W. A. LORENZ.

DISK GRINDING MACHINE.

APPLICATION FILED OCT. 29, 1919.

1,353,967. Patented Sept. 28, 1920.

Fig. 2

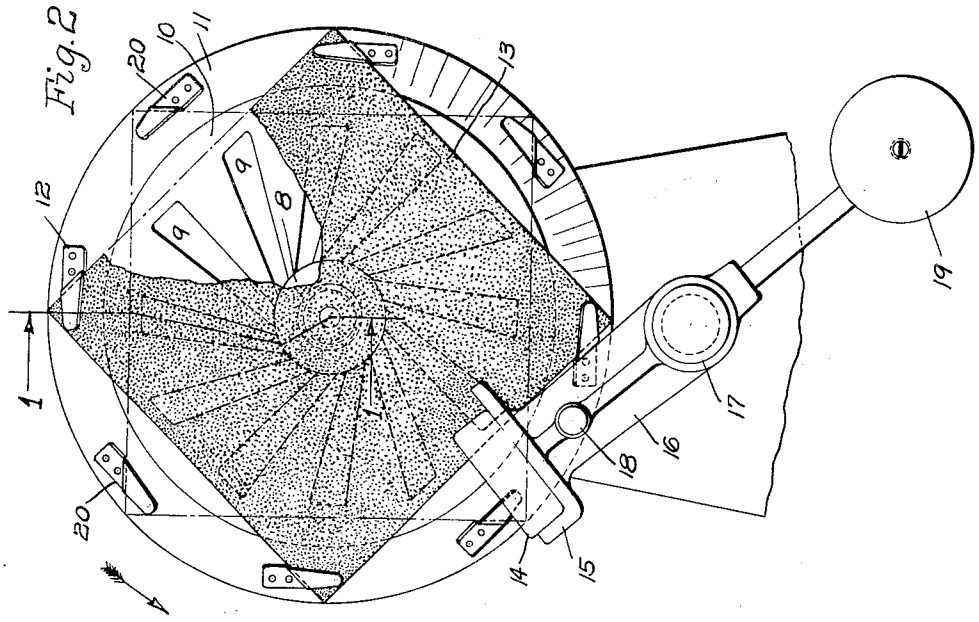
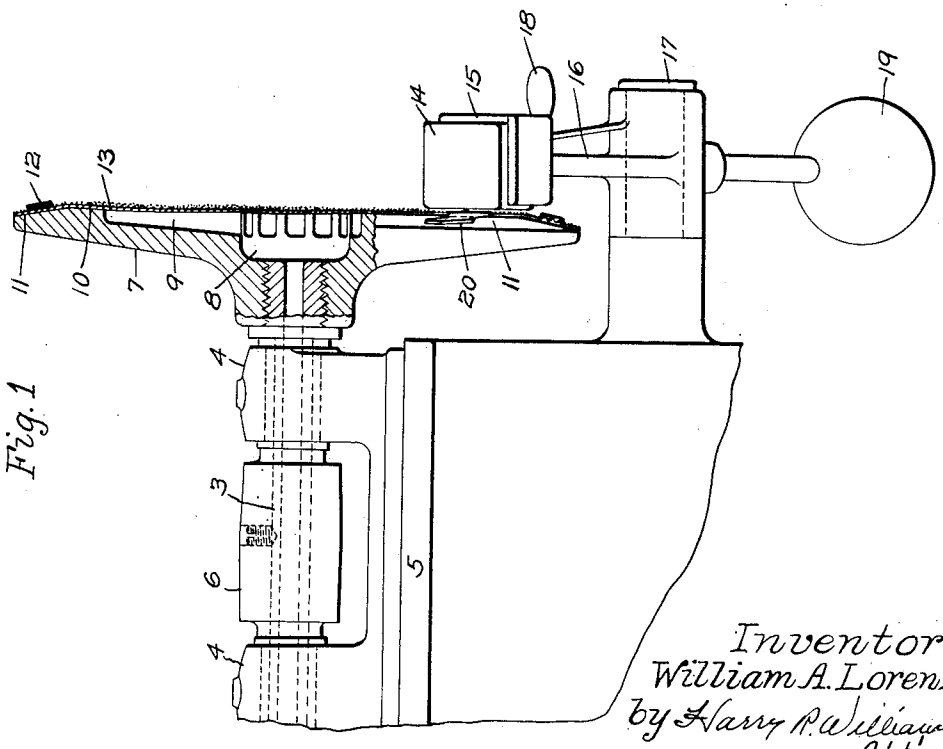


Fig. 1



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UNITED STATES PATENT OFFICE.

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DISK GRINDING-MACHINE.

1,353,967. Specification of Letters Patent. Patented Sept. 28, 1920.

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To all whom it may concern:

Be it known that I, WILLIAM A. LORENZ, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Disk Grinding-Machines, of which the following is a specification.

This invention relates to the class of machines known as disk grinders, that is, those machines for grinding and polishing in which the abrasive material is applied in the form of a disk or sheet to a rotatory head, and more particularly to the type of such machines in which the abrasive sheet is held to the rotatable head by means of the excess air pressure on the front face resulting from the exhausting of air from the back face.

The object of the present invention is to provide a machine of this character which is especially designed for utilizing rectangular abrasive sheets and thus avoiding the operation of and waste incident to cutting the sheets in circular form.

In the accompanying drawings Figure 1 shows a side elevation, with part of the head in section, of a machine which embodies the invention. Fig. 2 shows a front elevation of the same with a portion of the abrasive sheet held to the face of the head cut away.

The machine illustrated has a tubular shaft 3 which is designed to be connected with an ordinary exhaust fan or pump in a common manner. This shaft is supported by bearings 4 mounted on the top of the bed 5 and is provided with a pulley 6 by means of which it may be rotated at the desired speed. Secured to the end of the shaft so as to rotate therewith is a head 7. This head has a central recess 8 that communicates with the opening through the shaft, and has recesses 9 leading outwardly from this central opening in the outer or working face of the head. In the design shown these recesses are wider and shallower at their outer ends than at their inner ends and their outer ends terminate short distances within the outer edge of the flat sheet-backing or working face 10 of the head. The rim 11 of the head outside of the flat sheet-holding surface is depressed or beveled off so as to be slightly below or back of the plane of the working face, and on this rim are four clips or spring fingers 12, located in such positions that they will not interfere with the work when the head is rotated.

The rectangular sheet of abrasive material 13 is placed upon the working face of the head so as to cover the recesses and its corners are bent over onto the rim and thrust under the clips where they are held below the plane of the working face, then air is exhausted from the head back of the abrasive sheet for holding the sheet in place.

In the machine illustrated the piece 14 which is to be ground or polished by the abrasive sheet that is held by suction against the head secured to the rotatory shaft, is placed in a bracket 15 at the end of an arm 16 which is pivotally mounted on a stud 17 that projects from the bed of the machine. The arm is shown as provided with a handle 18, by means of which it may be swung back and forth, and also with a counterbalancing weight 19 so that the work will swing easily.

Mounted in this manner the work may be oscillated back and forth across the working face of the rotating abrasive sheet. As the head rotates very rapidly and the work is swung from side to side all of the abrasive sheet may be utilized except the corners which are bent out of the working plane and secured beneath the clips where they will not interfere with the work.

When the sections of the abrasive sheet backed by the solid areas of the head become dulled the sheet may be turned to bring the sections that were sucked into the openings over the solid areas, and to provide for this a duplicate set of clips 20 is arranged between the other clips for holding the corners of the sheet in the new position.

In constructing the head in the manner described, rectangular sheets of abrasive material can be firmly retained in place by air pressure and thus eliminate the waste of time and material incident to cutting the sheets into circular outline, as well as obviate the provision of the tools necessary for such a purpose and keeping these tools sharp and in good condition for use.

The invention claimed is:—

1. A grinding or polishing machine having a rotatable shaft, a head having a working face containing recesses and an imper-

forate rim that extends below the plane of said working face, means whereby air may be exhausted from the recesses in the head back of the central portion of a square abrasive sheet placed on the working face thereof, and means on said depressed rim of the head for engaging and holding the corners of said abrasive sheet below the plane of the working face of the head.

2. A suction head for a grinding or polishing machine having a working face containing recesses adapted to have air withdrawn therefrom and an outer imperforate rim that is depressed below the working face, clips mounted on said depressed rim for engaging the corners of a square sheet and holding the sheet in one position with respect to said recesses and clips mounted on the rim for engaging the corners of the sheet and holding it in another position with respect to said recesses.

3. A suction head for a grinding or polishing machine having a working face containing recesses adapted to have air withdrawn therefrom and an outer rim that is depressed below the working face, and spring clips secured on said depressed rim.

4. A suction head for a grinding or polishing machine having a circular working face with a central recess and communicating radiating recesses adapted to have air withdrawn therefrom, an annular beveled rim integral with and encircling said working face, and clips mounted on said rim below the plane of the recessed working face.

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