

# INSTRUCTIONS



## DRILL GRINDING MACHINE TYPE 1-G



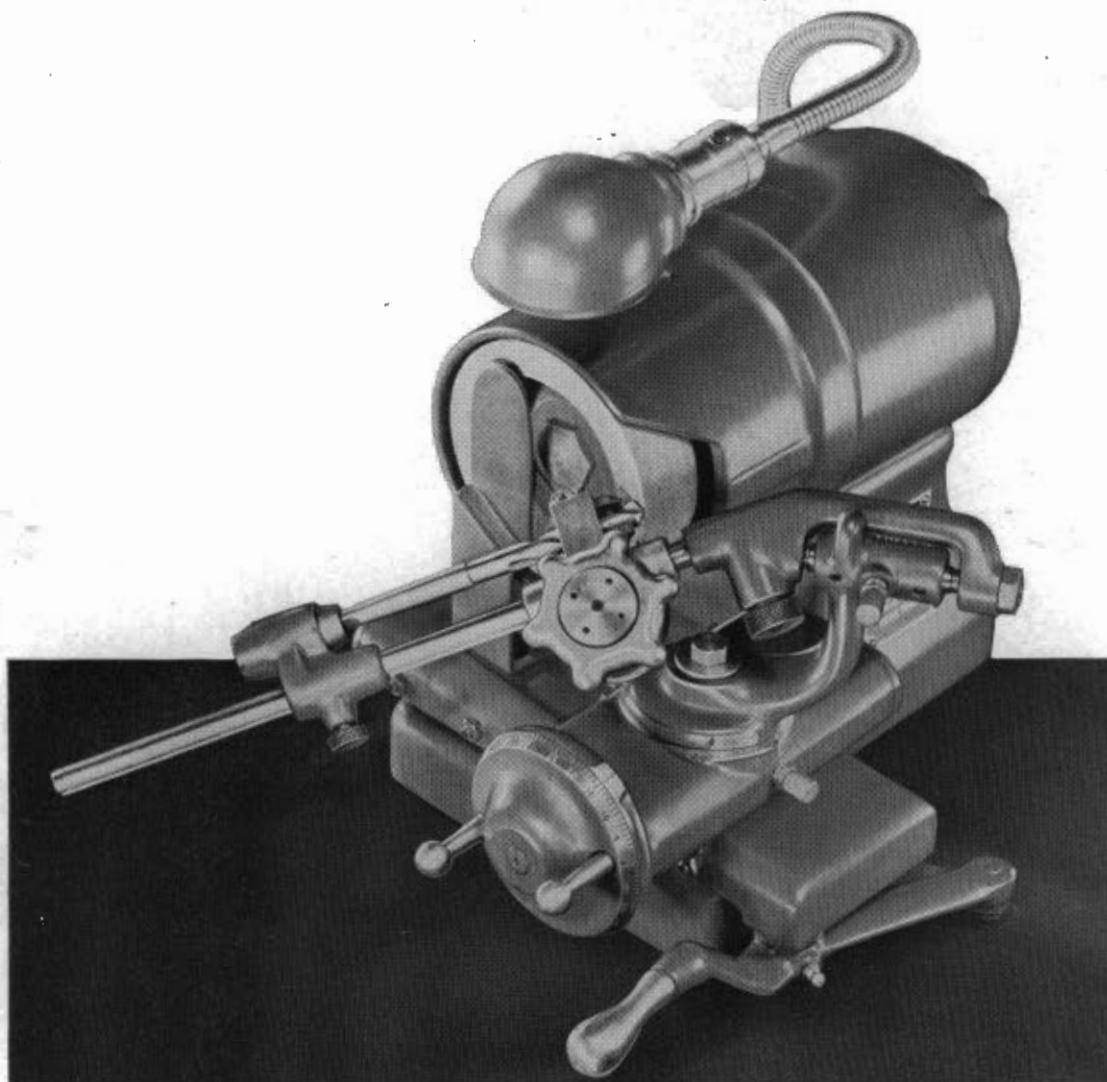
BULLETIN No. 4100

**CONSOLIDATED MACHINE TOOL CORPORATION**

**WILLIAM SELLERS & COMPANY, DIVISION**

**ROCHESTER, NEW YORK**

716-288-4600



## SELLERS MODEL No. 1-G DRILL GRINDING MACHINE

**THE SELLERS DRILL POINT**—Recommended by leading drill manufacturers—is widely recognized as the drill point that cuts faster, drills through more inches of metal per grind, requires less power and produces holes that are true cylinders of accurate size, thus speeding assembly and reducing spoilage.

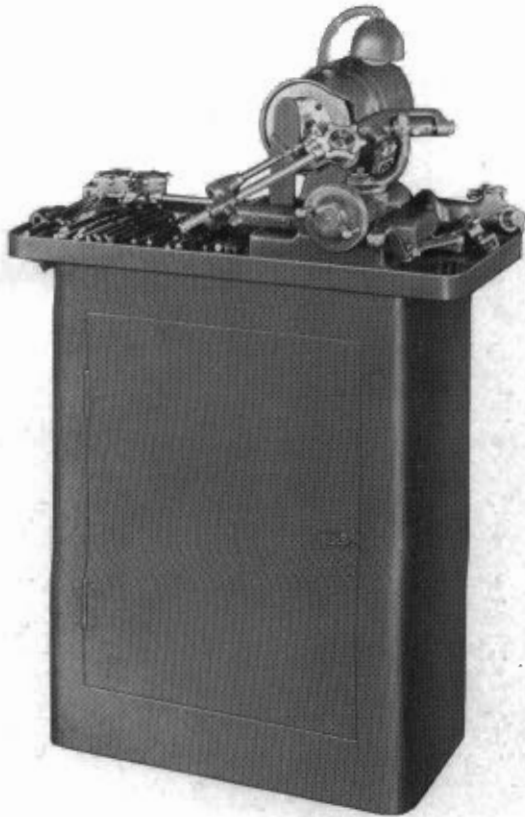
Now the basic principles and inherent accuracy of the Sellers chuck and the Sellers method of grinding have been embodied in a small, bench-type, self-contained machine that produces the Sellers point on one or a million drills in sizes as small as .028" (No. 70).

This machine like the larger Sellers Drill Grinders, provides drill lips ground with the same inclination to the drills' axis, of equal length, and with proper clearance at both center and periphery—the secret of the efficiency of the Sellers Drill Point.

See the streamlined compactness of this modern machine. Follow the smooth, simple, natural movements of the operator's hands as he runs through the cycle of chucking and grinding—suggesting the dispatch with which large numbers of drills may be perfectly conditioned.

# CABINET TYPE 1-G

## DRILL GRINDING MACHINE



A new convenience for operators of bench type drill grinders is the Sellers steel cabinet pedestal now available, either separately or with the Sellers No. 1-G Drill Grinder. The main pedestal is constructed of sheet steel of sufficient weight and with ample bracing to form a vibrationless mount for the machine. A hinged steel door with fastener allows access to the interior of the cabinet, which affords ample room for storing attachments and supplies for the machine. Three shelves are furnished, the material used being wood, as is also the pedestal top, to help eliminate vibration and avoid defacing tools and attachments when handling.

### DIMENSIONS

Cabinet is 31 inches from floor. Top is 13 in. x 30 in. for mounting machine and holding work, attachments, etc. Top is so constructed that base level of machine can be raised by addition of block under machine for convenience of tall operators.

Cabinet weight approximately 100 lbs.

Finish—Machine tool gray.





## TO SET UP NEW MACHINE

After unpacking, wipe off slushing grease and dirt carefully with clean rags or waste. **DO NOT USE COMPRESSED AIR TO CLEAN MACHINE.** It is particularly important to check adjustment of slides and swivel support centers to avoid any perceptible lost motion. The grinding wheel screws should be checked and tightened if necessary. Chuck rod should be free from dirt or grit on clamping surface that slides in swivel support. Use wheel dresser attachment to true up grinding wheel with chuck before grinding.

Lubricate all fittings with grease gun before attempting to operate. Motor Ball Bearings are packed by Manufacturer with grease for 2 years, under normal service.

Mount on bench or table of proper height for convenience of operator and bolt down with lag screws

Steel cabinet for mounting grinder can be supplied as Extra.

**2 . . . (Below) A Quarter turn of right hand chucks it securely (see page 5)**



**1 . . . (Above)  
Insert the drill (see page 5)**

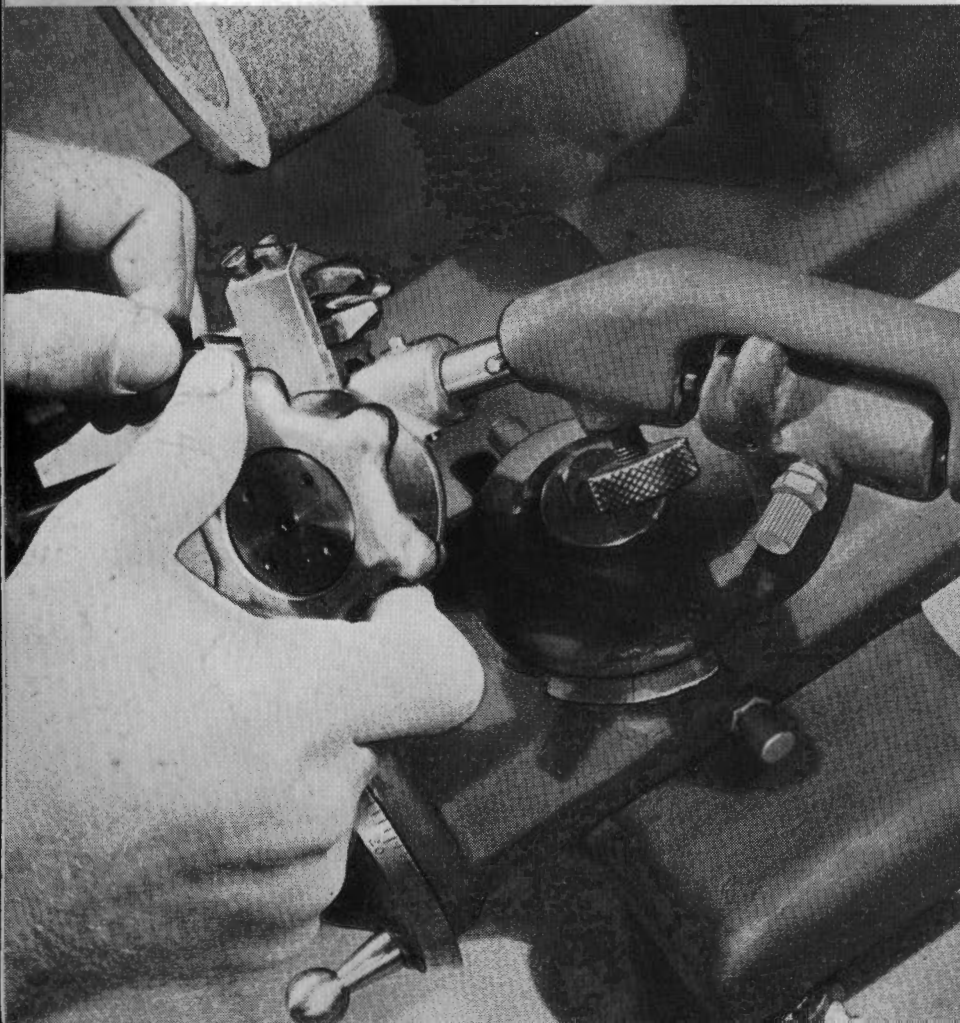
## ADJUSTMENTS

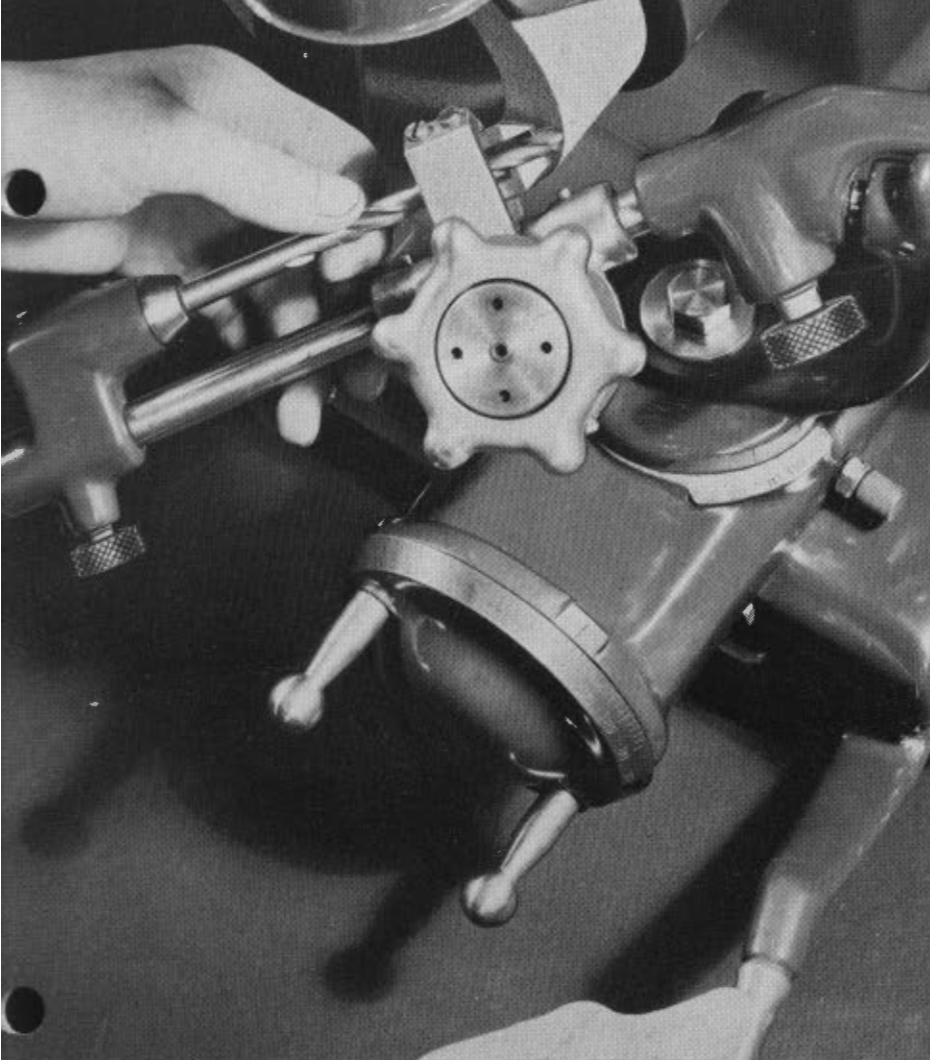
The slides should be tightened from time to time to avoid any perceptible lost motion. They should be arranged to move with a little resistance for best results. Adjust screws when slide is opposite guide.

Another important adjustment is the centers on which the chuck pivots. These must be adjusted from time to time to eliminate lost motion, in order to produce accurate drills.

All other parts of the machine are self-adjusting or arranged to be protected against wear.

The chuck jaws are chromium plated to resist the abrasive action of the emery. However, they must be kept lubricated to prevent damage. If wear becomes excessive the jaws or the entire chuck should be replaced.





**3 . . . (Above) Move to grinding position (see page 5)**

## LUBRICATION

**MOTOR BALL BEARINGS.** These are high speed ball bearings which must be carefully lubricated with grease of good quality. The grease should be of light body and free from acid. Once every 2 years, or more frequently if machine is used constantly, bearings should be removed and repacked with above mentioned grease. Excessive grease causes temperature rise of the bearings.

**SLIDES, ROCKER BEARINGS AND CHUCK JAWS** are provided with Alemite Hydraulic grease fittings. One slight push of the gun should be given to each fitting once a day. This is important in order to flush out any abrasive dust which may work into the sliding surfaces. Excessive grease should be wiped off with waste. Wipe off dirt from slide surface before lubricating. **DO NOT USE COMPRESSED AIR.**

For Alemite fittings use Gargoyle Mobile Grease No. 2 or equivalent (Semi-fluid).

## ABRASIVE WHEELS

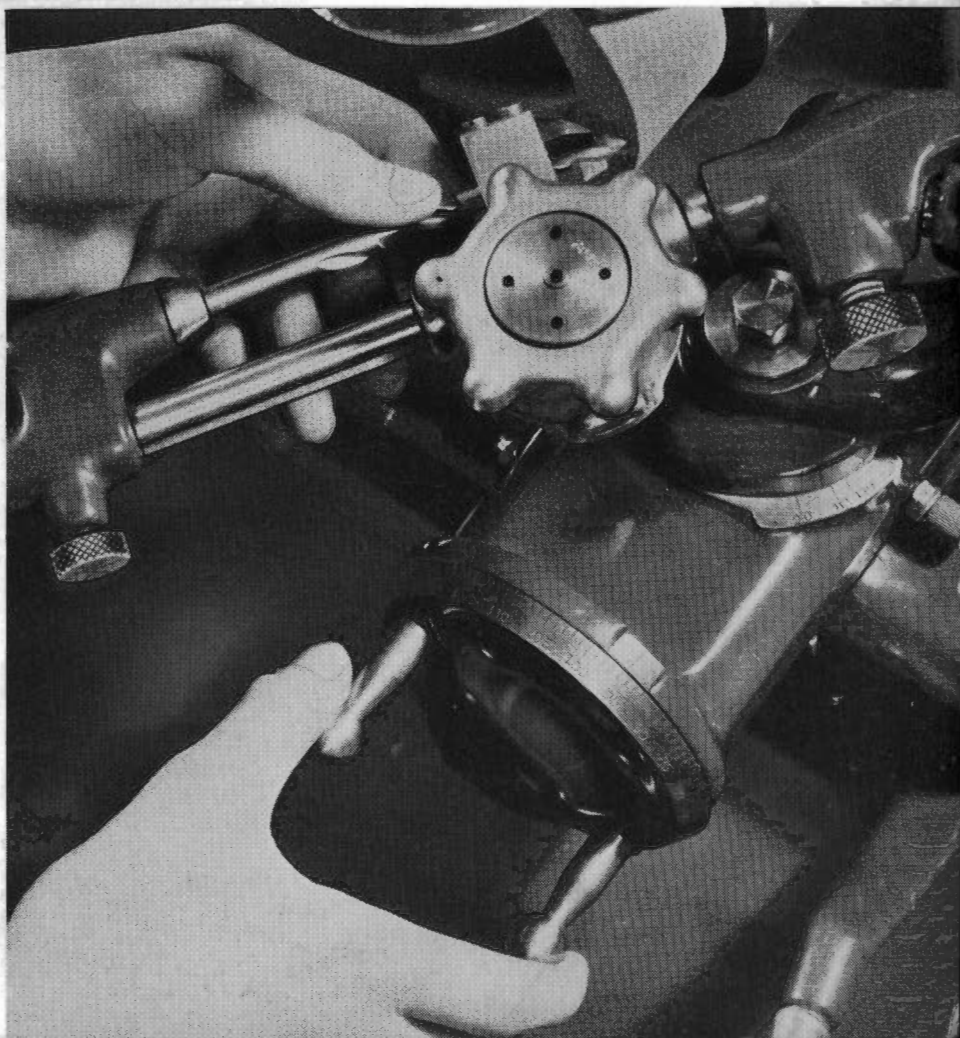
For small drills, better results will be obtained with finer grained wheels. If many drills  $\frac{1}{8}$ " to  $\frac{1}{4}$ " are to be ground, we recommend 120 grit wheels instead of the standard 100 grain. If the majority of drills is  $\frac{3}{8}$ " to  $\frac{1}{2}$ " diameter, an 80 grit wheel *could* be used.

## TO DRESS WHEEL WITH STANDARD WHEEL DRESSER (HACKER TYPE)

Remove chuck from swivel arm and mount Wheel Dresser in its place, let leg of Dresser rest on upper slide, line up Hacker with front of wheel and dress wheel by taking very light cuts and moving the slides fore and back, using the hand lever as in grinding drills. Be sure to make several strokes without feeding the Hacker in.

For a finer and more accurate dressing of the front of the wheel, we can supply a Diamond set into a nib which is mounted with an adapter, into the above dresser in place of the Hacker. We also can supply a complete diamond dresser to be used instead of the Hacker type dresser.

**4 . . . (Below) Grind the scientifically correct Sellers point (see page 5)**



## TO MOUNT DRILL FOR GRINDING

Move the back center away from the chuck to admit the full length of drill.

Open jaws to a greater distance than the diameter of the drill to be chucked. Hold the drill between the thumb and the index finger of the left hand so that one land of the drill rests in the notch of the lower steel end. Close the chuck jaws slightly, turning the drill so that opposite land of the drill rests in notch of upper steel end. The point of the drill should project about  $\frac{1}{8}$ " to  $\frac{3}{8}$ " beyond the edge of steel ends. Clamp the drill at this position and adjust the back center solidly against shank of the drill and clamp. Reclamp the chuck jaws on the drill being sure that drill fits firmly in back center. **AVOID EXCESSIVE PRESSURE OF THE STEEL JAWS ON THE DRILL AS IT MAY PRODUCE BURRS ON THE SHARP EDGES OF THE DRILL FLUTES AS WELL AS CAUSING UNNECESSARY WEAR OF STEEL ENDS AND CHUCK MECHANISM.**

## TO SET DRILL FOR PROPER CLEARANCE

The drill point should be placed so that the point projects about  $\frac{1}{8}$ " to  $\frac{3}{8}$ " beyond the edge of the steel ends. No definite rule can be given for this because the helix angles of different drills vary greatly.

If greater clearance is desired on the cutting edges the projection should be increased somewhat.

If less clearance is desired the projection should be decreased.

If normal clearance cannot be obtained by varying the extension of the point, the rod which carries the chuck may be moved in or out slightly in the swivel arm head. This is only necessary to cover extreme cases. Ordinary commercial drills may usually be ground setting line on chuck rod flush with the face of the swivel arm head.

## TO GRIND DRILL FROM 1/16" TO 1/2" DIAMETER

One chuck with steel ends for  $\frac{1}{16}$ " to  $\frac{3}{8}$ " drill is provided.

These steel ends are numbered piece No. 750 UPPER—piece No. 751 LOWER and are stamped  $\frac{1}{16}$ " to  $\frac{3}{8}$ " drills. The other chuck is furnished with steel ends for  $\frac{1}{8}$ " to  $\frac{1}{2}$ " drills, (stamped piece No. 650 UPPER—piece No. 651 LOWER).

Scribed line on chuck rod is average setting of chuck rod for  $\frac{1}{16}$ " to  $\frac{1}{2}$ " drills inclusive. Adjust chuck rod to suit if special lip clearance is required or for special fast or slow fluted drills.

The back center is furnished with two end stops—one stop for smaller and the other stop for larger drills.

## TO SET CHUCK FOR VARIOUS INCLUDED ANGLES OF POINT

Graduations on Upper Slide are for setting chuck to get various drill point angles.

The machine is shipped with chuck set to grind drills with 118° drill point.

To decrease the drill point angle move swivel stand clockwise.

To increase the drill point angle move swivel stand counterclockwise.

## MOUNTING POINT THINNING ATTACHMENT

Remove the complete standard chuck including stand and mount in its place the point thinning attachment. The stand of the point thinning attachment will fit in place of the chuck stand. A longer screw is furnished to hold the stand to the upper slide.

## DRESSING GRINDING WHEEL WITH DIAMOND DRESSER FOR POINTING "BLACK DEVIL" OR DEEP HOLE DRILLS

The attachment mounted with "O" line on attachment on inscribed line on center line of upper slide will dress the outside diameter of the grinding wheel cylindrical. Any angle desired to fill your special requirements can be dressed, and the settings should be marked on the base of the stand. One quarter turn of the attachment to the right will bring it in a position to dress the front of the grinding wheel straight. The stand is marked here with 5 graduations of 5° each to help in setting for dressing the wheel cone shaped. The dresser can be placed in the stand from both sides to facilitate getting the diamond up to the wheel.

Special care should be taken to place the diamond No. 868 in the proper hole of the dresser. The diamond must point *downward—never upward*.

## POINTING DRILLS (See drawing 1G-17)

Place standard chuck in piece No. 850, flat on rod of chuck toward clamping screw No. 852 and clamp. Adjust chuck to about 50° angle off vertical, (graduation for this setting is on piece No. 850) and clamp with No. 853. Adjust drill cutting edge to centerline of grinding wheel in extending drill more or less out of chuck steel ends to compensate for more or less spiral of drill and make necessary adjustment to centerline of grinding wheel by moving the whole chuck in or out of swivel No. 850, and clamp with No. 852.

After thinning first lip of drill, screw No. 857 should be adjusted to form a stop against the end bell of Motor; lock with screw No. 859. This will permit operator to grind equal cutting edges.

To assist in setting point of deep hole drills to centerline of grinding wheel, gauge No. 855 including screw and fiber washer, can be furnished as extra.



# SPECIFICATIONS

**CAPACITY.** Will grind two lip twist drills from  $\frac{1}{8}$ " to  $\frac{1}{2}$ " diameter, up to  $7\frac{3}{4}$ " long, and any included angle of point from  $80^\circ$  to  $160^\circ$ . Furnished with standard machine is one 5" diameter grinding wheel (coarse, medium or fine grain) a wheel dresser (Hacker type) two chucks for two lip twist drills (one chuck to accommodate drills from  $\frac{1}{8}$ " to  $\frac{3}{8}$ " diameter, and one chuck to accommodate drills from  $\frac{1}{8}$ " to  $\frac{1}{2}$ " diameters), one electric light and one point thinning attachment (without diamond dresser).

**TYPE.** Self-contained dry grinder, free from vibration, of the bench type with direct connected built-in motor.

**THE STANDARD CHUCK** designed to support the drill by secure clamping on the margins close to the point and at the shank by a sliding center, leaving the entire body of the drill free. Chuck closes and opens full range with a twist of the wrist. Extremely fast and inherently accurate.

Two of these chucks are furnished as standard equipment, one for drills  $\frac{1}{8}$ " to  $\frac{1}{2}$ ", one for drills  $\frac{1}{8}$ " to  $\frac{3}{8}$ " diameter.

**PROVIDES LIPS OF EQUAL LENGTH AND ANGLES OF INCLINATION.** The chuck is limited in rotation to less than  $180^\circ$  and the drill is reset so that each lip is chucked in the same position for grinding, thus insuring identical lips and concentricity of the drill point with the axis of the drill, regardless of uneven wear of the chuck jaws and parts, maintaining initial accuracy over years of time.

**A SPECIAL CHUCK** may be furnished as standard equipment in place of the  $\frac{1}{8}$ " to  $\frac{3}{8}$ " chuck above. Or it may be supplied as extra equipment. It is designed to facilitate handling drills of wire gauge sizes down to No. 70 and up to  $\frac{1}{8}$ " diameter.

**PROVIDES PROPER CLEARANCE.** The chucks hold the drill so that its axis is in correct relation to the axis of the wheel to automatically provide clearance increasing correctly from the periphery to the point of the drill, for all sizes of drills within the range of the machine.

**OPERATION.** The chuck is carried on two slide rests, one parallel to the axis of the wheel and the other parallel to the face of the grinding wheel. The slides are of the protected dovetail type with adjustable shoes. Movement of the chuck toward the face of the wheel is controlled by a micrometer hand wheel adjustment, whereas movement across the face is controlled by lever. The machine is not only capable of regrinding dull drills, but also rough and finish grinds in the same operation, badly burned or broken drills.

**RECLAIMING SMALL DRILLS.** Small drills are usually discarded when broken because the reclaiming is too tedious and expensive. This machine, because of its design and construction, permits rapid hogging cuts, and thereby offers an easy and inexpensive means of restoring even the smallest drills.

**EVEN WHEEL WEAR.** The grinding operation which passes the drill back and forth across the face of the cup wheel obtains maximum wheel life by maintaining a flat surface on the grinding wheel and reduces the necessity for wheel dressing.

**POINT THINNING.** This necessary operation for reconditioning drills is quickly and accurately accomplished on the 1-G. The regular chuck is used in a special bracket attached to the upper slide in place of the swing frame bracket. All types of drills may be quickly thinned and the point of the web brought to the exact center of the drills, thus providing for easy penetration and correction of "web out of center." For deep hole or crank shaft type drill points, specify the attachment with mounted diamond wheel dresser to form the corner of the wheel.

**THE GRINDING WHEEL.** Cup type 5" in diameter, mounted directly on the armature shaft of the built-in motor and protected by a suitable guard. Wheel grain, grade and bond is carefully selected to avoid overheating drill, permitting rapid grinding and minimum dressing.

**ALEMITE LUBRICATION FITTINGS** — provided to insure positive protection of bearing surfaces.

**DRIVE.** Constant speed ball bearing built-in motor of  $\frac{1}{3}$  h.p. 110 or 220 volts A.C. single phase suitable for operation on lighting circuit. Entirely enclosed and protected from dust and dirt. Motors of other characteristics, such as 115 or 230 volts D.C., can be furnished at extra cost.

**CONTROLS.** Toggle switch with overload protection.

**WIRING.** Completely wired ready for connection.

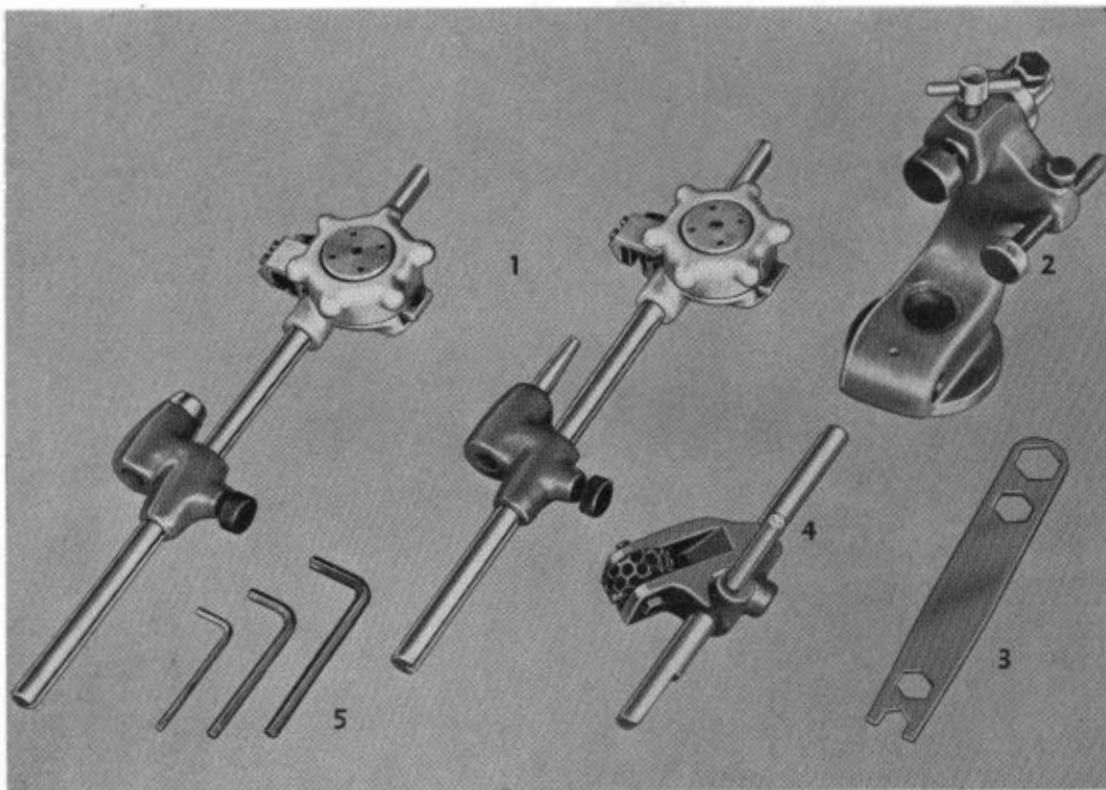
**LIGHT.** Adjustable electric light provides essential illumination for precision work.

**WEIGHT.** Complete, including motor, approximately 100 lbs.

**COLOR.** Standard gray.

**BENCH SPACE.** Overall, 23" x 20"; overall height, 12".

*Manufacturer reserves the right to change specifications without notice*



## ACCESSORIES

### FOR THE SELLERS 1-G DRILL GRINDING MACHINE

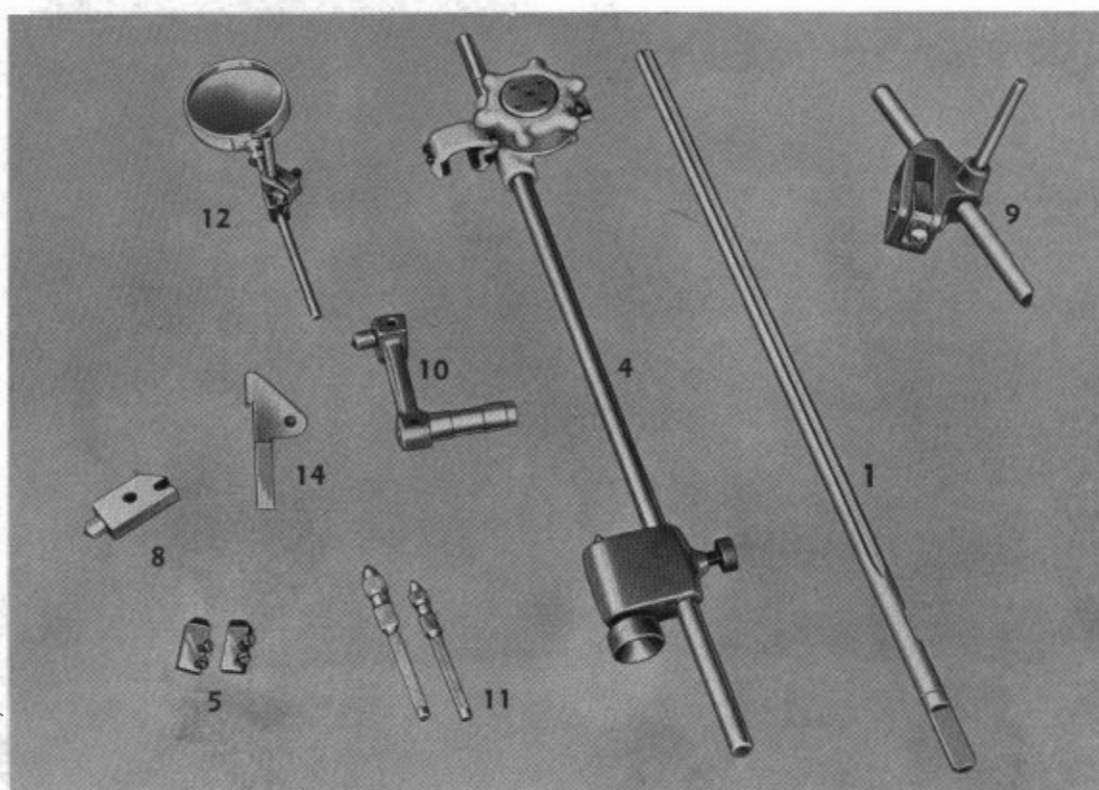
#### STANDARD

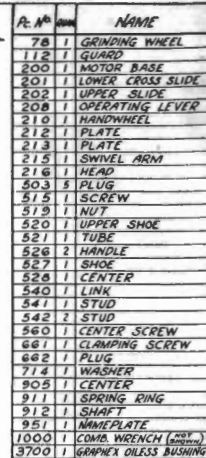
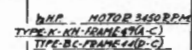
1. Two standard chucks to permit grinding of drills  $1/16''$  to  $1/2''$  diameter. A special chuck may be ordered instead of one of the standard chucks to permit grinding drills from  $.028''$  (No. 70) to  $1/8''$  diameter.
2. Point-Thinning Attachment for point-ing drills for regular or special drilling purposes (Deep holes or crankshaft drills).
3. One combination wrench.
4. Standard revolving wheel dresser complete.
5. Three hex wrenches.
6. Electric light for illuminating grinding operation.

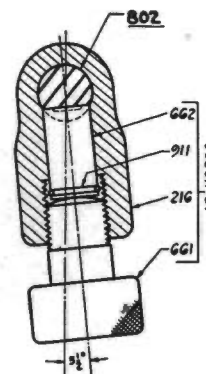
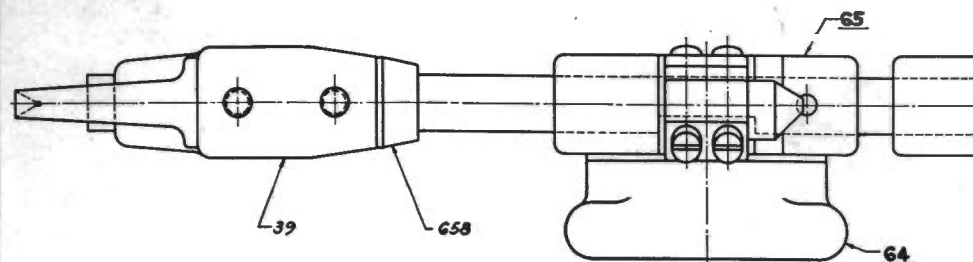


## EXTRAS

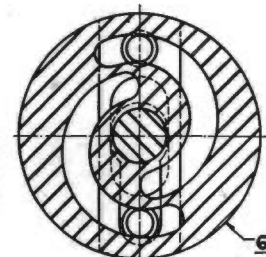
1. SPECIAL RODS to suit standard chuck for grinding drills up to 12", 16", 22", 25", 29" and 34" length.
2. STEEL ENDS to suit standard chuck or complete extra chuck to grind drills from No. 70 (.028) to 1/8" diameter twist drills. To be used with Starrett Pin Vises for holding short drills.
3. STEEL ENDS to suit standard chuck or complete extra chuck to grind 1/4" to 1/2" diameter straight fluted drills.
4. EXTRA CHUCK to grind two lip twist drills from 1/2" to 1" diameter up to 16" length.
5. STEEL ENDS to suit 1/2" to 1" diameter two lip twist drills for 1/2" to 1" diameter chuck.
6. STEEL ENDS to suit 1/2" to 1" chuck or complete extra chuck to point Celfor drills from 3/8" to 1 1/8" diameter.
7. EXTRA CHUCK with EXTRA STAND to grind left hand two lip twist drills from 1/8" to 1/2" diameter.
8. DIAMOND DRESSER to be interchanged with hacker wheel in standard wheel dresser delivered with machine.
9. DIAMOND DRESSER complete with holder (to save time to interchange hacker wheel and diamond).
10. DIAMOND DRESSER for point thinning attachment for special web thinning and pointing.
11. STARRETT PIN VISES to use with chuck for No. 70 (.028) to 1/8" drills.  
One pin vise to accommodate short drills .028 to 1/8".  
One pin vise to accommodate short drills .050 to 1/8".
12. MAGNIFYING GLASS including holder to attach to grinder.
13. CABINET to mount grinder on top furnished with steel door and wooden shelves.
14. GAUGE for setting drill point to center line of wheel including screw and fibre washer to use with standard point thinning attachment.







SECTION-C-C



SECTION-A-A

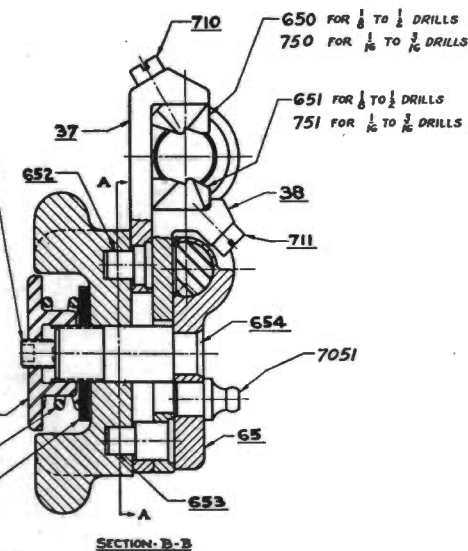
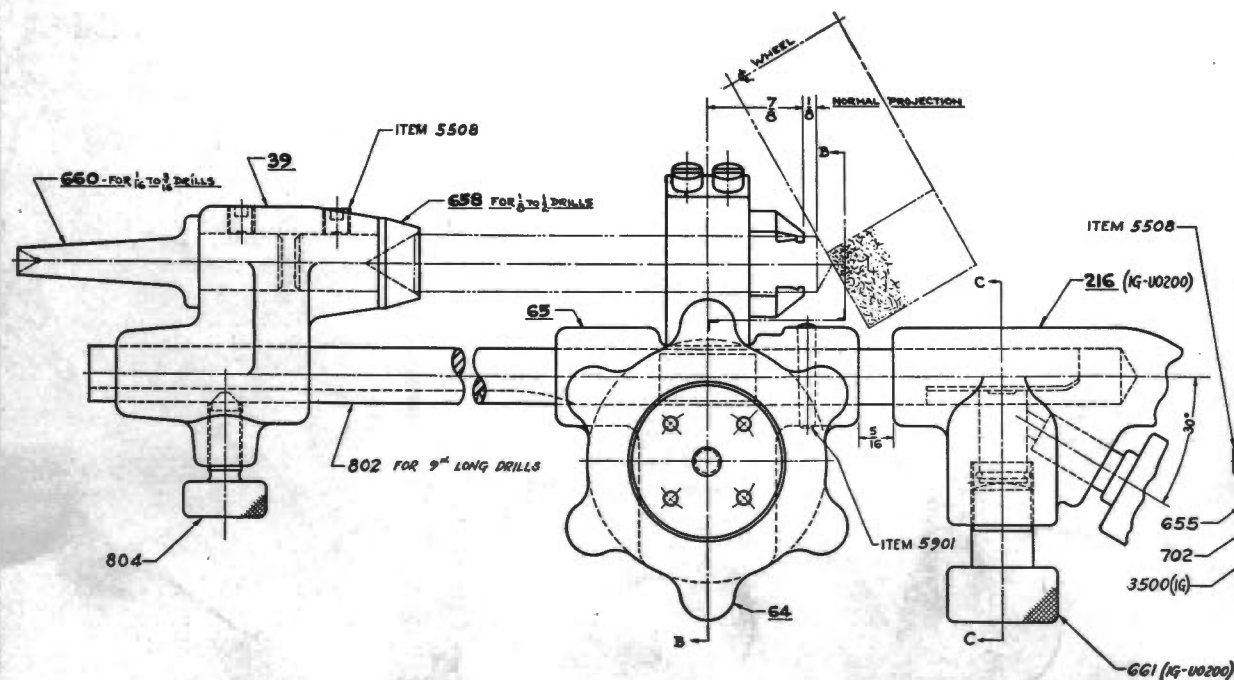
Pc. No.	QTY	NAME
37	1	UPPER JAW
38	1	LOWER JAW
39	1	HOLDER
64	1	JAW CAM
65	1	CHUCK BODY
650	1	STEEL END
651	1	STEEL END
652	1	CAM PIN
653	1	CAM PIN
654	1	STUD
655	1	NUT
658	1	END STOP
660	1	END STOP
702	1	SPRING
710	2	SCREW
711	2	SCREW
750	1	STEEL END
751	1	STEEL END
802	1	ROD
804	1	CLAMPING SCREW
3500	1	FIBRE WASHER

## SPECIAL PARTS

ROD FOR 12" LG. DRILLS	IG-800
" " 16" " "	IG-811 STANDARD FOR IG-U0137 FOR 1/2 TO 1" DRILLS
" " 16" " "	IG-803
" " 22" " "	IG-801
" " 25" " "	IG-809
" " 29" " "	IG-808
" " 34" " "	IG-805

## SPECIAL PARTS

IG-U237	STEEL ENDS 554-555	#70 TO 1/2 DRILLS
IG-U1150	" " 1150-1151	1/2 TO 1/2 STRAIGHT FLUTED DRILLS
IG-U79	" " 79-80	FOR POINTING CELFOR DRILLS
CONST IG-8	IG-U137	" " 650-651 1/2 TO 1" DRILLS
CONST IG-11	IG-U65	" " 550-551 1/2 TO 1" L.H. DRILLS



SECTION-B-B



Pc. No.	QTY	NAME
250	1	STAND
705	1	PIN
850	1	SWIVEL
852	1	CLAMP SCREW
853	1	CLAMP SCREW
857	1	SET SCREW
859	1	CLAMP SCREW
3505	1	PLUG

