## SUMMARY OF INVENTION

### Technical Problem

[0019]

Embodiments ofWhile the present invention seekis made to overcome the above problems, its object is to provide a screen printing plate for use with solar cells and a method of printing solar cell electrodes through the screen printing plate, by which electrodes having a high aspect ratio and low resistance are formed which may enablefor enabling low-cost manufacture of solar cells with high conversion efficiency.

### Solution to Problem

[0020]

Embodiments of tThe present invention mayaims to solve the above problems and pertains to a method of manufacturing a solar cell by printing a conductive paste to simultaneously form a bus bar electrode and a finger electrode. With respect to electrode formation by screen printing through a screen printing plate including a bus bar electrode opening, it has been found that if the bus bar electrode opening is partially provided with a blocked zone, the pressure applied by the squeegee to the paste filled in the opening is reduced. Then electrode breakage is inhibited. Embodiments of tThe invention areis predicated on this finding.

[0021]

Accordingly, embodiments of the invention provides a screen printing plate for use with solar cells and a method of printing solar cell electrodes as defined below.

~~[1]~~ According to an aspect of the present invention, there is provided a screen printing plate for use in printing a conductive paste to simultaneously form a bus bar electrode and a plurality of finger electrodes on a solar cell, ~~characterized in that~~ the screen printing plate including a bus bar electrode opening and a plurality of finger electrode openings, wherein the ~~includes a~~ finger electrode openings have~~inge~~ an opening width of less than 80 μm, and ~~a bus bar electrode opening including a blocked zone~~the screen printing plate has a plurality of blocked zones in the bus bar electrode opening, formed only at positions aligned with the finger electrode openings.

~~[2]~~ Preferably, ~~The screen printing plate of [1] wherein~~ the blocked zone accounts for up to 60% of a bus bar area computed from

the contour of the bus bar electrode opening of the screen printing plate.

~~[3]~~ Preferably, ~~The screen printing plate of [1] or [2] wherein~~ the blocked zone in the bus bar electrode opening is spaced apart a distance of 50 to 700 μm from the boundary between the finger electrode opening and the bus bar electrode opening.

~~[4]~~ There is disclosed a~~A~~ method of printing solar cell electrodes, characterized in that a conductive paste is printed while using the screen printing plate as disclosed~~of any one of [1] to [3]~~ and moving a squeegee in a direction perpendicular to a longitudinal direction of the bus bar electrode.

[0022]

It is noted that breakage rarely occurs with a commonly used finger opening having a width of 80 to 100 μm. Embodiments of t~~T~~he invention may be~~is~~ effective for fine lines corresponding to a finger opening width of less than 80 μm.

In order to take full advantage of the invention when solar cell electrodes are printed using the screen printing plate having the features described above, it is desired that the printing direction be substantially perpendicular to the longitudinal direction of bus bar electrode.

## Advantageous Effects of Invention

[0023]

The use of the inventive screen printing plate may make~~s~~ it possible to reduce the cost of manufacturing solar cells, to prevent the connection between the bus bar electrode and the finger electrode from breaking without increasing the shadow loss or compromising the aesthetic appearance of solar cells, and to manufacture reliable solar cells at high productivity.

## BRIEF DESCRIPTION OF DRAWINGS

[0024]

FIG. 1 is a cross-sectional view of electrodes of a typical solar cell.