Feb. 2, 1932. C. I. LOTT 1,843,614

APPARATUS FOR GRINDING

Filed May 26, 1928

Fig. 1

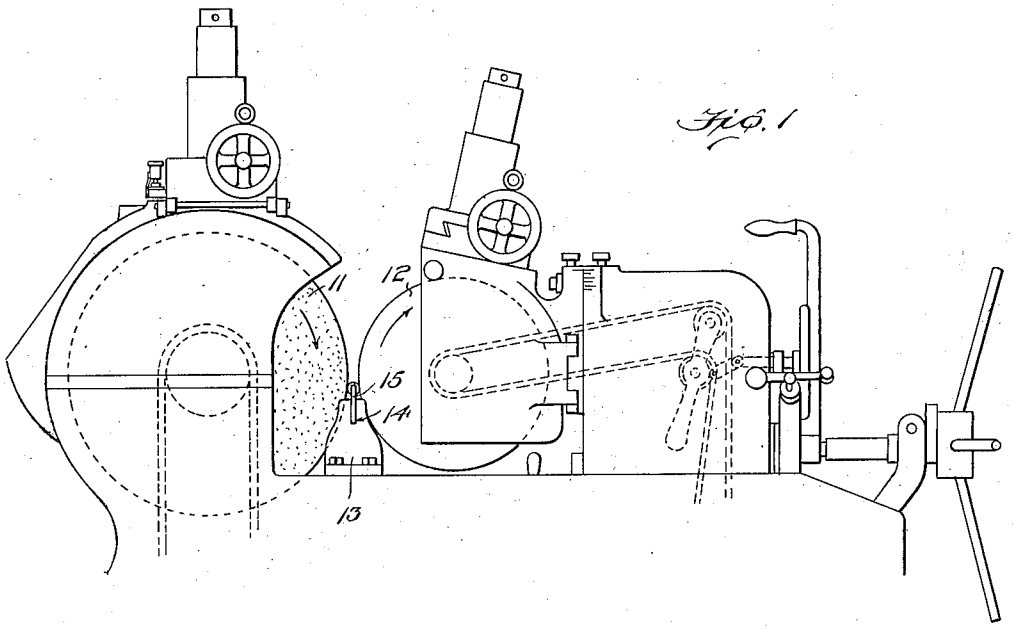


Fig. 2

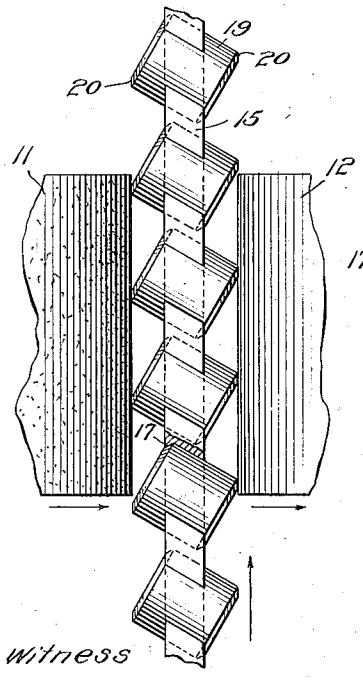


Fig. 3

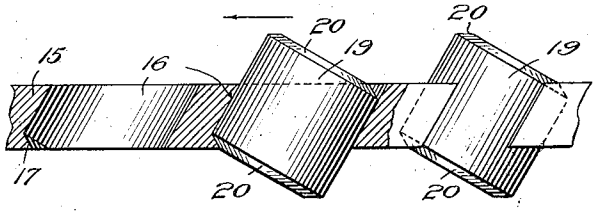
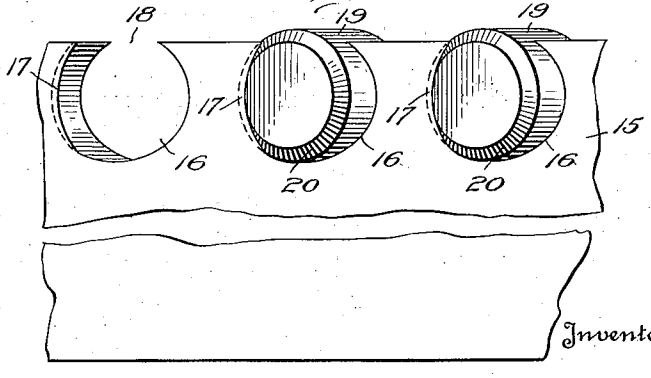


Fig. 4



Witness

Edwin L. Bradford

Inventor

Charles I. Lott

By Greene & Greene

Attorneys

Patented Feb. 2, 1932 1,843,614

UNITED STATES PATENT OFFICE

CHARLES I. LOTT, OF NEW YORK, N. Y.

APPARATUS FOR GRINDING

Application filed May 26, 1928. Serial No. 280,931.

My invention relates to an apparatus for accurately and economically grinding and polishing the bevels on cylindrical rollers for roller bearings, and particularly to one which overcomes the necessity for accurately mounting each roller in a lathe, or the like, whereby a material saving in the cost of manufacture is obtained.

In the accompanying drawings:

Fig. 1 is a diagrammatic end view of what is commonly called a "centerless grinder".

Fig. 2 is a fragmentary top view of my magazine carrying a plurality of rollers, a grinding wheel, and a turning wheel of a centerless grinder, the arrows indicating the directions of motion.

Fig. 3 is an enlarged detail, partly in section of my magazine showing rollers supported therein.

Fig. 4 is a side view of Fig. 3.

In these figures, 11 is a grinding wheel, 12 a turning wheel spaced from said grinding wheel with its axis slightly converging toward the axis of said grinding wheel.

A fixed work guide 13, has an upwardly open slot 14, through which a magazine 15 may slide. This magazine is provided with a plurality of diagonal parallel cylindrical apertures 16, an inwardly tapered shoulder 17, along a portion of one margin, and is upwardly open at 18.

The angle made by these apertures with a plane perpendicular to the longitudinal axis of the magazine depends upon the angle desired for the bevel on the finished product, which for rollers of the type shown may be from 5 degrees to 45 degrees.

A cylindrical roller 19 is revolubly supported in each aperture 16, with a portion of each end extending beyond the sides of my magazine.

Preferably the axes of the rollers 19 are inclined to the horizontal, thereby bringing the points of contact of the rollers 19 with the peripheral faces of the wheels 11, and 12 on opposite sides of a plane passing through the axes of said rollers.

In the preferred form illustrated, these rollers 19 are initially roughly beveled before being tempered, thus materially reducing the amount of grinding required in the finishing process. By suitably adjusting the magazine 15 to permit the rollers 19 to move toward the shoulder 17 as the corner is cut away, and preferably modifying the shape of the grinding wheel face, blank rollers having sharp corners may be used instead of those illustrated.

The method of operation is to load my magazine with unfinished rollers, the shoulders 17 preventing these rollers from passing entirely through the aperture 16, place the loaded magazine in the slot 14 and advance it between the grinding wheel and the turning wheel with the shoulders adjacent to the grinding wheel, as shown in Fig. 2 contact with the turning wheel being made first so that the rollers are rotating before the grinding wheel is reached. The slight convergence of the axes of the grinding and turning wheels serves to keep these rollers in contact with the grinding wheels as the magazine passes through the machine, and insuring accurate work.

When one end has been thus ground and polished, the magazine with the rollers contained therein is passed through a second similar machine which finishes the opposite ends of these rollers. By reversing the rollers in my magazine a single machine may be used, the second operation being a repetition of the first.

The open slots 18 aid the washing off of the waste material removed by the grinding operation.

A further modification of my method is to substitute for the turning wheel shown, a second grinding wheel, which will permit the grinding and polishing of the bevels on both ends in a single passage of my magazine. This would, however, require constant checking up and readjustment to keep these grinding surfaces properly spaced in order that the rollers should not vary more than allowed by the specifications.

By suitably modifying my apparatus, it may be used for finishing beveled corners on other articles than rollers for roller bearings, for example tubular articles may be finished by my method.

I may make other modifications of my invention within the terms of the claims as they may be allowed, and I therefore claim my method and apparatus as broadly as such claims may fairly be construed.

What I claim is:

1. In a device of the class described, a work holding magazine adapted to individually and revolubly support a plurality of cylindrical articles with their axes parallel to each other and oblique to the axis of said magazine with portions of the ends of said articles protruding from said magazine.

2. A magazine of the class described provided with a plurality of parallel oblique apertures, each having one end partly closed by an internal stop.

3. The combination with a "centerless grinder" having a fixed guideway, of a magazine adapted to be reciprocated in said guideway and to revolubly support a plurality of cylindrical articles with their axes oblique to said guideway and their ends in contact with a grinding wheel and a turning wheel of said grinder.

4. In a device of the class described, a work holding magazine comprising a longitudinally movable member having diagonal roller seats therein, said seats projecting at one end over a corner of a roller opposite the point of contact of the corner of such roller with its grinding surface.

In testimony whereof I hereunto affix my signature.

CHARLES I. LOTT.