

CPC**COOPERATIVE PATENT CLASSIFICATION****E05F****DEVICES FOR MOVING WINGS INTO OPEN OR CLOSED POSITION; CHECKS FOR WINGS; WING FITTINGS NOT OTHERWISE PROVIDED FOR, CONCERNED WITH THE FUNCTIONING OF THE WING****NOTE**

In this subclass, the following terms are used with the meanings indicated:

- "closer" or "opener" includes devices for assisting wing-movement or for wing-counterbalancing.

E05F 1/00**Closers or openers for wings, not otherwise provided for in this subclass**

- E05F 1/002 . {controlled by automatically acting means (for powered-operated mechanisms [E05F 15/20](#)) }
- E05F 1/004 .. {by thermostats, rain, wind or noise ([E05F 1/006](#) takes precedence) }
- E05F 1/006 .. {by emergency conditions, e.g. fire (operating or controlling mechanisms for physical fire-barriers [A62C 2/24](#)) }
- E05F 1/008 .. {by time control }
- E05F 1/02 . gravity-actuated, {e.g. by use of counterweights }
- E05F 1/025 .. {with rectilinearly-moving counterweights }
- E05F 1/04 .. for wings which lift during movement, {operated by their own weight }
- E05F 1/043 ... {with cams, helical tracks ([E05F 1/061](#) takes precedence) }
- E05F 1/046 ... { with rectilinearly-inclined tracks for sliding wings }
- E05F 1/06 ... Mechanisms in the shape of hinges or pivots, operated by the weight of the wing
- E05F 1/061 {with cams or helical tracks }
- E05F 1/063 {with complementary, substantially identical and slidingly cooperating cam surfaces ([E05F 1/066](#) takes precedence) }
- E05F 1/065 {Cam-and-wheel arrangements }
- E05F 1/066 {Helical grooves, slots, threads or the like }
- E05F 1/068 {with inclined pivot-axes }
- E05F 1/08 . spring-actuated, {e.g. for horizontally sliding wings (counterbalancing sliding or lifting wings [E05D](#) ; springs per se [F16F](#) , e.g. gas-springs [F16F 9/00](#)) }
- E05F 1/10 .. for swinging wings, {e.g. counterbalance (spring-assisted actuation of lids or covers of refuse receptacles [B65F 1/1623](#)) }
- E05F 1/1008 ... {with a coil spring parallel with the pivot axis ([E05F 1/1207](#) takes precedence) }
- E05F 1/1016 {with a canted-coil torsion spring }
- E05F 1/1025 { with a compression or traction spring }
- E05F 1/1033 ... {with a torsion bar ([E05F 1/123](#) takes precedence) }
- E05F 1/1041 ... {with a coil spring perpendicular to the pivot axis ([E05F 1/1246](#) takes precedence) }

E05F 1/105	....	{with a compression spring }
E05F 1/1058	.....	{for counterbalancing }
E05F 1/1066	....	{with a traction spring }
E05F 1/1075	.....	{for counterbalancing }
E05F 1/1083	...	{with a leaf or similar spring (E05F 1/1284 takes precedence) }
E05F 1/1091	...	{with a gas spring (E05F 1/1292 takes precedence) }
E05F 1/12	...	Mechanisms in the shape of hinges or pivots, operated by springs { for hinges with two or more pins E05D 3/06 }
E05F 1/1207	....	{with a coil spring parallel with the pivot axis }
E05F 1/1215	.....	{with a canted-coil torsion spring }
E05F 1/1223	.....	{with a compression or traction spring }
E05F 1/123	....	{with a torsion bar }
E05F 1/1238	.....	{specially adapted for vehicles }
E05F 1/1246	....	{with a coil spring perpendicular to the pivot axis }
E05F 1/1253	.....	{with a compression spring }
E05F 1/1261	.....	{for counterbalancing }
E05F 1/1269	.....	{with a traction spring }
E05F 1/1276	.....	{for counterbalancing }
E05F 1/1284	....	{with a leaf or similar spring }
E05F 1/1292	....	{with a gas spring }
E05F 1/14	...	with double-acting springs, e.g. for closing and opening or checking and closing {no material }
E05F 1/16	..	for sliding wings

E05F 3/00 Closers or openers with braking devices, e.g. checks; Construction of pneumatic or liquid braking devices ([construction of non-pneumatic or non-liquid braking devices E05F 5/00](#); friction devices in hinges [E05D 11/08](#))

E05F 3/02	.	with pneumatic piston brakes (rotary type E05F 3/14)
E05F 3/04	.	with liquid piston brakes (rotary type E05F 3/14)
E05F 3/06	..	in which a torsion spring rotates a member around an axis perpendicular to the axis of the piston
E05F 3/08	..	in which a torsion spring rotates a member around an axis arranged in the direction of the axis of the piston
E05F 3/10	..	with a spring, other than a torsion spring, and a piston, the axes of which are the same or lie in the same direction
E05F 3/102	...	{with rack-and-pinion transmission between driving shaft and piston within the closer housing }
E05F 3/104	...	{with cam-and-slide transmission between driving shaft and piston within the closer housing }
E05F 3/106	...	{with crank-arm transmission between driving shaft and piston within the closer housing }
E05F 3/108	...	{with piston rod protruding from the closer housing; Telescoping closers }
E05F 3/12	..	Special devices controlling the circulation of the liquid, e.g. valve arrangement ({ E05F 3/223 takes precedence } ; valves per se F16K)

- E05F 3/14 . with fluid brakes of the rotary type
- E05F 3/16 . with friction brakes
- E05F 3/18 . with counteracting springs ([double-acting springs E05F 1/14](#))
- E05F 3/20 . in hinges
- E05F 3/22 . Additional arrangements for closers, e.g. for holding the wing in opened or other position
 - E05F 3/221 . . {Mechanical power-locks, e.g. for holding the wing open or for free-moving zones }
 - E05F 3/222 . . . { electrically operated ([E05F 3/223 takes precedence](#)) }
 - E05F 3/223 . . { Hydraulic power-locks, e.g. with electrically operated hydraulic valves }
 - E05F 3/224 . . {for assisting in opening the wing }
 - E05F 3/225 . . { mounted at the bottom of wings, e.g. details related to seals, covers, connections to the wings, embedding in the floor }
 - E05F 3/226 . . . { with means to adjust the closed position of the wing }
 - E05F 3/227 . . { mounted at the top of wings, e.g. details related to closer housings, covers, end caps or rails therefor }
- E05F 5/00** **Braking devices, e.g. checks; Stops; Buffers; {Dovetails with buffering action };**
(construction of pneumatic or liquid braking devices [E05F 3/00](#); combined with devices for holding wings open [E05C 17/00](#); devices for limiting opening of wings or for holding wings open by a movable member extending between frame and wing [E05C 17/04](#))
 - E05F 5/003 . {for sliding wings ([E05D 13/04 takes precedence](#)) }
 - E05F 5/006 . { for hinges having a cup-shaped fixing part, e.g. for attachment to cabinets or furniture }
 - E05F 5/02 . specially for preventing the slamming of {swinging } wings {during final closing movement, e.g. jamb stops }
 - E05F 5/022 . . {specially adapted for vehicles, e.g. for hoods or trunks }
 - E05F 5/025 . . . {specially adapted for vehicle doors }
 - E05F 5/027 . . {with closing action }
 - E05F 5/04 . . hand-operated, {e.g. removable }; operated by centrifugal action {or by high closing speed }
 - E05F 5/06 . Buffers {or stops limiting opening of swinging wings, e.g. floor or wall stops } ([E05F 5/02 takes precedence](#))
 - E05F 5/08 . . with springs
 - E05F 5/10 . . with piston brakes
 - E05F 5/12 . specially for preventing the closing of a wing before another wing has been closed
- E05F 7/00** **Miscellaneous accessories for wings** (specially adapted for furniture [A47B 95/00](#); door-lifters [B66F](#) , [E04F 21/00](#); knobs or handles [E05B](#))
 - E05F 7/005 . {Aligning devices for wings }

- E05F 7/02 . for raising wings before being turned {before sliding [E05D 15/565](#) }
 - E05F 7/04 . Arrangements affording protection against rattling (with buffering action [E05F 5/00](#))
 - E05F 7/06 . Devices for taking the weight of the wing, arranged away from the hinge axis
 - E05F 7/08 . Special means for transmitting movements between vertical and horizontal sliding bars, rods, or cables { ([E05D 15/5208](#) takes precedence) }
- Guidance heading:** **Operating mechanisms for wings** (for safeguarding bank teller windows [E05G 5/00](#); for interconnected louvres [E06B 7/086](#); for blinds or roll-type closures [E06B 9/00](#))
- E05F 9/00** **Means for operating wings by hand rods not guided in or on the frame, including those which also operate the fastening** (bolts or fastening devices for wings [E05C](#))
- E05F 11/00** **Man-operated mechanisms for operating wings, including those which also operate the fastening** (connecting mechanisms for a plurality of wings [E05F 17/00](#))
- E05F 11/02 . for wings in general, e.g. fanlights ([E05F 11/36](#) takes precedence; for windows to be lowered vertically [E05F 11/38](#); for doors [E05F 11/54](#))
 - E05F 11/04 . . with cords, chains or cables
 - E05F 11/06 . . . in guide-channels
 - E05F 11/08 . . with longitudinally-moving bars guided, e.g. by pivoted links, in or on the frame
 - E05F 11/10 . . . Mechanisms by which a handle moves the bar
 - E05F 11/12 . . . Mechanisms by which the bar shifts the wing
 - E05F 11/14 directly, i.e. without links, shifting the wing, e.g. by rack and gear or pin and slot
 - E05F 11/145 {by pin and slot }
 - E05F 11/16 shifting the wing by pivotally-connected members {(moving) in a plane perpendicular to the pivot axis of the wing }
 - E05F 11/18 consisting of a lever, e.g. an angle lever, only {no material }
 - E05F 11/20 consisting of a lever, e.g. an angle lever, and only one additional link {no material }
 - E05F 11/22 consisting of a lever, e.g. an angle lever, and two or more additional links in series {no material }
 - E05F 11/24 shifting the wing by pivotally-connected members {(moving) in a plane parallel to the pivot axis of the wing }
 - E05F 11/26 consisting of a lever, e.g. an angle lever, only {no material }
 - E05F 11/28 consisting of a lever, e.g. an angle lever, and one or more additional links {no material }
 - E05F 11/30 consisting of links in rhomb-form {no material }
 - E05F 11/32 . . with rotary bars guided in the frame ([E05F 11/34](#) takes precedence)
 - E05F 11/34 . . with screw mechanisms
 - E05F 11/36 . specially designed for passing through a wall
 - E05F 11/38 . for sliding windows, e.g. vehicle windows, to be opened or closed by vertical

- movement
- E05F 11/382 . . {for vehicle windows ([E05F 11/40](#) to [E05F 11/52](#) take precedence) }
- E05F 11/385 . . . {Fixing of window glass to the carrier of the operating mechanism }
- E05F 11/40 . . operated by screw mechanism
- E05F 11/405 . . . {for vehicle windows }
- E05F 11/42 . . operated by rack bars and toothed wheels {or other push-pull mechanisms }
- E05F 11/423 . . . {for vehicle windows }
- E05F 11/426 {Flexible rack-and-pinion arrangements }
- E05F 11/44 . . operated by one or more lifting arms
- E05F 11/445 . . . {for vehicle windows }
- E05F 11/46 . . operated by lazy-tong mechanism
- E05F 11/465 . . . {for vehicle windows }
- E05F 11/48 . . operated by cords or chains {or other flexible elongated pulling elements, e.g. tapes }
- E05F 11/481 . . . {for vehicle windows }
- E05F 11/483 {by cables }
- E05F 11/485 {with cable tensioners }
- E05F 11/486 {with one cable connection to the window glass }
- E05F 11/488 {with two cable connections to the window glass }
- E05F 11/50 . . Crank gear with clutches or retaining brakes, for operating window mechanisms
- E05F 11/505 . . . {for vehicle windows }
- E05F 11/52 . . combined with means for producing an additional movement, e.g. a horizontal or a rotary movement
- E05F 11/525 . . . {for vehicle windows }
- E05F 11/53 . . for sliding windows, e.g. vehicle windows, to be opened or closed by horizontal movement
- E05F 11/535 . . . {for vehicle windows }
- E05F 11/54 . . for doors
- E05F 13/00** **Mechanisms operated by the movement or weight of a person or vehicle** ([through power-operated wing-operating mechanisms \[E05F 15/00\]\(#\)](#))
- E05F 13/02 . . by devices, e.g. lever arms, affected by the movement of the user
- E05F 13/04 . . by platforms lowered by the weight of the user
- E05F 15/00** **Power-operated mechanisms for wings** { (for hatch covers [B63B 19/14](#); for elevator doors [B66B 13/00](#); motor-operated devices for completing closing or initiating opening of a wing [E05B 17/0029](#); limit switches [H01H 3/16](#)) }
- E05F 15/0004 . . {Safety devices, e.g. safety couplings, detection of obstructions or end position ([E05F 15/20](#) takes precedence) ; anti-dropping devices [E05D 13/003](#); by current overload [H02H 7/0851](#) }

- E05F 15/0008 .. {specially adapted for vehicle windows or roofs ([E05F 15/0013](#) to [E05F 15/0095](#) take precedence) }
- E05F 15/0013 .. {specially adapted for mass transit vehicles ([E05F 15/0017](#) to [E05F 15/0095](#) take precedence) }
- E05F 15/0017 .. { Detection by means of monitoring transmitted force or torque ([E05F 15/0082](#), [E05F 15/0095](#) take precedence) ; Safety, e.g. slip, couplings }
- E05F 15/0021 .. {Detection using safety edges }
- E05F 15/0026 ... {by disruption of energy beams, e.g. light, sound }
- E05F 15/003 {specially adapted for vehicle windows or roofs }
- E05F 15/006 ... {by change in electrical conductivity }
- E05F 15/0065 {specially adapted for vehicle windows or roofs }
- E05F 15/0073 ... {by change in electrical capacity }
- E05F 15/0078 ... {by change in fluid pressure }
- E05F 15/0082 ... {by transmission of mechanical forces, e.g. rigid, movable members }
- E05F 15/0095 .. {specially adapted for pressure medium-operated mechanisms for wings, e.g. detection by means of monitoring transmitted fluid pressure ([E05FB15/00B6H](#) takes precedence) }

- E05F 15/02 . with pressure medium
- E05F 15/025 .. {for folding wings }
- E05F 15/04 .. for swinging wings
- E05F 15/042 ... {specially adapted for use in vehicles }
- E05F 15/045 {for railway-cars or mass transit vehicles }
- E05F 15/047 ... {operated by linear motors acting on a helical track coaxial with the suringing axis }

- E05F 15/06 .. for horizontally-sliding wings
- E05F 15/065 ... {for railway-cars }
- E05F 15/08 .. for vertically-sliding wings
- E05F 15/083 ... {for overhead wings }
- E05F 15/086 ... {for vehicle windows }

- E05F 15/10 . with rotary electromotors { ([detection of end position by striking](#), safety couplings [E05F 15/0017](#)) }
- E05F 15/103 .. {for folding wings }
- E05F 15/106 .. {for revolving wings }
- E05F 15/12 .. for swinging wings
- E05F 15/121 ... {operated by meshing gear wheels, one of which being mounted at the wing pivot axis; the motor acting directly on the wing pivot axis }
- E05F 15/122 ... {operated by push-pull mechanisms }
- E05F 15/123 {by flexible or rigid rack-and-pinion arrangements }
- E05F 15/124 {by screw-nut mechanisms }
- E05F 15/125 {by friction wheels }
- E05F 15/126 ... {operated by flexible elongated pulling elements, e.g. belts, chains }
- E05F 15/127 ... {operated by swinging arms }
- E05F 15/14 .. for horizontally-sliding wings

E05F 15/141	...	{for railway-cars }
E05F 15/142	...	{operated by push-pull mechanisms, e.g. friction wheels, flexible or rigid rack-and-pinion arrangements (E05F 15/141 , E05F 15/147 , E05F 15/148 take precedence) }
E05F 15/143	....	{allowing or involving an additional movement of the wing }
E05F 15/145	...	{operated by flexible elongated pulling elements, e.g. belts, chains (E05F 15/141 takes precedence) }
E05F 15/146	....	{allowing or involving an additional movement }
E05F 15/147	...	{operated by swinging arms (E05F 15/141 takes precedence) }
E05F 15/148	...	{operated by screw mechanisms (E05F 15/141 takes precedence) }
E05F 15/16	..	for vertically-sliding wings
E05F 15/1607	...	{for overhead wings }
E05F 15/1615	....	{operated by flexible or rigid rack-and-pinion arrangements }
E05F 15/1623	....	{operated by screw mechanisms }
E05F 15/163	....	{operated by friction wheels }
E05F 15/1638	....	{operated by swinging lever arms }
E05F 15/1646	....	{operated by flexible elongated pulling elements, e.g. belts (E05F 15/1615 takes precedence) }
E05F 15/1653	.....	{by chains }
E05F 15/1661	.....	{by cables or ropes }
E05F 15/1669	...	{for vehicle windows }
E05F 15/1676	....	{enabling manual drive, e.g. in case of power failure }
E05F 15/1684	....	{Control circuits therefor }
E05F 15/1692	....	{Specially adapted motor units, e.g. geared motors }
E05F 15/18	.	with other electrical means, e.g. solenoids {or linear motors }
E05F 15/20	.	controlled by automatically-acting means, e.g. by photocells, by electric waves, by thermostats, by rain, by fire, {by remote or time control }
E05F 15/2007	..	{by thermostats, rain, wind or noise (E05F 15/2015 takes precedence) }
E05F 15/2015	..	{by emergency conditions, e.g. fire (operating or controlling mechanisms for physical fire-barriers A62C 2/24 ; locks actuating in response to heat E05B 65/104) }
E05F 15/2023	..	{by detection of movement or presence of persons or objects }
E05F 15/203	...	{with photocells }
E05F 15/2038	...	{by the weight or other physical contact of a person or object }
E05F 15/2046	...	{reacting to a device carried by a person or object, e.g. a magnet or reflector (E05F 15/2076 takes precedence) }
E05F 15/2076	..	{by remote wireless control }
E05F 15/2084	...	{with light beams }
E05F 15/2092	..	{by time control }
E05F 17/00		Special devices for shifting a plurality of wings operated simultaneously (for simultaneously moving a plurality of interconnected ventilating lamellae E06B 7/086)
E05F 17/001	.	{of prison cell doors }

- E05F 17/002 . {for wings which lie one behind the other when closed }
- E05F 17/004 . {for wings which abut when closed }
- E05F 2003/00 **Closers or openers with braking devices, e.g. checks; Construction of pneumatic or liquid braking devices** (construction of non-pneumatic or non-liquid braking devices [E05F 5/00](#); friction devices in hinges [E05D 11/08](#))
- E05F 2003/22 . Additional arrangements for closers, e.g. for holding the wing in opened or other position
- E05F 2003/228 . . Arrangements where the end of the closer arm is sliding in a track
- E05F 2005/00 **Braking devices, e.g. checks; Stops; Buffers; {Dovetails with buffering action };** (construction of pneumatic or liquid braking devices [E05F 3/00](#); combined with devices for holding wings open [E05C 17/00](#); devices for limiting opening of wings or for holding wings open by a movable member extending between frame and wing [E05C 17/04](#))
- E05F 2005/02 . specially for preventing the slamming of {swinging } wings {during final closing movement, e.g. jamb stops }
- E05F 2005/04 . . hand-operated, {e.g. removable }; operated by centrifugal action {or by high closing speed }
- E05F 2005/043 . . . operated by centrifugal action at high closing speed
- E05F 2005/046 . . . hand operated
- E05F 2011/00 **Man-operated mechanisms for operating wings, including those which also operate the fastening** (connecting mechanisms for a plurality of wings [E05F 17/00](#))
- E05F 2011/38 . for sliding windows, e.g. vehicle windows, to be opened or closed by vertical movement
- E05F 2011/382 . . {for vehicle windows ([E05F 11/40](#) to [E05F 11/52](#) take precedence) }
- E05F 2011/385 . . . {Fixing of window glass to the carrier of the operating mechanism }
- E05F 2011/387 using arrangements in the window glass, e.g. holes
- E05F 2015/00 **Power-operated mechanisms for wings** { (for hatch covers [B63B 19/14](#); for elevator doors [B66B 13/00](#); motor-operated devices for completing closing or initiating opening of a wing [E05B 17/0029](#); limit switches [H01H 3/16](#)) }
- E05F 2015/0004 . {Safety devices, e.g. safety couplings, detection of obstructions or end position ([E05F 15/20](#) takes precedence) ; anti-dropping devices [E05D 13/003](#); by current overload [H02H 7/0851](#) }
- E05F 2015/0021 . . {Detection using safety edges }
- E05F 2015/0026 . . . {by disruption of energy beams, e.g. light, sound }
- E05F 2015/0034 with acoustical sensors
- E05F 2015/0039 using reflection from the obstruction
- E05F 2015/0043 with optical sensors
- E05F 2015/0047 by interruption of the beam
- E05F 2015/0052 the beam being parallel to the wing edge

- E05F 2015/0056 the beam being perpendicular to the wing edge
- E05F 2015/006 . . . {by change in electrical conductivity }
- E05F 2015/0069 using switches in serial arrangement
- E05F 2015/0086 . . . for detection during opening
- E05F 2015/0091 . . . Fault detection of safety edges

- E05F 2015/10 . with rotary electromotors { (detection of end position by striking, safety couplings [E05F 15/0017](#)) }
- E05F 2015/12 . . for swinging wings
- E05F 2015/127 . . . {operated by swinging arms }
- E05F 2015/128 the end of the arm sliding in a track; Slider arms therefor

- E05F 2015/20 . controlled by automatically-acting means, e.g. by photocells, by electric waves, by thermostats, by rain, by fire, {by remote or time control }
- E05F 2015/2023 . . {by detection of movement or presence of persons or objects }
- E05F 2015/2053 . . . with acoustical sensors
- E05F 2015/2061 . . . with optical sensors (photocells [E05F 15/203](#))
- E05F 2015/2069 . . . using camera's

- E05F 2017/00 Special devices for shifting a plurality of wings operated simultaneously (for simultaneously moving a plurality of interconnected ventilating lamellae [E06B 7/086](#))**

- E05F 2017/005 . for sliding wings
- E05F 2017/007 . . with means for interlocking the wings

- E05F 2017/008 . for swinging wings

- E05F 2700/00 Operating mechanisms for sliding windows**

- E05F 2700/02 . Devices for moving and locking sliding windows

- E05F 2700/04 . Devices for blocking sliding windows in general