A wet paper shape dredging system is disclosed herein, which comprises at least one slurry tank, at least one molding assembly and at least one suction device. The at least one slurry tank is used to store paper slurry. The at least one molding assembly is used to dredge the paper slurry from the at least one slurry tank and make the paper slurry to form at least two wet pulp layers within the at least one molding assembly. The at least one suction device is used to acceleratingly release the water and/or moisture from one of the at least two wet pulp layers. The present invention solves the bridge effect.
A first lower mold is sunk into a first slurry tank, to dredge up a pulp body contained within first paper slurry of the first slurry tank to a first plane of the first lower mold.

A second plane of a first upper mold is moved below a liquid surface of the first paper slurry.

The second plane of the first upper mold and the first plane of the lower mold are correspondingly matched below the liquid surface of the first paper slurry.

At least one part of the pulp body of the first paper slurry forms at least one first wet pulp layer between the first plane of the first upper mold and the second plane of the lower mold.

The wet paper-shape product is formed with the at least one first wet pulp layer.

**FIG. 14**
a first lower mold is sunk into a first slurry tank, to dredge up a pulp body contained within first paper slurry of the first slurry tank to a first plane of the first lower mold

a second plane of a first upper mold is moved below a liquid surface of the first paper slurry

water and/or moisture contained within the at least one first wet pulp layer is suctioned by the at least one first through hole disposed at the first lower mold and/or at least one second through hole disposed at the first upper mold, by using a first suction device

the second plane of the first upper mold and the first plane of the lower mold are correspondingly matched below the liquid surface of the first paper slurry

at least one part of the pulp body of the first paper slurry forms at least one first wet pulp layer between the first plane of the first upper mold and the second plane of the lower mold

the wet paper-shape product is formed with the at least one first wet pulp layer

FIG. 15
a first lower mold is sunk into a first slurry tank, to dredge up a pulp body contained within first paper slurry of the first slurry tank to a first plane of the first lower mold

S01

a second plane of a first upper mold is moved below a liquid surface of the first paper slurry

S02

the second plane of the first upper mold and the first plane of the lower mold are correspondingly matched below the liquid surface of the first paper slurry

S03

at least one part of the pulp body of the first paper slurry forms at least one first wet pulp layer between the first plane of the first upper mold and the second plane of the lower mold

S04

the first upper mold and the first lower mold are moved above the liquid surface of the first paper slurry

S07

the first upper mold and the first lower mold are separated above the liquid surface of the first paper slurry

S08

the wet paper-shape product is formed with the at least one first wet pulp layer

S05

FIG. 16
a first lower mold is sunk into a first slurry tank, to dredge up a pulp body contained within first paper slurry of the first slurry tank to a first plane of the first lower mold

a second plane of a first upper mold is moved below a liquid surface of the first paper slurry

the second plane of the first upper mold and the first plane of the lower mold are correspondingly matched below the liquid surface of the first paper slurry

at least one part of the pulp body of the first paper slurry forms at least one first wet pulp layer between the first plane of the first upper mold and the second plane of the lower mold

a heat-compression process is performed for the at least one first wet pulp layer

the wet paper-shape product is formed with the at least one first wet pulp layer

FIG. 17
SUMMARY OF THE INVENTION

[0009] In order to solve the above issue, the present invention provides a wet pulp mold which is not only for rapidly drying and forming a wet pulp semi-products and/or a wet pulp final product, but also for solving the bridging effect and preventing the structure of the wet pulp semi-product and/or the wet pulp final product from damage while separating.

[0010] In order to achieve the above purposes, the present invention comprises a wet paper shape dredging system which comprises at least one slurry tank, at least one molding assembly, and at least one suction device.

[0011] The at least one slurry tank is used to store paper slurry. The at least one molding assembly is used to dredge up a pulp body contained within the paper slurry to from the at least one slurry tank and make the paper slurry to form at least two wet pulp layers within the at least one molding assembly. The at least one suction device is used to accelerate the drain water and/or moisture from one of the at least two wet pulp layers.

[0012] In one preferred embodiment, the at least one slurry tank comprises a first slurry tank and a second slurry tank, the first slurry tank is used to store first paper slurry, the second slurry tank is used to store second paper slurry.

[0013] In one preferred embodiment, the first paper slurry and the second paper slurry have the same or different compositions.

[0014] In one preferred embodiment, a mean fiber length of the first paper slurry and a mean fiber length of the second paper slurry are different from each other.

[0015] In one preferred embodiment, the at least one molding assembly comprises a first molding assembly; the first molding assembly comprises a first upper mold and a first lower mold. The first lower mold dredges up the pulp body of the paper slurry from the at least one slurry tank, and then the first upper mold and the first lower mold are matched with each other to form the at least two wet pulp layers between the first upper mold and the first lower mold, sequentially.

[0016] In one preferred embodiment, the at least one molding assembly comprises a first molding assembly, and a second molding assembly. The first molding assembly comprises a first upper mold and a first lower mold. The first lower mold dredges up a pulp body of the first paper slurry from the first slurry tank, and then the first upper mold and the first lower mold are matched with each other to form a first wet pulp layer between the first upper mold and the first lower mold, sequentially. And the first lower molding assembly comprises a second upper mold and a second lower mold. The second lower mold dredges up a pulp body of the second paper slurry from the second slurry tank, and then the second upper mold and the second lower mold are matched with each other to form second wet pulp layer between the second upper mold and the second lower mold, sequentially.

[0017] In one preferred embodiment, the at least one molding assembly comprises a first molding assembly and a second molding assembly. The first molding assembly comprises a first upper mold and a first lower mold. The first lower mold dredges up a pulp body of the first paper slurry from the first slurry tank, and then the first upper mold and the first lower mold are matched with each other to form a first wet pulp layer between the first upper mold and the first lower mold, sequentially. And the first lower mold dredges up a pulp body of the second paper slurry from the second slurry tank, and then the first upper mold and the first lower mold are matched with
each other to form a second wet pulp layer between the first upper mold and the first lower mold, sequentially.

[0018] In one preferred embodiment, the at least two wet pulp layers have different sizes but are tightly combined.

[0019] In one preferred embodiment, the at least one molding assembly is able to form the at least one wet pulp layer with at least one wet pulp cavity, the at least one wet pulp cavity of the at least one wet pulp layer has a longest length within a range 0-8 mm on a cross-sectional part thereof.

[0020] In one preferred embodiment, the longest length is a range 0-6 mm.

[0021] In one preferred embodiment, a wet paper shape product according to the wet paper shape dredging system as above which comprises the at least two wet pulp layers overlapped the at least two wet pulp layers shaped in correspondence with each other.

[0022] In order to achieve the above purposes, the present invention comprises a first slurry tank and a first molding assembly.

[0023] The first slurry tank is used to store first paper slurry. The first molding assembly comprises a first lower mold and a first upper mold. The first lower mold comprises a first plane. At least one cavity and at least one first through hole are formed on the first plane, the first lower mold is used to dredge up a pulp body contained within the first paper slurry from the first slurry tank. The first upper mold comprises a second plane. At least one protrusion corresponding with the at least one cavity is formed on the second plane. The second plane of the first upper mold is sunk below a liquid surface of the first paper slurry of the slurry tank, to correspondingly match with the first plane of the first lower mold, under the liquid surface of the first paper slurry, so that at least one first wet pulp layer is formed with at least one part of the pulp body of the first paper slurry between the first plane of the first lower mold and the second plane of the first upper mold.

[0024] In one preferred embodiment, the dredging system further comprises an extension device, which is used to make the second plane of the first upper mold sink below the liquid surface of the first paper slurry.

[0025] In one preferred embodiment, the dredging system further comprises at least one first suction device, which is used to acceleratively release the water and/or moisture from the at least one first wet pulp layer.

[0026] In one preferred embodiment, the dredging system further comprises at least one first mesh, which is disposed on the first plane and shaped correspondingly to a shape of the first plane and the at least one cavity. The first mesh is used to leave the at least one first wet pulp layer thereon to prevent the at least one first wet pulp layer from entering the at least one first through hole, in a manner of avoiding choke of the at least one first through hole releasing the water and/or moisture of the at least one first wet pulp layer.

[0027] In one preferred embodiment, the at least one first wet pulp layer comprises at least two layers which have different sizes but tightly combined with each other.

[0028] In one preferred embodiment, the at least one first wet pulp layer has at least one first wet pulp cavity formed correspondingly between the first upper mold and the first lower mold, a horizontal cross-sectional width of the at least one first wet pulp cavity of the at least one first wet pulp layer is formed in a range 0-8 mm.

[0029] In one preferred embodiment, the horizontal cross-sectional width is formed in a range 0-6 mm.

[0030] In order to achieve the above purposes, the present invention further comprises a paper-shape product, which is made from the at least one first wet pulp layer generated by the wet paper shape dredging system as above.

[0031] In one preferred embodiment, the at least one first wet pulp layer comprises a plurality of first wet pulp layers overlapped with each other and shaped in correspondence with each other.

[0032] In order to achieve the above purposes, the present invention provides a wet paper-shape product forming method, comprising:

[0033] First, a first lower mold is sunk into a first slurry tank, to dredge up a pulp body contained within first paper slurry of the first slurry tank to a first plane of the first lower mold.

[0034] Then, a second plane of a first upper mold is moved below a liquid surface of the first paper slurry.

[0035] Then, the second plane of the first upper mold and the first plane of the lower mold are correspondingly matched below the liquid surface of the first paper slurry.

[0036] Then, at least one part of the pulp body of the first paper slurry forms at least one first wet pulp layer between the first plane of the first upper mold and the second plane of the lower mold.

[0037] Finally, the wet paper-shape product is formed with the at least one first wet pulp layer.

[0038] In one preferred embodiment, water and/or moisture contained within the at least one first wet pulp layer is suctioned by the at least one first through hole disposed at the first lower mold and/or at least one second through hole disposed at the first upper mold, by using a first suction device.

[0039] In one preferred embodiment, after at least one part of the pulp body of the first paper slurry forms at least one first wet pulp layer between the first plane of the first upper mold and the second plane of the lower mold, the method further comprises: moving the first upper mold and the first lower mold above the liquid surface of the first paper slurry; and separating the first upper mold from the first lower mold above the liquid surface of the first paper slurry.

[0040] In one preferred embodiment, a heat-compression process is performed for the at least one wet pulp layer.

[0041] The present invention further provides the at least one molding assembly to perform compressing procedures with multiple dredging process in the at least one slurry tank or to perform compressing procedures below the first paper slurry of the first slurry tank, to prevent generation of the bridging effect and raise the yield rate.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0042] FIG. 1 shows an illustrative drawing of a prior molding assembly;

[0043] FIG. 2 shows an illustrative drawing of a wet paper shape dredging system before performed in a mold matching manner, according to a first preferred embodiment of the present invention;

[0044] FIG. 3 shows an illustrative drawing of the wet paper shape dredging system of FIG. 2 which is in the mold matching manner;

[0045] FIG. 4 shows an illustrative drawing of a wet paper shape dredging system before performed in a mold matching manner, according to a second preferred embodiment of the present invention;
FIG. 5 shows an illustrative drawing of the wet paper shape dredging system of FIG. 4 which is in the mold matching manner;

FIG. 6 shows a combination illustrative drawing of combination of the first wet pulp layer of FIG. 3 and the second wet pulp layer of FIG. 5;

FIG. 7 shows an illustrative drawing of the wet paper shape dredging system of FIG. 3 before performed in a second mold matching manner;

FIG. 8 shows an illustrative drawing of the wet paper shape dredging system of FIG. 7 which is in the mold matching manner;

FIG. 9 shows an illustrative drawing of a wet paper shape dredging system before performed in a mold matching manner, according to a third preferred embodiment of the present invention;

FIG. 10 shows an illustrative drawing of the wet paper shape dredging system of FIG. 9 which is in the mold matching manner;

FIG. 11 shows a stereoscopic illustrative drawing of a first molding assembly of a wet paper shape dredging system according to a fourth preferred embodiment of the present invention;

FIG. 12 shows an illustrative drawing of the first molding assembly of the wet paper shape dredging system before performed in a mold matching manner, according to the fourth preferred embodiment of the present invention;

FIG. 13 shows an illustrative drawing of the first molding assembly of FIG. 12 which is in the mold matching manner;

FIG. 14 shows a flow diagram of a wet paper-shape product forming method according to the fourth preferred embodiment of the present invention;

FIG. 15 shows a flow diagram of a wet paper-shape product forming method according to a fifth preferred embodiment of the present invention;

FIG. 16 shows a flow diagram of a wet paper-shape product forming method according to a sixth preferred embodiment of the present invention; and

FIG. 17 shows a flow diagram of a wet paper-shape product forming method according to a seventh preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following description of each embodiment, with reference to the accompanying drawings, is used to exemplify specific embodiments which may be carried out in the present invention. The claims of the present invention are not limited by these embodiments.

FIG. 2 shows an illustrative drawing of a wet paper shape dredging system 100 before performed in a mold matching manner, according to a first preferred embodiment of the present invention. The wet paper shape dredging system 100 comprises a first slurry tank 175, a first molding assembly 118, and a first suction device 190.

The first slurry tank 175 is used to store first paper slurry 177. The first molding assembly 118 comprises a first upper mold 140 and a first lower mold 130. At least one first protrusion 150 is disposed on a second plane 145 of the first upper mold 140, and used to correspond with at least one cavity 110 disposed on a first plane 135 of the first lower mold 130. In the preferred embodiment, taking one larger first protrusion 150, another smaller first protrusion 150 and two corresponding larger and smaller first cavities 110 for examples, generally, the bridging effect is easily occurred in the smaller first cavity 110. At least one first mesh 160 is disposed on the at least one first cavity 110 and shaped in corresponding with a shape of the at least one first cavity 110. The at least one first mesh 160 can be a device having a porous structure. In the preferred embodiment, a first wet pulp layer 170 is shaped with a first wet pulp cavity on the first molding assembly 118 by the first cavity 110. A longest length of a cross-sectional part of the first wet pulp cavity of the first wet pulp layer 170, which is less than 8 mm, will be capable of preventing occurrence of the bridging effect thereon. Preferably, the longest length of the cross-sectional part of the first wet pulp cavity of the first wet pulp layer 170, which is less than 6 mm, is also able to prevent the bridging effect. FIG. 3 shows an illustrative drawing of the wet paper shape dredging system of FIG. 2 which is in the mold matching manner. While the first lower mold 130 is moved above a liquid surface of the first paper slurry 177, the first upper mold 140 and the first lower mold 130 is compressively matched with each other to shape the first wet pulp layer 170. The at least one first mesh 160 not only makes the first wet pulp layer 170 shaped from the first paper slurry 177, in correspondence with the at least one first mesh 160, but also makes the first suction device 190 draining out the unnecessary water from the first wet pulp layer 170 through the at least one first mesh 160.

FIG. 4 shows an illustrative drawing of a wet paper shape dredging system 200 before performed in a mold matching manner, according to a second preferred embodiment of the present invention. The wet paper shape dredging system 200 comprises a second slurry tank 275, a second molding assembly 218, and a second suction device 290. The second slurry tank 275 is used to store second paper slurry 277. The first lower molding assembly 218 comprises a second upper mould 240 and a second lower mould 230. At least one second protrusion 250 is disposed on a second plane 245 of the second upper mould 240, and is used to correspond with at least one second cavity 210 disposed on a first plane 235 of the second lower mould 230. In the preferred embodiment, taking one larger second protrusion 250, another smaller second protrusion 250 and two corresponding larger and smaller second cavities 210 for examples, generally, the bridging effect is easily generated in the smaller second cavity 210. At least one second mesh 260 is disposed on the at least one second cavity 210 and shaped in corresponding with a shape of the at least one second cavity 210. The at least one second mesh 260 can be a device having a porous structure. The first paper slurry 177 and the second paper slurry 277 can have the same or different compositions. A mean fiber length of the first paper slurry 177 and a mean fiber length of the second paper slurry 277 are different from each other.

FIG. 5 shows an illustrative drawing of the wet paper shape dredging system 200 of FIG. 4, which is in the mold matching manner. While the second lower mould 230 is moved above the liquid surface of the second paper slurry 277, the second upper mould 240 and the second lower mould 230 are compressively matched with each other to shape a second wet pulp layer 174. The at least one second mesh 260 not only makes the second paper slurry 277 to form the second wet pulp layer 174 with a shape corresponding with the at least one second mesh 260, but also makes the second
suction device 290 draining out the unnecessary water from the second wet pulp layer 174 through the at least one second mesh 260.

[0064] FIG. 6 shows an illustrative drawing of combination of the first wet pulp layer 170 of FIG. 3 and the second wet pulp layer 174 of FIG. 5. With the size differences between the first molding assembly 118 and the second molding assembly 218, the first wet pulp layer 170 and the second wet pulp layer 174 can be completely overlapped with each other.

[0065] FIG. 7 shows an illustrative drawing of the net paper shape dredging system 100 of FIG. 3 before performed in a second mold matched manner. Returning FIG. 3, after the first wet pulp layer 170 has been formed, the first lower mold 130 is sunk below the liquid surface of the first paper slurry 177 of the first slurry tank 175 again, to perform a second dredging process in the same slurry tank. The present invention does not limit one molding assembly to perform more than twice dredging processes in the same slurry tank.

[0066] FIG. 8 shows an illustrative drawing of the wet paper shape dredging system 100 of FIG. 7, which is in the mold matching manner. While the first lower mold 130 is moved above the liquid surface of the first paper slurry 177 of the first slurry tank 175, again, the first upper mold 140 and the first lower mold 130 are matched with each other to shape a third wet pulp layer 172, by making the first paper slurry 177 to form the third wet pulp layer 172 on the first wet pulp layer 170. Although the third wet pulp layer 172 and the first wet pulp layer 170 have different sizes from each other, they are tightly combined with each other.

[0067] FIG. 9 shows an illustrative drawing of a wet paper shape dredging system 300 before preformed in a mold matching manner, according to a third preferred embodiment of the present invention. A difference from the first preferred embodiment is: the first molding assembly 118 is further sunk into the second slurry tank 275 in the third preferred embodiment. Following FIG. 3, after the first wet pulp layer 170 has been formed, the first lower mold 130 is sunk below the liquid surface of the second paper slurry 277 of the second slurry tank 275, again, the first upper mold 140 and the first lower mold 130 are matched with each other to shape a fourth wet pulp layer 173, by making the second paper slurry 277 to form the fourth wet pulp layer 173 on the first wet pulp layer 170. Although the fourth wet pulp layer 173 and the first wet pulp layer 170 have different sizes from each other, they are tightly combined with each other. In the present invention, the first suction device 190 and the second suction device 290 are just for description, in actual operation, the first molding assembly 118 can work with the second suction device 290, and the first lower molding assembly 218 can work with the first suction device 190.

[0069] Please refer to FIGS. 11 and 12. FIG. 11 shows a stereoscopic illustrative drawing of a first molding assembly of a net paper shape dredging system 400 according to a fourth preferred embodiment of the present invention. FIG. 12 shows an illustrative drawing of the first molding assembly of the wet paper shape dredging system 400 before preformed in a mold matching manner, according to the fourth preferred embodiment of the present invention. The wet paper shape dredging system 400 comprises a first slurry tank 175, a first molding assembly 118, an extension device 310, and a first suction device 190. The first slurry tank 175 is used to store first paper slurry 177. The first molding assembly 118 comprises a first upper mold 140 and a first lower mold 130.

[0070] The first lower mold 130 forms a first plane 135, at least one first cavity 110 and at least one first through hole 120. The at least one first cavity 110 and the at least one first through hole 120 are disposed on the first plane 135. In the preferred embodiment, the at least one first through hole 120 is further disposed around the at least one first cavity 120 or its inner walls, but there is no limitation regarding the number of the first cavity 110, and can be added or decreased by the manufacturers on the demands. A first mesh 160 is disposed on the first plane 135 of the first lower mold 130; the mesh number of the first mesh 160 can be added or decreased according to design requirement. In other preferred embodiments, a device with porous structure is able to substitute the first mesh 160. In other preferred embodiments, overlapped multiple meshes with different mesh numbers are able to substitute the first mesh 160.

[0071] The first upper mold 140 forms a second plane 145 corresponding to the first plane 135, at least one first protrusion 150 corresponding to the at least one first cavity 110, and at least one second through hole 125. The at least one first protrusion 150 and the at least one second through hole 125 are located on the second plane 145.

[0072] The extension device 310 is used to make the second plane 145 of the first upper mold 140 pulled above or sink below the liquid surface of the first paper slurry 177 of the first slurry tank 175. While the second plane 145 of the first upper mold 140 is sunk below the liquid surface of the first paper slurry 177, to match with the first plane 135 of the first lower mold 130 below the liquid surface of the first paper slurry 177, then at least part of the paper slurry 177 forms a first wet pulp layer 170 between the second plane 145 of the first upper mold 140 and the first plane 135 of the first lower mold 130 (see FIG. 3). On the contrary, while the second plane 145 of the first upper mold 140 is pulled above the liquid surface of the first paper slurry 177, to separate the second plane 145 of the first upper mold 140 from the first plane 135 of the first lower mold 130 from each other.

[0073] The first suction device 190, such as vacuum pump, connects with the at least one second through hole 125 of the first upper mold 140 and the at least one first through hole 120 of the first lower mold 130 by wires, to perform a vacuum suction process for the first upper mold 140 and the first lower mold 130 while the molds matching. However, in different embodiments, it is possible to apply multiple first suction devices to respectively connect with the first upper mold 140 and the first lower mold 130.

[0074] Please further refer to FIGS. 12 and 13. FIG. 13 shows an illustrative drawing of the first molding assembly of FIG. 12, which is in a mold matching manner. While the extension device 310 makes the second plane 145 of the first upper mold 140 sunk below the liquid surface of the first paper slurry 177 of the first slurry tank 175, to match with the first plane 135 of the first lower mold 130 below the liquid surface of the first paper slurry 177, then at least part of the paper slurry 177 forms a first wet pulp layer 170 between the second plane 145 of the first upper mold 140 and the first plane 135 of the first lower mold 130.
[0075] Because the first lower mold 130 comprises the at least one first cavity 110, the first wet pulp layer 170 forms at least one first wet pulp cavity 1702 corresponding to the at least one first cavity 110. A cross-sectional width of the at least one first wet pulp cavity 1702 is formed in a range 0-8 mm, and preferably, the cross-sectional width is formed in a range 0-5 mm. In other words, since the specific gravity of the fiber of first paper slurry 177 is greater than water and the pressure is higher below the liquid surface, the fiber easily will accumulate in the bottom of the first wet pulp cavity 1702 instead of accumulating on the opening of the first wet pulp cavity 1702, so that no bridging effect will be occurred therein.

[0076] In other embodiments, it is possible to form a first wet pulp layer 170 by multiple mold matching processes. In other words, the first wet pulp layer 170 comprises more than two layers which have different sizes from each other but are combined with each other, tightly.

[0077] The present invention further provides a wet pulp product, which is made from the at least one first wet pulp layer 170 generated by the wet paper shape dredging system of the above embodiments.

[0078] In the present invention, no matter if a single first molding assembly or multiple first molding assemblies are used to dredge and match in a single first slurry tank or multiple first slurry tanks to form the first wet pulp layer with multiple layers, the multiple layers can be overlapped with each other with corresponding shapes.

[0079] FIG. 14 shows a flow diagram of a wet paper-shape product forming method according to a fourth preferred embodiment of the present invention.

[0080] First, performing a step S01, a first lower mold 130 is sunk into a first slurry tank 175, to dredge up a pulp body contained within a part of first paper slurry 177 of the first slurry tank 175 to a first plane 135 of the first lower mold 130 (as shown in FIG. 2). Then, performing a step S02, a second plane 145 of a first upper mold 140 is moved below a liquid surface of the first paper slurry 177 of the first slurry tank 175. Then, performing a step S03, the second plane 145 of the first upper mold 140 and the first plane 135 of the lower mold 130 are correspondingly matched with each other, below the liquid surface of the first paper slurry 177 of the first slurry tank 175 (as shown in FIG. 3). Then, performing a step S04, at least one part of the pulp body of the first paper slurry 177 forms at least one first wet pulp layer 170 between the first plane 135 of the first upper mold 130 and the second plane 145 of the lower mold 140 (as shown in FIG. 3). Then, performing a step S05, the wet paper-shape product is formed with the at least one first wet pulp layer 170.

[0081] In comparison with the prior art (matching above the liquid surface), the present invention prevents the bridging effect by matching below the liquid surface.

[0082] FIG. 15 shows a flow diagram of a wet paper-shape product forming method according to a fifth preferred embodiment of the present invention. The difference between the fifth preferred embodiment and the fourth preferred embodiment is: further performing a step S06 between the step S02 and the step S03, the step S06, water and/or moisture contained within the at least one first wet pulp layer 170 is suctioned by the at least one first through hole 120 disposed at the first lower mold 130 and/or at least one second through hole 125 disposed at the first upper mold 140, by using a first suction device 190.

[0083] FIG. 16 shows a flow diagram of a wet paper-shape product forming method according to a sixth preferred embodiment of the present invention. The difference between the sixth preferred embodiment and the fourth preferred embodiment is: further performing the steps S07 and S08 between the step S02 and the step S03, in the step S07, the first upper mold 140 and the first lower mold 130 are moved above the liquid surface of the first paper slurry 177. Then, performing the step S08, the first upper mold 140 and the first lower mold 130 are separated from each other above the liquid surface of the first paper slurry 177.

[0084] FIG. 17 shows a flow diagram of a wet paper-shape product forming method according to a seventh preferred embodiment of the present invention. The difference between the sixth preferred embodiment and the fourth preferred embodiment is: further performing a step S09 between the step S04 and the step S03, in the step S09, a heat-compression process is performed for the at least one first wet pulp layer 170.

[0085] Although the present invention has been disclosed as preferred embodiments, the scope of the claims of the present invention must be defined. The foregoing preferred embodiments are not intended to limit the present invention.

1. A wet paper shape dredging system, comprising:
   at least one slurry tank, used to store paper slurry;
   at least one molding assembly, used to dredge up a pulp body contained within the paper slurry from the at least one slurry tank and make the paper slurry to form at least two wet pulp layers within at least one molding assembly;
   and
   at least one suction device, used to acceleratively drain water and/or moisture from one of the at least two wet pulp layers.

2. The wet paper shape dredging system according to claim 1, wherein the at least one slurry tank comprises a first slurry tank and a second slurry tank, the first slurry tank is used to store first paper slurry, the second slurry tank is used to store a second paper slurry.

3. The wet paper shape dredging system according to claim 2, wherein the first paper slurry and the second paper slurry have the same or different compositions.

4. The wet paper shape dredging system according to claim 2, wherein a mean fiber length of the first paper slurry and a mean fiber length of the second paper slurry are different from each other.

5. The wet paper shape dredging system according to claim 1, wherein the at least one molding assembly comprises a first molding assembly, the first molding assembly comprises a first upper mold and a first lower mold, the first lower mold dredges up the pulp body of the paper slurry from the at least one slurry tank and then the first upper mold and the first lower mold are matched with each other to form at least two wet pulp layers between the first upper mold and the first lower mold, sequentially.

6. The wet paper shape dredging system according to claim 2, wherein the at least one molding assembly comprises a first molding assembly and a second molding assembly, the first molding assembly comprises a first upper mold and a first lower mold, the first lower mold dredges up a pulp body of the first paper slurry from the first slurry tank and then the first upper mold and the first lower mold are matched with each other to form a first wet pulp layer between the first upper mold and the first lower mold, sequentially, and the first lower molding assembly comprises a second upper mold and a
second lower mold, the second lower mold dredges up a pulp body of the second paper slurry from the second slurry tank and then the second upper mold and second the lower mold are matched with each other to form a second wet pulp layer between the second upper mold and the second lower mold, sequentially.

7. The wet paper shape dredging system according to claim 2, wherein the at least one molding assembly comprises a first molding assembly and a second molding assembly, the first molding assembly comprises a first upper mold and a first lower mold, the first lower mold dredges up a pulp body of the first paper slurry from the first slurry tank and then the first upper mold and the first lower mold are matched with each other to form a first wet pulp layer between the first upper mold and the first lower mold, and the first lower mold dredges up a pulp body of the second paper slurry from the second slurry tank and then the first upper mold and the first lower mold are matched with each other to form a second wet pulp layer between the first upper mold and the first lower mold, sequentially.

8. The wet paper shape dredging system according to claim 1, wherein the at least two wet pulp layers have different sizes but are tightly combined.

9. The wet paper shape dredging system according to claim 1, wherein the at least one molding assembly is able to form the at least one wet pulp layer with at least one wet pulp cavity, the at least one wet pulp cavity of the at least one wet pulp layer has a longest length within a range 0-8 mm on a cross-sectional part thereof.

10. The wet paper shape dredging system according to claim 9, wherein the longest length is in a range 0-6 mm.

11. A wet paper shape product according to the wet paper shape dredging system of claim 1, which comprises the at least two wet pulp layers overlapped and shaped in correspondence with each other.

12. A wet paper shape dredging system, comprising:
   a first slurry tank, used to store first paper slurry; and
   a first molding assembly, comprising:
   a first lower mold, comprising a first plane, at least one cavity and at least one first through hole formed on the first plane, the first lower mold being used to dredge up a pulp body contained within the first paper slurry from the first slurry tank; and
   a first upper mold, comprising a second plane, at least one protrusion corresponding with the at least one cavity being formed on the second plane;

wherein the second plane of the first upper mold is sunk below a liquid surface of the first paper slurry of the slurry tank to correspondingly match with the first plane of the first lower mold, under the liquid surface of the first paper slurry, so that at least one first wet pulp layer is formed with at least one part of the pulp body of the first paper slurry between the first plane of the first lower mold and the second plane of the first upper mold.

13. The wet paper shape dredging system according to claim 12, wherein the dredging system further comprises an extension device, which is used to make the second plane of the first upper mold sink below the liquid surface of the first paper slurry.

14. The wet paper shape dredging system according to claim 12, wherein the dredging system further comprises at least one first suction device, which is used to acceleratively release the water and/or moisture from the at least one first wet pulp layer.

15. The wet paper shape dredging system according to claim 12, wherein the dredging system further comprises at least one first mesh, which is disposed on the first plane and shaped correspondingly to a shape of the first plane and the at least one cavity, the first mesh is used to leave the at least one first wet pulp layer thereon to prevent the at least one first wet pulp layer from entering at the at least one first through hole, in a manner of avoiding choke of the at least one first through hole releasing the water and/or moisture of the at least one first wet pulp layer.

16. The wet paper shape dredging system according to claim 12, wherein the at least one first wet pulp layer comprises at least two layers which have different sizes but tightly combined with each other.

17. The wet paper shape dredging system according to claim 12, wherein the at least one first wet pulp layer has at least one first wet pulp cavity formed correspondingly between the first upper mold and the first lower mold, a horizontal cross-sectional width of the at least one first wet pulp cavity of the at least one first wet pulp layer is formed in a range 0-8 mm.

18. The wet paper shape dredging system according to claim 12, wherein the horizontal cross-sectional width is formed in a range 0-6 mm.

19. A paper-shape product, which is made from the at least one first wet pulp layer generated by the wet paper shape dredging system according to claim 12.

20. The paper-shape product according to claim 19, wherein the at least one first wet pulp layer comprises a plurality of first wet pulp layers overlapped with each other and shaped in correspondence with each other.

21. A wet paper-shape product forming method, comprising:
   making a first lower mold sink into a first slurry tank, to dredge up a pulp body contained within first paper slurry of the first slurry tank to a first plane of the first lower mold;
   moving a second plane of a first upper mold below a liquid surface of the first paper slurry;
   correspondingly matching the second plane of the first upper mold and the first plane of the lower mold below the liquid surface of the first paper slurry;
   forming at least one first wet pulp layer by at least one part of the pulp body of the first paper slurry between the first plane of the first upper mold and the second plane of the lower mold; and
   forming the wet paper-shape product with the to least one first wet pulp layer.

22. The wet paper-shape product forming method according to claim 21, further comprising: suctioning water and/or moisture contained within the at least one first wet pulp layer by at least one first through hole disposed at the first lower mold and/or at least one second through hole disposed at the first upper mold, by using a first suction device.

23. The wet paper-shape product forming method according to claim 21, wherein after forming at least one first wet pulp layer by at least one part of the pulp body of the first slurry between the first plane of the first upper mold and the second plane of the lower mold, the method further comprising:
moving the first upper mold and the first lower mold above the liquid surface of the first paper slurry; and separating the first upper mold from the second lower mold, above the liquid surface of the first paper slurry.

24. The wet paper-shape product forming method according to claim 21, further comprising: performing a heat-compression process for the at least one first wet pulp layer.

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