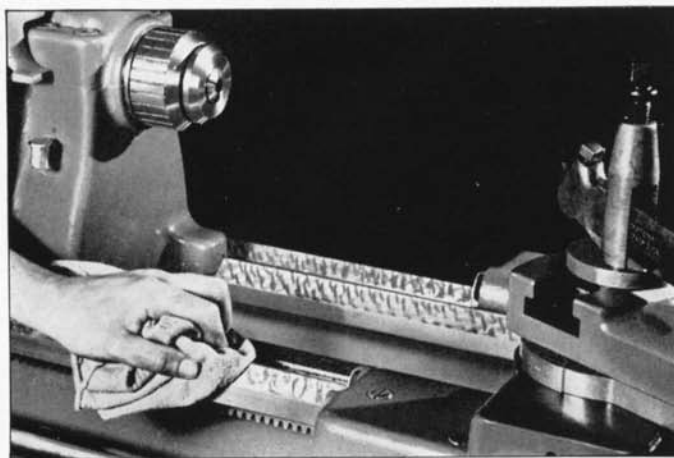


Fig. 5. A clean cloth can be used for removing the last traces of dust and grit.

### Wipe With Clean Cloth

A clean cloth can be used, after brushing, to remove the last traces of dust and grit. A little oil on the cloth will prevent rust from forming on the finished surfaces of the machine. Always stop the lathe before using a cloth to avoid the possibility of the cloth becoming tangled with the work or some moving part of the lathe.



About once a week the lathe should be thoroughly cleaned with kerosene to remove gum and oil stains. A caustic cleaner should not be used because it might damage the painted finish or cause the machined surfaces of the lathe to rust. Naphtha and other explosive cleaners should be avoided. Carbon tetrachloride is an excellent non-inflammable cleaning agent. Any good metal polish or fine steel wool can be used for polishing tarnished or slightly rusted surfaces.

### Periodic Inspection

The bed ways can be badly scored by a small steel chip imbedded in the saddle or tailstock base. To prevent this an experienced machine tool service man should periodically inspect the lathe and remove any grit or chips that may have worked under the saddle or tailstock. The felt wipers on the ends of the saddle wings should be removed and cleaned in kerosene.

All oil holes should have plugs or covers to prevent dust and chips from falling into them. If an oil hole cover is broken off or an oil hole plug lost, it should be replaced without delay. Dirt and chips should not be allowed to work into the threads of the lead screw or the gearing of the headstock, apron, or quick change gear box.

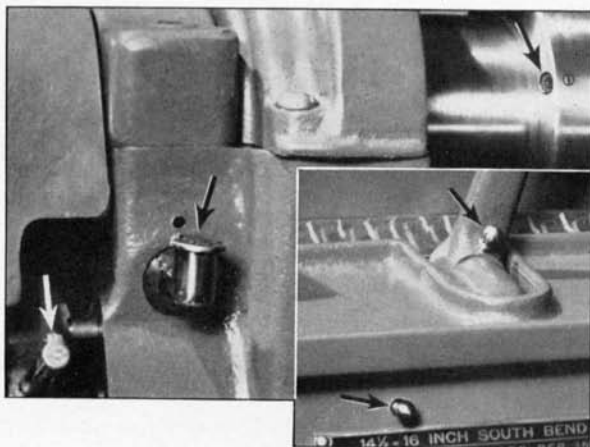


Fig. 6. All oil holes should have plugs or covers to prevent dirt from falling into them.





Fig. 7. The apron oil reservoir should be drained and flushed with kerosene occasionally.

The apron oil reservoir should be drained and cleaned by flushing with kerosene occasionally. The headstock oil reservoirs should also be drained (using suction pump) and flushed. Fresh oil should of course be added after flushing.

A good way to clean the threads of the lead screw is to hold a cord of suitable size in the thread groove and pull the ends back and forth as the lead screw revolves. See Fig. 9. A stiff scrub brush and kerosene can also be used to clean screw threads, gear teeth, etc.



Fig. 8. Use a suction pump to drain the headstock oil reservoirs.

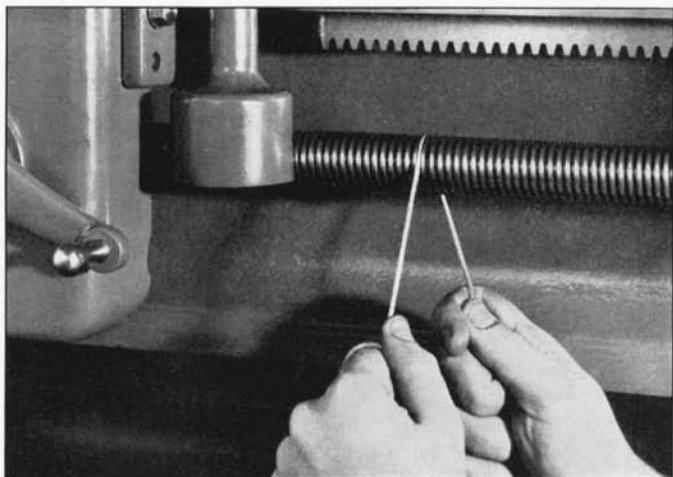


Fig. 9. Cleaning the threads of the lead screw with a cord in the thread groove.



Fig. 10. The threads on the lathe spindle should be thoroughly cleaned and oiled before mounting a chuck or a face plate.

### Cleaning Spindle Nose Threads

The threads and the shoulder on the lathe spindle should be thoroughly cleaned and oiled before mounting a chuck or a face plate on the spindle nose. A very small chip or particle of dirt will prevent the chuck from running true and may cause it to stick on the spindle nose.

The threads in the back of the face plate or chuck should also be carefully cleaned. A heavy steel wire bent to the shape shown in Fig. 11, is convenient for this purpose. The ends of the wire should be filed to conform with the V-shape of the thread groove.

If the chuck or face plate bind when screwed onto the spindle nose, it is an indication that a chip is imbedded in the thread. Careful examination under a strong light may be necessary to locate the chip. A sharp pointed steel pick may be used to dislodge the chip and remove it from the thread.

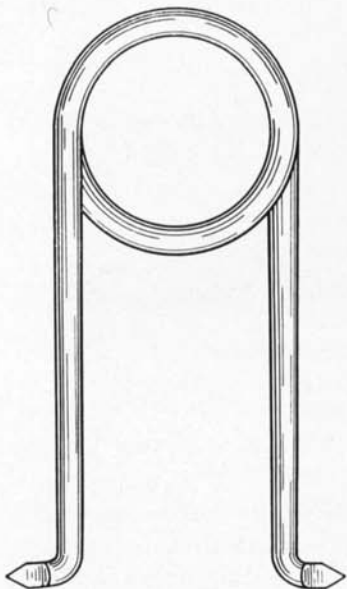


Fig. 11. Bent wire filed on ends to a V-shape for cleaning threads in chuck-backs and face plates.



Fig. 12. The threads in the chuck-back should be carefully cleaned to remove all dirt and chips.

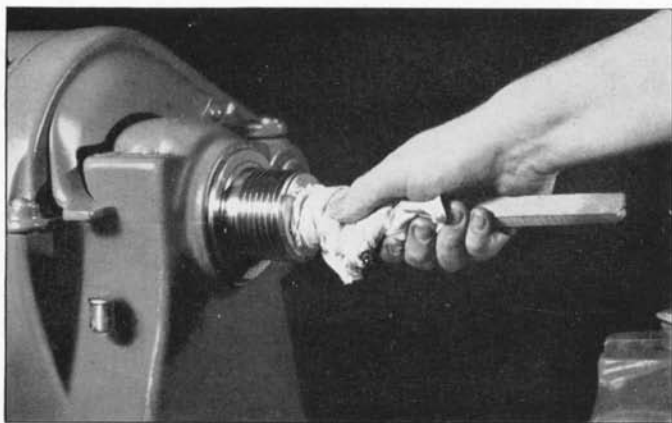


Fig. 13. Cleaning taper in headstock spindle with a cloth wrapped around a stick.

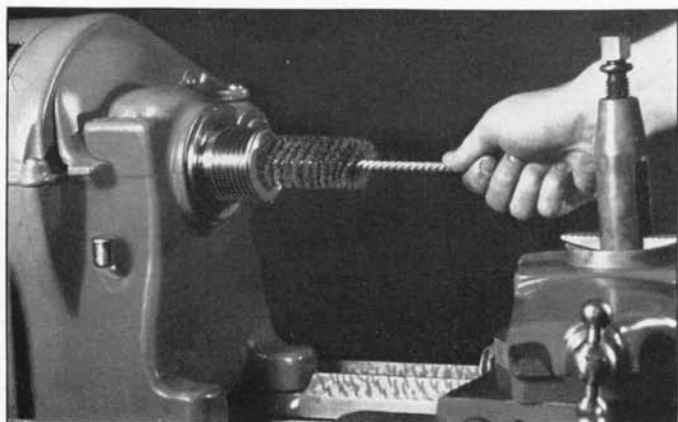


Fig. 14. A bottle brush is handy for cleaning chips and dirt out of tapered holes.

### Cleaning Spindle Tapers

Tapers cannot fit together perfectly unless they are clean and free from burrs. A very small chip will throw the taper out of true and will prevent it from holding securely.

A cloth wrapped around a stick is convenient for cleaning the tapered holes in the headstock spindle and tailstock spindle. A bottle brush is also handy for this purpose. An inexperienced



Fig. 15. Use a clean cloth to wipe the taper shank of a lathe center or drill chuck before mounting in spindle taper.

operator should stop the headstock spindle before cleaning the taper. Fingers should never be inserted into the taper of a revolving spindle. Lathe centers and tapered shanks of drill chucks should be wiped with a clean cloth before inserting into the spindle taper. When the lathe center or a drill chuck does not run true it is an indication that the taper may not be clean. Dirt or chips between the collet sleeve and the taper in the lathe spindle may cause the collet to run out of true several thousandths of an inch.

### **Compound Rest and Tool Post Assembly**

The compound rest and tool post assembly should always be cleaned before setting up a new job or re-adjusting the lathe tool. A very small chip underneath the tool post ring or the tool holder may prevent the cutting tool from having the solid support necessary for taking a smooth cut. A chip lodged beneath the cutter bit may cause it to be broken.

The dovetails of the compound rest assembly should be kept free from chips and dirt. If chips work into the dovetail bearing surfaces they will cause the dovetails to bind, making them hard to operate. Chips between the dovetail bearing surfaces or between the compound rest base and swivel may cause the lathe to chatter.

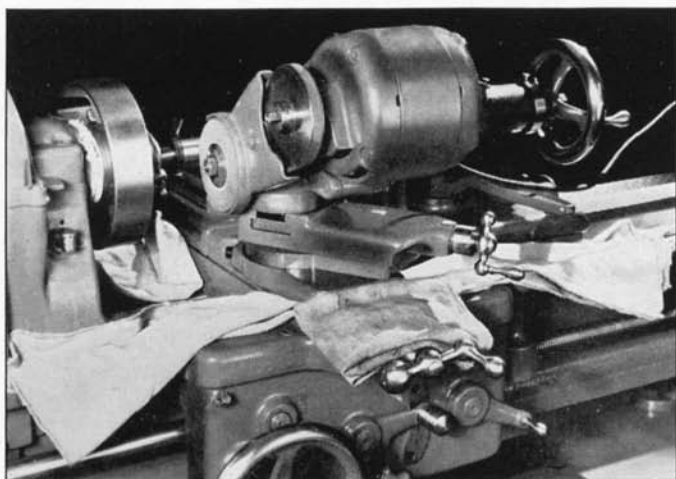


Fig. 16. The bed and other bearing surfaces should be well protected from emery dust when a tool post grinder is used on the lathe.

### Protect Lathe From Abrasive Dust

Grinding wheels, buffing stands, polishing tumblers, and similar equipment should not be located near lathes or other fine machine tools. Emery dust or other abrasive dust may cause serious damage if it is allowed to settle on the lathe. If it is necessary to install a grinding wheel near a lathe, a good dust exhaust or collector should be provided for the grinder. When the lathe is not in use it should be covered with a heavy paper or canvas cover. See Fig. 19.

If a tool post grinder is used on the lathe, the bed ways and other bearing surfaces should be well protected from the emery dust. Oil cloth or canvas can be used to cover the bed. A small cloth can be wrapped around the spindle to prevent dust from working into the spindle bearing. A small cup of oil or water may be placed directly below the grinding wheel to catch dust particles. The entire lathe should be thoroughly cleaned after the grinding is completed.

Rubber and fibre products usually contain very abrasive constituents. Extra precautions should be taken to protect the lathe

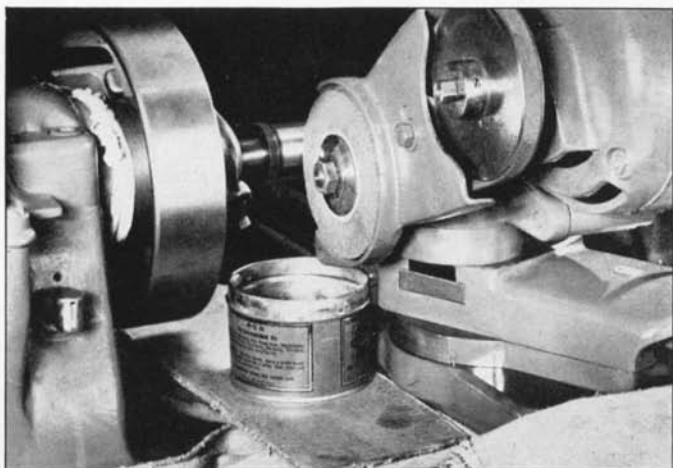


Fig. 17. A small cup of oil may be placed below the grinding wheel to catch dust particles.

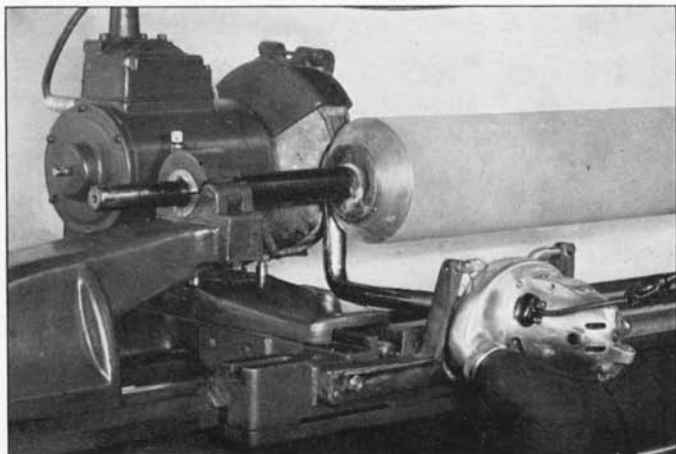


Fig. 18. A lathe equipped with a dust exhaust system for grinding rubber rolls.

when it is used for machining or grinding hard or soft rubber, fiber, plastics, and the like. A dust exhaust system should be installed if the lathe is to be used extensively on this class of work.



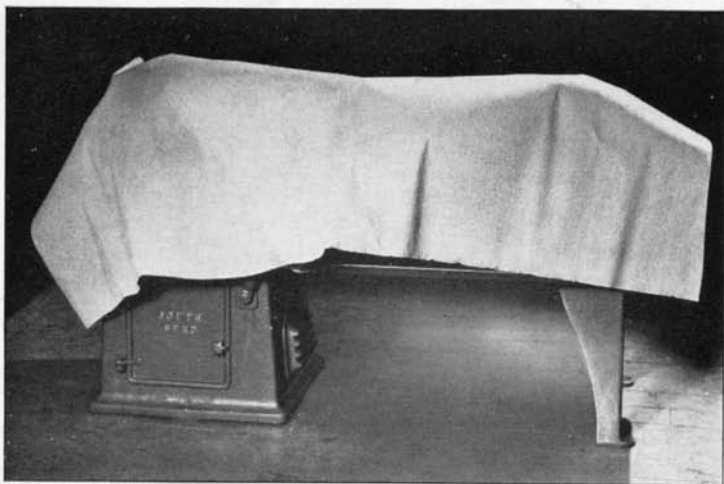


Fig. 19. Keep the lathe covered when it is not in use.

### Keep Belts Clean

Lubricating oil causes belts to slip and is harmful to both leather and rubber belts. The motor V-belts and the leather cone pulley belt should be kept clean and free from oil, dirt, and chips. Saddle soap or carbon tetra-chloride can be used for cleaning leather belts.

A little neats-foot oil will keep the leather cone pulley belt pliable. Sticky or gummy belt dressings are not necessary, and are not recommended. They cause dirt and chips to stick to the belt, sometimes doing more harm than good. When the belt tension is properly adjusted a clean dry belt will transmit all the power required for machining any work within the capacity of the lathe.

Good lathe operators take pride in keeping their lathes clean. They know that it makes the lathe easier to operate and enables them to turn out more and better work. They also know that it is easy to spot a good machinist by the way he takes care of his equipment. Keep your lathe clean. It pays!