

Nov. 25, 1941.

W. MAKENNY

2,263,897

BURRING MACHINE

Filed Oct. 25, 1938

2 Sheets-Sheet 1

Fig. 1.

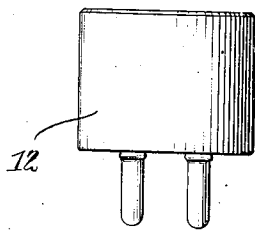


Fig. 2.

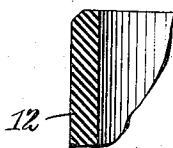


Fig. 3.

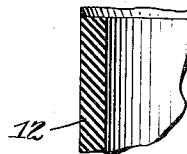


Fig. 6.

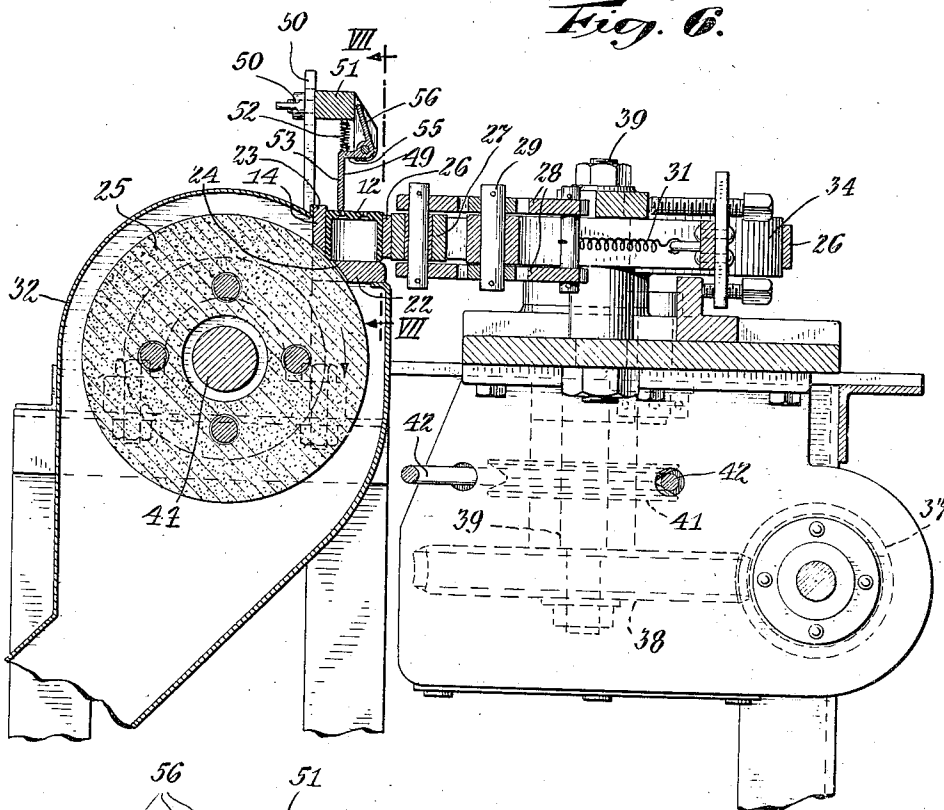
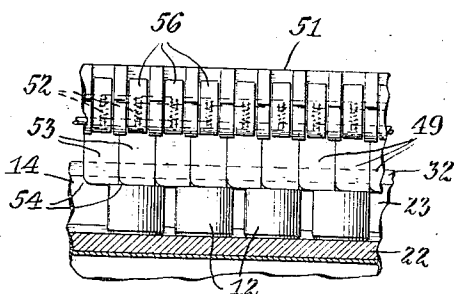


Fig. 7.



INVENTOR
W. MAKENNY
BY *J. W. Greenhouse*
ATTORNEY

Nov. 25, 1941.

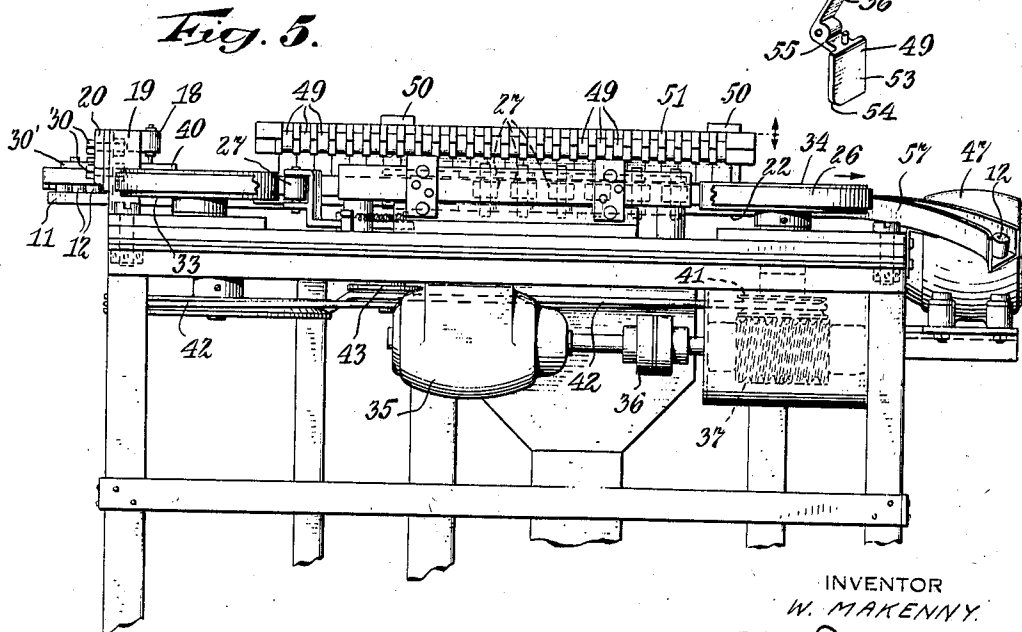
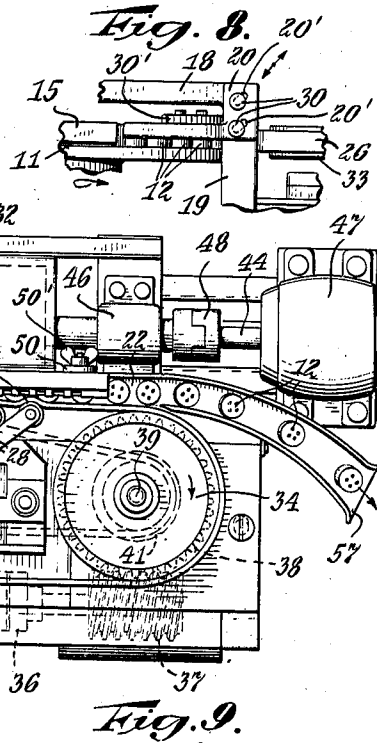
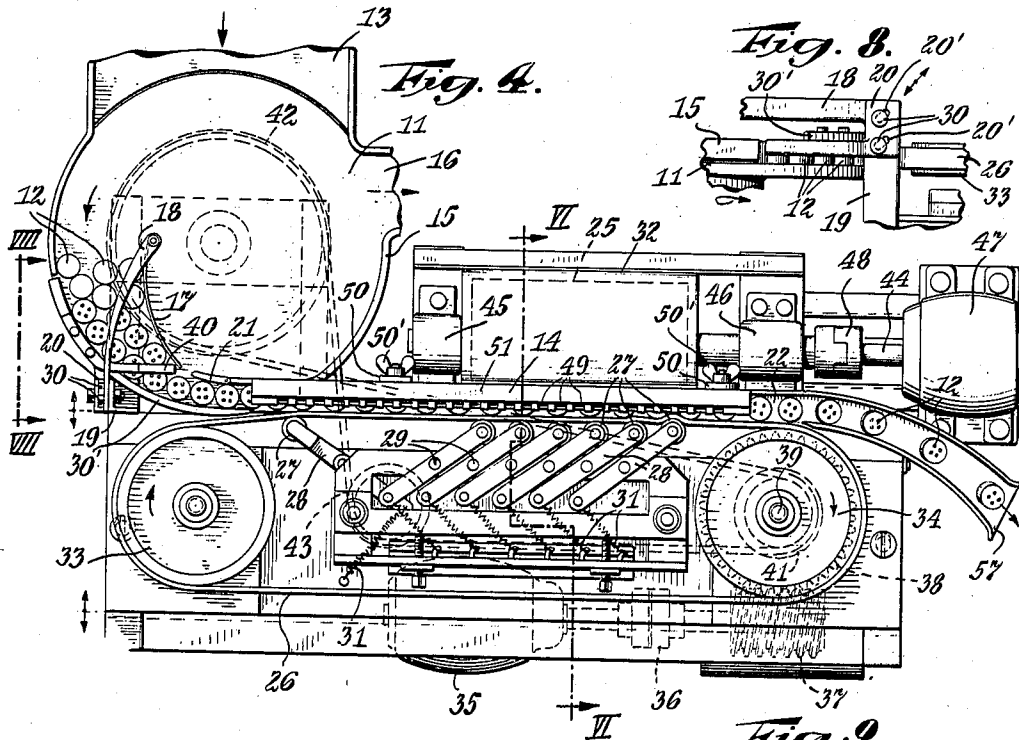
W. MAKENNY

2,263,897

BURRING MACHINE

Filed Oct. 25, 1938

2 Sheets-Sheet 2



INVENTOR
W. MAKENNY.
BY *JW Greenhour*
ATTORNEY

UNITED STATES PATENT OFFICE

2,263,897

BURRING MACHINE

William Makenny, Mountainview, N. J., assignor
to Westinghouse Electric & Manufacturing
Company, East Pittsburgh, Pa., a corporation
of Pennsylvania

Application October 25, 1938, Serial No. 236,853

7 Claims. (Cl. 51—74)

This invention relates to the finishing of radio tube bases and other shells, and more particularly to a burring machine, and method of burring, particularly adapted for the purpose.

The principal object of my invention, generally considered, is to provide for the finishing of radio tube bases and other shells, in an efficient and expeditious manner, preferably making use of a machine which advances the shells along a runway and effects their rotation while subjected to the action of an abrasive wheel, for removing the feather edge and beveling to the desired extent.

Another object of my invention is the provision of a machine for feeding radio tube bases or other hollow cylindrical shells to a runway along which they are carried and rotated, while the lower edge of each is subjected to the action of an abrasive wheel.

A further object of my invention is the provision of a machine for finishing radio tube bases and other similar cylindrical shells, in which a runway is provided along which said shells are pushed and rotated, means being disposed above the line of shells in said runway for pushing on the tops thereof and urging them into engagement with a rotating abrasive wheel, in order to effect a burring action on the lower edges thereof.

A still further object of my invention is the provision of a rotatable endless belt as part of a burring machine, with a series of levers carrying rollers engaging said belt, and resiliently urged to cause shells in a runway, partially defined by said belt, to be rotated while edges thereof are burred.

An additional object of my invention is the provision of an improved method of burring radio tube bases and other cylindrical shells, comprising advancing and rotating said shells with their open ends down while causing them to pass by a slit in a runway, and abrading the edge portions thereof, which extend beyond said slit.

Other objects and advantages of the invention, relating to the particular arrangement and construction of the various parts, will become apparent as the description proceeds.

Referring to the drawings illustrating my invention:

Figure 1 is an elevational view of a hollow cylindrical shell, or more specifically a radio tube base, finished by the application of a bevel to its upper edge, in accordance with my invention.

Figure 2 is an enlarged fragmentary vertical sectional view of the base shown in Figure 1.

Figure 3 is a view corresponding to Figure 2, but showing a base after being pressed, and before the upper edge portion thereof has been beveled.

Figure 4 is a plan of a preferred form of machine, embodying my invention.

Figure 5 is an elevational view of the machine shown in Figure 4.

Figure 6 is a sectional view of the machine on the line VI—VI of Figure 4, in the direction of the arrows.

Figure 7 is a fragmentary sectional view of the machine on the line VII—VII of Figure 6, in the direction of the arrows.

Figure 8 is a fragmentary elevational view of the machine on the line VIII—VIII of Figure 4, in the direction of the arrows.

Figure 9 is a perspective view of one of the bell-crank devices which act on the shells during the process of burring.

Referring to the drawings in detail, like parts being designated by like reference characters, there is shown a rotating dial 11, upon which a supply of shells or radio tube bases 12 is fed from a chute or hopper 13. The chute 13 desirably feeds the shells 12 so that they all open downwardly but, if provision for this is not made, an operator will have to be stationed at the dial 11 in order to effect the necessary turnover of any shells or radio tube bases, so that they all open downwardly before they pass to the runway 14 therebeyond. The dial 11 has an enclosing wall 15 so that the elements 12 thereon will not be thrown off by centrifugal force, and a port 16 may be provided in said wall to discharge a surplus of the shells for transfer back to the source of supply, in case the feeding rate thereof is excessive.

Means disposed above the dial 11 are provided for guiding the shells 12 into the runway 14, said means in the present embodiment consisting of a resilient member 17 supported from a bracket 18, mounted on the frame 19 of the machine, as shown in detail in Figure 8. A guard member 20 having diagonal slots 20' to allow for adjustment on bolts 30, is provided as shown most clearly in Figures 4 and 8. The guard 20 carries a curved arm 30', as by means of bolts, forming an adjustable part of the enclosing wall 15 for dial 11, and an arm 40 extending over the shells 12 as they are fed to the runway 14, in order to prevent the passage of shells which are unduly tall. Shells engaged by the arm 40 are deflected and caused to push by the resilient member 17, acting as a valve, to be ejected from the port 16

and removed, if noticed by the operator. In any event, such oversize shells would not be allowed in the runway 14. An adjustable guiding member 21 is positioned adjacent the entrance to the runway 14 in order to effect the desired reception of the shells 12.

The runway 14 of the present embodiment comprises a floor portion 22, and a single side wall portion 23, forming guard means, spaced to leave a slit or slot 24, through which a lower edge portion of each shell 12 extends, as shown most clearly in Figure 6, so as to be engaged by an emery or other abrasive wheel 25, for removing the feather edge and applying the desired bevel thereto. In order to insure that the shells 12 will be burred around the entire circumference, the same are not merely fed lineally to the runway 14 from the rotating dial, but are caused to rotate while moving forward through the action of an endless belt 26, pressed into engagement with the sides thereof by a plurality of rollers 27, each of which is carried by a lever 28 rotatably mounted, as indicated at 29, and resiliently urged into engagement with the belt 26 by any desired means, such as coil springs 31, as shown most clearly in Figure 4.

The rollers 27 effect a frictional engagement between the belt 26 and the shells 12, so that said shells are constrained to rotate while passing the abrasive wheel 25, to thereby effect a beveling and transformation from the shape shown in Figure 3 to that shown in Figure 2. The abrasive wheel 25 is desirably enclosed in a hood 32 in order to carry off the dust produced in the operation. The belt 26 may pass over pulleys 33 and 34, one of which is geared to the motor 35 through clutch 36, worm 37, and wheel 38. The wheel shaft 39 may carry a pulley 41 over which passes a belt 42 which may serve to drive the disc 11. An idler pulley 43 may serve for tightening the belt and directing its action.

In the present embodiment, the abrasive wheel 25 is shown mounted on a shaft carried by bearings 45 and 46 and independently driven by motor 47 through clutch 48. It will, however, be understood that a single motor may serve for driving the entire machine if desired.

In order to insure that each shell is pressed downward in the runway 14 until its lower edge thereof is burred to the desired bevel, I provide a series of presser devices 49 mounted on a support 51 and each resiliently urged into engagement with the top of a shell therebeneath, as by means of a coil spring 52. The support 51 is adjustably clamped on standards 50 as by means of wing nuts 50'. Each device 49 may be shaped as a bell crank with a depending presser arm 53, the lower edge of which is beveled or curved, as indicated at 54, so as to ride up on an oncoming shell and avoid stoppage of the latter. The presser devices 49 are small in width, compared with the shells, as indicated most clearly in Figure 7, so that at least one device is always pressing one shell independently of anything else, thereby avoiding the possibility that one device will straddle two shells and obviate the application of any pressure to the shorter thereof. The lower bell crank arm 55 carries the presser element 53, while the upper arm 56 serves to prevent undue depression of the presser arm 53 by engaging the support 51 as a stop. This avoids the possibility that the temporary absence of shells therebeneath will permit undue depression of one or more presser elements 49, resulting

in subsequent stoppage of the flow of shells through the machine.

After each shell has passed by the abrasive wheel 25, and been burred and beveled around its entire periphery to change it from the shape shown in Figure 3 to that in Figure 2, it is discharged from the machine at the outlet end 57 of the runway, as shown most clearly in Figures 4 and 5.

From the foregoing disclosure it will be seen that I have provided a machine which receives radio tube bases or other shells, carries them along a runway while causing them to rotate in engagement with an abrasive wheel, thereby burring and removing any feather edge therefrom, to provide the desired beveled edge. It will be noted that because of its adjustability the machine is adapted for burring devices of diameters and heights varying over a comparatively wide range, and that, on account of the presser arms 53 engaging the devices adjacent their peripheries, rather than at their centers, radio tube bases having bottom lugs projecting from their centers may be burred, as well as those of the type illustrated. Although a preferred embodiment of the invention has been disclosed, it will be understood that modifications may be made within the spirit and scope of the appended claims.

I claim:

1. In a burring machine, a runway for shells, a belt associated with said runway for rotating said shells as they pass therealong, lever-carried roller means resiliently engaging the surface of the belt, opposite to that engaging said shells, for causing the necessary driving engagement with said shells, and an abrasive wheel disposed on the other side of said runway for engaging the edges of said shells extending therethrough and effecting a burring action thereon.

2. In a burring machine, means for rotating shells as they pass therethrough, means for burring edges of said shells while rotating, and means comprising pivoted bell-crank shaped devices, depending arms of which engage the tops of said shells, and spring engaged portions extending at an angle therefrom to hubs, for resiliently pressing down on the tops of said shells to urge them into operative relation with said burring means.

3. In a burring machine, a runway for shells comprising a floor, one side wall spaced therefrom to leave a slit, a rotatable endless belt forming another side wall, means for advancing said shells along said runway and rotating and resiliently urging said belt against said shells to cause the latter to rotate as they advance, with edge portions thereof extending through said slit, an abrasive wheel rotatable adjacent said slit to grind the edge portions of said shells extending therethrough, and means for resiliently pressing down on the tops of said shells in said runway to keep them in position and urge them toward said wheel, until the desired burring action has been effected thereon.

4. In a burring machine, a runway for shells comprising a floor and one fixed side wall spaced from said floor to leave a slit, an endless belt, passing around pulleys turnable about upright axes, forming the other side wall, means for advancing said shells along said runway, means for rotating one of said pulleys to cause the wall-forming portion of said belt to move in the direction of travel of said shells, resiliently pressed rollers engaging the surface of said belt, oppo-

site to that adjacent said shells, to resiliently urge said belt into driving engagement with said shells to cause the latter to rotate and stay in engagement with said fixed wall as they advance, with edge portions thereof extending through said slit, an abrasive wheel rotatable about a normally horizontal axis, with its peripheral portion adjacent said slit, to grind down on the edge portions of said shells extending there-
through, and means for resiliently pressing down on the tops of said shells in said runway to keep them in position for urging them toward said wheel, until the desired burring action has been effected.

5. In a burring machine, a runway for shells, means for rotating said shells in said runway, lever-carried roller means resiliently engaging the surface of said rotating means, opposite to that engaging said shells, for causing the necessary driving engagement with said shells, and abrasive means disposed on the other side of said runway for effecting a burring action on the edges of shells extending therethrough.

6. In a burring machine, means for rotating shells as they pass therethrough, means for burring edges of said shells while rotating, and means comprising pivoted bell-crank shaped devices which engage said shells, and means resiliently acting thereon for pressing down on the tops of said shells to urge them into operative engagement with said burring means.

7. In a burring machine, a runway for shells, comprising a floor, one side wall spaced therefrom to leave a slit, movable means forming another side wall, means for advancing said shells along said runway and effecting movement of said other side-wall-forming means, means for urging said moving side-wall-forming means against said shells to cause them to rotate as they advance, with edge portions extending through said slit, abrasive means acting adjacent said slit to grind the edge portions of said shells extending therethrough, and means for resiliently engaging the tops of said shells in said runway to keep them in the desired position.

WILLIAM MAKENNY.