CLAIMS

1. A device for releasing and resetting a fire and smoke barrier, which is used for actuating a barrier release member, the device comprising:

an electromagnetic clutch module, comprising an electromagnetic attraction unit and a clutch member, the electromagnetic attraction unit being provided to attract and hold the clutch member;

a push rod ejecting module, coupled to the clutch member and storing an elastic potential energy sufficient to push the barrier release member;

a push rod resetting module, coupled to the clutch member and provided to reset the push rod ejecting module;

wherein when the electromagnetic attraction unit is electrically deenergized, the clutch member is released by the electromagnetic attraction unit, and the barrier release member is pushed by the push rod ejecting module with aid of the elastic potential energy; when the push rod resetting module and the electromagnetic clutch module are electrically energized, the clutch member is attracted and held by the electromagnetic attraction unit, and the push rod ejecting module is reset by the push rod resetting module.

2. The device of claim 1, wherein the push rod resetting module includes a motor and a resetting gear, the push rod ejecting module includes a push rod and a compression spring, the push rod is provided with a rack portion, and the compression spring stores the elastic potential energy and is abutted against the push rod; the motor is coupled to the resetting gear, the resetting gear is engaged with the rack portion of the push rod; and when the resetting gear is rotated by the motor, the push rod is biased backwardly against the elastic potential energy by the resetting gear.

3. The device of claim 2, wherein the push rod resetting module further includes a worm and a resetting shaft, the resetting shaft is provided with a worm gear, the worm is connected to the motor and engaged with the worm gear, and the resetting gear is fitted on the resetting shaft.

4. The device of claim 3, further comprising a planetary gear set, which includes a ring gear, a plurality of planetary gears and a sun gear, wherein the ring gear is disposed on the clutch member, the plurality of planetary gears are pivotally connected to a lateral end face of the resetting gear and engaged with the ring gear, the sun gear is engaged with the plurality of planetary gears and connected to the resetting shaft.

5. The device of claim 4, wherein when the electromagnetic attraction unit is electrically deenergized, the push rod is biased by the elastic potential energy of the compression spring so that the resetting gear is rotated, the plurality of planetary gears are rotated by the resetting gear, and thus the clutch member is rotated; when the push rod resetting module and the electromagnetic clutch module are electrically energized, the resetting shaft is rotated by the motor via the worm and the worm gear, and the plurality of planetary gears and the resetting gear are driven by the sun gear so as to reset the push rod.

6. A device for releasing and resetting of a fire and smoke barrier, which is used for actuating a barrier release member, the device comprising:

a push rod ejecting module, storing an elastic potential energy sufficient to push the barrier release member;

an electromagnetic holding module, coupled to the push rod ejecting module; and

a push rod resetting module, coupled to the push rod ejecting module;

wherein when the electromagnetic holding module is electrically deenergized, the barrier release member is pushed by the push rod ejecting module with aide of the elastic potential energy; when the push rod resetting module and the electromagnetic holding module are electrically energized, the push rod ejecting module is reset by the push rod resetting module; the push rod ejecting module is attracted and held by the electromagnetic holding module;

wherein the push rod resetting module includes a motor and a resetting gear, the push rod ejecting module includes a push rod and a compression spring, the push rod is provided with a rack portion, and the compression spring stores the elastic potential energy and is abutted against

the push rod; the motor is coupled to the resetting gear, the resetting gear is engaged with the rack portion of the push rod; and when the resetting gear is rotated by the motor, the push rod is biased backwardly against the elastic potential energy by the resetting gear.

7. The device of claim 6, wherein the push rod resetting module further includes a first bevel gear, a second bevel gear and a transmission shaft, the second bevel gear is disposed on the transmission shaft, the first bevel gear is connected to the motor and engaged with the second bevel gear, and the resetting gear set is disposed on the transmission shaft.

8. The device of claim 7, further comprising a warning module, wherein the warning module includes a buzzer, a first cam and a first micro switch, the first micro switch is electrically connected to the buzzer, the first cam is disposed on the transmission shaft; the push rod resetting module further includes a second cam and a second micro switch, the second cam is disposed on the transmission shaft, the second micro switch is electrically connected to the motor, wherein when the push rod ejecting module is reset by the push rod resetting module, the first cam and the second cam are rotated by the transmission shaft; when the first micro switch is triggered by the first cam, the buzzer is turned on or off, and when the second micro switch is triggered by the second cam, the motor is turned off.

9. The device of claim 8, further comprising a push rod stopping module, which includes a stop lever and a third micro switch, wherein the stop lever is capable of selectively blocking a front end of the push rod or unblocking the front end of the push rod so that the barrier release member is able to be actuated; when the front end of the push rod is blocked, the third micro switch is triggered so as to turn on the buzzer.