CLAIMS

What is claimed is:

1. An elevator system comprising:

a first elevator shaft;

at least four elevator cabs positioned within said first elevator shaft, said four elevator cabs including a first elevator cab positioned above a second elevator cab, said second elevator cab positioned above a third elevator cab and said third elevator cab positioned above said fourth elevator cab, each of said four cabs having a first and second wall that are substantially parallel;

a first set of four cables coupled to said second elevator cab, two cables of said first set of four cables positioned on said first wall of said second elevator cab and the remaining two cables of said first set of four cables positioned on said second wall of said second elevator cab, wherein each of said four cables is connected to ~~its own~~ a respective counterweight in a first set of counterweights, wherein said respective counterweight is connected to only one cable ~~no two or more~~ of said first set of four cables ~~connected to the same counterweight~~;

a second set of four cables coupled to said third elevator cab, two cables of said second set of four cables positioned on said first wall of said third elevator cab and the remaining two cables of said second set of four cables positioned on said second wall of said third elevator cab, wherein each of said four cables is connected to ~~its own~~ a respective counterweight in a second set of counterweights, wherein said respective counterweight is connected to only one cable ~~no two or more~~ of said second set of four cables; ~~connected to the same counterweight,~~ each of said second set of four cables positioned such that the cables do not interfere with said first set of four cables connected to said second elevator cab; and

a third set of four cables coupled to said fourth elevator cab, two cables of said third set of four cables positioned on said first wall of said fourth elevator cab and the remaining two cables of said third set of four cables positioned on said second wall of said fourth elevator cab, wherein each of said four cables is connected to ~~its own~~ a respective counterweight in a third set of counterweights, wherein said respective counterweight is connected to only one cable ~~no two or more~~ of said third set of four cables; ~~connected to the same counterweight,~~ each of said third set of four cables positioned such that the cables do not interfere with either said first set of four cables connected to said second elevator cab or said second set of four cables connected to said third elevator cab.

2. The elevator system of claim 1, wherein said elevator cabs further comprise:

a first guide, positioned on said first wall, for engaging a first vertical path in the elevator shaft; and

a second guide, positioned on said second wall, for engaging a second vertical path in the elevator shaft.

3. The elevator system of claim 2, where said first guide is positioned substantially along a center axis of said first wall and said second guide is position substantially along a center axis of said second wall.

4. The elevator system of claim 1, wherein a first axis is formed between one cable of said two cables of said first set of four cables positioned on said first wall and one cable of said two cables of said first set of four cables positioned on said second wall, and wherein said first axis passes substantially through ~~the~~ a two-dimensional center of the second elevator cab.

5. The elevator system of claim 1, further comprising:

a first set of four pulleys, each pulley disposed to receive one cable of the first set of four cables;

a second set of four pulleys, each pulley disposed to receive one cable of the second set of four cables; and

a third set of four pulleys, each pulley disposed to receive one cable of the third set of four cables.

6. The elevator system of claim 1, wherein said first set of counterweights are positioned external to the elevator shaft.

7. The elevator system of claim 1, wherein said first set of counterweights comprises four counterweights, each of said four counterweights of said first set of counterweights coupled to one of said cables in said first set of four cables.

8. The elevator system of claim 7, wherein said second set of counterweights comprises four counterweights, each of said four counterweights of said second set of counterweights coupled to one of said cables in said second set of four cables.

9. The elevator system of claim 8, wherein said third set of counterweights comprises four counterweights, each of said four counterweights of said third set of counterweights coupled to one of said cables in said third set of four cables.

10. The elevator system of claim 7, further comprising a set of four counterweight channels, each of said four counterweight channels for housing one of said first set of counterweights.

11. The elevator system of claim 1, further comprising a first set of counterweight channels, each counterweight channel of said first set of counterweight channels encloses one counterweight in said first set of counterweights.

12. The elevator system of claim 11, further comprising a second set of counterweight channels, each counterweight channel of said second set of counterweight channels encloses one counterweight in said second set of counterweights.

13. The elevator system of claim 12, further comprising a third set of counterweight channels, each counterweight channel of said third set of counterweight channels encloses one counterweight in said third set of counterweights,

14. The elevator system of claim 13, wherein said first, second and third counterweight channels are positioned such that the first set of counterweights do not interfere with the second or third set of counterweights during elevator operation.

15. The elevator system of claim 1 further comprising:

a first lift cable coupled to a first location of said second cab and a first motor, said first lift cable capable of moving said second cab in response to activation of said first motor.

16. The elevator system of claim 15, wherein said first lift cable is also coupled to a second location of said second cab, wherein during movement of the second cab, said first lift cable moves and no portion of said first lift cable is stored.

17. The elevator system of claim 15 further comprising:

a second lift cable coupled to a first location of said third cab and a second motor, said second lift cable capable of moving said third cab in response to activation of said second motor, wherein said second lift cables do not interfere with said first lift cables during operation.

18. The elevator system of claim 17, wherein said second lift cable is also coupled to a second location of said third cab, wherein during movement of the third cab, said second lift cable moves and no portion of said second lift cable is stored.

19. The elevator system of claim 17 further comprising:

a third lift cable coupled to a first location of said fourth cab and a third motor, said third lift cable capable of moving said fourth cab in response to activation of said third motor, wherein said third lift cables do not interfere with said first lift cables or said second lift cables during operation.

20. The elevator system of claim 19, wherein said third lift cable is also coupled to a second location of said fourth cab, wherein during movement of the fourth cab, said third lift cable moves and no portion of said third lift cable is stored.

21. The elevator system of claim 10, wherein said set of four counterweight channels ~~are~~ is attached to a dividing wall, a first subset of the set of four counterweight channels attached to a first side of the dividing wall and a second subset of the set of four counterweight channels attached to a second side of the dividing wall.

CLAIMS

What is claimed is:

1. An elevator system comprising:

a first elevator shaft;

at least four elevator cabs positioned within said first elevator shaft, said four elevator cabs including a first elevator cab positioned above a second elevator cab, said second elevator cab positioned above a third elevator cab and said third elevator cab positioned above said fourth elevator cab, each of said four cabs having a first and second wall that are substantially parallel;

a first set of four cables coupled to said second elevator cab, two cables of said first set of four cables positioned on said first wall of said second elevator cab and the remaining two cables of said first set of four cables positioned on said second wall of said second elevator cab, wherein each of said four cables is connected to a respective counterweight in a first set of counterweights, wherein said respective counterweight is connected to only one cable of said first set of four cables;

a second set of four cables coupled to said third elevator cab, two cables of said second set of four cables positioned on said first wall of said third elevator cab and the remaining two cables of said second set of four cables positioned on said second wall of said third elevator cab, wherein each of said four cables is connected to a respective counterweight in a second set of counterweights, wherein said respective counterweight is connected to only one cable of said second set of four cables; each of said second set of four cables positioned such that the cables do not interfere with said first set of four cables connected to said second elevator cab; and

a third set of four cables coupled to said fourth elevator cab, two cables of said third set of four cables positioned on said first wall of said fourth elevator cab and the remaining two cables of said third set of four cables positioned on said second wall of said fourth elevator cab, wherein each of said four cables is connected to a respective counterweight in a third set of counterweights, wherein said respective counterweight is connected to only one cable of said third set of four cables; each of said third set of four cables positioned such that the cables do not interfere with either said first set of four cables connected to said second elevator cab or said second set of four cables connected to said third elevator cab.

2. The elevator system of claim 1, wherein said elevator cabs further comprise:

a first guide, positioned on said first wall, for engaging a first vertical path in the elevator shaft; and

a second guide, positioned on said second wall, for engaging a second vertical path in the elevator shaft.

3. The elevator system of claim 2, where said first guide is positioned substantially along a center axis of said first wall and said second guide is position substantially along a center axis of said second wall.

4. The elevator system of claim 1, wherein a first axis is formed between one cable of said two cables of said first set of four cables positioned on said first wall and one cable of said two cables of said first set of four cables positioned on said second wall, and wherein said first axis passes substantially through a two-dimensional center of the second elevator cab.

5. The elevator system of claim 1, further comprising:

a first set of four pulleys, each pulley disposed to receive one cable of the first set of four cables;

a second set of four pulleys, each pulley disposed to receive one cable of the second set of four cables; and

a third set of four pulleys, each pulley disposed to receive one cable of the third set of four cables.

6. The elevator system of claim 1, wherein said first set of counterweights are positioned external to the elevator shaft.

7. The elevator system of claim 1, wherein said first set of counterweights comprises four counterweights, each of said four counterweights of said first set of counterweights coupled to one of said cables in said first set of four cables.

8. The elevator system of claim 7, wherein said second set of counterweights comprises four counterweights, each of said four counterweights of said second set of counterweights coupled to one of said cables in said second set of four cables.

9. The elevator system of claim 8, wherein said third set of counterweights comprises four counterweights, each of said four counterweights of said third set of counterweights coupled to one of said cables in said third set of four cables.

10. The elevator system of claim 7, further comprising a set of four counterweight channels, each of said four counterweight channels for housing one of said first set of counterweights.

11. The elevator system of claim 1, further comprising a first set of counterweight channels, each counterweight channel of said first set of counterweight channels encloses one counterweight in said first set of counterweights.

12. The elevator system of claim 11, further comprising a second set of counterweight channels, each counterweight channel of said second set of counterweight channels encloses one counterweight in said second set of counterweights.

13. The elevator system of claim 12, further comprising a third set of counterweight channels, each counterweight channel of said third set of counterweight channels encloses one counterweight in said third set of counterweights,

14. The elevator system of claim 13, wherein said first, second and third counterweight channels are positioned such that the first set of counterweights do not interfere with the second or third set of counterweights during elevator operation.

15. The elevator system of claim 1 further comprising:

a first lift cable coupled to a first location of said second cab and a first motor, said first lift cable capable of moving said second cab in response to activation of said first motor.

16. The elevator system of claim 15, wherein said first lift cable is also coupled to a second location of said second cab, wherein during movement of the second cab, said first lift cable moves and no portion of said first lift cable is stored.

17. The elevator system of claim 15 further comprising:

a second lift cable coupled to a first location of said third cab and a second motor, said second lift cable capable of moving said third cab in response to activation of said second motor, wherein said second lift cables do not interfere with said first lift cables during operation.

18. The elevator system of claim 17, wherein said second lift cable is also coupled to a second location of said third cab, wherein during movement of the third cab, said second lift cable moves and no portion of said second lift cable is stored.

19. The elevator system of claim 17 further comprising:

a third lift cable coupled to a first location of said fourth cab and a third motor, said third lift cable capable of moving said fourth cab in response to activation of said third motor, wherein said third lift cables do not interfere with said first lift cables or said second lift cables during operation.

20. The elevator system of claim 19, wherein said third lift cable is also coupled to a second location of said fourth cab, wherein during movement of the fourth cab, said third lift cable moves and no portion of said third lift cable is stored.

21. The elevator system of claim 10, wherein said set of four counterweight channels is attached to a dividing wall, a first subset of the set of four counterweight channels attached to a first side of the dividing wall and a second subset of the set of four counterweight channels attached to a second side of the dividing wall.