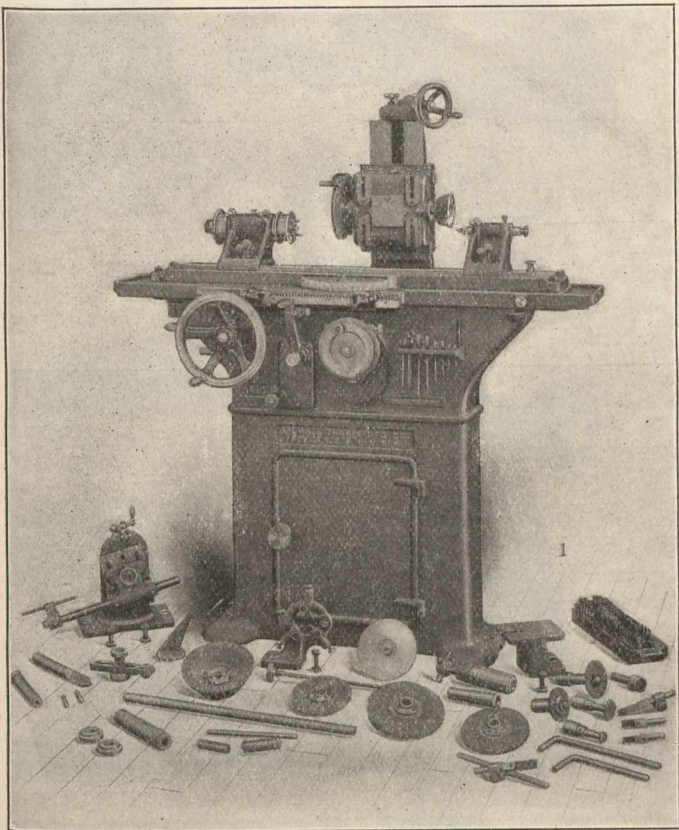


UNIVERSAL AND TOOL GRINDING MACHINE.

One of the most complete machines recently placed upon the market is the Universal and Tool Grinding Machine, illustrated herewith. It is designed to meet the requirements of the tool room in the grinding of milling cutters, formed cutters, straddle and face mills, bevelled cutters of

formed and require to be ground on the periphery. These features adapt the machine particularly to the needs of shops where the volume of work does not warrant the installation of grinding machines of different kinds to accommodate the variety of work that can be ground upon this machine.

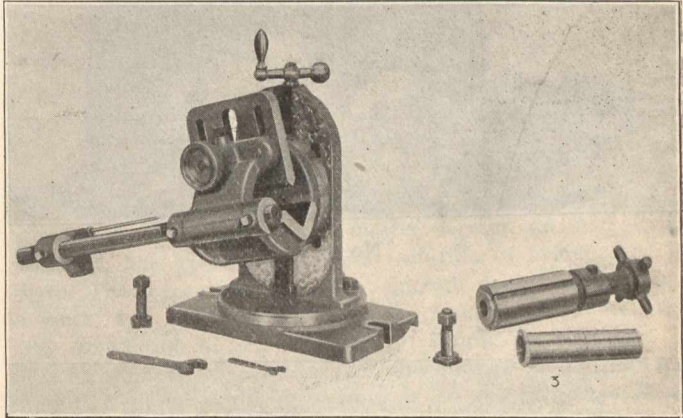
An idea of the rigid construction of this machine can



No. 1.

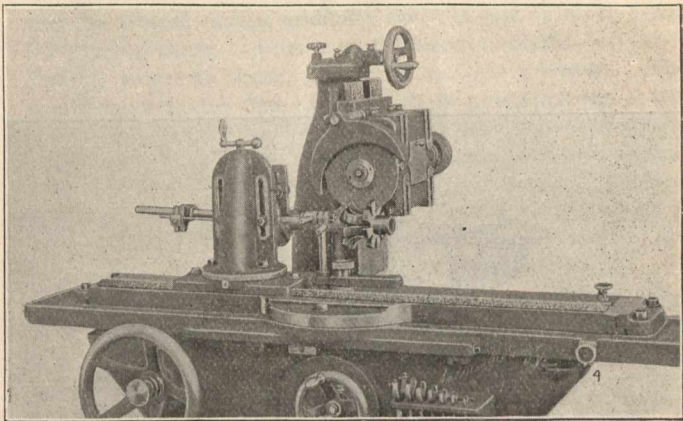
any angle, straight or taper reamers, etc., and in addition cylindrical grinding, either straight or taper, can be done.

Attachments are furnished when desired, and fit the machine for internal and surface grinding, as well as the grinding of convex and concave cutters whose teeth are not



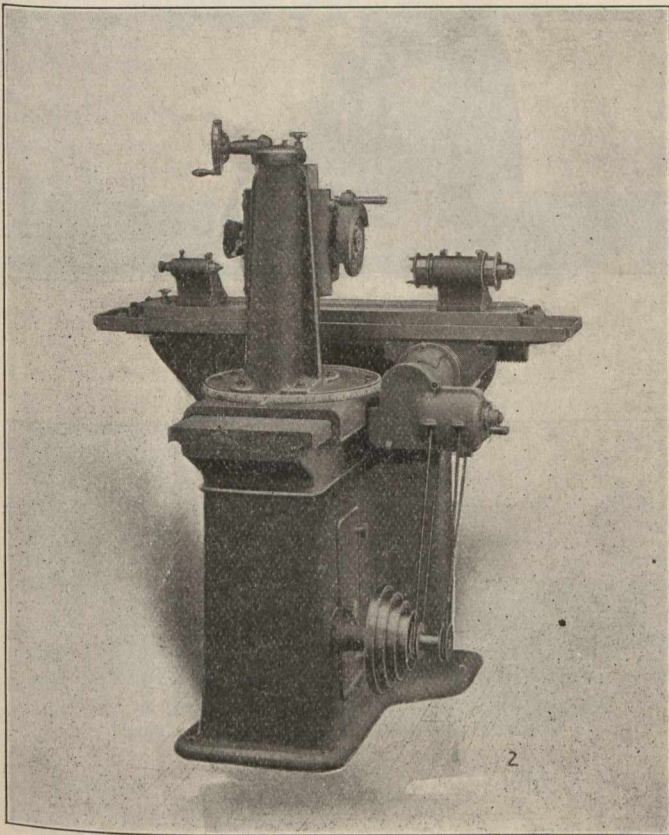
No. 3.

be obtained from the two views shown in Figs. 1 and 2. The wheel is supported by a column that swivels upon a large central stud. The support for this column, as will be seen, reaches to the floor and forms a part of the base of the machine, thus adding much to the rigidity. The base of the column is large in diameter and affords ample bearing surface to insure maintenance of alignment. It is graduated to read to 90 deg. either side of centre line to allow for setting the wheel to grind tapers, etc. The swivel table differs to some extent from that of the Universal Grinding

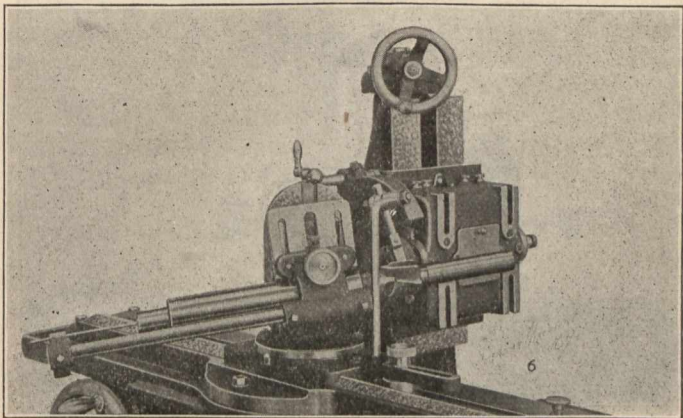


No. 4.

Machine in order to meet the requirements of grinding abrupt tapers on cylindrical work or cutters of abrupt angles. For this purpose there is a graduated arc placed upon the front of the table, which reads to 45 deg. beyond the parallel position. When grinding angles greater than can be reached by the swivel table, the head-stock spindle is placed



No. 2.



No. 5.