Claims

1. A security device comprising an image formed upon a substrate having a first printed region and a second printed region, wherein at least one printed region has optically variable effects, wherein one of the first and second printed regions are at least partially surrounded by the other, wherein a same ink formulation having field alignable flakes therein is applied to the first and second printed regions, wherein the second printed region is comprised of thin parallel lines, wherein

a) the first printed region is either a solid printed region or is comprised of substantially wider lines than are printed in the second printed region; or

b) wherein the first printed region is either a solid printed region or is comprised of a first group of parallel lines and wherein the area density of the ink of the second group of substantially parallel lines is substantially less that the area density of solid printed region or the area density of the first group of parallel lines,

and wherein particles or flakes in the ink are field aligned so as to produce a visible kinematic dynamic effect in the first region and not visible in the second region when the image is tilted or rotated, and wherein a contrast between the first and second printed regions as a function of a difference between the width of lines in the second region and the solid or lined first printed region, forms a discernible printed image.

2. A security device as defined in claim 1, wherein both printed regions have optically variable effects.

3. A security device as defined in claim 2 wherein a plurality of parallel lines in the first region are at least twice a wide as the thin parallel lines of the second region and wherein the area density of the ink of the second group of substantially parallel lines is substantially less that the area density of the area density of the first group of parallel lines,

4. A security device as defined in claim 3, wherein the ink is comprised of magnetically aligned flakes.

5. A security device as defined in claim 3 wherein the ink consists of magnetically alignable flakes.

6. A security device as defined in claim 4, wherein the magnetically aligned flakes in the first and second regions is the same ink formulation and wherein the lines in the first region are at least two times wider than the lines in the second region.

7. A security device as defined in claim 6, wherein a contrast between the first region and second region forms discernible indicia.

8. A security device as defined in claim 7 wherein the magnetically aligned flakes are color shifting flakes.

9. A security device as defined in claim 7, wherein the magnetically aligned flakes are color switching flakes.

10. A security device as defined in claim 7, wherein the magnetically aligned flakes are diffractive flakes.

11. A security device as defined in claim 6 wherein the lines in the first region are parallel.

12. A security device as defined in claim 6 wherein the lines in the second region are parallel.

13. A security device as defined in claims 6 wherein the lines in the first and second regions are parallel.

14. A security device as defined in claim 6 wherein lines in one of the first and second regions are of different thicknesses.

15. A security device as defined in claim 4 wherein flakes in the first and second regions are magnetically aligned and wherein a strong dynamic effect that is a function of the alignment of the flakes is seen in the first printed region and is not seen in the second printed region.

16. A security device as defined in claim 3 wherein the height of the ink in the first region is greater than the height of the ink in the second regions.

17. A security device as defined in claim 3, wherein the weight of the ink in a line of a length of one unit in the first region is at least three times the weight of the ink in a line of a same length in the second region.

18. A security device as defined in claim 3 wherein the first region consists of a plurality of parallel printed lines of width W_L.

19. A security device as defined in claim 18 wherein the second region consists of a plurality of parallel printed lines having a width of less than $W_L/2$.

20. A security device as defined in claim 19, wherein a rolling bar is seen in the first region without magnification as the image is tilted, and wherein a rolling bar is not seen without magnification in the second region when tilting the image.

21. A security device as defined in claim 3, wherein the ink is applied to the first and one or more second regions by an Intaglio printing process.

22. A security device as defined in claim 1 wherein a plurality of adjacent pairs of parallel lines in the second region each have a visible unprinted line therebetween and wherein the unprinted line is wider than the printed lines next thereto.

23. A security device as defined in claim 1 wherein a plurality of adjacent pairs of parallel lines in the first region each have a visible unprinted line therebetween and wherein the unprinted line is narrower than the printed lines next thereto.

24. A security device as defined in claim 1, wherein the thin parallel lines in the second region are contiguous and form a single line.

25. A security device as defined in claim 1 wherein the wider lines in the first printed region are contiguous and form a single line.

26. A security device as defined in claim 1 wherein the thin parallel lines in the second region and the wider lines in the first printed region are contiguous and form a single line.

27. A security device as defined in claim 1 wherein the thin parallel lines in the second region and the wider lines in the first printed region appear to be contiguous and appear form a single line having a varying width and wherein the single line having a varying width is a dotted or pixelated line.

28. A method of forming a security device comprising the steps of:
printing upon a substrate a first printed region and one or more second printed regions at least partially bordering the first printed region, wherein a same ink formulation having flakes therein is applied to the first and one or more second printed regions in lines of different thicknesses, and/or different heights, wherein the printed lines in the first printed region are substantially wider and or higher, than printed lines in the one or more second printed regions, and wherein particles or flakes in at least some of the ink is field aligned so as to produce a visible kinematic effect when the image is tilted or rotated, and wherein a contrast between the first and second printed regions as a function of their contrasting line widths, forms a discernible printed image.

29. A method as defined in claim 28 wherein the printing is Intaglio printing.

30. A method as defined in claim 29 wherein ink is applied so as to be more raised in the first region than in the second region.

31. A method as defined in claim 28 wherein the discernible printed image consists of a lined image formed of groups of parallel lines.

Claims

1. A security device comprising an image formed upon a substrate having a first printed region and a second printed region, wherein at least one printed region has optically variable effects, wherein one of the first and second printed regions are at least partially surrounded by the other, wherein a same ink formulation having field alignable flakes therein is applied to the first and second printed regions, wherein the second printed region is comprised of thin substantially parallel lines, wherein

a) the first printed region is either a solid printed region or is comprised of substantially wider or higher lines than are printed in the second printed region[[;]], or

b) the first printed region is either a solid printed region or is comprised of a first group of parallel lines and wherein the area density of the ink the thin substantially parallel lines is substantially less that the area density of the solid printed region or the area density of the first group of parallel lines,

and wherein flakes in the ink are field aligned so as to produce a kinematic dynamic effect visible in the first printed region when the image is tilted or rotated, wherein the kinematic dynamic effect is not visible in the second printed region, due to a difference between the width or height of lines or the area density in the second printed region and the solid or lined first printed region, and wherein a contrast between the first and second printed regions as a function of a difference between the width or height of lines or the area density in the second printed region and the solid or lined first printed region, forms a discernible printed image.

2. A security device as defined in claim 1, wherein both printed regions have optically variable effects.

3. A security device as defined in claim 2 wherein a plurality of parallel lines in the first printed region are at least twice a wide as the thin parallel lines of the second printed region and wherein the area density of the ink of the

second group of substantially parallel lines is substantially less that the area density of the area density of the first group of parallel lines [[,]].

4. A security device as defined in claim 3, wherein field alignable flakes in the first and second printed regions is the same ink formulation and wherein the lines in the first printed region are at least two times wider than the lines in the second printed region.

5. A security device as defined in claim 4, wherein a contrast between the first printed region and second printed region forms discernible indicia.

6. A security device as defined in claim 5 wherein the magnetically aligned flakes are color shifting flakes.

7. A security device as defined in claim 5, wherein the magnetically aligned flakes are diffractive flakes.

8. A security device as defined in claim 4 wherein lines in one of the first and second printed regions are of different thicknesses.

9. A security device as defined in claim 3 wherein the height of the ink in the first printed region is greater than the height of the ink in the second printed regions.

10. A security device as defined in claim 3, wherein the weight of the ink in a line of a length of one unit in the first printed region is at least three times the weight of the ink in a line of a same length in the second printed region.

11. A security device as defined in claim 3 wherein the first printed region consists of a plurality of parallel printed lines of width W_L and the second printed region consists of a plurality of parallel printed lines having a width of less than $W_L/2$.

12. A security device as defined in claim 1, wherein a rolling bar is seen in the first printed region without magnification as the image is tilted, and wherein a rolling bar is not seen without magnification in the second printed region when tilting the image.

13. A security device as defined in claim 3, wherein the ink is applied to the first and one or more second printed regions by an Intaglio printing process.

14. A security device as defined in claim 1 wherein a plurality of adjacent pairs of parallel lines in the second printed region each have a visible unprinted line therebetween and wherein the unprinted line is wider than the printed lines next thereto.

15. A security device as defined in claim 1 wherein a plurality of adjacent pairs of parallel lines in the first printed region each have a visible unprinted line therebetween and wherein the unprinted line is narrower than the printed lines next thereto.

16. A security device as defined in claim 1, wherein the thin parallel lines in the second printed region are contiguous and form a single line.

17. A security device as defined in claim 1 wherein the wider lines in the first printed region are contiguous and form a single line.

18. A security device as defined in claim 1 wherein the thin parallel lines in the second printed region and the wider lines in the first printed region appear to be contiguous and appear form a single line having a varying width and wherein the single line having a varying width is a dotted or pixelated line.

19. A method of forming a security device comprising the steps of:
printing upon a substrate a first printed region and one or more second printed regions at least partially bordering the first printed region, wherein

a same ink formulation having flakes therein is applied to the first and one or more second printed regions in lines of different thicknesses, and/or different heights, wherein the lines in the first printed region are substantially wider and or higher [[,]] than the lines in the one or more second printed regions, and wherein flakes in at least some of the ink is field aligned so as to produce a kinematic dynamic effect when the image is tilted or rotated, wherein the kinematic dynamic effect is visible in the first printed region when the image is tilted or rotated, wherein the kinematic dynamic effect is not visible in the second printed region as a function of a difference between the width or height of lines in the second printed region and the first printed region, and wherein a contrast between the first and second printed regions as a function of their contrasting line widths, forms a discernible printed image.

20. A method as defined in claim 19 wherein the printing is Intaglio printing.

21. A method as defined in claim 20 wherein ink is applied so as to be more raised in the first printed region than in the second printed region.

22. A method as defined in claim 19 wherein the discernible printed image consists of a lined image formed of groups of parallel lines.

23. A security device comprising an image formed upon a substrate, wherein the image has a first printed region and a second printed region at least partially bordering the first printed region, wherein the first printed region is either a solid printed region or comprises a first plurality of lines and the second printed region comprises a second plurality of lines, and the lines in the first printed region are higher or wider than the lines in the second printed region,
wherein a same ink formulation having field alignable flakes therein is applied to the first and second printed regions,
wherein a ratio of ink area density in the first printed region to ink area density in the second printed region is such that a kinematic dynamic effect

is visible in the first printed region when the image is tilted or rotated, and no kinematic dynamic effect is visible in the second printed region.