

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 2003/228 . . Arrangements where the end of the closer arm is sliding in a track

- 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 2005/043 . . . operated by centrifugal action at high closing speed
- E05F 2005/046 . . . hand operated

- 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 2011/387 using arrangements in the window glass, e.g. holes
- 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 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 15/006 ... { by change in electrical conductivity }
- E05F 15/0065 { specially adapted for vehicle windows or roofs }
- E05F 2015/0069 using switches in serial arrangement
- 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 2015/0086 ... for detection during opening
- E05F 2015/0091 ... Fault detection of safety edges
- E05F 15/0095 .. { specially adapted for pressure medium-operated mechanisms for wings, e.g. detection by means of monitoring transmitted fluid pressure ([E05F 15/006H](#) 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 2015/128	....	the end of the arm sliding in a track; Slider arms therefor
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 2015/2053 . . . with acoustical sensors
- E05F 2015/2061 . . . with optical sensors (photocells [E05F 15/203](#))
- E05F 2015/2069 . . . using camera's
- 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 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