

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 15/70](#))}

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)}

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** (motor-operated accessories in locks for completing closing or initiating opening of a wing [E05B 17/00](#))

- E05F 15/40
 - Safety devices, e.g. detection of obstructions or end positions
- E05F 15/41
 - • Detection by monitoring transmitted force or torque ([E05F 15/48](#) takes precedence); Safety couplings with activation dependent upon torque or force, e.g. slip couplings

- E05F 15/42 . . Detection using safety edges
- E05F 15/43 . . . responsive to disruption of energy beams, e.g. light or sound
- E05F 15/431 {specially adapted for vehicle windows or roofs}
- E05F 2015/432 {with acoustical sensors}
- E05F 2015/433 {using reflection from the obstruction}
- E05F 2015/434 {with optical sensors}
- E05F 2015/435 {by interruption of the beam}
- E05F 2015/436 {the beam being parallel to the wing edge}
- E05F 2015/437 {the beam being perpendicular to the wing edge}
- E05F 15/44 . . . responsive to changes in electrical conductivity
- E05F 15/443 {specially adapted for vehicle windows or roofs}
- E05F 2015/447 {using switches in serial arrangement}
- E05F 15/46 . . . responsive to changes in electrical capacitance
- E05F 15/47 . . . responsive to changes in fluid pressure
- E05F 15/48 . . . by transmission of mechanical forces, e.g. rigid or movable members
- E05F 2015/483 . . . {for detection during opening}
- E05F 2015/487 . . . {Fault detection of safety edges}
- E05F 15/49 . . specially adapted for mechanisms operated by fluid pressure, e.g. detection by monitoring transmitted fluid pressure ([E05F 15/47](#) takes precedence)
- E05F 15/50 . using fluid-pressure actuators
- E05F 15/51 . . for folding wings
- E05F 15/53 . . for swinging wings
- E05F 15/54 . . . operated by linear actuators acting on a helical track coaxial with the swinging axis
- E05F 15/56 . . for horizontally-sliding wings
- E05F 15/565 . . . {for railway-cars}
- E05F 15/57 . . for vertically-sliding wings
- E05F 15/59 . . . for overhead wings
- E05F 15/60 . using electrical actuators
- E05F 15/603 . . using rotary electromotors
- E05F 15/605 . . . for folding wings
- E05F 15/608 . . . for revolving wings
- E05F 15/611 . . . for swinging wings
- E05F 15/614 operated by meshing gear wheels, one of which being mounted at the wing pivot axis; operated by a motor acting directly on the wing pivot axis
- E05F 15/616 operated by push-pull mechanisms
- E05F 15/619 using flexible or rigid rack-and-pinion arrangements
- E05F 15/622 using screw-and-nut mechanisms
- E05F 15/624 using friction wheels

- E05F 15/627 operated by flexible elongated pulling elements, e.g. belts, chains or cables (using flexible elongated push-pull mechanisms [E05F 15/619](#))
- E05F 15/63 operated by swinging arms
- E05F 2015/631 {the end of the arm sliding in a track; Slider arms therefor}
- E05F 15/632 . . . for horizontally-sliding wings

WARNING

Group [E05F 15/632](#) is incomplete pending reclassification of documents from group [E05F 15/652](#).

Groups [E05F 15/652](#) and [E05F 15/632](#) should be considered in order to perform a complete search.

- E05F 15/635 operated by push-pull mechanisms, e.g. flexible or rigid rack-and-pinion arrangements ([E05F 15/652](#) takes precedence)
- E05F 15/638 allowing or involving a secondary movement of the wing, e.g. rotational or transversal
- E05F 15/641 operated by friction wheels

WARNING

Group [E05F 15/641](#) is incomplete pending reclassification of documents from group [E05F 15/635](#).

Groups [E05F 15/635](#) and [E05F 15/641](#) should be considered in order to perform a complete search.

- E05F 15/643 operated by flexible elongated pulling elements, e.g. belts, chains or cables (by flexible elongated push-pull mechanisms [E05F 15/635](#))
- E05F 15/646 allowing or involving a secondary movement of the wing, e.g. rotational or transversal
- E05F 15/649 operated by swinging arms
- E05F 15/652 operated by screw-and-nut mechanisms
- E05F 15/655 specially adapted for vehicle wings

WARNING

Groups [E05F 15/655](#) - [E05F 15/662](#) are incomplete pending reclassification of documents from group [E05F 15/632](#).

Group [E05F 15/632](#) and the appropriate group in [E05F 15/655](#) - [E05F 15/662](#) should be considered in order to perform a complete search.

- E05F 15/657 enabling manual drive, e.g. in case of power failure
- E05F 15/659 Control circuits therefor
- E05F 15/662 Motor units therefor, e.g. geared motors
- E05F 15/665 . . . for vertically-sliding wings
- E05F 15/668 for overhead wings

WARNING

Group [E05F 15/668](#) is incomplete pending reclassification of documents from group [E05F 15/673](#).

E05F 15/668

(continued)

Groups [E05F 15/673](#) and [E05F 15/668](#) should be considered in order to perform a complete search.

- E05F 15/67 operated by flexible or rigid rack-and-pinion arrangements
- E05F 15/673 operated by screw-and-nut mechanisms
- E05F 15/676 operated by friction wheels
- E05F 15/678 operated by swinging lever arms
- E05F 15/681 operated by flexible elongated pulling elements, e.g. belts
- E05F 15/684 by chains
- E05F 15/686 by cables or ropes
- E05F 15/689 specially adapted for vehicle windows
- E05F 15/692 enabling manual drive, e.g. in case of power failure
- E05F 15/695 Control circuits therefor
- E05F 15/697 Motor units therefor, e.g. geared motors
- E05F 15/70 with automatic actuation
- E05F 15/71 responsive to temperature changes, rain, wind or noise
- E05F 15/72 responsive to emergency conditions, e.g. fire
- E05F 15/73 responsive to movement or presence of persons or objects
- E05F 15/74 using photoelectric cells
- E05F 15/75 responsive to the weight or other physical contact of a person or object
- E05F 15/76 responsive to devices carried by persons or objects, e.g. magnets or reflectors ([E05F 15/77 takes precedence](#))
- E05F 2015/763 {using acoustical sensors}
- E05F 2015/765 {using optical sensors ([using photoelectric cells E05F 15/74](#))}
- E05F 2015/767 {using cameras}
- E05F 15/77 using wireless control
- E05F 15/78 using light beams
- E05F 15/79 using 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