CLAIMS

1. A die casting assembly comprising:

a cavity defined by a plurality of dies, said cavity including at least one sharp corner;

each of said dies including a plurality of die segments, each of said die segments contacting at least one other of said plurality of die segments; and

a first die segment joint between at least two of said die segments, wherein said die segment joint is aligned with said sharp corner.

2. The die casting assembly of claim 1, wherein said at least one sharp corner is a plurality of sharp corners.

3. The die casting assembly of claim 2, further comprising a plurality of die segment joints, each of said die segment joints aligned with at least one of said sharp corners.

4. The die casting assembly of claim 1, wherein at least one of said plurality of die segments is constructed of a material selected from a group of a steel, superalloy, refractory metal and ceramic material.

5. The die casting assembly of claim 1, wherein at least one of said plurality of die segments is at least partially coated via a pack cementation or plasma vapor deposition process.

6. The die casting assembly of claim 1, wherein at least one of said die segments is maintained in position in said die via a pair of opposing spring features.

7. The die casting assembly of claim 1, wherein at least one of said die segments is maintained in position in a housing at least partially surrounding said plurality of die segments.

8. The die casting assembly of claim 1, wherein each of said plurality of die segments includes a connector corresponding to each contacting die segment, and each of said connectors is interfaced with a corresponding connector of a contacting die segment.

9. The die casting assembly of claim 1, wherein a joint connecting a first die segment and a second die segment comprises a sharp corner.

10. A die comprising:

a plurality of die segments, each of said die segments contacting at least one other of said plurality of die segments; and

a partial die cavity defined by said die segments, wherein said partial die cavity includes at least one sharp corner;

a first die segment joint between at least two of said die segments, wherein said die segment joint is aligned with said sharp corner.

11. The die of claim 10, wherein said at least one sharp corner includes at least two sharp corners, and wherein at least one half of said sharp corners are aligned with at least one die segment joint.

12. The die of claim 10, wherein at least one of said die segment joints includes a corner spaced apart from said die cavity.

13. The die of claim 10, wherein each of said plurality of die segments is constructed of a material selected from a group of steel, superalloy, refractory metal and ceramic material.

14. The die of claim 10, wherein each of said plurality of die segments is at least partially coated via a pack cementation or plasma vapor deposition process.

15. The die of claim 10, wherein each of said die segments is maintained in position in said die via a pair of opposing spring features.

16. The die of claim 10, wherein each of said die segments is maintained in position in a housing at least partially surrounding said plurality of die segments.

17. The die of claim 10, wherein each of said plurality of die segments includes a connector corresponding to each contacting die segment, and each of said connectors is interfaced with a corresponding connector of a contacting die segment.

18. The die of claim 10, wherein said sharp corner is a corner having an angle of less than or equal to 110 degrees.

19. A method of repairing a die casting assembly comprising the steps of:

identifying a damage die segment in a die; and

replacing said damaged die segment with a new die segment having a substantially identical geometry to an original geometry of said damage die segment.

20. The method of claim 19, wherein said step of replacing said damaged die segment with a new die segment having a substantially identical geometry to an original geometry of said damage die segment further comprises removing only said damaged die segment from a die containing said damaged die casting segment.

CLAIMS

1. A die casting assembly comprising:

a cavity defined by a plurality of dies, said cavity including at least one sharp corner;

each of said dies including a plurality of die segments, each of said die segments contacting at least one other of said plurality of die segments; and

a first die segment joint between at least two of said die segments, wherein said die segment joint is aligned with said sharp corner.

2. The die casting assembly of claim 1, wherein said at least one sharp corner is a plurality of sharp corners.

3. The die casting assembly of claim 2, further comprising a plurality of die segment joints, each of said die segment joints aligned with at least one of said sharp corners.

4. The die casting assembly of claim 1, wherein at least one of said plurality of die segments is constructed of a material selected from a group of a steel, superalloy, refractory metal and ceramic material.

5. The die casting assembly of claim 1, wherein at least one of said plurality of die segments is at least partially coated via a pack cementation or plasma vapor deposition process.

6. The die casting assembly of claim 1, wherein at least one of said die segments is maintained in position in said die via a pair of opposing spring features.

7. The die casting assembly of claim 1, wherein at least one of said die segments is maintained in position in a housing at least partially surrounding said plurality of die segments.

8. The die casting assembly of claim 1, wherein each of said plurality of die segments includes a connector corresponding to each contacting die segment, and each of said connectors is interfaced with a corresponding connector of a contacting die segment.

9. The die casting assembly of claim 1, wherein a joint connecting a first die segment and a second die segment comprises a sharp corner.

10. A die comprising:

a plurality of die segments, each of said die segments contacting at least one other of said plurality of die segments; and

a partial die cavity defined by said die segments, wherein said partial die cavity includes at least one sharp corner;

a first die segment joint between at least two of said die segments, wherein said die segment joint is aligned with said sharp corner.

11. The die of claim 10, wherein said at least one sharp corner includes at least two sharp corners, and wherein at least one half of said sharp corners are aligned with at least one die segment joint.

12. The die of claim 10, wherein at least one of said die segment joints includes a corner spaced apart from said die cavity.

13. The die of claim 10, wherein each of said plurality of die segments is constructed of a material selected from a group of steel, superalloy, refractory metal and ceramic material.

14. The die of claim 10, wherein each of said plurality of die segments is at least partially coated via a pack cementation or plasma vapor deposition process.

15. The die of claim 10, wherein each of said die segments is maintained in position in said die via a pair of opposing spring features.

16. The die of claim 10, wherein each of said die segments is maintained in position in a housing at least partially surrounding said plurality of die segments.

17. The die of claim 10, wherein each of said plurality of die segments includes a connector corresponding to each contacting die segment, and each of said connectors is interfaced with a corresponding connector of a contacting die segment.

18. The die of claim 10, wherein said sharp corner is a corner having an angle of less than or equal to 110 degrees.

19. A method of repairing a die casting assembly comprising the steps of:

identifying a damage die segment in a die, wherein the die comprises a plurality of die segments, each of said die segments contacting at least one other of said plurality of die segments, a partial die cavity defined by said die segments, wherein said partial die cavity includes at least one sharp corner, and a first die segment joint between at least two of said die segments, wherein said die segment joint is aligned with said sharp corner; and

replacing said damaged die segment with a new die segment having a substantially identical geometry to an original geometry of said damage die segment.

20. The method of claim 19, wherein said step of replacing said damaged die segment with a new die segment having a substantially identical geometry to an original geometry of said damage die segment further comprises removing only said damaged die segment from a die containing said damaged die casting segment.