Wadkin

Universal Cutter Grinder, N.H.

British Standard Classification No. 55.7

With table for grinding knives up to 12½" long, using dividing head arbor.

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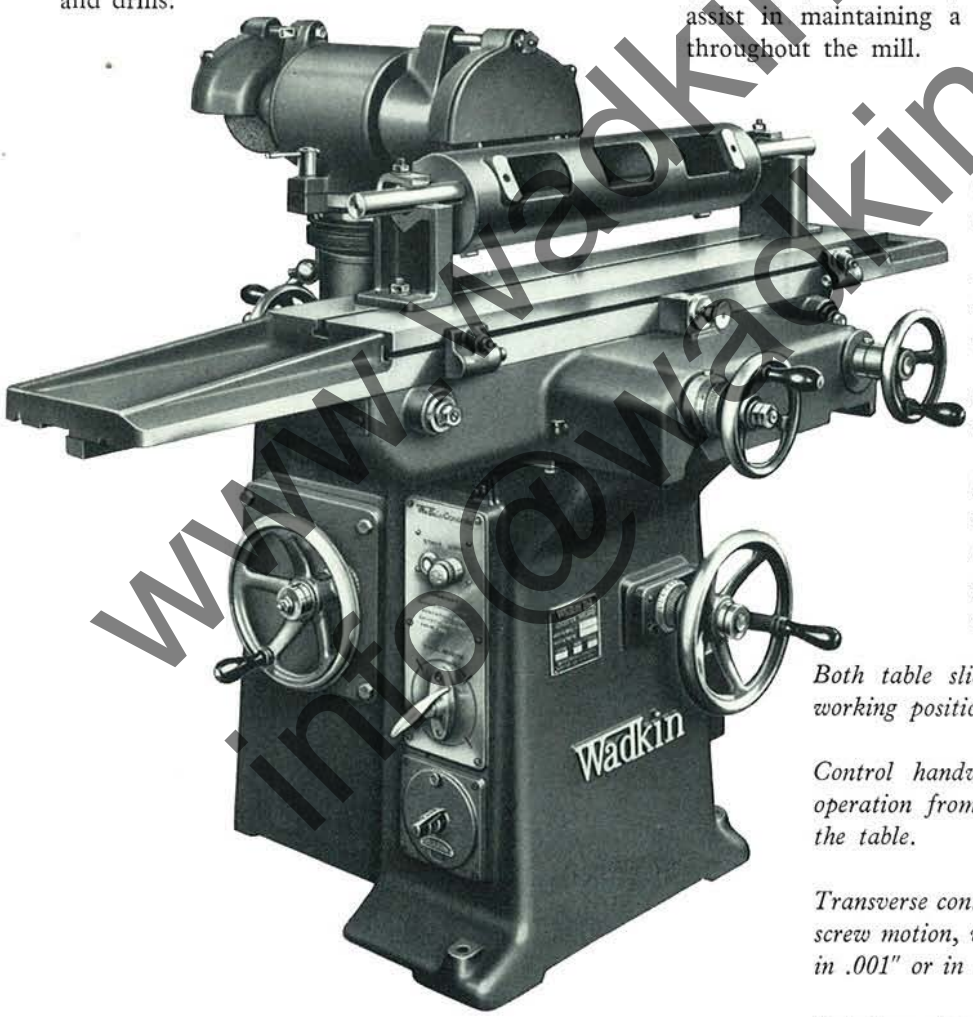
Wadkin

Universal Cutter Grinder, N.H.

This machine has been specially designed for the proper regrinding and maintaining of all the cutter equipment used on modern high speed woodworking machines. It will deal efficiently with all types of multi-knife cutter heads, as well as cutters for square or circular blocks, thick or thin planing knives either in the blocks or independent of them. It is also capable of regrinding tungsten carbide tipped saws, tenoning machine cutterblocks and drills.



Shows machine with table for grinding thick knives up to 24" long, and under certain conditions thin knives up to 26½" using a dummy block and vee blocks. This table does not increase the capacity of the machine when using dividing head.

Cup grinding wheels are mounted at each end of the spindle which permits either coarse or fine wheels to be used as a pair, or alternatively a grinding wheel at one end and a diamond impregnated wheel for tungsten carbide at the other.

This is a machine that should be installed in every woodworking plant where moulders are in use. Not only will it prove a real source of economy by speeding up cutter sharpening, but it will materially assist in maintaining a good standard of finish throughout the mill.

Features

Robust construction to precision engineering standards.

Head swivels 240° and carries a grinding wheel at each end.

Grinding wheel spindle runs in both directions.

Rise and fall of head is totally enclosed in collapsible bellows to prevent the entrance of dust.

Both table slides are covered at every working position.

Control handwheels are duplicated for operation from either front or rear of the table.

Transverse control to table is by fine pitch screw motion, with handwheels graduated in .001" or in .1 mm.

Grinding spindle is nickel steel, heat treated and is mounted on precision preloaded ball bearings.

Specification

The Machine

The machine consists of a rigid main frame carrying the motorised grinding head and table.

The Table

The table is carried direct on the main frame and not on a knee bracket, ensuring a greater degree of rigidity. The table has longitudinal movement on ball bearings and hardened steel slides, also transverse movement. The longitudinal control is by handwheel operating a precision steel rack and pinion. Transverse control is by fine pitch screw motion with the handwheels graduated in .001″ or .1 mm. for giving a fine feed. The table slides are covered at every position of the table.

A feature of the machine is that all control handwheels are duplicated so that the machine can be conveniently operated either from the front or rear of table, whichever position gives the operator the better view of the grinding operation.

Table is accurately machined and has a tee slot to carry the fixtures required for the different classes of work. It is also slotted on the front edge to carry adjustable stops controlling the limit of table travel.

The table is supplied in two sizes as detailed under "Dimensions and Capacities" below.

The Grinding Head

The grinding wheel head is arranged to swivel on a circular base plate fitted into the machine main frame. The movement is through 240° to allow either wheel to be presented over the table and in addition swivelled up to 30° right or left for hollow grinding.

The head embodies a 2 h.p. squirrel cage motor mounted directly on a heat treated nickel steel spindle. Precision preloaded ball bearings are fitted.

The spindle is arranged to take either 6″ diameter taper cup wheels, 7″ diameter dish wheels, or diamond impregnated wheels.

The head has a rise and fall of 8¾″ operated by screw and spiral gears working in totally enclosed boxes in the main frame. The slide is totally enclosed in a collapsible bellows as a protection against dust and grit.

Control Gear

The head motor is controlled by a direct on contactor starter with no-volt and three overload releases operated by start and stop push buttons. A reversing switch is provided so that the wheels can be run in either direction.

Guards

Both grinding wheels are effectively guarded. Guards have quickly detachable front covers.

Dimensions and Capacities

Height of centre of grinding wheel to table ...	Maximum 15½″ (395 mm.)	Minimum 6¾″ (170 mm.)
Wheel head swivels	240°	
Rise and fall of head	8¾″ (220 mm.)	
Diameter of grinding wheels	Taper: Cup 6″ (150 mm.), Dish 7″ (175 mm.)	
Speed of grinding wheels on 50 cycle electric supply	3000 r.p.m.	
Speed of grinding wheels on 60 cycle electric supply	3600 r.p.m.	
Horse power of motor	2	
Travel of table:	Standard table	Long table
Longitudinal	16″ (405 mm.)	28″ (710 mm.)
Cross	9¼″ (235 mm.)	9¼″ (235 mm.)
Maximum length of knife ground using dividing head	12½″ (315 mm.)	12½″ (315 mm.)
Maximum length of knife ground using vee blocks...	12½″ (315 mm.)	24″ (610 mm.) thick knives 26½″ (670 mm.) thin knives
Floor space with maximum movements	5′ 4″×4′ 3″ (1625×1295 mm.)	7′ 10″×4′ 3″ (2390×1295 mm.)
Net weight in cwts.	13¼ (1480 lb.) (670 kg.)	14¾ (1650 lb.) (750 kg.)
Gross weight in cwts.	17¼ (1930 lb.) (875 kg.)	18½ (2070 lb.) (940 kg.)
Shipping dimensions in cubic feet	77 (2·1 cu.m.)	82 (2·3 cu.m.)

Details included with the machine:

Motor and control gear; one 6″ diameter taper cup wheel; one 7″ diameter dish wheel; one wheel mounting sleeve; set of spanners; grease gun, and tin of ball bearing grease.

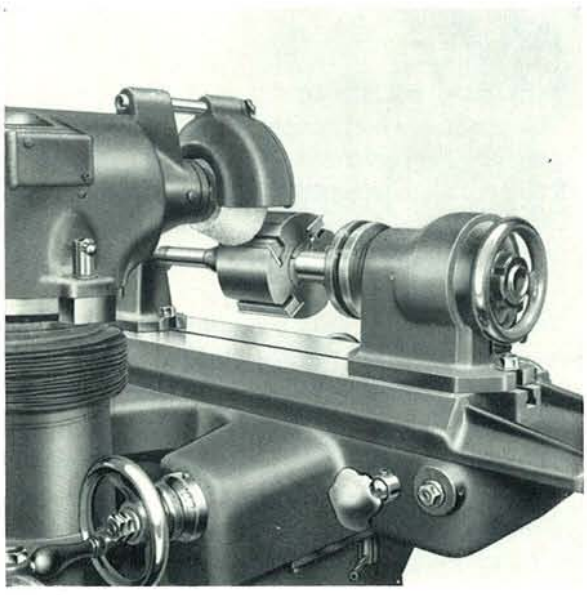


Fig. 1.

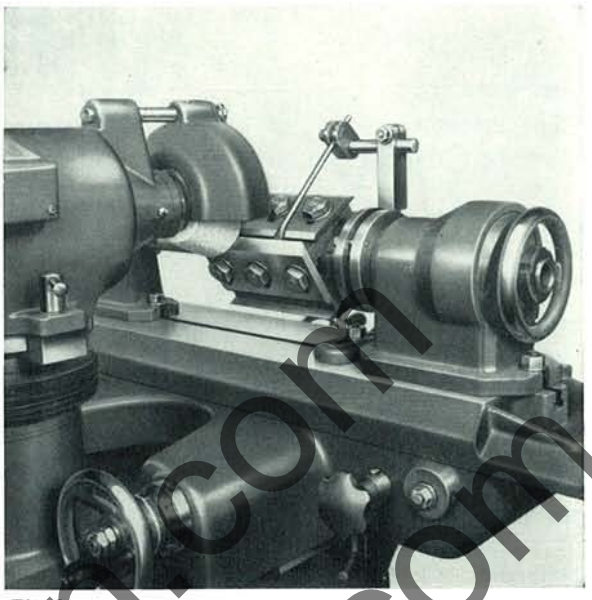


Fig. 2.

The illustrations on this and the following pages show the various types of grinding that can be done by means of the attachments supplied for use on the machine. In Figs. 1 to 6, the cutterblock or knife carrier is located between a dividing head fixture and tailstock designed for grinding multi-knife cutterblocks up to 10″ diameter. The dividing head is precision made and all working parts hardened and ground. A feature of the head is that a masking plate is built into it, and by positioning a stop screw, the choice of 2, 3, 4, 6 or 8 divisions can be obtained.

When set for a given number of positions it is impossible to obtain any other but the correct setting. When required, all the divisions of the head can be masked off and a finger mechanism, carried from the table, used to locate the cutters (see Fig. 2).

Fig. 1 shows the clearance bevels being ground in a four knife circular block. Block is reversed on the arbor for grinding face bevels. The one arbor accommodates slip-on square or circular blocks embodying thick or thin knives used on Wadkin 4″, 7″ or 8″ moulders. Alternatively an arbor can be supplied to accommodate blocks used on Wadkin 7″ or 8″ and 12″ moulders. Additional arbors can be supplied to suit other sizes and makes of moulders.

Fig. 3.—Setting up for grinding a solid profile cutter, a block gauge seen on the table is used for setting the cutter at the correct angle for grinding.

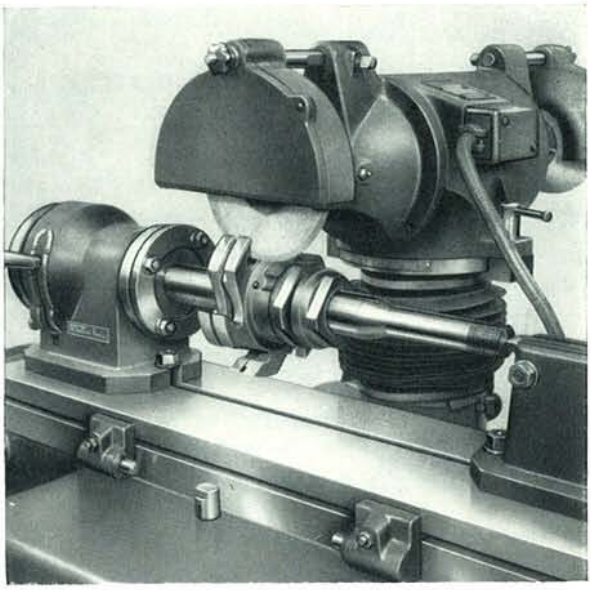


Fig. 4.—After the initial setting (Fig. 3) the remaining cutters are precision located by the dividing head.

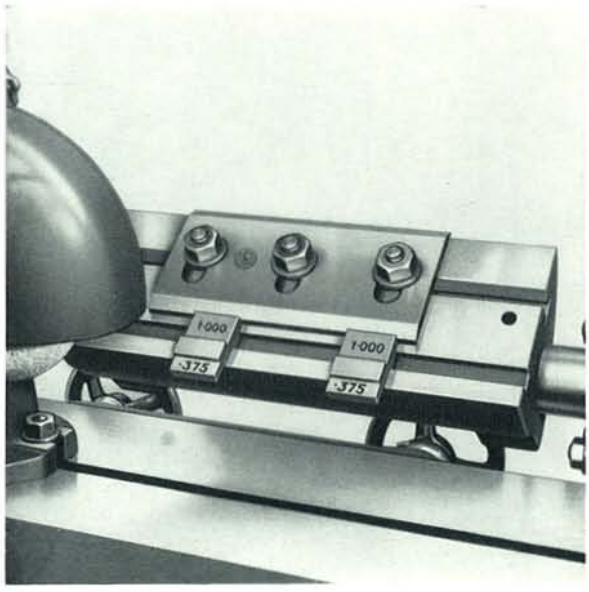


Fig. 5.—Both thick and thin knives up to 12" long can be ground separate from their blocks on this fixture. The knives are set from the back by means of the setting gauge blocks, which ensures that the knives are ground parallel.

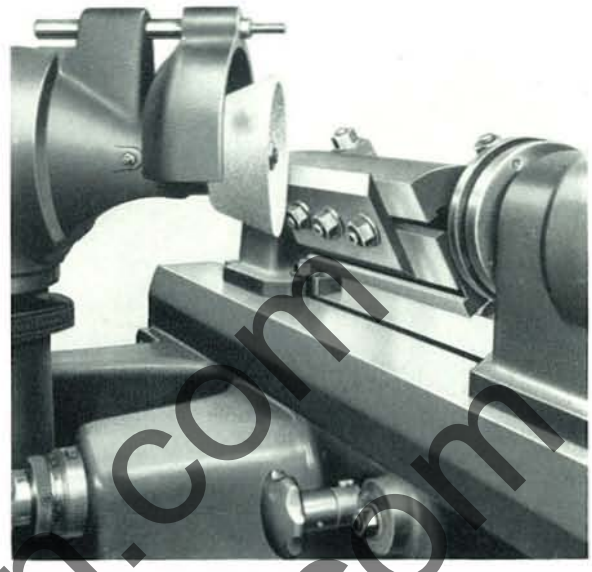
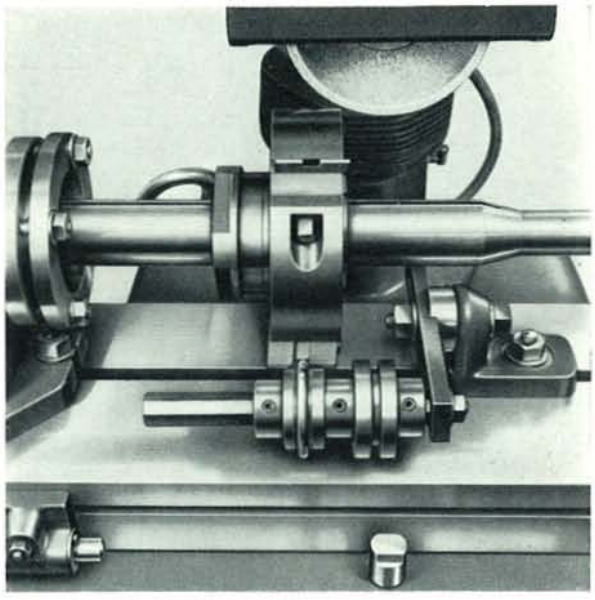


Fig. 6.—Either plain or hollow grinding can be done. Head swivels as seen above for hollow grinding.

Fig. 7.—Face angle and clearance angle can be ground on all types of matcher heads.

Fig. 8.—After grinding the cutters, the roller setting attachment seen in position below is used for setting the cutters in track. Provision is made on the one attachment for setting both the tonguing and grooving heads.



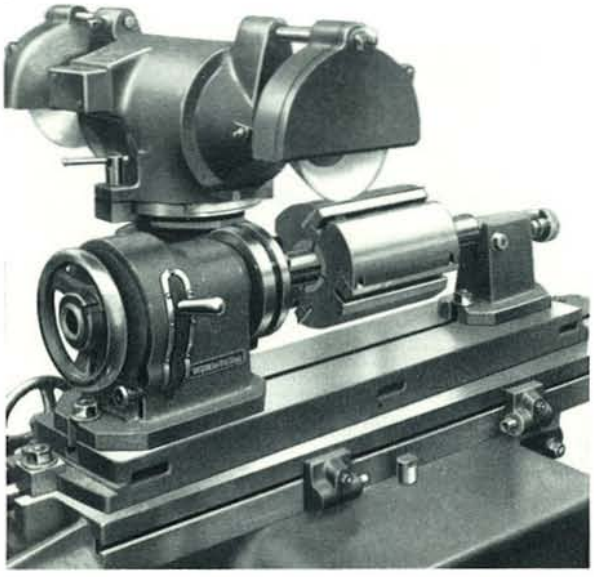


Fig. 9.—The grinding of skew type or shear cut blocks either square or circular is catered for by means of a swivelling platen secured to the table on which the dividing head unit and tailstock are mounted. Platen swivels 10° either way. Alternatively, this operation can be done using a locating finger, carried from the cross slide and rotating the block on the arbor. This is not recommended for blocks larger than 6" long.

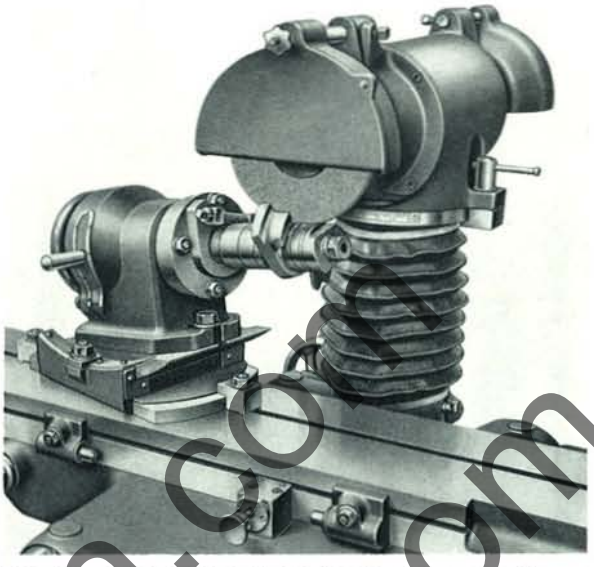
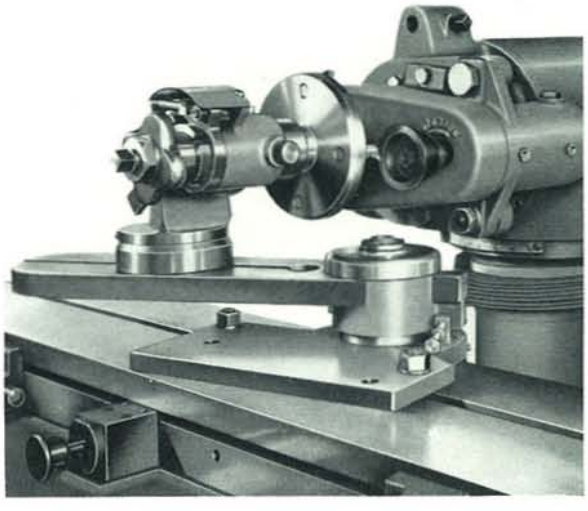


Fig. 10.—Solid profile cutterblocks with compound angles can be dealt with by attaching a radial feed stub arbor to the standard dividing head, and mounting it on a canting and pivoting base plate secured to the table. The unit will cant at any angle up to 15° up or down, and swivel 30° either way from the centre line. This unit is suitable for cutters having a compound face angle of a size up to 6" diameter x 6" long and up to 9" diameter x 2" long, depending on the cant and swivel angles required.

Fig. 11.—Every type of cutter used on high speed routers can be ground by means of this auxiliary table and attachments. Attachment DGA shown below is for sharpening spiral and straight fluted cutters.

Fig. 12.—Shows attachment type SFA3 mounted on swivelling base type SFR3, being used for grinding tungsten carbide tipped plug cutters mounted in face mill. A 2¼" diameter diamond lapping wheel is being used.



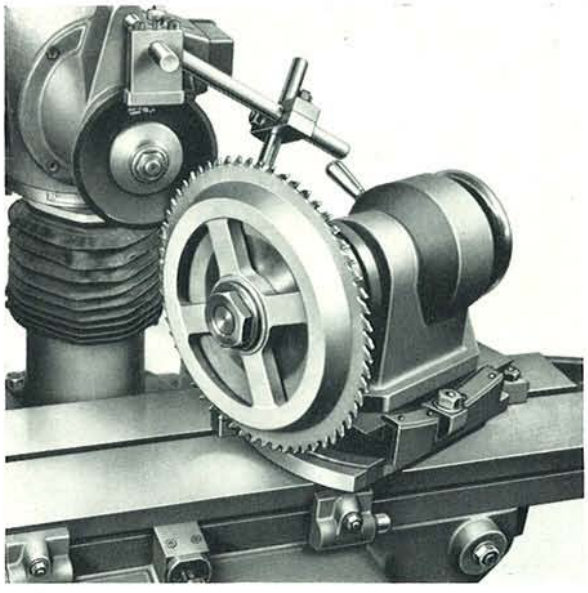


Fig. 13.—Equipment can be supplied for grinding Oertli hogging heads and saws. Illustration shows grinding of top bevel on saw blades using special indexing arm and supporting flanges on stub arbor.

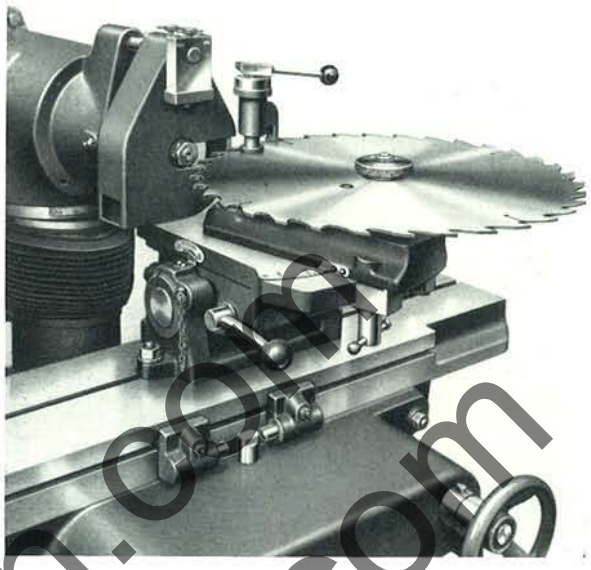


Fig. 14.—Tungsten carbide tipped saws between 8" and 18" diameter can be reground on this attachment. Square or bevel topping, also facing operations, are performed separately. The saw is positioned on self-centring bushes and the tooth to be ground located by a disappearing plunger pin. A diamond impregnated wheel is used for this operation.

Fig. 15.—High speed grinding attachment, Type NHG, for dealing with all kinds of router cutters. It is quickly attached to the main grinding head. The spindle revolves at 5,000 r.p.m. and uses 2" and 2¼" diameter grinding wheels.

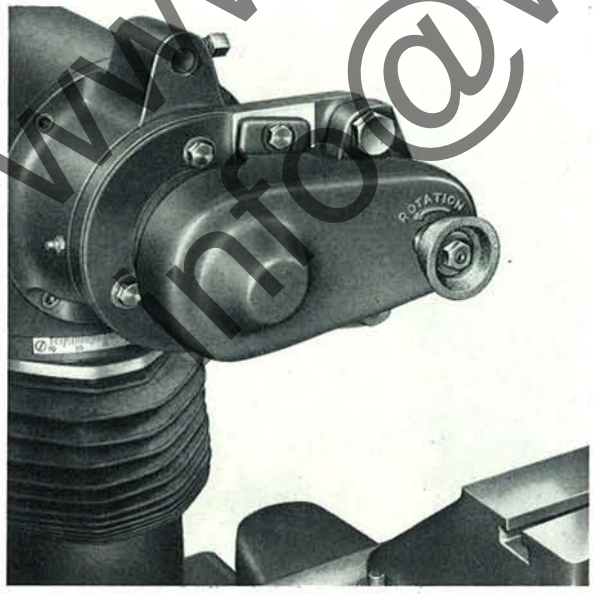
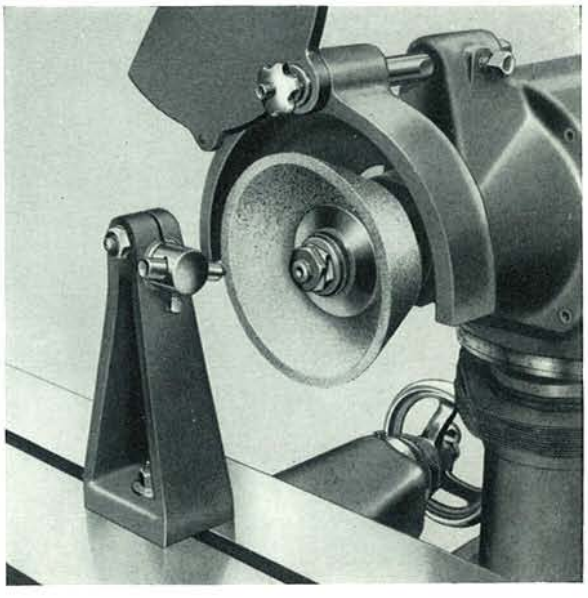


Fig. 16.—Provision is made for wheel dressing. The fixture shown is designed to carry a diamond which is passed backwards and forwards across the revolving grinding wheel by means of the table movements.



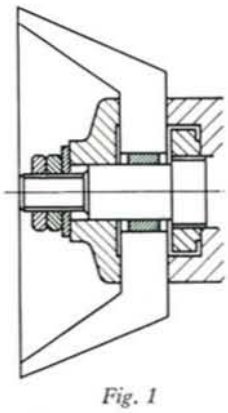


Fig. 1

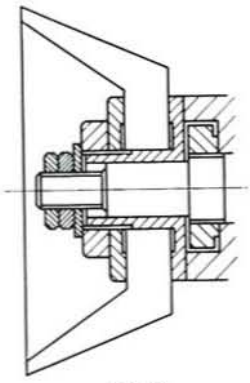


Fig. 2

Grinding Wheels

The normal method of wheel mounting is by means of a loose bush as Fig. 1. We strongly recommend however on grounds of economy and accuracy that a screwed sleeve bush is used as Fig. 2. Once mounted on the sleeve and the wheel accurately dressed on the spindle, it can be removed and replaced on the spindle repeatedly without the need for retruing. A screwed sleeve is available to accommodate taper cup, dish wheels and diamond impregnated wheels.

Standard Grinding Wheels used on the machine:

6″ taper cup wheel	... $2\frac{3}{8}$″ wide	Type UGW130/A	For all high speed steel, thick or thin knives, matcher heads, P.M. heads.
7″ dish wheel	... $1\frac{1}{4}$″ wide	Type UGW131/A	For solid profile type heads in alloy and high speed steel.

A full range of wheels is also supplied for use with the various attachments used on the machine.

Dust Collecting Arrangement

A self-contained dust collecting unit of the filter sleeve type can be supplied as shown.

All dust is collected in a drawer in the base of the cabinet.

Fan is driven by a $\frac{1}{3}$ h.p. motor giving a powerful suction.

Hood is on a universal joint for swivelling to any position.

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