Claims

1. A dropdown flood barrier comprising:

at least one panel and an associated counterweight, the panel configured to be movable between an elevated position and a lowered position in cooperation with the counterweight; and

at least one rotatable drive coupled to the panel, and is configured such that rotation of the rotatable drive enables the panel to be moved from the elevated position to the lowered position, the rotatable drive includes a brake,

wherein the brake is arranged to exert a force against the rotation of the rotatable drive to decrease a speed of the rotation when the speed of the rotation exceeds a predetermined threshold, the brake being retractable from the rotatable drive when the speed of the rotation is decreased below the predetermined threshold; and

wherein in use, the rotatable drive is activated to enable the panel to controllably move under its own weight from the elevated position to the lowered position to form a barrier against flood water, the controllable movement of the panel enabled by the brake of the rotatable drive and the counterweight.

2. The flood barrier of claim 1, wherein the panel is arranged intermediate two member posts.

3. The flood barrier of claim 2, wherein the member posts are included as part of the flood barrier, which is to be installed across a canal or a river.

4. The flood barrier of claim 2, wherein the member posts are structural members at an entrance of a building at where the flood barrier is to be installed.

5. The flood barrier of any preceding claims, wherein the panel further includes a plurality of seals having corrugated surfaces to interface with the member posts to enable the panel to form the barrier against the flood water when in the lowered position.

6. The flood barrier of claim 5, wherein each seal has in a rest condition a generally D-shaped cross-sectional area.

7. The flood barrier of claim 5 or 6, wherein each seal is a Thermoplastic-Vulcanizers (TPV) Ethylene-Propylene-Diene-Monomer (EPDM) seal.

8. The flood barrier of claim 7, wherein each seal has an operating temperature range of between -40 °C and 130 °C.

9. The flood barrier of claim 5, wherein the plurality of seals are arranged at edges of the panel.

10. The flood barrier of claim 9, wherein at least two layers of seals are arranged at each edge of the panel.

11. The flood barrier of any preceding claims, wherein the at least one panel includes a plurality of panels configured in a cooperative arrangement to collectively form the flood barrier.

12. The flood barrier of any preceding claims, wherein the panel is formed from steel structural members.

13. The flood barrier of any preceding claims, wherein the rotatable drive is coupled to the panel using a plurality of stainless steel wire ropes.

14. The flood barrier of claim 1, wherein the counterweight is formed from steel, and is arranged in a tubular configuration.

15. The flood barrier of claim 1, wherein the counterweight is formed from casted lead ingots, and is arranged in a tubular configuration.

16. The flood barrier of claim 1, wherein the counterweight is formed from steel, and is arranged in a cage configuration.

17. The flood barrier of claim 4, further comprising a threshold plate for positioning at the floor of the entrance to interface with the panel when the panel is in the lowered position.

18. The flood barrier of any preceding claims, wherein the rotatable drive further comprises at least one electromagnetic lock configured to be electrically activated to inhibit rotation of the rotatable drive to hold the panel in the elevated position, and to be electrically deactivated to permit rotation of the rotatable drive to enable the panel to be moved to the lowered position.

19. The flood barrier of any preceding claims, wherein the brake includes brake pads arranged to be extendable centrifugally from the main body of the brake to contact against a surface of the rotatable drive for exerting the force, when the speed of the rotation of the rotatable drive exceeds the predetermined threshold.

20. A method of operating a dropdown flood barrier, which includes at least one panel and an associated counterweight, the panel configured to be movable between an elevated position and a lowered position in cooperation with the counterweight, at least one rotatable drive coupled to the panel, and is configured such that rotation of the rotatable drive enables the panel to be moved from the elevated position to the lowered position, the method comprises:

activating the rotatable drive to enable the panel to controllably move under its own weight from the elevated position to the lowered position to form a barrier against flood water,

wherein the rotatable drive includes a brake arranged to exert a force against the rotation of the rotatable drive when a speed of the rotation exceeds a predetermined threshold, the brake being retractable from the rotatable drive when the speed of the rotation is decreased below the predetermined threshold; and

wherein the controllable movement of the panel is enabled by the brake of the rotatable drive and the counterweight.