CLAIMS

1. An electroslag welding method, comprising:

feeding a flux to a slag bath in electroslag welding so that a length of a welding wire from a tip of a contact tip to the slag bath is equal to a predetermined length;

adjusting a travelling speed of a travelling carriage having a welding torch and a slidable backing plate under a welding condition of a constant wire feeding speed during the welding so that a predetermined relation between a welding current and a reference current value is satisfied; and

performing welding while keeping a depth of the slag bath at a predetermined depth.

2. An electroslag welding apparatus, comprising:

a welding torch having a contact tip that feeds electric power to a welding wire;

a slidable backing plate;

a travelling carriage having the welding torch and the slidable backing plate;

a travelling carriage controlling device;

a slag bath detector;

a flux feeding device; and

a flux feed controlling device; wherein:

the slag bath detector is configured to detect a slag bath when the slag bath rises to a position of a predetermined length from a tip of the contact tip;

in order to make a length of the welding wire from the tip of the contact tip to the slag bath equal to the predetermined length, the flux feed controlling device is configured to control the flux feeding device so as to stop feeding a flux when the slag bath detector detects the slag bath, and so as to feed the flux when the slag bath detector does not detect the slag bath;

the travelling carriage controlling device is configured to control a travelling speed of the travelling carriage under a welding condition of a constant wire feeding speed during the welding so that a predetermined relation between a welding current

and a reference current value determined in accordance with a wire feeding speed is satisfied; and

the electroslag welding apparatus is capable of performing welding while keeping a depth of the slag bath at a predetermined depth.

3. The electroslag welding apparatus according to claim 2, wherein:

the travelling carriage controlling device is configured to control so as to increase the travelling speed of the travelling carriage when the welding current is larger than the reference current value as the predetermined relation and so as to decrease the travelling speed of the travelling carriage when the welding current is smaller than the reference current value as the predetermined relation.

4. The electroslag welding apparatus according to claim 2, wherein:

the slag bath detector is configured to detect a welding voltage when a detection terminal of the slag bath detector comes into contact with the slag bath, thereby detecting the slag bath.

5. The electroslag welding apparatus according to claim 4, wherein:

the slag bath detector is configured to process the detected welding voltage by a filter having a time constant half to twice a weaving period, thereby determining whether the slag bath has been detected or not.

6. The electroslag welding apparatus according to claim 4, wherein:

the detection terminal is connected to the welding torch.

7. The electrocslag welding apparatus according to claim 2, wherein:

the slag bath detector is configured to apply a voltage to a detection terminal of the slag bath detector from a DC power supply through a resistor to detect the slag bath based on a fact that the voltage of the detection terminal drops down when the detection terminal comes into contact with the slag bath.

8. The electroslag welding apparatus according to claim 2, wherein:

the slag bath detector has a photosensor and is configured to detect light from the slag bath to detect the slag bath.

9. The electroslag welding apparatus according to claim 2, wherein:

the flux feeding device is configured to feed a flux by a valve driven by a solenoid.

10. The electroslag welding apparatus according to claim 2, wherein:

the flux feeding device is configured to feed a flux by a screw driven by a motor.

11. The electroslag welding apparatus according to claim 2, wherein:

when the wire feeding speed is changed, the reference current value is automatically changed based on a predetermined function expressing a relation between the wire feeding speed and the reference current value.

12. The electroslag welding apparatus according to claim 11, wherein:

the reference current value is determined depending on a kind of the welding wire based on the function predetermined in accordance with the kind of the welding wire.