CLAIMS

What Is Claimed Is:

1. A method of making disk separator plates for mounting in a hard disk drive, each disk separator plate having a plurality of mounting apertures for fastening the separator plate to the frame of a hard disk drive, the method comprising:

stamping a separator plate having a top and a bottom and external edge and mounting apertures from a sheet of metal; and

forming an offset at each of the mounting apertures extending from the top or bottom surface of the separator plate, for a predefined distance.

2. The method of claim 1 wherein the forming an offset step comprises:

extruding a boss having an inner and outer diameter and a predefined distance, extending from the top or bottom surface of the separator plate, around each mounting aperture.

3. The method of claim 2 wherein the extruding boss step comprises forming a boss having a larger diameter at the predefined height than at the top of the plate.

4. The method of claim 2 further comprising enlarging the inner diameter of the boss at the top of the separator plate sufficiently to receive the outer diameter of the boss.

5. A method of making disk separator plates for mounting in a hard disk drive, each disk separator plate having a plurality of mounting apertures for fastening the separator plate to the frame of a hard disk drive, the method comprising:

stamping a separator plate having a top and a bottom and external edge with tabs at predetermined location on the external edge with apertures in each tab; and

forming an offset at the apertures in tabs extending from the top or bottom surfaces of the separator plate, for a predefined distance.

6. The method of claim 5 wherein said forming an offset step comprises:

extruding a boss having an inner and outer diameter and a predefined height extending from the bottom of the plate around each mounting aperture.

7. The method of claim 6 wherein the extruding a boss step comprises forming a boss having a larger diameter at the predefined height than at the top of the plate.

8. The method of claim 5 further comprising enlarging the inner diameter of the boss at the top of the plate sufficient to receive the outer diameter of the boss.

9. The method of claim 5 further comprising bending each tab at the external edge of the plate a predefined distance from the edge to form an offset of a certain height.

10. The method of claim 5 wherein the mounting apertures are formed by cutting the material inside a predefined area in each tab, and bending the material at the top of the plate to create an offset having a predefined height.

11. The method of claim 10 further comprising bending the ends of material at the required height to form feet.

12. The method of claim 5 wherein each mounting tab is formed elongated and tangentially to the external edge of the separator plates, shaped as connected like formed parts, and the offset is formed by bending one part of the mounting tab to completely overlap the other part.

13. The method of claim 12 wherein a mounting aperture is formed in each like formed part, and the mounting apertures align when the parts of the mounting tab are bent to overlap each other.

14. The method of claim 5 further comprising forming a separate piece in the shape of the mounting tabs and bending the separate piece to overlap a mounting tab on the top and bottom.

15. The method of claim 14 wherein a mounting aperture is formed in the mounting tab and in the separate bent piece, the mounting apertures align when the separate bent piece overlaps the mounting tab.

16. A disk separator plate for hard disk drives, comprising:

a separator plate having a top and bottom surface and external edge stamped from a single sheet of metal; and

an offset around each of the mounting apertures extending from the top or bottom surface of the separator plate for a predefined distance, formed in the stamped separator plate.

17. The disk separator plate of claim 16 wherein the offset around each of the mounting apertures is extruded into a boss.

18. The disk separator plate of claim 17 wherein the boss has a larger diameter at the predefined distance than at the surface of the plate.

19. The disk separator plate of claim 17 further comprising counterboring the inner diameter of the boss at the surface of the separator plate to receive the outer diameter of the boss at the predefined distance.

20. A disk separator plate for hard disk drives, comprising:

a separator plate having a top and bottom surface and external edge with tabs at predetermined locations on the external edge with a top and bottom surface, and aperture in each tab stamped from a single sheet of metal; and

an offset at each of the mounting apertures extending from a top or bottom surface of the tabs for a predefined distance formed in the stamped separator plate.

21. The disk separator plate of claim 20 wherein the offset around each aperture is extruded into a boss.

22. The disk separator plate of claim 21 wherein the boss has a larger diameter at the predefined distance than at the surface of the tab.

23. The disk separator plate of claim 20 further comprising a counterbore at the inner diameter of the boss at the surface of the tab to receive the outer diameter of the boss at the predefined distance.

24. The disk separator plate of claim 20 wherein the offset is formed by bending each tab a predefined distance from the edge to form an offset of a center height.

25. The disk separator plate of claim 20 wherein the offset is formed by bending each tab to fold over itself to form an offset of a certain height.

26. The disk separator plate of claim 20 wherein the offset is formed by clamping a U-shaped piece on each tab to form an offset of a certain height.

CLAIMS

What is claimed is:

1. A method of making disk separator plates for mounting in a hard disk drive, each disk separator plate having a plurality of mounting apertures for fastening the separator plate to the frame of a hard disk drive, the method comprising:

stamping a separator plate having a top and a bottom and external edge and mounting apertures from a sheet of metal; and

extruding a boss having an inner and outer diameter and a predefined distance extending from the top or bottom surface of the separator plate, around each mounting aperture, the extruded boss having a larger diameter at the predefined distance than at the surface of the plate.

2. A method of making dish separator plate for mounting in a hard disk drive, each disk separator plate having a plurality of mounting apertures for fastening the separator plate to the frame of a hard disk drive, the method comprising:

stamping a separator plate having a top and a bottom end external edge and mounting apertures from a sheet of metal;

extruding a boss having an inner and outer diameter and a predefined distance extending from the top or bottom surface of the separator plate around each aperture; and

enlarging the inner diameter of the boss at the separator plate sufficiently to receive the outer diameter of the boss in an adjacent separator plate.

3. A method of making disk separator plates for mounting in a hard disk drive, each disk separator plate having a plurality of mounting apertures for fastening the separator plate to the frame of a hard disk drive, the method comprising:

stamping a separator plate having a top and a bottom and external edge with tabs at predetermined locations on the external edge with mounting apertures in each tab; and

extruding a boss having an inner and outer diameter and a predefined height extending from s surface of the plate around each mounting aperture in each tab, the extruded base having a larger diameter at the predefined height than at the surface of the plate.

4. A method of making separate plates for mounting in a hard disk drive, each disk separator plate having a plurality of mounting apertures for fastening the separator plate to the frame of a hard disk drive, the method comprising:

stamping a separator plate having a top and bottom surface and external edge with tabs at predetermined locations on the external edge with mounting apertures in each tab;

extruding a boss having an inner and outer diameter and a predefined height extending from a surface of the plates around each mounting aperture in each tab; and

enlarging the inner diameter of the boss at the surface of the plate sufficient to receive the outer diameter of the boss in an adjacent separator plate.

5. A method of making disk separator plates for mounting in a hard disk drive, each disk separator plate having a plurality of mounting apertures for fastening the separator plate to a frame of a hard disk drive, the method comprising:

stamping a separate plate having a top and a bottom surface and external edges with tabs at predetermined locations on the exterior edge with mounting apertures in each tab;

each tab formed elongated and tangentially to the external edge of the separator plate, an offset formed by bending one part of the tab to completely overlap another part of the tab.

6. The method of claim 12 wherein mounting apertures are formed in the tab, and the mounting apertures align when the parts of the tab are bent to overlap.

7. A disk separator plate for hard disk drives, comprising:

a separator plate having a top and bottom surface and external edge stamped from a single sheet of metal; and

a boss around each of the mounting apertures extending from the top or bottom surface of the separator plate for a predefined distance, formed on the stamped separator plate, the boss having a larger diameter at the predefined distance than at the surface of the plate.

8. A disk separator plate for hard disk drives, comprising:

a separator plate having a top and bottom surface and external edge with tabs at predetermined locations on the external edge with a top and bottom surface, and an aperture in each tab, stamped from a single sheet of metal; and

a boss having an inner and outer diameter at each of the mounting apertures extending from a top or bottom surface of the tabs for a predefined distance, a counter bore at the inner diameter of the boss at the top of the separator plate sufficient to receive the outer diameter of a boss in an adjacent separator plate.