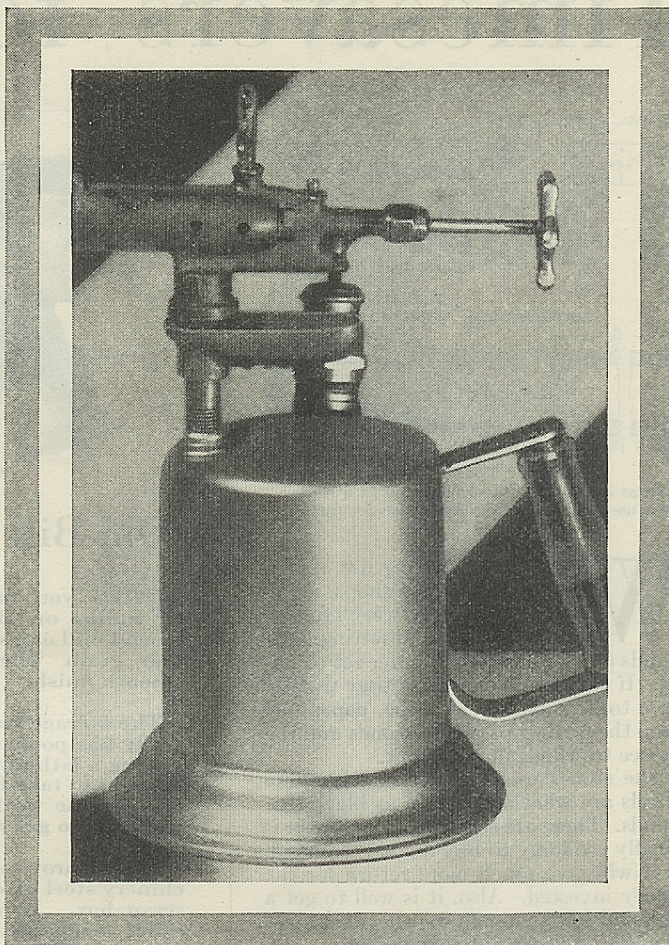


C & L 158

*This blow-torch is especially made and priced for the man who likes to do odd jobs around the house, or to tinker with mechanical things. It will last a lifetime if it is not abused. The usual retail price is about five dollars. Most hardware, electrical and automobile accessory stores have it—or can get it for you quickly. Look for the gold-banded, red handle.*

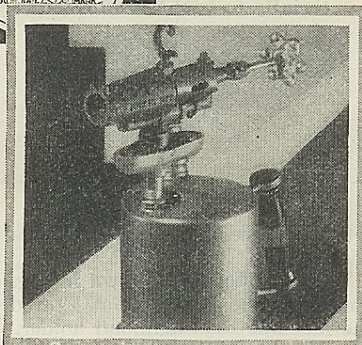
IS THE  
FEELING FOR  
FINE TOOLS  
IN YOUR  
BLOOD?



DO YOU get a real kick when you pick up a good tool? One that makes working a pleasure? That makes you want to stick at the job? Well, be set to feel that way when you take up a Clayton & Lambert blow-torch.

In a Clayton & Lambert you buy all the exactness and pride that can be put into a blow-torch. You get materials that have proved their value by use. You obtain the result of 40 years' experiment and invention—exclusive Clayton & Lambert improvements. In construction and mechanism, Clayton & Lamberts are made with an eye for long, efficient service.

For instance—the vaporizing chamber has an exclusive vein system for quicker, hotter heat. That makes the torch function better and saves money



C & L 32

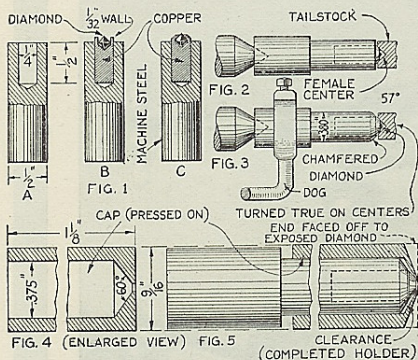
*This is one of the most popular blow-torches we have ever made. It is more expensive than the 158 because it is made for much harder use. It is designed for the man who uses a blow-torch in his daily business and demands not only excellent performance but rugged ability to stand rough handling. 32 contains the most advanced, patented C & L blow-torch improvements.*

on your fuel bills. All fittings are built into the tank by a patented method that prevents their falling in or coming out. There's *absolutely no danger* of an explosion with a Clayton & Lambert torch. Even the most delicate part—the gas orifice—is fool-proof. In the No. 158 the orifice has a guard. The slightly higher priced No. 32 has a patented control valve so that you'll never ruin the torch by a careless twist of your wrist. And when you close the valve you automatically clean out the carbon.

The next time you're in a hardware or electrical store look for the blow-torch with a gold-banded, red handle. Be sure of the handle—it marks a Clayton & Lambert. Then you're getting the largest selling torch in the world.

CLAYTON & LAMBERT  
MANUFACTURING COMPANY, Detroit, Mich.

# Timesavers for Shop Men



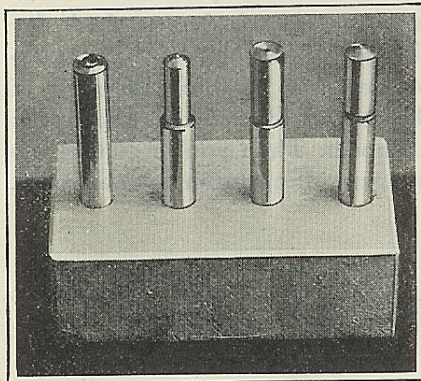
Steps in setting a black diamond in a holder for use in dressing grinding wheels accurately.

**W**ITH the increasing use of diamonds in machine shops, many men have become very familiar with their care and setting. Diamonds can be purchased either set or unset. If they are bought set, they usually have to be reset after a time, depending upon the quality of the diamonds and the service to which they are put.

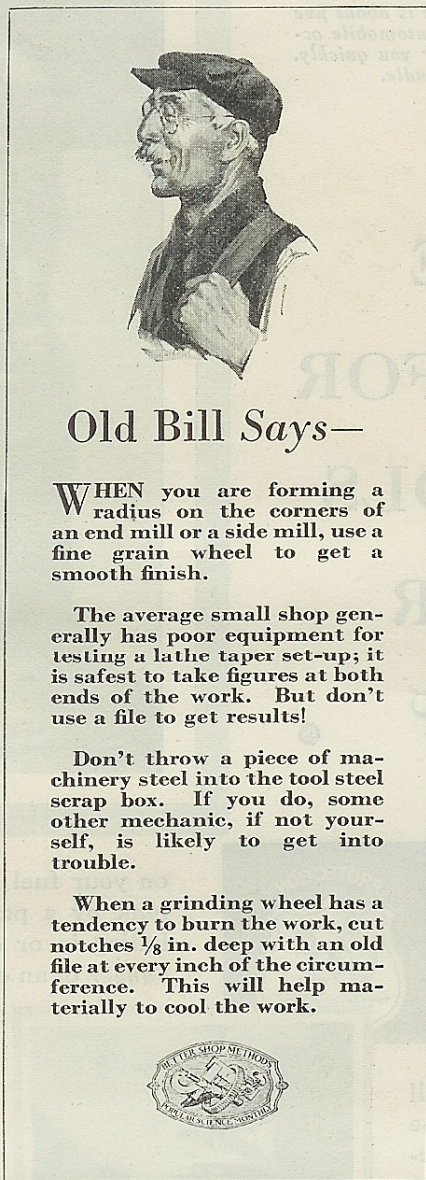
The stones used for dressing grinding wheels are what are known as black diamonds. There are several grades, but it is usually economy to buy a good diamond, as it will give much more return for the money invested. Also, it is well to get a diamond large enough for the work, just as when buying a monkey wrench.

Most diamonds are brazed into a steel holder. While brazing has been used with apparently good results for many years, much attention has been given to other methods. One result of this study has been the use of metals other than brass that melt at relatively low temperatures. This has been carried so far in one instance as to make a setting that will soften and release the diamond should it reach 800 degrees F. in service. The method was devised to avoid damaging the diamond, yet if overheating in service is likely to damage the jewel, as experts maintain, why will not heating it to 1,600 or 1,800 degrees in the setting also be detrimental?

This thought led to the development of the method of setting shown in the illustrations in this column. The diamond is



A mounted diamond and holders in three stages of completion. No brazing is required.



## Old Bill Says—

**W**HEN you are forming a radius on the corners of an end mill or a side mill, use a fine grain wheel to get a smooth finish.

The average small shop generally has poor equipment for testing a lathe taper set-up; it is safest to take figures at both ends of the work. But don't use a file to get results!

Don't throw a piece of machinery steel into the tool steel scrap box. If you do, some other mechanic, if not yourself, is likely to get into trouble.

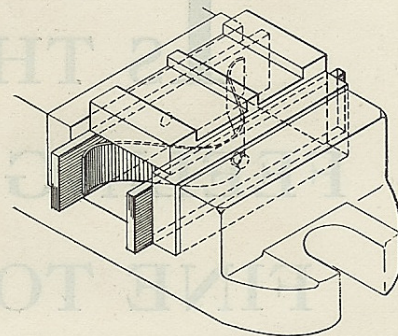
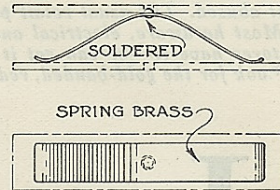
When a grinding wheel has a tendency to burn the work, cut notches 1/8 in. deep with an old file at every inch of the circumference. This will help materially to cool the work.



held just as securely and is not heated in setting.

The first steps are shown in Fig. 1. A hole should be drilled about 1/2 in. deep in the machine-steel holder. This hole should be about 1/16 in. larger than the diamond. Into the hole is driven a piece of copper rod, which is allowed to project 1/16 in. A hole just large enough to fit the diamond is drilled into the end of the copper plug deep enough to receive the diamond so that the point is just flush with the end of the plug. Then the copper is carefully peened over the diamond with a small set. Of course, this peening must be gently done to avoid fracturing the stone. The point of the diamond should be kept in the center of the holder as nearly as possible.

The holder is next turned on the outside true with the diamond. This is done by centering the rear end of the holder, and running the diamond in a female center



Thin, springy spreader used to support parallels under flat work held in a vise.

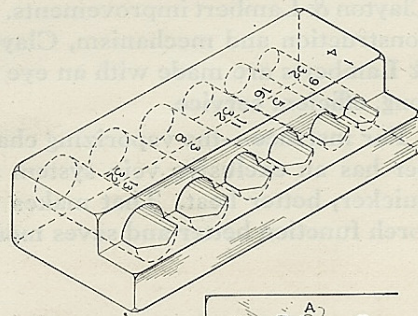
held in the tailstock of the lathe. The female center is made by drilling a small hole in a piece of 1/4-in. stock held in the chuck and allowing the diamond to true up the hole to fit itself (Fig. 2). A little emery and oil will assist.

Next, the end of the holder is chamfered to an angle of about 57 degrees, as shown in Fig. 3.

A cap is made from 3/16-in. stock and reamed to press over the turned portion of the holder as shown in Fig. 4. The bottom of this cap must be reamed with a reamer having an included angle of 60 degrees or slightly greater than the angle of the chamfered point. This is so that when the two are assembled the cap will bear on the point of the diamond only. A hole about half the diameter of the diamond is drilled through the end of the cap.

The cap is pressed on the holder and its end faced off as shown in Fig. 5 to expose the diamond. This completes the setting, which should take about one and a half hours, after the first trial.

The diamond should not project beyond the cap any (Continued on page 115)



Gage for verifying the size of a drill and at the same time showing the concentricity of the point, the correctness of the cutting angle, and also the amount of clearance.

C & L 158

*This blow-torch is especially made and priced for the man who likes to do odd jobs around the house, or to tinker with mechanical things. It will last a lifetime if it is not abused. The usual retail price is about five dollars. Most hardware, electrical and automobile accessory stores have it—or can get it for you quickly. Look for the red handle.*

Time tells  
the better value of  
Clayton & Lambert  
torches

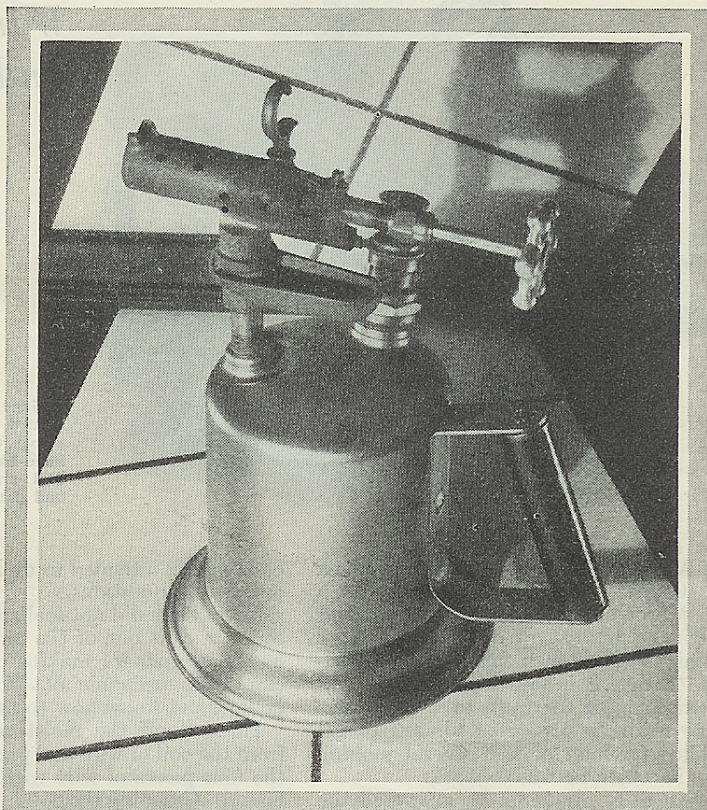
NEARLY any piano sounds good when it's new. Nearly any automobile runs well when it's new. Nearly any blow-torch performs right when it's new. Time . . . use . . . these bring out the "class" in a product, show the true worth of it.

The ability of Clayton & Lambert blow-torches to prove their "class" in the test of time and use has made them the largest selling blow-torches in the world. This is not the result of mere honest manufacture. It is caused by our ceaseless seeking for improved performance, improved design, improved materials—shown by a string of blow-torch patents as long as your arm.

Why is the brass tank given a satin finish, instead of shiny? Because buffing the metal weakens it in some spots—and these would "give," in time. Why a lead washer in the filler plug, instead of leather? Because it wears longer. Why a double spring on the pump valve? Just one reason—satisfaction year after year.



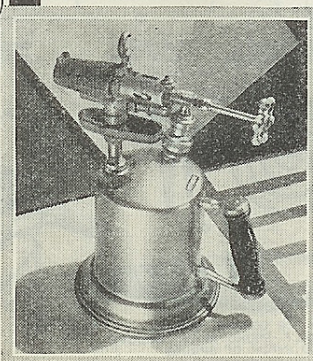
CLAYTON  
&  
LAMBERT  
MANUFACTURING CO.  
DETROIT, MICHIGAN



Handles so attached that bending or breaking them can't make the tank leak, protection for the base of the tanks, to guard against rough handling. Only one reason—longer service for you.

The patented burner orifice on No. 32 can't be spread, no matter how careless a man is in shutting the valve too tight—again, longer service for you.

About the only thing on Clayton & Lambert blow-torches not placed there for the special purpose of giving you better performance over a longer period, is the red paint on the handles. And that's put there so you can identify these torches, and get their greater value, the minute you see them.



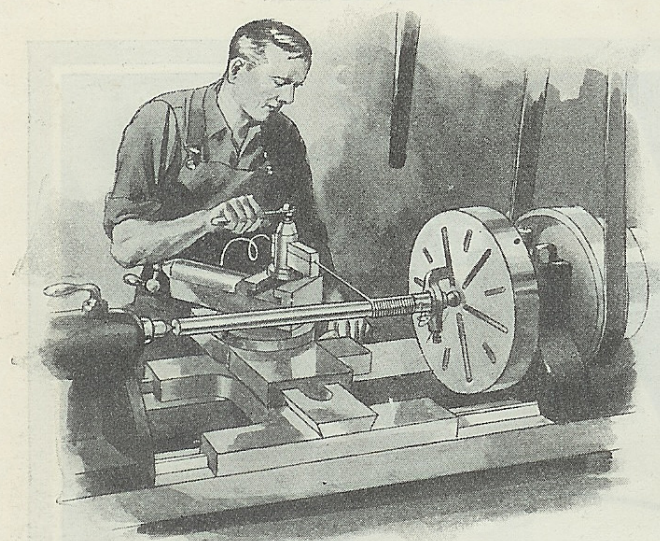
C & L 32

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# Winding Springs Is Easy

*Once You Know How to Tame Music Wire and Other Stubborn Stock and Can Make Mandrels and Tools*

By H. L. WHEELER



Springs are frequently needed in the jobbing shop. Machine-shop hand-books give mandrel and wire sizes and data for winding.

bounced across the floor. Jack, shocked by the suddenness of this accident, rubbed his badly rapped knuckles.

Wilkins had seen what had happened from across the shop and came up just as Jack was picking up the hopeless tangle of wire.

"We won't waste any time trying to untangle this mess," the foreman commented calmly. "I am quite willing to show you how to handle this spring job, but we'll have to charge the spoiled wire against your time. Get another package from the stock room."

"WATCH this," said Wilkins, as he unwrapped the new package. First he cut two of the binders; then he placed the coil on the floor and stepped on it with both feet in such a way that the two remaining binders were in front. Bending over and easing up the foot pressure, he cut the binders. The coil expanded beneath his feet and came to rest at about twice its original diameter.

"Now it can be picked up without becoming snarled or entangled," he explained.

Wilkins tied the bundle in two places and pulled the end through far enough to allow several springs to be made.

Even experienced mechanics, it should be mentioned, often use a poor method in handling a new coil of music wire. Without releasing the tension, they pull out enough wire to make two or three springs. As the coil becomes reduced in size by this method, the binders loosen and slip around. Then the wire springs out something like a fan, and the coils are easily kinked and tangled. I have seen half-used bundles of music wire so badly tangled because they had been opened in this way that it was cheaper to scrap them than to try to salvage them.

Wilkins looked over the lathe that Jack was to use (Continued on page 123)

IT WAS a proud moment for Jack Hinds when he stepped out as a journeyman machinist. Deeked out in his brand-new overalls and quite confident of his own mechanical knowledge, acquired in four hard years of apprenticeship at the railroad shops in his home town, he presented himself to Ed Wilkins, foreman of the general jobbing shop in which he was to work.

With alert precision, he answered the questions which the mild-spoken foreman asked. He could see that Wilkins was the sort of man to take a kindly interest in young fellows. This discovery surprised him a little, because he had heard indirectly that Wilkins was considered to be hard-boiled and a record breaker in respect to the amount of work he turned out with his shop force of twenty men.

After Jack had been registered by the time keeper and the tool-crib man, Wilkins handed him a blueprint of a coil spring such as is shown in Fig. 1, to be made of No. 30 music wire.

"You will find a box of short ends over by the hack saw," the foreman said. "Pick out a piece of half-inch round stock about ten inches long and make an arbor. Center both ends and drill a hole for starting the wire. You may use that twelve-inch lathe over in the corner."

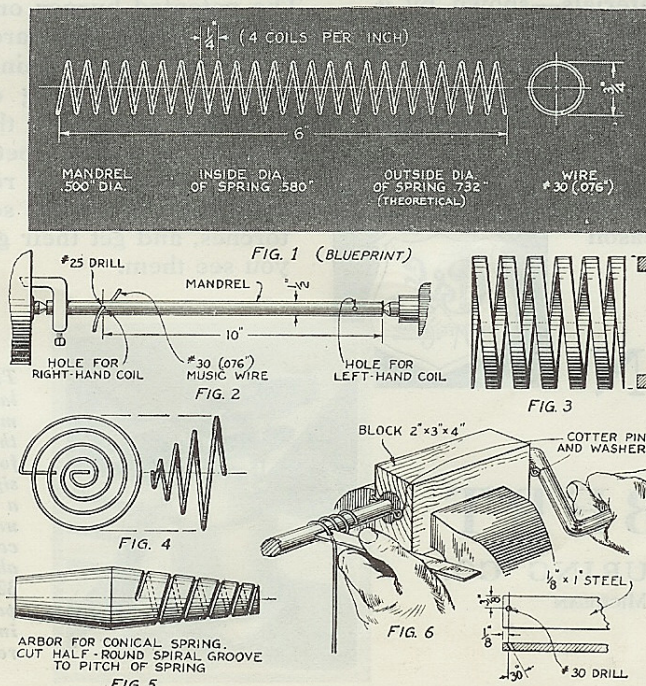
JACK drew the wire from the stock room while trying to recall how the old-timers in the railroad shop had wound springs. The truth is, he had never done it himself and, indeed, had never handled music wire. He thought it would be easy

enough and intended to do his best without asking questions.

What Jack did not realize is that while music wire is one of the most commonly used materials for making coil springs, it can give a mechanic all sorts of trouble if he does not know how to handle it.

He tore off the moisture-proof paper from the coil of wire and proceeded to cut the four pieces of wire with which it was bound. Grasping the coil in his left hand, he snipped the wires one after the other. Some of the boys in the shop were watching him, and they held their breath as he was about to cut the last binder.

Snap! The coil flew from his grasp and



Typical spring winding job and mandrel; spring cut from bar stock; conical spring and type of arbor used; bench winder for light springs.