

No. 886,099.

PATENTED APR. 28, 1908.

L. C. WALES.
GRINDING ROLL.

APPLICATION FILED SEPT. 7, 1907.

Fig. 1.

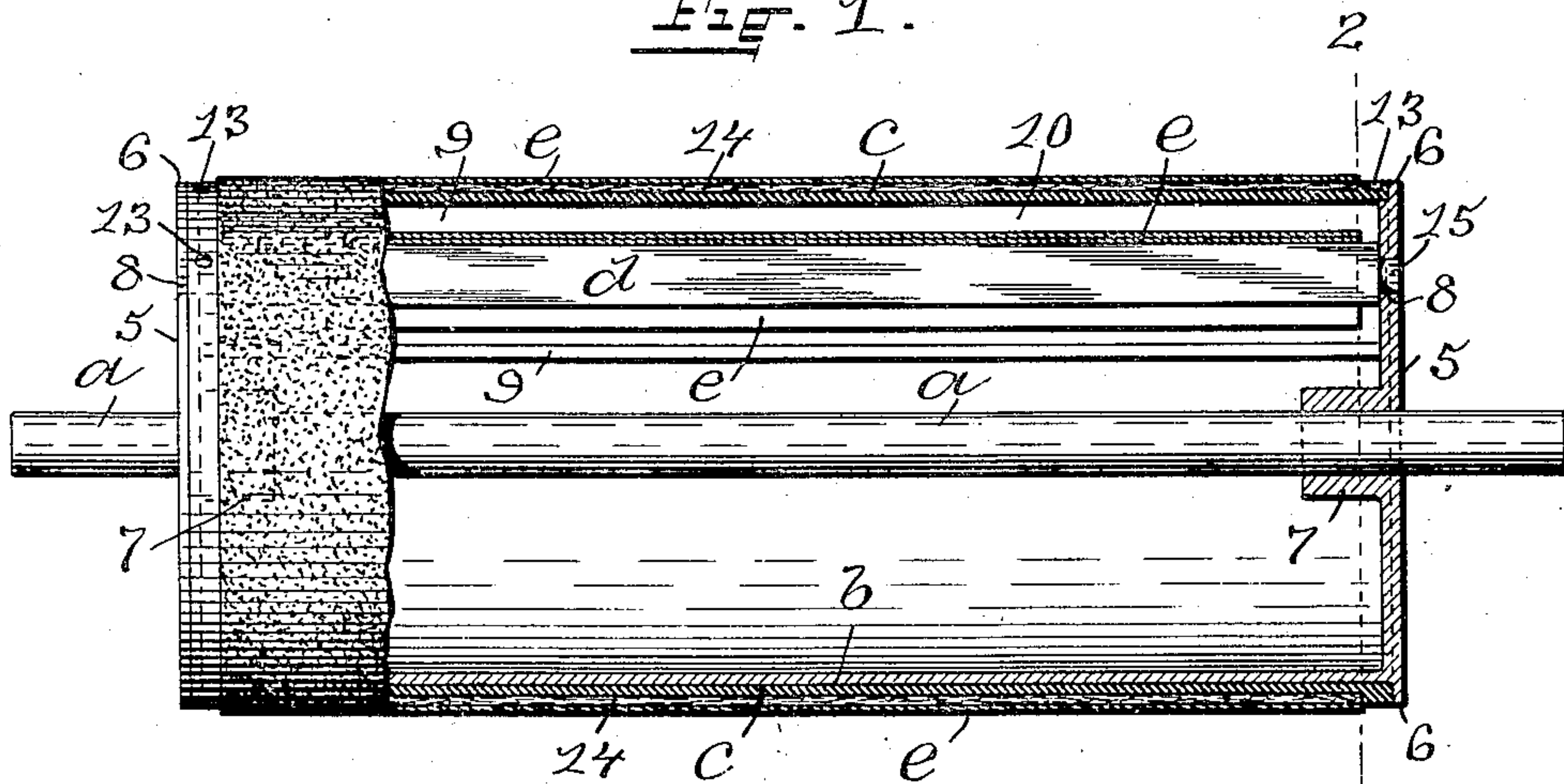


Fig. 2.

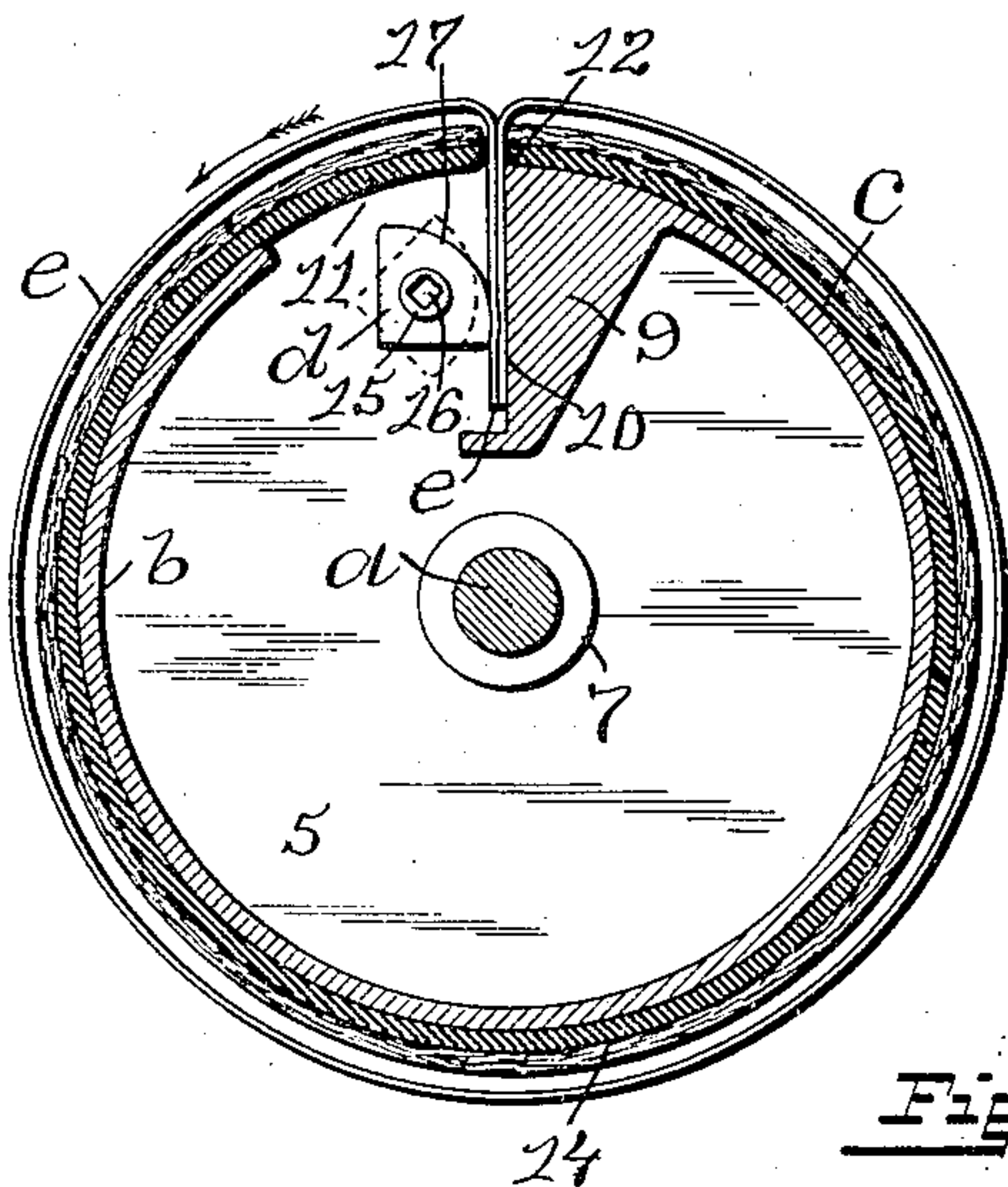


Fig. 3.

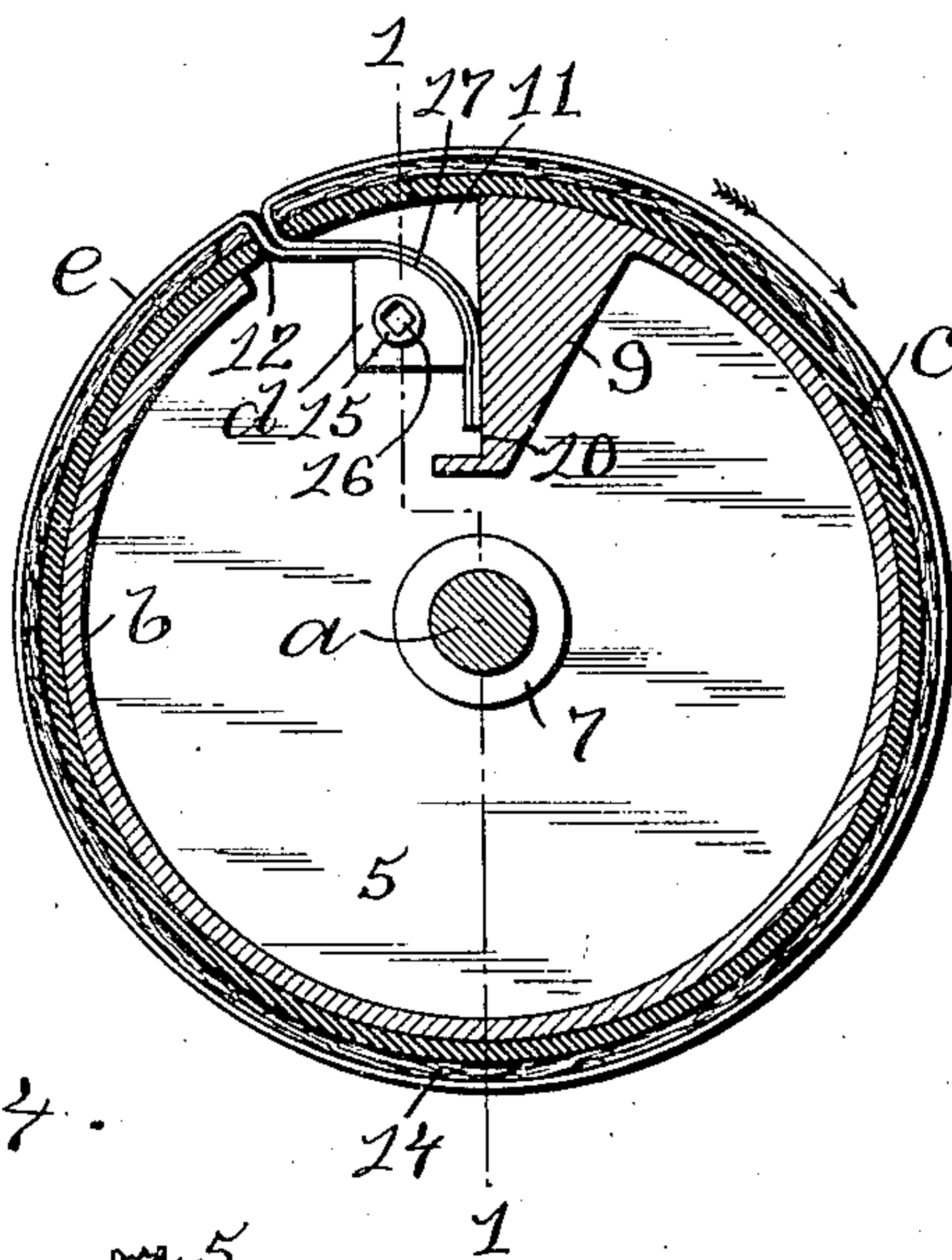
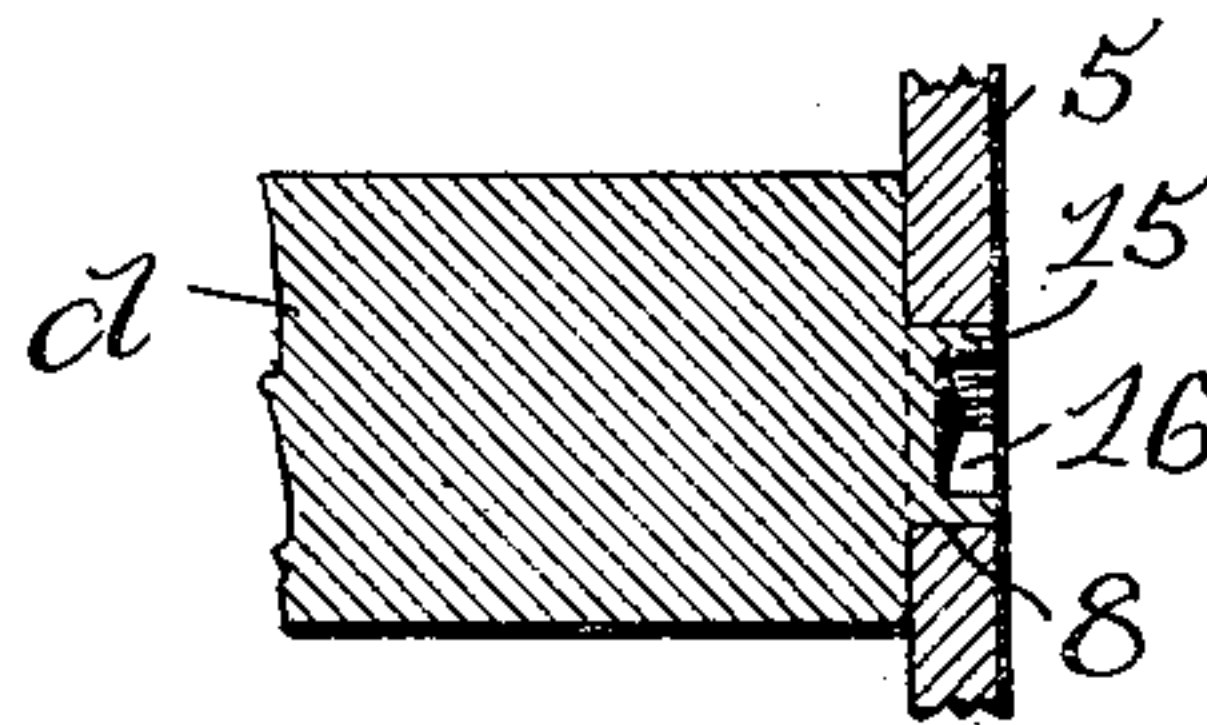


Fig. 4.



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GRINDING-ROLL.

No. 886,099.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed September 7, 1907. Serial No. 391,776.

To all whom it may concern:

Be it known that I, LESTER C. WALES, a citizen of the United States, residing at Edgewood, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Grinding-Rolls, of which the following is a specification.

This invention has reference to an improvement in wood working machines and more particularly to an improvement in grinding rolls used in machines for grinding or surfacing boards for flooring or other purposes.

The object of my invention is to improve the construction of a grinding roll, whereby a sheet of grinding or abrasive material is detachably secured on the peripheral face of the roll and the slack of the same (caused by the abrasive material coming into contact with the work) automatically taken up.

A further object of my invention is to simplify the construction of a grinding roll, whereby a flexible sheet of abrasive material, such as sand paper or emery cloth, is quickly secured on the face of the roll or removed from the same and the cost of manufacturing the roll reduced.

My invention consists in the peculiar and novel construction of a grinding roll for wood working machines, said grinding roll having details of construction, as will be more fully set forth hereinafter and claimed.

Figure 1 is a face view of my improved grinding roll, shown partly in section, the sectional portion of which is taken on line 1 1 of Fig. 3. Fig. 2 is an enlarged transverse sectional view taken on line 2 2 of Fig. 1, showing the sheet of abrasive material in position and before being tightened onto the peripheral face of the roll. Fig. 3 is an enlarged transverse sectional view similar to Fig. 2, showing the sheet of abrasive material after being tightened onto the peripheral face of the roll, and Fig. 4 is an enlarged detail sectional view, showing the means for supporting and turning the locking bar.

In the drawings, *a* indicates a shaft, *b* a hollow cylindrical roll, *c* a cylindrical shell, *d* a locking bar of my improved grinding roll, and *e* a sheet of flexible abrasive material, such as paper or cloth covered with sand, emery or corundum.

The shaft *a* is rotatably supported in bearings in the machine and is revolved at a high rate of speed by the driving mechanism of the

machine to revolve the roll in the direction of the arrow, as shown in Fig. 3.

The hollow cylindrical roll *b* is constructed to have the closed ends 5 5 extending out from the face of the roll to form the annular lips 6 6 at each end of the roll, the central hubs 7 7 by which the roll is secured to the shaft *a* by any well known means, the transverse holes 8 8 forming bearings for the trunnions on the ends of the locking bar *d*, the longitudinal rib 9 formed on the inner circumference of the roll and having the flat radial face 10, and a comparatively wide longitudinal slot 11 in the peripheral face of the roll and extending the length of the roll. The rib 9 forms one edge of the slot, the width of which extends in an opposite direction in which the roll revolves, as shown in Fig. 3. One or both of the ends 5 5 may be detachably secured to the roll.

The cylindrical shell *c* is constructed to have a rotatable fit on the roll *b*, a comparatively narrow longitudinal slot 12 and two holes 13 13 at each end of the shell, as shown in Fig. 1. This shell *c* is held from longitudinal movement on the roll *b* by the annular end lips 6 6 on the roll in a position for the slot 12 in the shell to coincide with the slot 11 in the roll, as shown in Fig. 2. A sheet of felt 14 or other suitable material such as rubber, is secured to the peripheral face of the shell by cement or other means.

The locking bar *d* extends the length of the roll opposite the flat face 10 of the rib 9 and has a trunnion 15 at each end of the bar in the end of which is a square hole 16 and a curved face 17 extending the length of the bar on the side toward the flat face 10 of the rib 9. This curved face 16 of the bar is shaped to form (in conjunction with the flat face 10 of the rib 9) a clamp to wedge or clamp the ends of the sheet of abrasive material *e* between the rib 9 and the bar, when the bar is turned into the position, as shown in full lines in Fig. 2, and to release the same when the bar is turned into the position as shown in broken lines in Fig. 2. The trunnions 15 15 on the ends of the locking bar *d* extend through the holes 8 8 in the ends 5 5 of the roll flush with the ends, as shown in Fig. 1.

The sheet of abrasive material *e* is secured on the peripheral surface of the shell *c* by inserting one end of the sheet through the slot 12 in the shell, the slot 11 in the roll and be-

tween the rib 9 and the locking bar *d* with the locking bar *d* in the open position, as shown in broken lines in Fig. 2. The sheet of abrasive material *e* is now wrapped around the shell *c* and the other end inserted through the slots 12 and 11 and between the first end of the sheet and the locking bar *d*. A suitable tool is now inserted in the square hole 16 in the end of the trunnion 15 and the locking bar turned into the position, as shown in full lines in Fig. 2, thereby clamping the ends of the sheet between the rib 9 and the locking bar *d*. A spanner having two pins is now placed on one end of the shell *c* with the pins in the holes 13 13 in the shell and the shell *c* turned on the roll *b* in the direction of the arrow, as shown in Fig. 2, thereby drawing the doubled portion of the sheet of abrasive material over the locking bar *d* and tightening the sheet of abrasive material onto the peripheral face of the shell *c*, as shown in Fig. 3. When in use the roll is revolved in the direction of the arrow, as shown in Fig. 3. The frictional contact of the work on the sheet of abrasive material *e* will tend to stretch the same in an opposite direction to the direction in which the roll is revolving, thereby moving or partly rotating the shell *c* on the roll *b* in a direction opposite to the direction in which the roll is revolving, and through this reverse movement of the shell automatically taking up the slack in the sheet of abrasive material. Through the wedging action of the locking bar *d* any strain on the sheet of abrasive material *e* tending to pull the ends of the sheet out of the roll will cause the locking bar to more firmly grip and hold the ends of the same in the roll.

It is evident that the rib 9 could be in the form of a fixed bar, corresponding in shape to the locking bar *d* with its curved face in an oppositely-disposed position and the longitudinal slot 11 in the roll *b* could extend in width on both sides of a center line drawn between the bars, whereby the roll could be revolved in either direction and other details of construction could be varied without materially affecting the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a grinding roll, a cylindrical roll having a longitudinal slot, a cylindrical shell rotatably supported on the roll and having a longitudinal slot, and means in the roll for securing the ends of a sheet of abrasive material.

2. In a grinding roll, a cylindrical roll having a longitudinal slot, a cylindrical shell rotatably supported on the roll and having a longitudinal slot, means for holding the shell from longitudinal movement on the roll, and means for securing the ends of a sheet of abrasive material in the roll.

3. In a grinding roll, a cylindrical roll hav-

ing a longitudinal slot, a cylindrical shell rotatably supported on the roll having a longitudinal slot and covered with an abrasive material, and means for securing the ends of a sheet of abrasive material in the roll.

4. In a grinding roll, a cylindrical roll having a longitudinal slot in its face, a cylindrical shell rotatably supported on the roll having a longitudinal slot in its face and covered with a resilient material, means for holding the shell from longitudinal movement on the roll, and means for securing the ends of a sheet of abrasive material in the roll.

5. In a grinding roll, a cylindrical roll having annular radial flanges at each end and a longitudinal slot in its face, a cylindrical shell rotatably supported on the roll and having a longitudinal slot in its face coinciding with the slot in the roll, and means for detachably securing the ends of a sheet of abrasive material in the roll.

6. In a grinding roll, a cylindrical roll having a longitudinal slot in its face, a longitudinal rib on its inner circumference and a locking bar adjacent the rib, a cylindrical shell rotatably supported on the roll and having a longitudinal slot in its face coinciding with the slot in the roll, and means for rotating the locking bar to clamp the ends of a sheet of abrasive material between the rib and the locking bar.

7. In a grinding roll, a cylindrical roll having annular radial flanges at each end, a comparatively wide longitudinal slot in its face, a longitudinal rib on its inner face, and a rotatable locking bar adjacent the rib, a cylindrical shell rotatably supported on the roll and having a comparatively narrow slot in its face and covered with a resilient material, and means for rotating the locking bar, whereby a sheet of abrasive material is held on the peripheral face of the shell, the ends of the sheet of abrasive material clamped between the rib and the locking bar and the slack of the sheet of abrasive material automatically taken up when the roll is in use.

8. In a grinding roll, a cylindrical roll having annular radial flanges at each end, a comparatively wide longitudinal slot in its face, a longitudinal rib on its inner face and a rotatable locking bar having a curved face adjacent the rib, a cylindrical shell rotatably supported on the roll and having a comparatively narrow longitudinal slot in its face, transverse holes in each end and covered with a resilient material, whereby a sheet of abrasive material is first loosely held on the shell, the ends of the sheet of abrasive material secured by clamping the same between the rib and the locking bar, the initial slack of the sheet of abrasive material taken up by partly rotating the shell on the roll and the slack of the sheet of abrasive material caused by the same coming into contact with the work taken up

by the shell automatically moving or partly rotating on the roll when in use.

9. In a grinding roll the combination of a shaft *a*, a cylindrical roll *b* having the ends 5 5 secured to the shaft *a*, the annular lips 6 6 at each end, the longitudinal rib 9 on the inner circumference of the roll and a comparatively wide longitudinal slot 11 in the race of the roll, a cylindrical shell *c* rotatably supported on the roll *b* and having a comparatively narrow longitudinal slot 12 and two holes 13 13 in each end of the shell, a sheet of felt 14 on the face of the shell *c*, a locking bar

d extending the length of the roll and having a trunnion 15 in the end of which is a square hole 16 at each end of the bar and a curved face 17, and means for supporting the trunnions 15 15 of the locking bar *d* in the ends 5 5 of the roll, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LESTER C. WALES.

Witnesses:

ADA E. HAGERTY,
J. A. MILLER.