What is claimed is:

[CLAIM 1]

An assembly for separating tramp metals from liquid raw materials, comprising:

a first device for separating tramp metals from liquid raw materials, comprising:

a first body unit including a first tank having an open top side, a close bottom side, a first inlet, and a first outlet, the first tank further defining a first space so that the liquid raw materials can be introduced from the first inlet, passed through the first space and flowed out from the first outlet;

a first holding unit including a first cover with a plurality of holes and a plurality of first non-magnetic holders, the first cover secured on the open top side of the first tank and having an upper surface and a lower surface, each of the first non-magnetic holders having a first holding body and an opening disposed on one end of the first holding body, the first non-magnetic holders disposed on the lower surface of the first cover in a spaced manner and in a way that each of the openings thereof corresponds to each of the holes of the first cover and the first holding bodies thereof are received in the first space of the first tank;

a first magnetic unit including a first base with an upper side and a lower side, a plurality of first magnet members mounted on the lower side of the first base in a spaced manner and a first enclosure having a telescopic wall, a second space defined by the telescopic wall, an upper end connected to the lower side of the first base and a lower end connected to the upper surface of the first cover, the first magnetic unit

coupled to the first tank in such a way that can move back and forth between a first and a second position, when the first magnetic unit is located at the first position, the telescopic wall of the first enclosure is in a compressed state and each of the first magnetic members inserts into the first holding body of each of the first non-magnetic holders through the opening thereof and when the first magnetic unit is located at the second position, the telescopic wall of the first enclosure is in an extended state so that the first magnet members are received in the second space thereof;

a first rinsing unit including a first injector fixed on the inner surface of the first tank for introducing a rinsing liquid from outside to the first injector to rinse the first non-magnetic holders for removing the tramp metals attracted on the surface of each of the first non-magnetic holders when the first magnetic unit is located at the second position; and

a first driving unit coupled respectively to the first tank and the first magnetic unit for driving the first magnet unit to move back and forth between the first and second positions relative to the first tank;

a second device for separating tramp metals from liquid raw materials, comprising:

a second body unit including a second tank having an open top side, a close bottom side, a second inlet, and a second outlet, the second tank further defining a first space so that the liquid raw materials can be introduced from the second inlet, passed through the first space and flowed out from the second outlet;

a second holding unit including a second cover with a plurality of holes and a plurality of second non-magnetic holders, the second cover secured on the open top

side of the second tank and having an upper surface and a lower surface, each of the second non-magnetic holders having a second holding body and an opening disposed on one end of the second holding body, the second non-magnetic holders disposed on the lower surface of the second cover in a spaced manner and in a way that each of the openings thereof corresponds to each of the holes of the second cover and the second holding bodies thereof are received in the first space of the second tank;

a second magnetic unit including a second base with an upper side and a lower side, a plurality of second magnet members mounted on the lower side of the second base in a spaced manner and a second enclosure having a telescopic wall, a second space defined by the telescopic wall, an upper end connected to the lower side of the second base and a lower end connected to the upper surface of the second cover, the second magnetic unit coupled to the second tank in such a way that can move back and forth between a first and a second position, when the second magnetic unit is located at the first position, the telescopic wall of the second enclosure is in a compressed state and each of the second magnetic members inserts into the second holding body of each of the second non-magnetic holders through the opening thereof and when the second magnetic unit is located at the second position, the telescopic wall of the second enclosure is in an extended state so that the second magnet members are received in the second space thereof;

a second rinsing unit including a second injector fixed on the inner surface of the second tank for introducing a rinsing liquid from outside to the second injector to rinse the second non-magnetic holders for removing the tramp metals attracted on the

surface of each of the second non-magnetic holders when the second magnetic unit is located at the second position; and

a second driving unit coupled respectively to the second tank and the second magnetic unit for driving the second magnet unit to move back and forth between the first and second positions relative to the second tank;

a main inlet respectively connected with the first inlet of the first device and the second inlet of the second device;

a main outlet respectively connected with the first outlet of the first device and the second outlet of the second device;

a first feed-in valve unit disposed on the first inlet of the first device;

a first feed-out valve unit disposed on the first outlet of the first device;

a second feed-in valve unit disposed on the second inlet of the second device;

a second feed-out valve unit disposed on the second outlet of the second device; and

a control means respectively coupled with the first driving unit and all the valve units of the first device and the second driving unit and all the valve units of the second device so that the first and second devices can be operated in turn.

[CLAIM 2]

The assembly for separating tramp metals from liquid raw materials of claim 1, wherein the first tank of the first device further includes a first discharge port disposed at the close bottom side thereof and the second tank of the second device further includes a second discharge port disposed at the close bottom side thereof.

[CLAIM 3]

The assembly for separating tramp metals from liquid raw materials of claim 2, further comprising a third discharge valve unit disposed on a third path between the first discharge port and a first storage tank, a fourth discharge valve unit disposed on a fourth path between the first discharge port and a second storage tank; a fifth discharge valve unit disposed on a fifth path between the second discharge port and the first storage tank and a sixth discharge valve unit disposed on a sixth path between the second discharge port and the second storage tank, and all of the discharge valve units are coupled with the control means.

[CLAIM 4]

A method for separating tramp metals from liquid raw materials which is carried out by the assembly of claim 3, the method comprising the following steps:

closing the second inlet by the second feed-in valve unit and the second outlet by the second feed-out valve unit;

locating the first magnetic unit of the first device in the first position;

closing the third and fourth path by the third and fourth discharge valve unit;

opening the first inlet by the first feed-in valve unit and the first outlet by the first feed-out valve unit;

feeding-in the liquid raw materials from the main inlet and the first inlet into the first space of the first tank and feeding-out it from the first outlet and the main outlet so that when the liquid raw materials pass through the first space of the first tank, the tramp metals thereof are attracted on the surface of each of the first non-magnetic holders;

closing the first feed-in valve unit and the first feed-out valve unit after the previous step is performed for a first predetermined time;

opening the third path by the third discharge valve unit;

discharging the liquid raw materials remained in the first space of the first tank from the third path to the first storage tank;

closing the third path by the third discharge valve unit;

driving the first magnetic unit by the first driving unit from the first position to the second position;

introducing the liquid raw materials stored in the first storage tank as a rinsing liquid to the first injector to rinse the first non-magnetic holders for removing the tramp metals attracted on the surface thereof;

unintroducing the rinsing liquid after the previous step is performed for a second predetermined time;

opening the fourth path by the fourth discharge valve unit;

discharging the rinsing liquid remained in the first space of the first tank from the fourth path to the second storage tank;

closing the first inlet by the first feed-in valve unit and the first outlet by the first feed-out valve unit;

locating the second magnetic unit of the second device in the first position;

closing the fifth and sixth paths by the fifth and sixth discharge valve unit;

opening the second inlet by the second feed-in valve unit and the second outlet by the second feed-out valve unit;

feeding-in the liquid raw materials from the main inlet and the second inlet into the first space of the second tank and feeding-out it from the second outlet and the main outlet so that when the liquid raw materials pass through the first space of the second tank, the tramp metals thereof are attracted on the surface of each of the second non-magnetic holders;

closing the second inlet by the second feed-in valve unit and the second outlet by the second feed-out valve unit after the previous step is performed for the first predetermined time;

opening the fifth path discharge port by the fifth discharge valve unit;

discharging the liquid raw materials remained in the first space of the second tank from the fifth path to the first storage tank;

closing the fifth path by the fifth discharge valve unit;

driving the second magnetic unit by the second driving unit from the first position to the second position;

introducing the liquid raw materials stored in the first storage tank as a rinsing liquid to the second injector to rinse the second non-magnetic holders for removing the tramp metals attracted on the surface thereof;

unintroducing the rinsing liquid after the previous step is performed for the second predetermined time; and

opening the sixth path by the sixth discharge valve unit;

discharging the rinsing liquid remained in the first space of the second tank from the sixth path to the second storage tank; and

driving the first magnetic unit by the first driving unit from the second position to the first position for re-operating out the method.