Feb. 13, 1962 E. R. GLENN 3,020,580

DOOR CLOSER

Filed Oct. 21, 1959

FIG. 1.

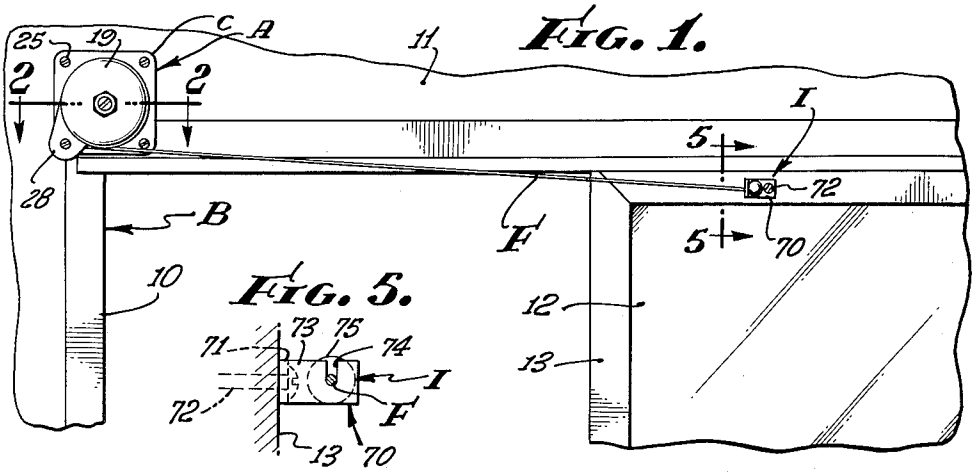


FIG. 5.

FIG. 2.

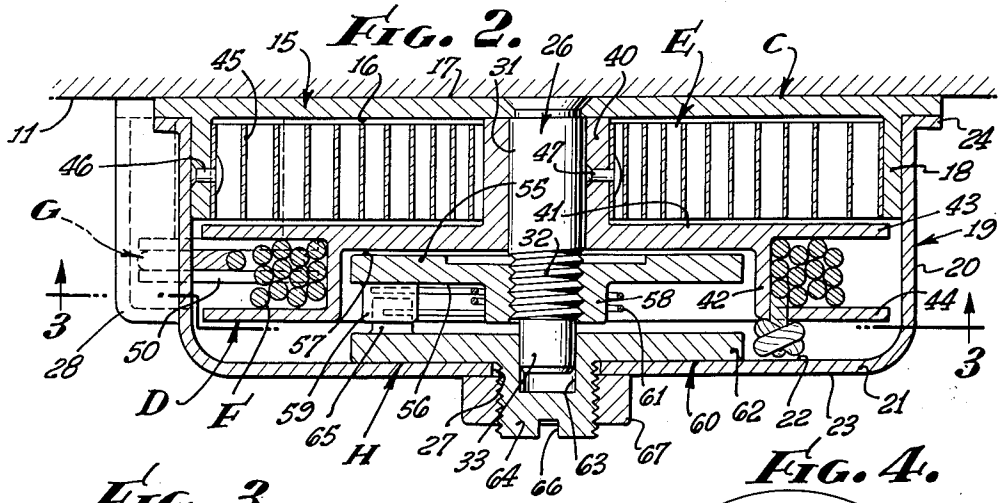


FIG. 3.

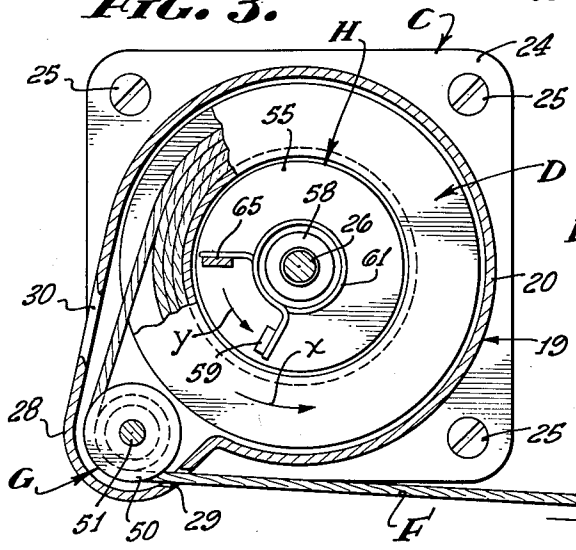
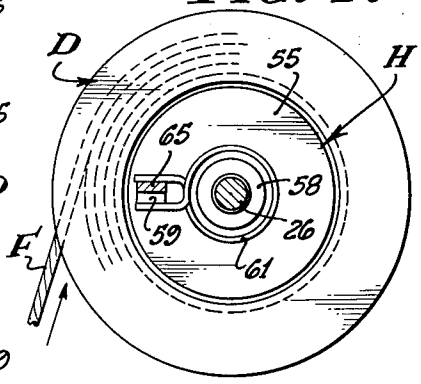


FIG. 4.



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DOOR CLOSER

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10 Claims. (Cl. 16—61)

This invention relates to a door closer and is more particularly concerned with a closer for use in connection with sliding doors.

Sliding doors, that is, doors supported or mounted to shift laterally on rails or tracks, have been in use for many years. In recent years the use of such doors has materially increased, to the end that few new structures are being built where sliding doors are not used.

The most common uses of such doors are in wardrobes and as outside doors opening to backyards, patios, and the like. The sliding doors which are used in outside door openings are most commonly glass doors, that is, the doors consist of plate glass panels mounted in suitable frames. Such a door frame is suitably supported on rails so that the door panel can be shifted laterally into and out of engagement over the door opening.

In many situations, outside sliding glass door structures such as referred to above, are also provided with a suitable sliding screen door which can be closed when the glass door is left open for the purpose of ventilation and which serves to prevent insects and other pests from entering the building from the outside thereof.

As in the case of conventional pivotally hung doors, it is desirable that sliding doors be kept closed when not in use, or in the case of a sliding door construction provided with a screen door, that the screen door be kept closed except when a person is passing through the opening.

In the case of conventionally pivotally hung doors, door closers have been provided for many years, the most common of which involves a spring-loaded pneumatic cylinder and piston unit which will allow the door to which it is related to be opened rapidly and with little effort, and such that it urges the door back to its closed position slowly, and so that the door will not slam shut in such a manner that it might be damaged or might cause injury to persons attempting to pass through the opening.

The above sequence of operation has proven to be the most satisfactory.

Attempts have been made to provide door closers for sliding doors, which have the same or similar sequence of operation as the conventional door closer for pivotally hung doors, but such attempts have been found wanting in one or more ways and to the end that until the development of the present invention, a satisfactory door closer for sliding doors had not been provided and made available to the public.

Spring-loaded pneumatic cylinder and piston type closers have been made available for sliding doors, but are extremely costly and have proved to be unsatisfactory, due to the fact that the cylinders must be of sufficient longitudinal extent to allow for the door to be shifted from its fully closed position to its fully open position. In other words, the cylinder must be as long, if not longer, than the lateral extent of the door.

Other means, such as spring and/or weight-loaded spool and line type closers have been tried, but have been unsatisfactory due to the fact that a suitable braking means has not been provided therefor, so that when the doors to which they are related are opened and then released, the doors are pulled closed rapidly and, in effect, slammed, oftentimes damaging the doors and subjecting the users to undue risk of bodily harm.

An object of the present invention is to provide a novel door closer applicable to sliding doors and which is such as will allow the door to which it is related to be opened fully and easily, and which is such that it will close the door slowly and evenly.

Another object of my invention is to provide a closer of the character referred to which is small, neat, and compact, and which is such that it can be easily and quickly engaged and related to any conventional sliding door construction, without the necessity of rebuilding or modifying the door construction in any manner.

A further object of the present invention is to provide a closer construction involving a spring-loaded spool adapted to be mounted on the door or on the adjacent door frame or wall, a tow line carried by the spool and having a free end connected with the door frame or wall, or connected with the door, whichever the case may be, and spring-loaded braking means related to the spool and operable to allow for free turning of the spool when the door is being opened and the line is being drawn from the spool against its resistance, and to brake and slow the turning of the spool in the opposite direction when the door is being closed and when the line is being wound onto the spool.

Another object of the invention is to provide a braking means which is adjustable to limit the rate of rotation of the spool when the line is being wound thereon, and to thereby limit and control the rate at which the door with which the construction is related closes.

It is a further object of my invention to provide novel means for securing the free end of the tow line to the structure to which it is related, and so that the construction can be easily and conveniently put into or taken out of service, as circumstances require.

An object of the present invention is to provide a door closer of the character referred to which is easy and economical to manufacture, and a closer which is both highly effective and dependable in operation.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of my invention, throughout which description reference is made to the accompanying drawing, in which:

FIG. 1 is a side elevational view of a portion of a sliding door construction with the closer that I provide related thereto;

FIG. 2 is an enlarged sectional view of my closer construction taken as indicated by line 2—2 on FIG. 1;

FIG. 3 is a sectional view taken as indicated by line 3—3 on FIG. 2;

FIG. 4 is a view of a portion of the structure shown in FIG. 3 and showing it in a different operative position; and

FIG. 5 is a detail view of the connection of the tow line to the door taken as indicated by line 5—5 on FIG. 1.

The closer A provided by the present invention is adapted to be related to a sliding door construction B to allow for easy sliding and opening of the door and is operable to slowly close the door.

The door construction B that I have illustrated includes an opening frame 10 engaged in an opening in a wall 11, a pane of plate glass 12 and a door frame 13 about the pane and engaged in the opening frame 10. The opening frame 10 is provided with suitable ways and/or rails (not shown), along its top and/or bottom sides and with which the door frame is engaged.

The closer A can be related to any sliding door construction, with the result that the door construction B, shown, can be varied widely. Since the particular construction of the door does not affect the novelty of the invention, I will not burden this disclosure with further

detailed description or showing of the door construction B.

The closer A that I provide is shown as including, generally, a body C, a spool D rotatably supported in the body and connected with the spool, a tow line F wound about the spool and having a free end extending therefrom, guide means G carried by the body and adapted to guide the line onto and off of the spool and through the body, and brake means H carried by the body and engageable with the spool and operable to let the spool turn freely in one direction and to brake and slow turning of the spool in the other direction.

In addition to the foregoing, the closer construction that I provide further includes a suitable coupling means I to couple the free end of the tow line to the part of the door construction with which it is related, as, in the case illustrated, to the door frame 13.

The body C is a sectional unit having a flat base 15 with front and back sides 16 and 17 and an annular forwardly projecting spring retaining flange 18, and a rearwardly opening cup-like shell 19 slidably engaged about the flange 18 and positioned adjacent the front of the base and so that the base closes the shell.

The base 15 of the body is substantially square in configuration and is provided at its corners with fastener receiving openings.

The cup-like shell 19 has a cylindrical side wall 20, a front wall 21 with inner and outer faces 22 and 23, and a rear radially outwardly projecting mounting flange 24 at the rearmost edge of the side wall. The flange 24 is substantially square in plane configuration and has fasteners receiving openings at its corners.

The shell is slidably engaged about the flange 18 on the base so that its flange 24 abuts the base and the fastener receiving openings in the said flange and base are in register with each other.

The body C is adapted to be secured to the wall 11 with the rear surface 17 of the base 15 in flat bearing engagement on the wall, by means of suitable screw fasteners 25 engaged through the openings in the corners of the flange and base. It will be noted that the fasteners 25, in addition to mounting the body to the wall, also serves to secure the base and shell elements of the body in fixed relationship with each other.

In addition to the foregoing, the base 15 of the body is provided with a central, axially disposed, forwardly projecting shaft 26, which shaft is a separate part suitably applied and fixed to the base. The shaft is adapted to support and carry the spool D and elements of the braking means H, as will be hereinafter described.

The shell 19 of the body, in addition to the foregoing, is provided with a central opening 27 in its outer wall 21 to register with the shaft 26 and to accommodate elements of the braking means H, as will be described, and is provided with a substantially radially outwardly projecting, radially inwardly opening, blister-like enlargement 28 to accommodate the guide means G. The enlargement in the particular form of the invention shown extends diagonally relative to the base, and extends over and beyond one corner of the base, and eliminates one corner of the flange 24 of the shell. The enlargement 28 is provided with horizontally and vertically disposed tow-line receiving openings 29 and 30 extending on axes at right angles to each other and spaced radially outwardly of the side wall of the shell.

The shaft 26 carried by the base of the body C has a straight cylindrical inner portion 31, a threaded middle portion 32 and a cylindrical outer portion 33 of reduced diameter.

The spring retaining flange 18 on the base projects from the base a limited extent and terminates at a point spaced rearwardly of the front wall of the shell when the shell is fully engaged on the base.

The spool D is shown as including, an elongate, tubular hub portion 40 having inner and outer ends and slidably engaged on the cylindrical inner portion of the shaft 26 to be rotatably carried thereby, a radially outwardly projecting flange-like disc portion 41 on the outer end of the hub portion 40, an annular, axially forwardly projecting line carrying rim 42 about the outer periphery of the disc portion, and axially spaced, radially outwardly projecting inner and outer line retaining flanges 43 and 44 on the rim. The inner flange 43 is, in effect, a continuation of the disc portion 41 and is of such extent that its outer periphery overlies the forward edge of the spring retaining flange 18 on the base of the body.

The spring means E involves a simple, convolutely wound length of strap spring 45 engaged about the hub 40 of the spool, within the flange 18 on the base and between the base and the disc portion of the spool. The outer end of the spring 45 is fixed to the flange 18 on the base by means of a suitable fastener 46, such as a split rivet, and its inner end is fixed to the hub portion of the spool by means of a fastener 47.

With the above relationship of parts, it will be apparent that the spring 45 is suitably housed and retained. It will also be apparent that upon rotation of the spool in one direction the spring is wound up to normally yieldingly urge or rotate the spool in the opposite direction, when the spool is released.

The tow line F is a simple nylon cord, or the like, and has an inner end fixed to the spool D, as by inserting it through an opening in the outer flange 44 of the spool and knotting it. The line F is wound about the rim 42 of the spool between the flanges 43 and 44 thereof and has an outer end portion extending from the spool, about the guide means G in one direction or the other, as will be described, out through one or the other of the openings 29 and 30 in the enlargement on the shell 19, and thence to the coupling means I, to be later described.

The guide means G includes a simple sheave 50 rotatably carried on a shaft 51 mounted in the blister-like enlargement 28 on the shell. The shaft 51 extends on an axis parallel with and spaced radially from the axis of the spool. The sheave 50 is arranged in the enlargement 28 so as to guide the line F, which line is engaged therewith, onto and from the spool and freely through the opening 30 or 29 through which the line extends.

It will be apparent that by selectively engaging the line F over one or the other side of the sheave 50 and out through the suitable opening 29 or 30 in the enlargement 28 of the shell, the direction in which the line extends from the construction can be changed as desired, so as to facilitate installation of the construction on any sliding door construction.

The braking means H that I provide is adapted to allow for free rotation of the spool, when the line F is being drawn therefrom and the spring 45 is being wound taut, and to brake and slow rotation of the spool when it is rotating in the opposite direction by the action of the spring 45.

The means H is shown as including an axially disposed braking disc 55 having front and rear faces 56 and 57, a central, internally threaded forwardly projecting hub 58, and a forwardly projecting stop 59 on the outer face spaced radially of the hub. The disc 55 is threadedly engaged on the central portion of the shaft 26 so that its inner face establishes flat frictional bearing engagement on the outer face of the disc portion 41 of the spool D.

The means H further includes an adjustable stop means 60 to limit rearward movement of the disc into engagement with the hub, and spring means 61 acting between the disc 55 and the stop means and normally yieldingly urging the disc into engagement with the stop means and to its rearmost braking position.

The stop means 60 involves a plate 62 having a central, rearwardly opening socket 63, a central externally threaded, forwardly projecting stem 64, and a rearwardly projecting stop 65 spaced radially of the socket 63. The forward end of the stem 64 is provided with a suitable tool engaging slot 66.

In addition to the foregoing, the means 60 further includes a lock nut 67 threaded on the stem 64 to engage the front face 23 of the front wall of the shell and to draw the plate into tight locking engagement on the front wall of the shell.

The stops 59 and 65 are spaced an equal distance from the axis of the construction so that upon rotation of the disc relative to the shaft and resulting axial shifting thereof, the stop 59 is brought into and out of engagement with the stop 65.

With the above relationship of parts, it will be apparent that by rotating the plate, as by means of a tool engaged in the slot 66 in the stem, 64, the position of the stop 65 can be varied to limit rearward movement of the disc and control the resulting pressure engagement of the disc on the spool, and the stop can be set in the desired position by means of the lock nut 67.

The spring means 61 of the braking means H is a simple coil, or helically turned torsion spring having radially outwardly turned ends. The spring is engaged about the hub 58 of the disc and has its opposite ends engaging the oppositely disposed sides of the stops 59 and 65 and serving to normally yieldingly urge the stops together and to rotate the disc in a direction to advance it rearwardly into pressure engagement with the spool. The spring is only of sufficient force or strength to maintain the disc in contact with the spool, that is, to prevent the disc from rotating freely and advancing forwardly out of contact with the spool.

With the braking means H thus set, it will be apparent that when the spool and disc are turned in the direction indicated by the arrows X and Y, in FIG. 3 of the drawing, as when the tow line F is being pulled off the spool D, the frictional drag between the spool and the braking disc rotates the disc against the resistance of the spring 61 and about the shaft 26, so that the disc is advanced slightly forwardly and away from the spool, thereby substantially placing the braking means in an inoperative position.

While it is true the braking discs does not move completely out of engagement with the spool, it is moved a sufficient distance so that the frictional resistance between the disc and the spool is only proportionate or equal to the weight or strength of the spring 61 which is extremely light, as indicated above.

When the direction of rotation of the spool is reversed, as when the line is being wound onto the spool by the action of the spring means E, the frictional resistance between the disc and the spool and the action of the spring 61 rotates the disc so that the stop 59 thereof engages the stop 65 on the plate and to a position where the disc is advanced into predetermined pressure and braking engagement on the spool to slow the rate of rotation of the spool.

The coupling means I that I provide is adapted to releasably secure the outer free end of the tow line F to the door, or in the case where the closer is mounted on the door, to releasably secure the free end of the tow line to the frame 10 of the door opening, the wall 11, or some other fixed structure.

The means I includes a simple, L-shaped bracket 70 formed of strap steel and having one leg 71 secured in flat engagement on the frame 13 of the door by means of a screw fastener 72, and having its other leg 73 projecting from the door and provided with a laterally opening slot 74. The free end of the line is provided with an enlarged stop 75, which stop is shown as being spherical and larger in diametric extent than the slot 72. The line F is engaged in the slot and so that the stop 75 engages the side of the leg 73 remote from the closer, and is normally yieldingly held in engagement therewith by the action of the spring means of the closer.

It will be apparent that when it is desired to place the closer out of operation, it is a simple operation to manually engage the stop 75, draw the line F from engagement with the bracket, and allow the line to wind onto the spool until the stop engages the shell of the closer.

From the foregoing, it will be apparent that I have invented a simple, highly effective and dependable closer construction for use in connection with sliding doors, and the like, and which is easy and economical to manufacture.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any modifications or variations that may appear to those skilled in the art and fall within the scope of the following claims.

Having described my invention, I claim:

1. A door closer of the character referred to including, a body adapted to be mounted in fixed relationship to a door frame supporting a door, a spool rotatably carried by the body, a tow line wound about the spool and having an end portion extending from the spool and coupled with the door, spring means between the body and the spool to normally yieldingly rotate the spool in a direction to wind the line thereon and braking means between the body and the spool and operable to slow rotation of the spool in the direction where the line is being wound thereon and to allow for free rotation in the other direction, said braking means including a threaded shaft carried by the body, a braking disc threaded on said shaft and establishing frictional engagement with the spool and stop means limiting rotation of the disc in the direction to advance it towards the spool and spring means normally yieldingly urging the disc in the direction of rotation of the spool when the line is being wound thereon to advance the disc on the shaft and towards the spool.

2. A door closer of the character referred to including, a body adapted to be mounted in fixed relationship to a door frame supporting a door and having a shaft projecting therefrom, a spool rotatably carried by the shaft and having a flat, concentric disc portion, a tow line wound about the spool and having an end portion extending from the spool and coupled with the door, a spring means between the body and the spool to normally yieldingly rotate the spool in a direction to wind the line thereon and spring actuated braking means between the body and the spool and operable to slow rotation of the spool in the direction where the line is being wound thereon and to allow for free rotation in the other direction, said braking means including a threaded extension on the shaft, a braking disc threaded on said extension and establishing frictional engagement with the disc portion of the spool and spring means normally yieldingly advancing the disc on the extension, towards the spool and in the direction of rotation of the spool when the line is being wound thereon and stop means to limit rotation of the disc and resulting advancement into pressure engagement on the spool.

3. A door closer of the character referred to including, a body adapted to be mounted in fixed relationship to a door frame supporting a door, and having a shaft projecting therefrom, a spool rotatably carried by the shaft and having a flat concentric disc portion, a tow line wound about the spool and having an end portion extending from the spool and coupled with the door, a spring means between the body and the spool to normally yieldingly rotate the spool in a direction to wind the line thereon and including a convolutely wound spring with one end fixed to the spool and the other end fixed to the body and spring actuated braking means between the body and the spool and operable to slow rotation of the spool in the direction where the line is being wound thereon and to allow for free rotation in the other direction, said braking means including a threaded extension on the shaft, a braking disc threaded on said extension and establishing frictional engagement with the disc portion of the spool, a stop projecting from the braking disc, a second stop

connected to the body and engageable with the first-mentioned stop to limit rotation of the disc in the direction to advance it towards the spool, and spring means normally yieldingly advancing the disc on the extension, towards the spool whereby the stops engage.

4. A door closer of the character referred to including, a body adapted to be mounted in fixed relationship to a door frame supporting a door and having a shaft projecting therefrom, a spool rotatably carried by the shaft and having a flat, concentric disc portion, a tow line wound about the spool and having an end portion extending from the spool and coupled with the door, a spring means between the body and the spool to normally yieldingly rotate the spool in a direction to wind the line thereon and spring actuated braking means between the body and the spool and operable to slow rotation of the spool in the direction where the line is being wound thereon and to allow for free rotation in the other direction, said braking means including a threaded extension on the shaft, a braking disc threaded on said extension and establishing frictional engagement with the disc portion of the spool, adjustable stop means to limit rotation and advancement of the braking disc towards the spool and including a stop projecting from the braking disc, a second stop shiftably carried by the body and adapted to be engaged by the first-mentioned stop and spring means normally yieldingly advancing the disc on the extension, towards the spool and in the direction of rotation of the spool when the line is being wound thereon, said spring means for the braking means including a torsion spring with one end engaging the stop on the disc, and its other end engaging the stop on the body.

5. A door closer of the character referred to including, a body adapted to be mounted in fixed relationship to a door frame supporting a door and having a shaft projecting therefrom, a spool rotatably carried by the shaft and having a flat, concentric disc portion, a tow line wound about the spool and having an end portion extending from the spool and coupled with the door, a spring means between the body and the spool to normally yieldingly rotate the spool in a direction to wind the line thereon and spring actuated braking means between the body and the spool and operable to slow rotation of the spool in the direction where the line is being wound thereon and to allow for free rotation in the other direction, said braking means including, a threaded extension on the shaft, a braking disc threaded on said extension and establishing frictional engagement with the disc portion of the spool and stop means limiting advancement of the disc on the extension, towards the spool and in the direction of rotation of the spool when the line is being wound thereon, said stop means for the braking means including, a forwardly projecting stop on the braking disc at a point spaced radially from the axis thereof, a rearwardly projecting stop carried by the body and shiftable circumferentially about the axis of the construction and adapted to be engaged by said first-mentioned stop to limit rearward movement of the braking disc, and means for releasably holding the rearwardly projecting stop in fixed position relative to the body.

6. A door closer of the character referred to including, a body adapted to be mounted in fixed relationship to a door frame supporting a door and having a shaft projecting therefrom, a spool rotatably carried by the shaft and having a flat, concentric disc portion, a tow line wound about the spool and having an end portion extending from the spool and coupled with the door, a spring means between the body and the spool to normally yieldingly rotate the spool in a direction to wind the line thereon and spring actuated braking means between the body and the spool and operable to slow rotation of the spool in the direction where the line is being wound thereof and to allow for free rotation in the other direction, said braking means including, a threaded extension on the shaft, a braking disc threaded on said extension and establishing frictional engagement with the disc portion of the spool, stop means limiting advancing the disc on the extension, towards the spool and in the direction of rotation of the spool when the line is being wound thereon, said stop means including a stop on the disc at a point spaced radially from the axis of the spool, a second stop carried by the body and shiftable circumferentially about the axis of the shaft and adapted to be engaged by the first-mentioned stop, means for releasably holding the second stop in fixed position relative to the body and spring means related to and normally yieldingly urging the said stops together.

7. A door closer of the character referred to including, a body having a base section adapted to be mounted in fixed relationship to a door frame supporting a door, an annular spring retaining flange projecting forwardly from the plate, a shaft projecting forwardly from the plate concentric with the flange and having a cylindrical rear portion, a threaded intermediate portion and a cylindrical outer portion, and a rearwardly opening cup-like shell section having a cylindrical side wall engaged about the flange and a front wall with a central opening, a spool having an elongate, central, hub portion rotatably engaged on the rear portion of the shaft, an intermediate disc portion at one end of the hub portion and an outer line supporting portion, an elongate tow line having one end fixed to and wound about the outer portion of the spool and having its other end engaged through an opening in the shell and extending to and coupled with the door, an elongate convolutely wound spring having one end fixed to the flange on the base and its other end fixed to the hub on the spool and normally yieldingly turning the spool in the direction to wind the line thereon, a braking disc having a central hub threaded on the intermediate portion of the shaft and establishing frictional bearing engagement on the intermediate disc portion of the spool, a plate having a central outwardly projecting threaded stem and a central inwardly opening socket arranged within the shell to bear against the front wall thereof with the outer portion of the shaft engaged in the socket and with the stem projecting through the opening in the shell, a lock nut threaded on the stem to engage the front wall of the shell and hold said plate in fixed position on said wall, a forwardly projecting stop on the braking disc and spaced radially from the central axis of the disc, a rearwardly projecting stop on the plate and spaced radially from the axis of the plate and adapted to be engaged by the stop on the disc to limit rotation and rearward axial shifting of the disc and a helical torsion spring with radially outwardly projecting ends engaged between the plate and the braking disc and with its ends engaging the stops on the said plate and disc, said spring normally yieldingly turning the disc in the direction of rotation of the spool when the line is being wound thereon and advancing the stop on the disc into engagement with the stop on the plate and the disc into predetermined pressure engagement on the spool.

8. A door closer of the character referred to including, a body having a base section adapted to be mounted in fixed relationship to a door frame supporting a door, an annular spring retaining flange projecting forwardly from the plate, a shaft projecting forwardly from the plate concentric with the flange and having a cylindrical rear portion, a threaded intermediate portion and a cylindrical outer portion, and a rearwardly opening cup-like shell section having a cylindrical side wall engaged about the flange and a front wall with a central opening, a spool having an elongate, central hub portion rotatably engaged on the rear portion of the shaft, an intermediate disc portion at one end of the hub portion and an outer line supporting portion, an elongate tow line having one end fixed to and wound about the outer portion of the spool and having its other end engaged through an opening in the shell and extending to and coupled with the door, an

elongate convolutely wound spring having one end fixed to the flange on the base and its other end fixed to the hub on the spool and normally yieldingly turning the spool in the direction to wind the line thereon, a braking disc having a central hub threaded on the intermediate portion of the shaft and establishing frictional bearing engagement on the intermediate disc portion of the spool, a plate having a central outwardly projecting threaded stem and a central inwardly opening socket arranged within the shell to bear against the front wall thereof with the outer portion of the shaft engaged in the socket and with the stem projecting through the opening in the shell, a lock nut threaded on the stem to engage the front wall of the shell and hold said plate in fixed position on said wall, a forwardly projecting stop on the braking disc and spaced radially from the central axis of the disc, a rearwardly projecting stop on the plate and spaced radially from the axis of the plate and adapted to be engaged by the stop on the disc to limit rotation and rearward axial shifting of the disc and a helical torsion spring with radially outwardly projecting ends engaged between the plate and the braking disc and with its ends engaging the stops on the said plate and disc, said spring normally yieldingly turning the disc in the direction of rotation of the spool when the line is being wound thereon and advancing the stop on the disc into engagement with the stop on the plate and the disc into predetermined pressure engagement on the spool, and guide means for the line including a sheave rotatably supported in the shell on an axis parallel with the axis of the spool and spaced radially outwardly of the spool, said tow line extending from the spool over the sheave and tangentially from the sheave through the opening in the shell.

9. A door closer of the character referred to including, a body having a base section adapted to be mounted in fixed relationship to a door frame supporting a door, an annular spring retaining flange projecting forwardly from the plate, a shaft projecting forwardly from the plate concentric with the flange and having a cylindrical rear portion, a threaded intermediate portion and a cylindrical outer portion, and a rearwardly opening cup-like shell section having a cylindrical side wall engaged about the flange and a front wall with a central opening, a spool having an elongate central hub portion rotatably engaged on the rear portion of the shaft, an intermediate disc portion at one end of the hub portion and an outer line supporting portion, an elongate tow line having one end fixed to and wound about the outer portion of the spool and having its other end engaged through an opening in the shell and extending to and coupled with the door by means of a suitable coupling means, an elongate, convolutely wound spring having one end fixed to the flange on the base and its other end fixed to the hub on the spool and normally yieldingly turning the spool in the direction to wind the line thereon, a braking disc having a central hub threaded on the intermediate portion of the shaft and establishing frictional bearing engagement on the intermediate disc portion of the spool, a plate having a central inwardly opening socket arranged within the shell to bear against the front wall thereof with the outer portion of the shaft engaged in the socket and with the stem projecting through the opening in the shell, a lock nut threaded on the stem to engage the front wall of the shell and hold said plate in fixed position on said wall, a forwardly projecting stop on the braking disc and spaced radially from the central axis of the disc, a rearwardly projecting stop on the plate and spaced radially from the axis of the plate and adapted to be engaged by the stop on the disc to limit rotation and rearward axial shifting of the disc and a helical torsion spring with radially outwardly projecting ends engaged between the plate and the braking disc and with its ends engaging the stops on the said plate and disc, said spring normally yieldingly turning the disc in the direction of rotation of the spool when the line is being wound thereon and advancing the stop on the disc into engagement with the stop on the plate and the disc into predetermined pressure engagement on the spool, said coupling means including a bracket fixed to the door and having an outwardly projecting arm with a line receiving notch therein, and an enlarged stop member on the end of the line and engaging the side of the arm remote from the closer.

10. A door closer of the character referred to including, a body having a base section adapted to be mounted in fixed relationship to a door frame supporting a door, an annular spring retaining flange projecting forwardly from the plate, a shaft projecting forwardly from the plate concentric with the flange and having a cylindrical rear portion, a threaded intermediate portion and a cylindrical outer portion, and a rearwardly opening cup-like shell section having a cylindrical side wall engaged about the flange and a front wall with a central opening, a spool having an elongate, central hub portion rotatably engaged on the rear portion of the shaft, an intermediate disc portion at one end of the hub section and an outer line supporting portion, an elongate tow line having one end fixed to and wound about the outer portion of the spool and having its other end engaged through an opening in the shell and extending to and coupled with the door, an elongate convolutely wound spring having one end fixed to the flange on the base and its other end fixed to the hub on the spool and normally yieldingly turning the spool in the direction to wind the line thereon, a braking disc having a central hub threaded on the intermediate portion of the shaft and establishing frictional bearing engagement on the intermediate disc portion of the spool, a plate having a central outwardly projecting threaded stem and a central inwardly opening socket arranged within the shell to bear against the front wall thereof with the outer portion of the shaft engaged in the socket and with the stem projecting through the opening in the shell, a locknut threaded on the stem to engage the front wall of the shell and hold said plate in fixed position on said wall, a forwardly projecting stop on the braking disc and spaced radially from the central axis of the disc, a rearwardly projecting stop on the plate and spaced radially from the axis of the plate and adapted to be engaged by the stop on the disc to limit rotation and rearward axial shifting of the disc and a helical torsion spring with radially outwardly projecting ends engaged between the plate and the braking disc and with its ends engaging the stops on the said plate and disc, said spring normally yieldingly turning the disc in the direction of rotation of the spool when the line is being wound thereon and advancing the stop on the disc into engagement with the stop on the plate and the disc into predetermined pressure engagement on the spool, and guide means for the line including a sheave rotatably supported in the shell on an axis parallel with the axis of the spool and spaced radially outwardly of the spool, said tow line extending from the spool over the sheave and tangentially from the sheave through the opening in the shell, said coupling means including a bracket fixed to the door and having an outwardly projecting arm with a line receiving notch therein, and an enlarged stop member on the end of the line and engaging the side of the arm remote from the closer.

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