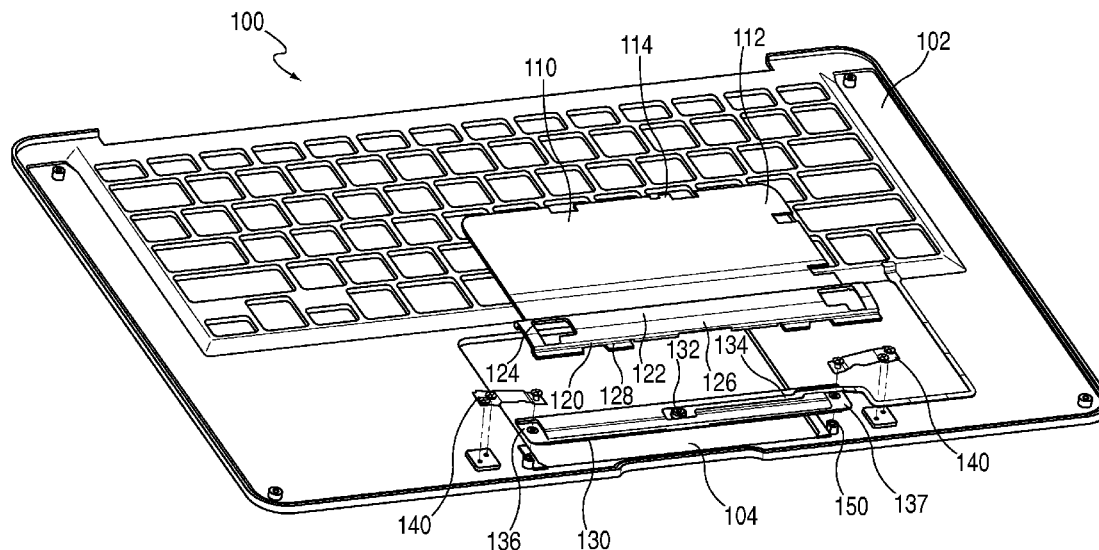




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**Mathew et al.**(10) **Pub. No.: US 2013/0009898 A1**(43) **Pub. Date: Jan. 10, 2013**(54) **TOUCHPAD AND PICK BUTTON ASSEMBLY****Publication Classification**(75) Inventors: **Dinesh Mathew**, Fremont, CA (US);  
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Francisco, CA (US)(51) **Int. Cl.**  
**G06F 3/041** (2006.01)(52) **U.S. Cl.** ..... **345/173**(57) **ABSTRACT**

A touchpad assembly for use in an electronic device is provided. The touchpad assembly may include a touchpad frame operative to be placed within an opening in an electronic device frame. The touchpad assembly may include a support plate for supporting a touchpad, and a bracket for receiving a pick button. The support plate and bracket may be manufactured into a same component to increase the rigidity of the touchpad assembly. The pick button may include a varying height to prevent the pick button from deflecting and to make the pick button travel for providing a selection instruction uniform. The pick button may be coupled to the frame using any suitable approach, including using springs connected the ends of the pick button to the frame. The frame may also include pads to muffle the sound of the pick button when it returns to its initial position after having been pressed.

(73) Assignee: **Apple Inc.**, Cupertino, CA (US)(21) Appl. No.: **13/620,009**(22) Filed: **Sep. 14, 2012****Related U.S. Application Data**(63) Continuation of application No. 12/241,015, filed on  
Sep. 29, 2008, now Pat. No. 8,294,675.(60) Provisional application No. 61/010,726, filed on Jan.  
11, 2008, provisional application No. 61/010,138,  
filed on Jan. 4, 2008.

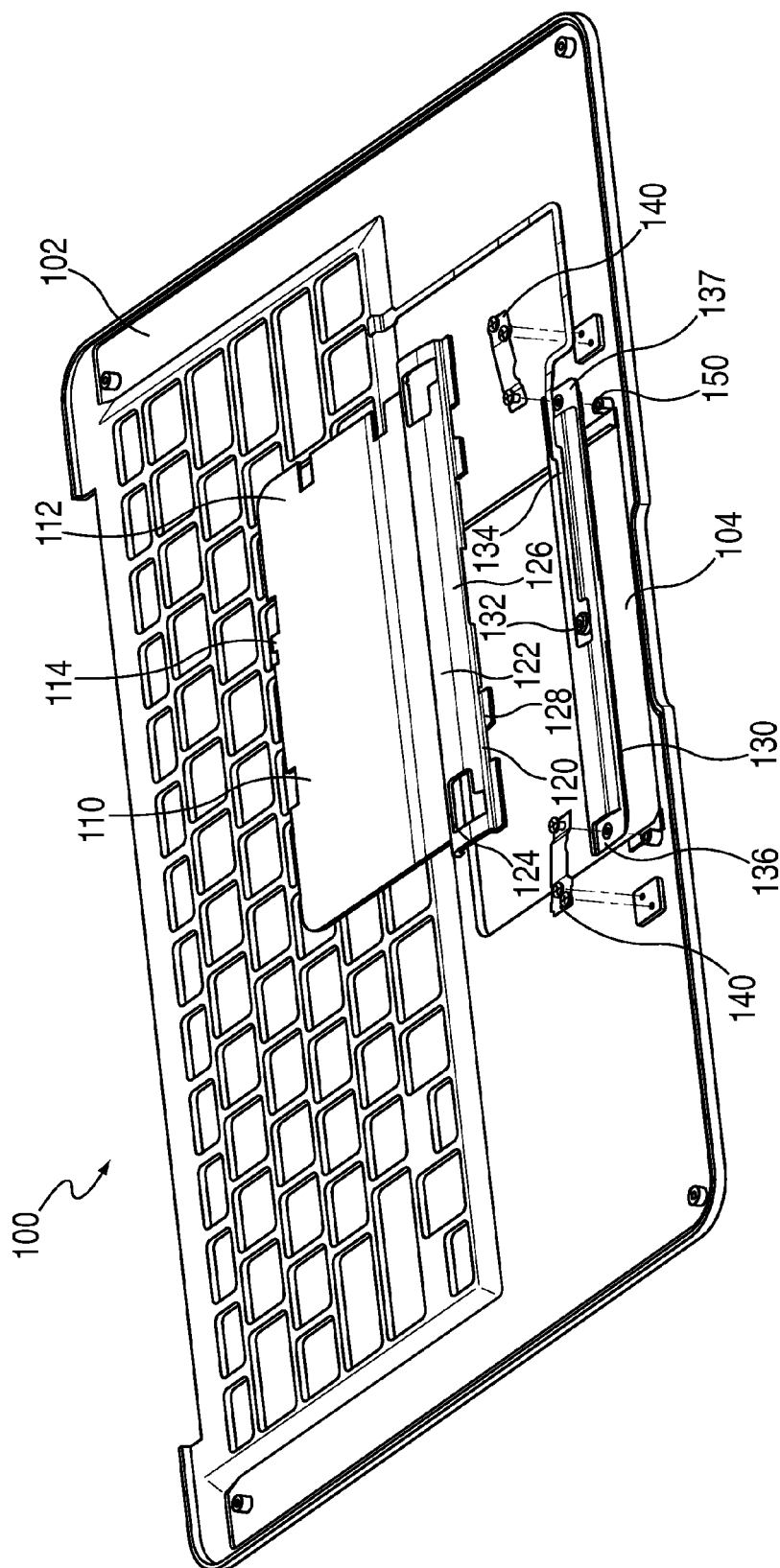


FIG. 1

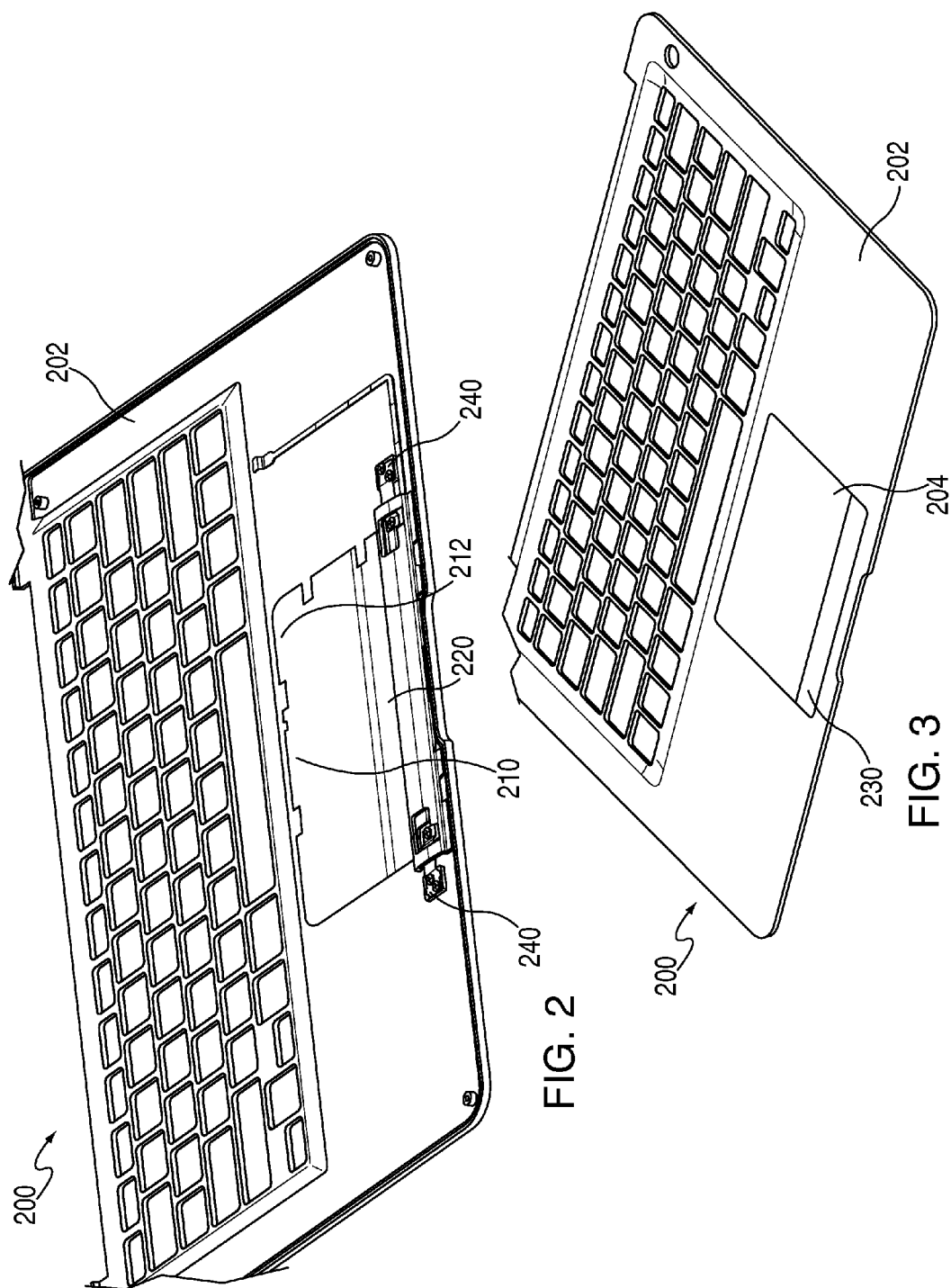
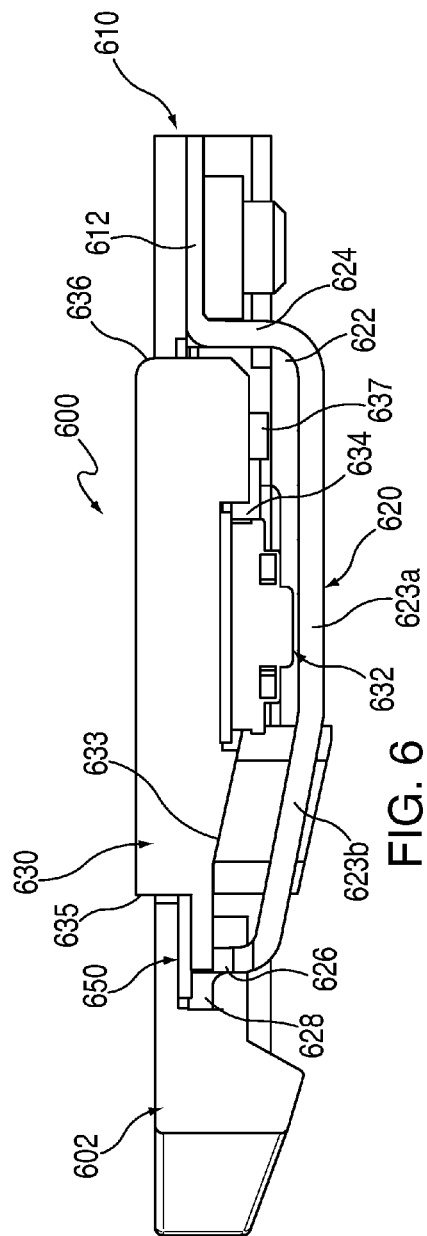
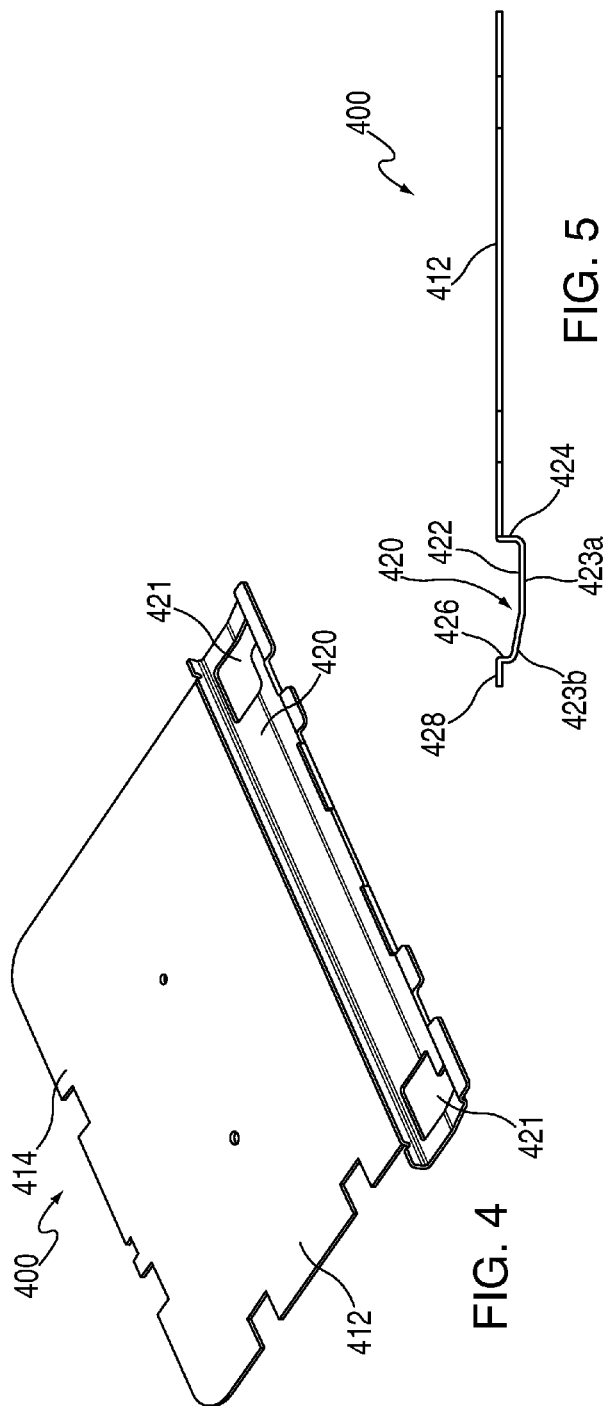


FIG. 2

FIG. 3



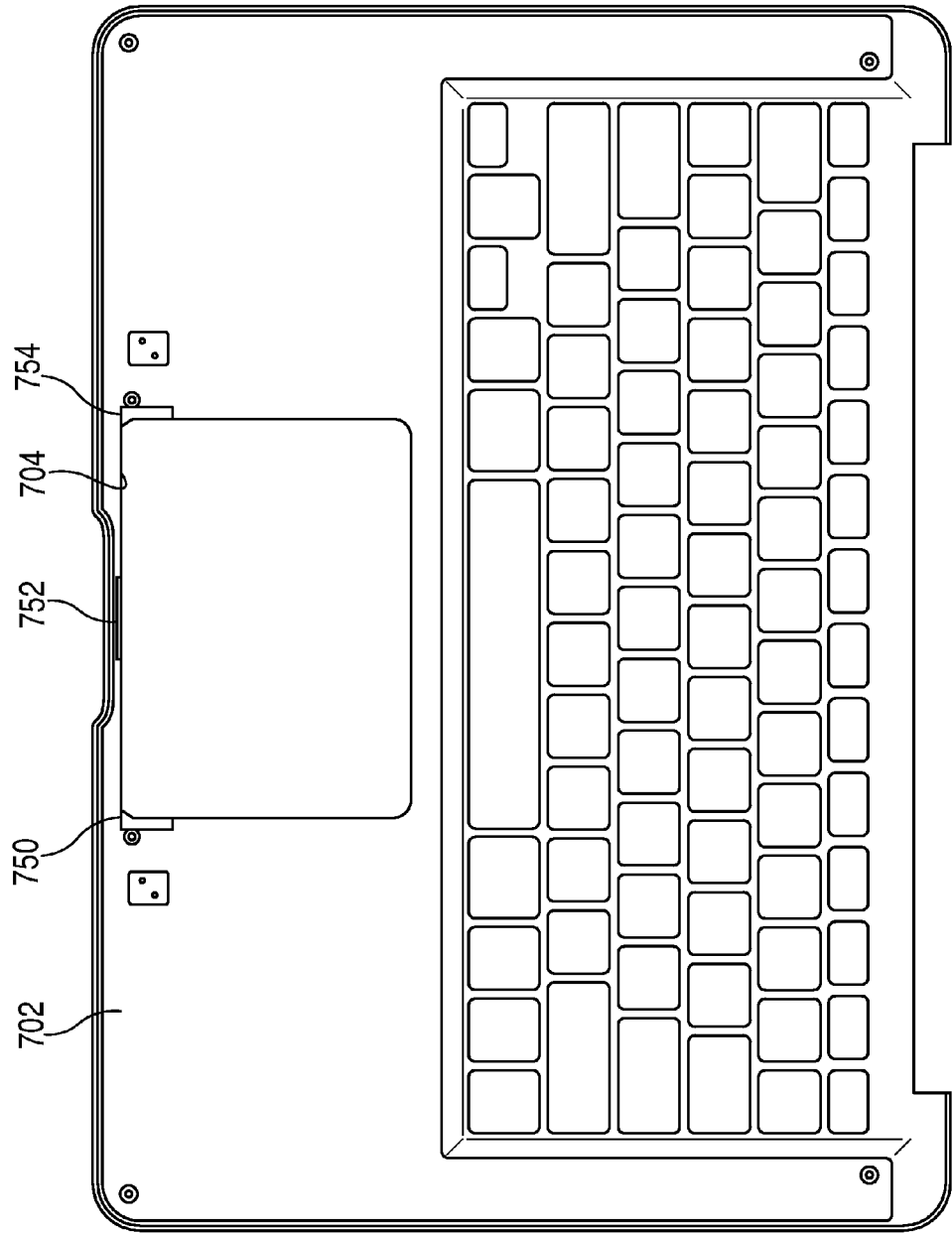


FIG. 7

## TOUCHPAD AND PICK BUTTON ASSEMBLY

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. patent application Ser. No. 12/241,015, filed Sep. 29, 2008, which claims the benefit of U.S. Provisional Application No. 61/010,138, filed Jan. 4, 2008, and of U.S. Provisional Patent Application No. 61/010,726, filed Jan. 11, 2008, all of which are incorporated by reference herein in their entireties.

### BACKGROUND OF THE DISCLOSURE

[0002] This invention is directed to a touchpad assembly for use in an electronic device.

[0003] Some electronic devices, and in particular laptop and desktop computers, may include several types of input mechanisms. One of the input mechanisms may include a touchpad (e.g., for controlling a pointer displayed on a screen) and one or more buttons (e.g., a pick button to provide selection instructions). The touchpad and pick button may be coupled to the electronic device using several different approaches. In some embodiments, the electronic device may include a first opening through which a user may access the touchpad, and a second opening through which the pick button may extend.

[0004] In many electronic devices, the pick button provided is relatively small, and may be supported from within the electronic device using one or more springs (e.g., helical springs) compressed underneath the pick button. In addition, the small size of the button allows a user to actuate the button by depressing the button with the same amount of force independent of where the button is pressed—in other words, the small size of the button prevents it from deflecting away from a switch located underneath the button. While such existing touchpad assemblies may be sufficient for smaller touchpads and pick buttons, they lack the mechanical features necessary to provide proper support and a pleasant user experience when the touchpad, pick button, or both become larger (e.g., for example in a multi-touchpad) or are placed in smaller electronic devices (e.g., very thin laptop computers, such as the MacBook Air™, available from Apple Inc. of Cupertino, Calif.).

### SUMMARY OF THE DISCLOSURE

[0005] Touchpad assemblies for use in an electronic device are provided. The touchpad assemblies may be operative to support large touchpads (e.g., a multi-touchpad) and associated large pick buttons (e.g., a pick button extending the length of the multi-touchpad).

[0006] In some embodiments, a touchpad assembly may be provided. The touchpad assembly may include a pick button and an assembly frame operative to be secured to an electronic device housing. The assembly frame may include a support plate operative to support a touchpad and a bracket coupled to a side of the support plate such that the bracket defines a recess. The pick button may be placed within the recess such that a switch is located between the pick button and the bracket. At least one spring may be coupled to an end of the pick button and to the housing to retain the pick button within the housing. In some embodiments, the pick button may include a rib or other element varying the cross-section

of the button, for example to prevent the pick button from deflecting when it is pressed, or to make the distance traveled to actuate the switch uniform.

[0007] In some embodiments, an electronic device may be provided. The electronic device may include a housing with an opening, and an assembly frame operative to support a touchpad and a pick button. The assembly frame may be coupled to the housing such that a substantial portion of the assembly frame is accessible through the opening. A pick button may be placed in the assembly frame. At least one pad may be placed on the housing adjacent to the pick button such that the pad may muffle sounds created when the pick button is depressed (e.g., to actuate a switch).

[0008] In some embodiments, an assembly frame of a touchpad assembly may be provided. The assembly frame may include a support plate operative to support a touchpad, where the support plate includes at least one plate tab operative to be placed in contact with an electronic device housing. The assembly frame may also include a bracket operative to receive a pick button. The bracket may include at least one bracket tab operative to be placed in contact with the electronic device housing. To ensure that the support plate is sufficiently rigid, the support plate and bracket may be constructed from the same piece of material (e.g., stamped from a single piece of metal).

### BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The above and other features of the present invention, its nature and various advantages will be more apparent upon consideration of the following detailed description, taken in conjunction with the accompanying drawings in which:

[0010] FIG. 1 is an exploded bottom, right, front perspective view of an illustrative touchpad assembly coupled to a keyboard frame in accordance with some embodiments of the invention;

[0011] FIG. 2 is a bottom, right, front perspective view of an illustrative assembled keyboard frame and touchpad assembly in accordance with some embodiments of the invention;

[0012] FIG. 3 is a top, right, front perspective view of the assembled keyboard frame and touchpad assembly of FIG. 2 in accordance with some embodiments of the invention;

[0013] FIG. 4 is a top, left, front perspective view of an illustrative touchpad assembly frame for use in an electronic device in accordance with some embodiments of the invention;

[0014] FIG. 5 is a cross-sectional view of the touchpad assembly frame of FIG. 4 in accordance with some embodiments of the invention;

[0015] FIG. 6 is a cross-sectional view of an illustrative touchpad assembly for use with an electronic device in accordance with some embodiments of the invention; and

[0016] FIG. 7 is a bottom view of an illustrative frame having acoustic pads in accordance with some embodiments of the invention.

### DETAILED DESCRIPTION OF THE DISCLOSURE

[0017] This invention is related to features of a pick button associated with a touchpad of any electronic device (e.g., a laptop computer).

**[0018]** FIG. 1 is an exploded perspective view of an illustrative touchpad assembly coupled to a keyboard frame in accordance with some embodiments of the invention. Frame **102** may define a structure on which different electronic device components may be mounted. For example, frame **102** may be a wall portion of an electronic device housing, and may include a keyboard frame for retaining keys used to provide inputs to the electronic device, and for providing access to a touchpad for controlling the display of content by the electronic device. Touchpad assembly **100** may include or be operative to support a touchpad and at least one pick button such that the touchpad and at least one pick button are accessible to a user through opening **104** of frame **102**.

**[0019]** Touchpad assembly **100** may include assembly frame **110** operative to provide support for a touchpad. Assembly frame **110** may include several portions, including support plate **112** and bracket **120**. Support plate **112** may be operative to provide support for a touchpad, such that support plate **112** may provide resistance for a user's finger as it moves across the touchpad. Support plate **112** may substantially match the size and shape of at least a portion of opening **104**. In some embodiments, support plate **112** may be sized such that at least a portion of support plate **112** extends beyond the periphery of opening **104** on one or more sides of opening **104**. For example, if opening **104** substantially defines a rectangle, support plate **112** may extend beyond the periphery of the sides of the rectangle other than the side adjacent to the pick button of touchpad assembly **100** (e.g., the side of opening **104** that is adjacent to the edge of frame **102**).

**[0020]** In some embodiments, support plate **112** may include one or more tabs **114**, for example, to allow wiring to connect a touchpad on the top surface of support plate **112** and electronic device components adjacent to the bottom surface of support plate **112**. Instead or in addition, tabs **114** may be used to couple support plate **112** to frame **102**, for example using a mechanical fastener (e.g., a screw), tape, an adhesive, an interlocking mechanism or component, or any other suitable approach.

**[0021]** Bracket **120** may define a trough or groove operative to receive a pick button **130**. For example, bracket **120** may include recessed portion **122** defined by sidewalls **124** and **126**. Bracket **120** may be coupled to support plate **112** using any suitable approach. For example, bracket **120** and support plate **112** may be manufactured as two distinct components and assembled together (e.g., using an adhesive, tape, a mechanical fastener, welding, soldering, or heat treatment). As another example, bracket **120** and support plate **112** may be manufactured as a single component (e.g., a single stamped component). Bracket **120** may be connected to support plate **112** by sidewall **124**, and coupled to frame **102** using sidewall **126**. For example, sidewall **126** may include one or more tabs **128** extending from the end of sidewall **126**, for example, at substantially the same height as support plate **112**. Tabs **128** may be sized such that tabs **128** extend beyond the periphery of opening **104** when assembly frame **110** is coupled to frame **102**. For example, tabs **128** may be operative to extend over the side of the rectangle that is adjacent to the pick button of touchpad assembly **100** (e.g., the side of opening **104** that is adjacent to the edge of frame **102**). Tabs **128** may be used to couple bracket **120** to frame **102** using any suitable approach, including for example using a mechanical fastener (e.g., a screw), tape, an adhesive, an interlocking mechanism or component, or any other suitable approach.

**[0022]** Support plate **112** and bracket **120** may be constructed from any suitable material. In particular, the material used for one or both of support plate **112** and bracket **120** may be selected from material having sufficient strength to resist pressure caused by a user's finger on the touchpad. The material used may also be selected based on weight, aesthetic, and ease of manufacturing considerations. For example, the material used for support plate **112** may include at least one of a metal, composite material, or plastic (e.g., a stamped aluminum or steel component).

**[0023]** Touchpad assembly **100** may include pick button **130** for providing inputs (e.g., selection instructions) to the electronic device. Pick button **130** may form an elongated structure having a substantially rectangular cross-section. Pick button **130** may be inserted in opening **104** such that the pick button is aligned with bracket **120**. A switch **132** may be positioned between the lower surface of pick button **130** and bracket **120** such that when pick button **130** is pressed, pick button **130** may be brought in close proximity with bracket **120** such that switch **132** is compressed between the pick button and the bracket and thereby actuated. In some embodiments, switch **132** may be coupled to pick button **130** and connected to other electronic device components (e.g., other components located in proximity of frame **102**) using trace **134**.

**[0024]** Pick button **130** may be coupled to frame **102** using any suitable approach. In some embodiments, pick button **130** may be coupled such that pick button **130** may be deflected to provide an input and return to a rest position in which switch **132** is not closed. For example, pick button **130** may be coupled to frame **102** using one or more pick button springs **140** coupled to ends **136** and **137** of pick button **130**. Each of ends **136** and **137** may include a recessed platform for receiving a spring **140** such that the overall profile of pick button **130** and spring **140** may remain substantially the same (e.g., the depth of each recessed platform at ends **136** and **137** may be substantially equal to the thickness of spring **140**). By providing springs that extend away from underneath pick button **130**, the overall thickness of pick button **130** and bracket **120** (e.g., the distance between the top of pick button **130** and the bottom of bracket **120**) may be minimized.

**[0025]** Springs **140** may include any suitable type of spring, including for example a tension spring, extension spring, compression spring, torsional spring, wire spring, coil spring, flat spring, cantilever spring, helical spring, hairspring, balance spring, leaf spring, or any other suitable type of spring. The springs may have any suitable spring constant or value defining the elasticity of the spring, including, for example, a value selected based on the distance required to actuate switch **132**, the desired tactile feedback, and size considerations. Springs **140** may be coupled to pick button **130** and frame **102** using any suitable approach, including, for example, an adhesive, tape, mechanical fastener (e.g., a screw), an engagement mechanism (e.g., a snap), or any other suitable approach.

**[0026]** Pick button **130** may be coupled to touchpad assembly **100** such that tactile and audio feedback are provided when a user actuates the pick button. For example, pick button **130** may provide an audible "click" sound when a user presses pick button **130**. To prevent audio feedback as the pick button returns to its initial position (e.g., so as not to confuse a user whether switch **132** was closed once or twice), frame **102** may include one or more pads **150** for muffling the sound of the pick button returning to the initial, un-clicked position.

[0027] FIG. 2 is a perspective view, similar to FIG. 1, of the bottom of an illustrative assembled frame and touchpad assembly in accordance with some embodiments of the invention. FIG. 3 is a perspective view of the top of the illustrative assembled frame and touchpad assembly in accordance with some embodiments of the invention. Touchpad assembly 200 may include assembly frame 210 coupled to frame 202. Pick button 230 and touchpad support plate 212 may be accessible from the outside of frame 202 through opening 204. Pick button 230 may be supported by bracket 220 of touchpad assembly frame 210, and retained at least partially within opening 204 by springs 240.

[0028] FIG. 4 is a perspective view of an illustrative assembly frame for use in an electronic device in accordance with some embodiments of the invention, and FIG. 5 is a cross-sectional view of the assembly frame of FIG. 4 in accordance with some embodiments of the invention. Assembly frame 400 may include support plate 412 and bracket 420, such that a touchpad may be placed on support plate 412 and a pick button may be positioned within bracket 420. Support plate 412 may form a substantially flat surface constructed from a suitable rigid material such that when a user presses the touchpad, support plate 412 may resist the user's contact and prevent the touchpad from flexing or deflecting during use.

[0029] Support plate 412 may have any suitable size. In some embodiments, support plate 412 may be larger than a touchpad placed on support plate 412. To couple support plate 412 to an electronic device frame, support plate 412 may include one or more tabs 414 operative to be placed adjacent to the electronic device frame (e.g., tabs 414 may extend beyond the periphery of an opening within the frame). Tabs 414 may extend from any suitable side of support plate 412, including for example from the three sides of support plate 412 that are not in contact with bracket 420 (e.g., the sides that extend beyond the periphery of the opening in the frame).

[0030] To ensure that sufficient support is provided to the remaining side of support plate 412, bracket 420, which may be coupled to the frame via tabs 428, may be coupled to support plate 412 such that the support provided to bracket 420 may be transferred to support plate 412. Bracket 420 and support plate 412 may be coupled using any suitable approach, including for example using welding, soldering, a mechanical fastener, an adhesive, tape, or any other suitable coupling mechanism that provides sufficient stiffness between bracket 420 and support plate 412 (e.g., to transfer the load). In some embodiments, bracket 420 and support plate 412 may be constructed from a single piece of material (e.g., stamped from a single sheet of metal). By combining bracket 420 and support plate 412, the two components of assembly frame 400 may support each other within an electronic device frame, and allow assembly frame 400 to be smaller, thus allowing more flexibility in the design of the electronic device.

[0031] Bracket 420 may be constructed using any suitable approach. In some embodiments, bracket 420 may include recessed portion 422, which may include a substantially flat surface. Recessed portion 422 may be placed in contact with a switch coupled to a pick button placed within bracket 420 to provide resistance for the switch to close when the pick button is pressed into bracket 420. Bracket 420 may include sidewalls 424 and 426 connecting recessed portion 422 to support plate 412 and tabs 428. Sidewalls 424 and 426 may have any suitable dimensions, and may be angled relative recessed portion 422 at any suitable angle (e.g., 90 degrees). Recessed

portion 422 may include one or more apertures 421 providing clearance for springs used to couple the pick button to the electronic device. For example, recessed portion 422 may include two apertures 421 at opposite ends of recessed portion 422 to provide clearance for springs used to connect the ends of the pick button to an electronic device frame.

[0032] In some embodiments, the depth of recessed portion 422 may vary. As shown in FIG. 5, support plate 412 may constitute a substantially planar surface coupled to bracket 420. Recessed portion 422 may include planar portion 423a, which may be substantially parallel to support plate 412 and may be connected to support plate 412 by sidewall 424, and angled portion 423b, which may be a prolongation of planar portion 423a that is substantially planar and slightly angled away from planar portion 423a. The end of angled portion 423b may be coupled to sidewall 426, which may in turn be coupled to tab 428 for connecting assembly frame 400 to an electronic device frame. The dimensions and orientations of planar portion 423a, angled portion 423b, and sidewalls 424 and 426 may be selected based on any suitable criteria, including for example dimensions of the pick button placed in bracket 420.

[0033] FIG. 6 is a cross-sectional view of an illustrative touchpad assembly for use with an electronic device in accordance with some embodiments of the invention. Touchpad assembly 600 may include assembly frame 610 and pick button 630. Touchpad assembly 600 may be coupled to frame 602 of the electronic device, for example using tab 628 of assembly frame 610. Assembly frame 610 may include support plate 612 and bracket 620, and may be coupled to frame 602 such that portions of support plate 612 and bracket 620 may be accessible through an opening of frame 602. Pick button 630 may be positioned within bracket 620 such that switch 632 may be placed between bottom surface 634 of pick button 630 and planar portion 623a of recessed portion 622 of bracket 620. In addition, bottom surface 634 and planar portion 623a may be substantially parallel to ensure that proper contact is maintained with switch 632. The thickness of pick button 630 and depth of recessed portion 622 (e.g., determined by the length of sidewalls 624 and 626) may be selected such that switch 632 may be substantially in contact with both bottom surface 634 and planar portion 623a without being actuated when pick button 630 is at rest.

[0034] Pick button 630 may have any suitable profile. In particular, the profile of pick button 630 may be selected such that a user must deflect pick button 630 by the same amount wherever the user places his finger (e.g., on a portion of pick button 630 near tab 628 or near support plate 612). For example, pick button 630 may include a variable cross-section based on the distance of each portion of pick button 630 to switch 632. In particular, pick button 630 may include angled face 633 connecting proximal end 635 of pick button 630 to the portion of pick button 630 adjacent to switch 632 (e.g., bottom surface 634). Instead of using a symmetrical or similar angled portion between the portion of pick button 630 adjacent to switch 632 and distal end 636, pick button 630 may include rib 637 having a larger width than other portions of pick button 630 to reduce the travel necessary to close switch 632 when a user presses pick button 630 near distal end 636. In some embodiments, rib 637 may also be operative to prevent pick button 630 from deflecting or bending when a user presses an area near distal end 636 or near a tip portion of button 630 (e.g., proximate a spring of the assembly), which



would increase the travel required by button **630** to actuate switch **632** or prevent button **630** from actuating switch **632** altogether.

**[0035]** In some embodiments, the touchpad assembly may include one or more components for modifying or controlling tactile feedback, audio feedback, or both provided in response to a user pressing the pick button and closing the switch (e.g., inverting a dome switch positioned underneath the pick button). FIG. 7 is a bottom view of an illustrative frame having acoustic pads for controlling audio feedback in accordance with some embodiments of the invention. Frame **702** may include opening **704** for receiving a touchpad assembly. To reduce the sound of a pick button striking frame **702** when it is pressed, frame **702** may include pads **750**, **752**, and **754** operative to muffle the sound of the pick button. Pads **750**, **752**, and **754** may be positioned at any suitable position on frame **702**, including for example in the center of opening **704** (e.g., pad **752**), and near the tips of the pick button (e.g., pads **750** and **754**). Pads **750**, **752**, and **754** may be constructed from any suitable material, including for example Mylar, felt, plastic, hook and fastener material, a composite material, or any other suitable material. In some embodiments, the material used may be selected in particular for audio muffling properties (e.g., to muffle the sound of a button “clicking” as it returns to an un-clicked initial state).

**[0036]** The above-described embodiments of the invention are presented for purposes of illustration and not of limitation, and the invention is limited only by the claims which follow.

**1-18.** (canceled)

**19.** An electronic device comprising:

a housing comprising an opening;  
a pick button positioned within the opening; and  
a first spring, wherein:

a first end of the first spring is attached to the pick button;  
and  
a second end of the first spring is attached to the housing.

**20.** The electronic device of claim **19**, wherein at least one of:

the first end of the first spring is directly connected to the pick button; and  
the second end of the first spring is directly connected to the housing.

**21.** The electronic device of claim **19**, wherein:

the first end of the first spring is directly connected to the pick button; and  
the second end of the first spring is directly connected to the housing.

**22.** The electronic device of claim **19**, further comprising a second spring, wherein:

the first end of the first spring is attached to a first end of the pick button;  
the second end of the first spring is attached to the housing adjacent a first side of the opening;  
a first end of the second spring is attached to a second end of the pick button; and  
a second end of the second spring is attached to the housing adjacent a second side of the opening.

**23.** The electronic device of claim **22**, wherein at least one of:

the first end of the first spring is directly connected to a first end of the pick button;  
the second end of the first spring is directly connected to the housing adjacent a first side of the opening;

a first end of the second spring is directly connected to a second end of the pick button; and

a second end of the second spring is directly connected to the housing adjacent a second side of the opening.

**24.** The electronic device of claim **22**, wherein:

the first end of the first spring is directly connected to a first end of the pick button;

the second end of the first spring is directly connected to the housing adjacent a first side of the opening;

a first end of the second spring is directly connected to a second end of the pick button; and

a second end of the second spring is directly connected to the housing adjacent a second side of the opening.

**25.** The electronic device of claim **19**, further comprising a bracket defining a recess, wherein the bracket is secured to the housing such that the pick button is positioned within the recess.

**26.** The electronic device of claim **25**, wherein the bracket is not coupled to at least one of the pick button and the first spring.

**27.** The electronic device of claim **25**, wherein:

the bracket is not coupled to the pick button; and  
the bracket is not coupled to the first spring.

**28.** The electronic device of claim **25**, wherein the bracket is not coupled to the pick button.

**29.** The electronic device of claim **19**, wherein the first end of the first spring is attached to a recessed platform of the pick button.

**30.** The electronic device of claim **29**, wherein the combined thickness of the first end of the first spring and the recessed platform of the pick button is equal to a thickness of the pick button adjacent to the recessed platform.

**31.** The electronic device of claim **19**, further comprising a pad, wherein:

the first spring is operative to allow a top surface of the pick button to be deflected away from a bottom surface of the housing and to then return the top surface of the pick button towards the bottom surface of the housing;

the pad is positioned between the bottom surface of the housing and the top surface of the pick button; and

the pad is operative to muffle sounds created when the top surface of the pick button is returned towards the bottom surface of the housing.

**32.** An assembly comprising:

a bracket defining a recess;  
a pick button positioned within the recess;  
a switch positioned within the recess between a bottom surface of the pick button and the bracket; and  
at least one spring coupled to the pick button, wherein:

the at least one spring allows the pick button to be deflected from its initial position towards the bracket for actuating the switch and then returns the pick button to its initial position; and

the pick button comprises a rib extending along the length of the bottom surface of the pick button.

**33.** The assembly of claim **32**, wherein:

the switch is positioned within the recess between a first portion of the bottom surface of the pick button and the bracket; and

the rib extends adjacent to the first portion of the bottom surface of the pick button.

**34.** The assembly of claim **32**, wherein the rib causes the deflection of the pick button for actuating the switch to be the same independent of the location on the pick button of the force causing the deflection.

**35.** The assembly of claim **32**, further comprising a support plate extending from the bracket, wherein:

the switch is positioned within the recess between a first portion of the bottom surface of the pick button and the bracket;

the rib extends adjacent to the first portion of the bottom surface of the pick button; and

the rib is positioned between the first portion of the bottom surface and an edge of the pick button that is adjacent the support plate.

**36.** The assembly of claim **32**, further comprising a support plate extending from the bracket, wherein:

the switch is positioned within the recess between a first portion of the bottom surface of the pick button and the bracket;

the rib extends adjacent to the first portion of the bottom surface of the pick button; and

the pick button further comprises a first end, a second end opposite the first end, a distal end adjacent the support plate when the pick button is positioned within the recess, and a proximal end opposite the distal end; and the length of the bottom surface extends between the first end and the second end.

**37.** The assembly of claim **36**, wherein the rib is positioned between the first portion of the bottom surface and the distal end.

**38.** The assembly of claim **36**, wherein:

the bracket is operative to be secured to an electronic device housing; and

the at least one spring is coupled to the first end of the pick button and to the electronic device housing.

**39.** The assembly of claim **38**, further comprising at least one other spring coupled to the second end of the pick button and to the electronic device housing.

**40.** The assembly of claim **36**, wherein:

a first amount of deflection of the pick button is necessary to actuate the switch when the pick button is deflected at the first end of the pick button;

a second amount of deflection of the pick button is necessary to actuate the switch when the pick button is deflected between the first end of the pick button and the second end of the pick button; and

the rib is configured to allow the first amount of deflection to equal the second amount of deflection.

**41.** A method of manufacturing an assembly frame, the method comprising:

stamping a single piece of metal to form:

a first flat portion operative to support a touchpad; and  
a bracket extending from the first flat portion, the bracket defining a recess that is operative to receive a pick button.

**42.** The method of claim **41**, wherein the stamped single piece of metal also forms:

a first tab at a first edge of the first flat portion for coupling the single piece of metal to a first portion of an electronic device housing; and

a second tab at a first edge of the bracket for coupling the single piece of metal to a second portion of the electronic device housing, wherein a second edge of the first flat portion opposite the first edge of the first flat portion comprises a second edge of the bracket opposite the first edge of the bracket.

**43.** The method of claim **41**, wherein the single piece of metal comprises at least one of aluminum and steel.

\* \* \* \* \*