US011534010B2

(12) **United States Patent**
Alexander et al.

(10) **Patent No.: US 11,534,010 B2**
(45) **Date of Patent: Dec. 27, 2022**

(54) **ADJUSTABLE FRAMING SYSTEM**

(71) Applicant: **Tracer Imaging LLC**, Ossining, NY (US)

(72) Inventors: **James Alexander**, Mount Kisco, NY (US); **Ryan Kelly**, Scarsdale, NY (US); **Steven M. Spiro**, Chappaqua, NY (US)

(73) Assignee: **TRACER IMAGING LLC**, Ossining, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **17/517,025**

(22) Filed: **Nov. 2, 2021**

(65) **Prior Publication Data**

US 2022/0133064 A1 May 5, 2022

Related U.S. Application Data

(60) Provisional application No. 63/108,586, filed on Nov. 2, 2020.

(51) **Int. Cl.**

A47G 1/16	(2006.01)
A47G 1/17	(2006.01)
A47G 1/24	(2006.01)

(52) **U.S. Cl.**

CPC . ***A47G 1/17*** (2013.01); *A47G 1/24* (2013.01)

(58) **Field of Classification Search**

CPC A47G 1/16; A47G 1/1606; A47G 1/1613; A47G 1/162; A47G 1/24; A47G 1/17; F16B 47/003

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,353,536	A	10/1994	Erber et al.	
5,605,313	A *	2/1997	Erickson	A47G 1/1606 248/467
5,781,980	A	7/1998	Golston	
10,856,674	B2 *	12/2020	Wiggins	A47G 1/16

(Continued)

OTHER PUBLICATIONS

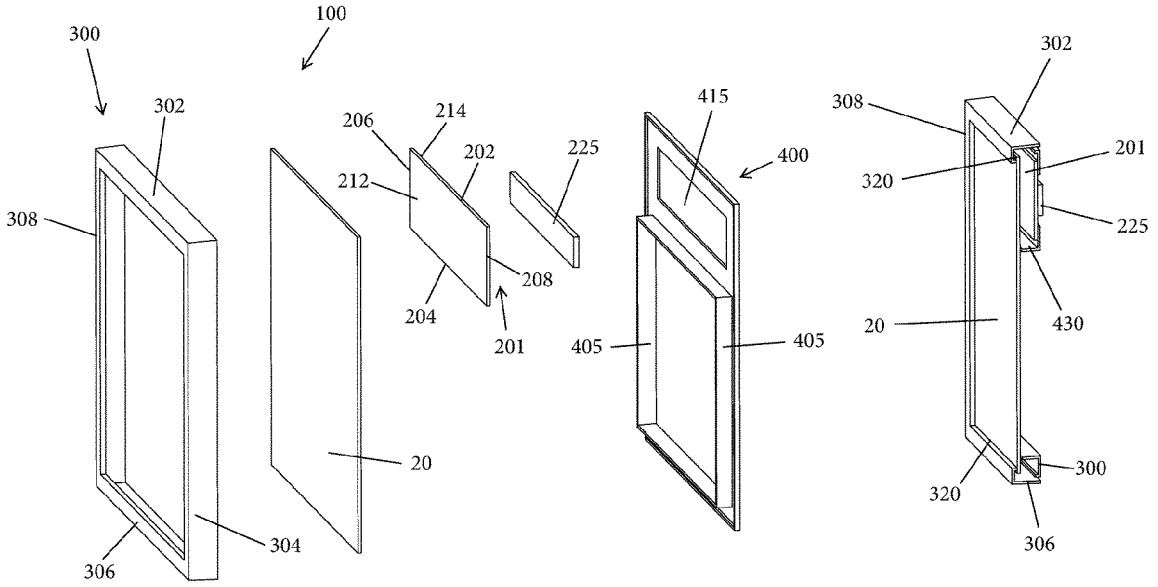
International Search Report and Written Opinion in PCT Application No. PCT/US2021/057699, dated Feb. 3, 2022.

Primary Examiner — Cassandra Davis
(74) *Attorney, Agent, or Firm* — Leason Ellis LLP

(57) **ABSTRACT**

A frame system according to one embodiment includes a mount body having an inner surface and an opposing outer surface. The outer surface has an adhesive body applied thereto. The adhesive body has an adhesive on an outer surface thereof for contacting and bonding with a support surface. The frame system further includes an outer frame element having a first opening through which an image substrate is visible. The outer frame element has a first surface against which the image substrate seats. A back plate is configured for attachment to the outer frame element and the back plate includes a second opening that receives the adhesive body. The back plate further includes a forward protrusion against which the image substrate seat. A mount space is defined between the outer frame element and the back plate in which the mount body is disposed and is configured to move in at least two directions for adjusting a position of the frame system on the support surface. At least one biasing element (e.g. a spring) applies a force against the mount body for holding the assembled outer frame element and back plate in a desired position relative to the mount body.

17 Claims, 3 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

2004/0035039	A1*	2/2004	Bilinszky	B60R 11/00 40/760
2004/0123503	A1	7/2004	Pitzen	
2011/0042542	A1*	2/2011	Russo	A47G 1/17 248/467
2011/0131855	A1	6/2011	Heeps	
2012/0090211	A1	4/2012	Price	
2013/0181584	A1*	7/2013	Whitten	F16B 47/003 248/689
2021/0085103	A1*	3/2021	Voelker	A47G 1/205

* cited by examiner

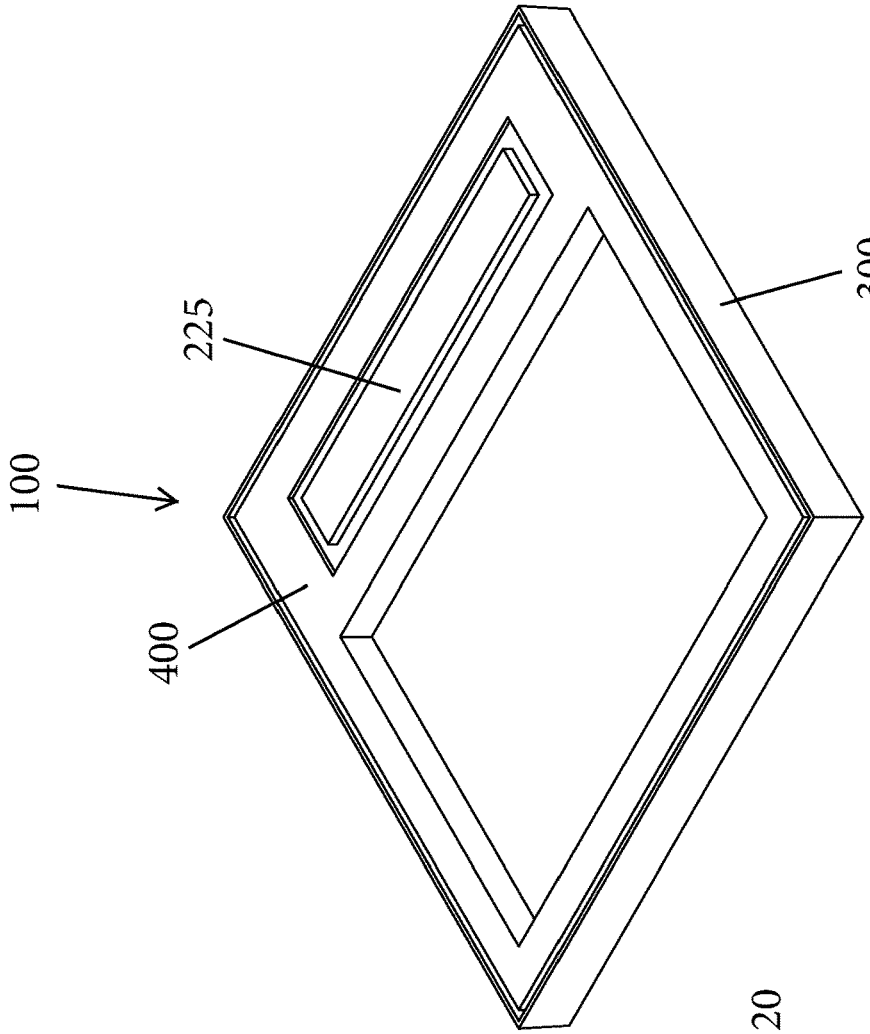


Fig. 1

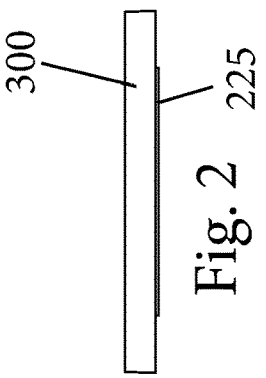


Fig. 2

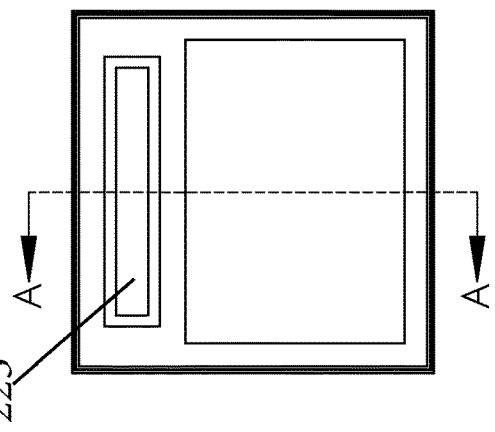


Fig. 3

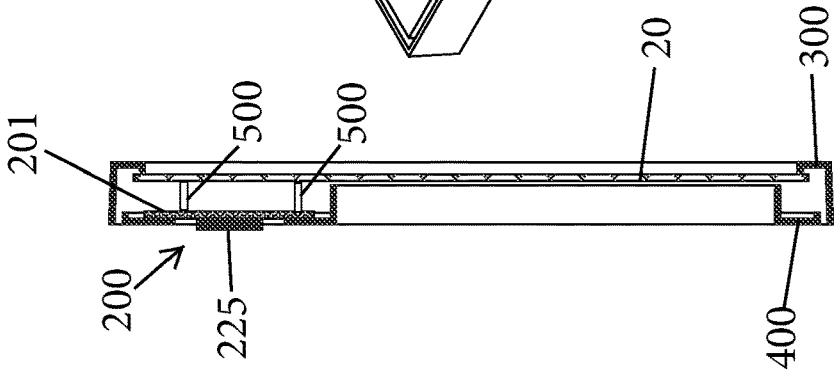


Fig. 4

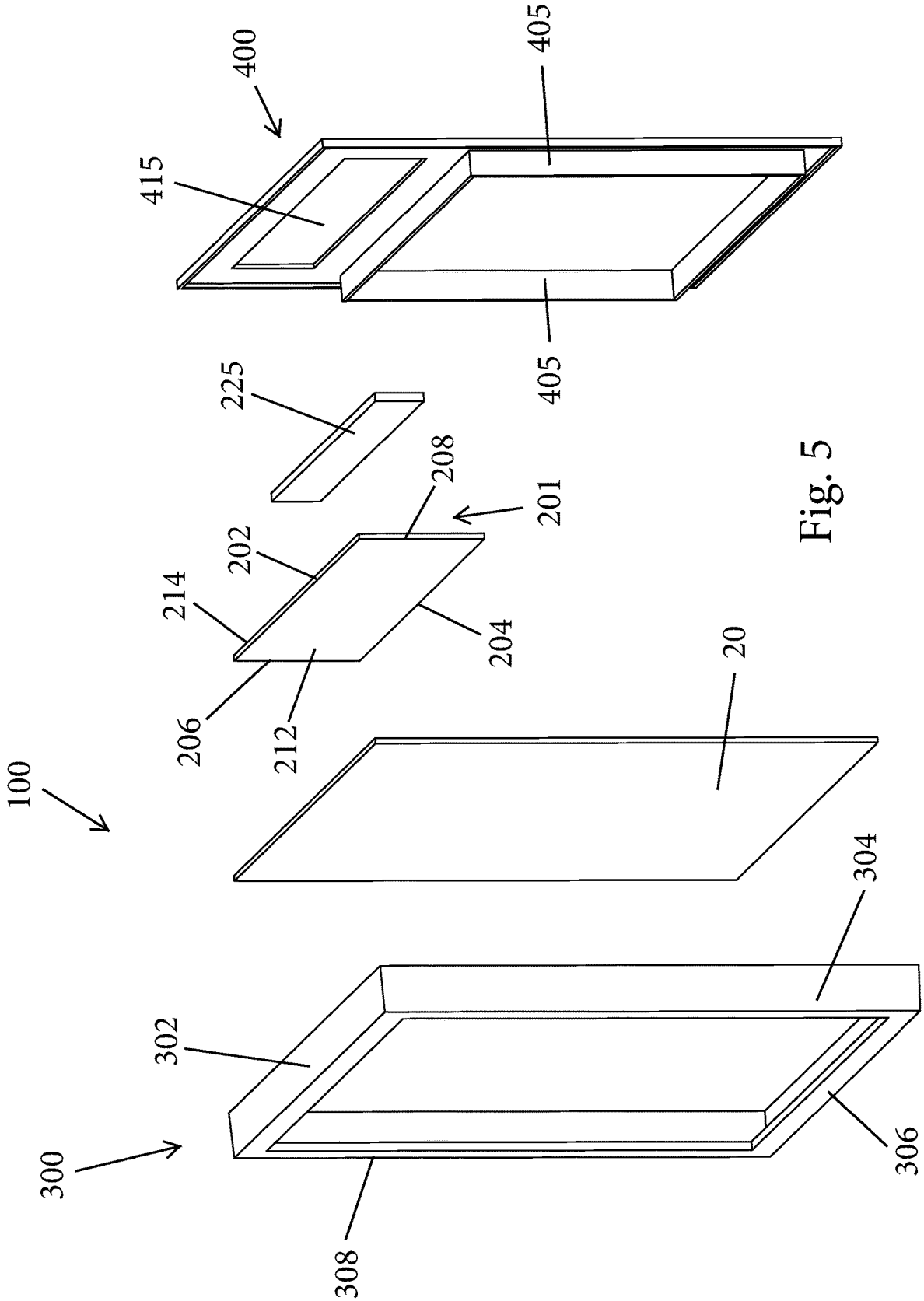

400
405
415
405
225
208
201
202
214
204
206
212
20
100
304
302
300
306
308

Fig. 5

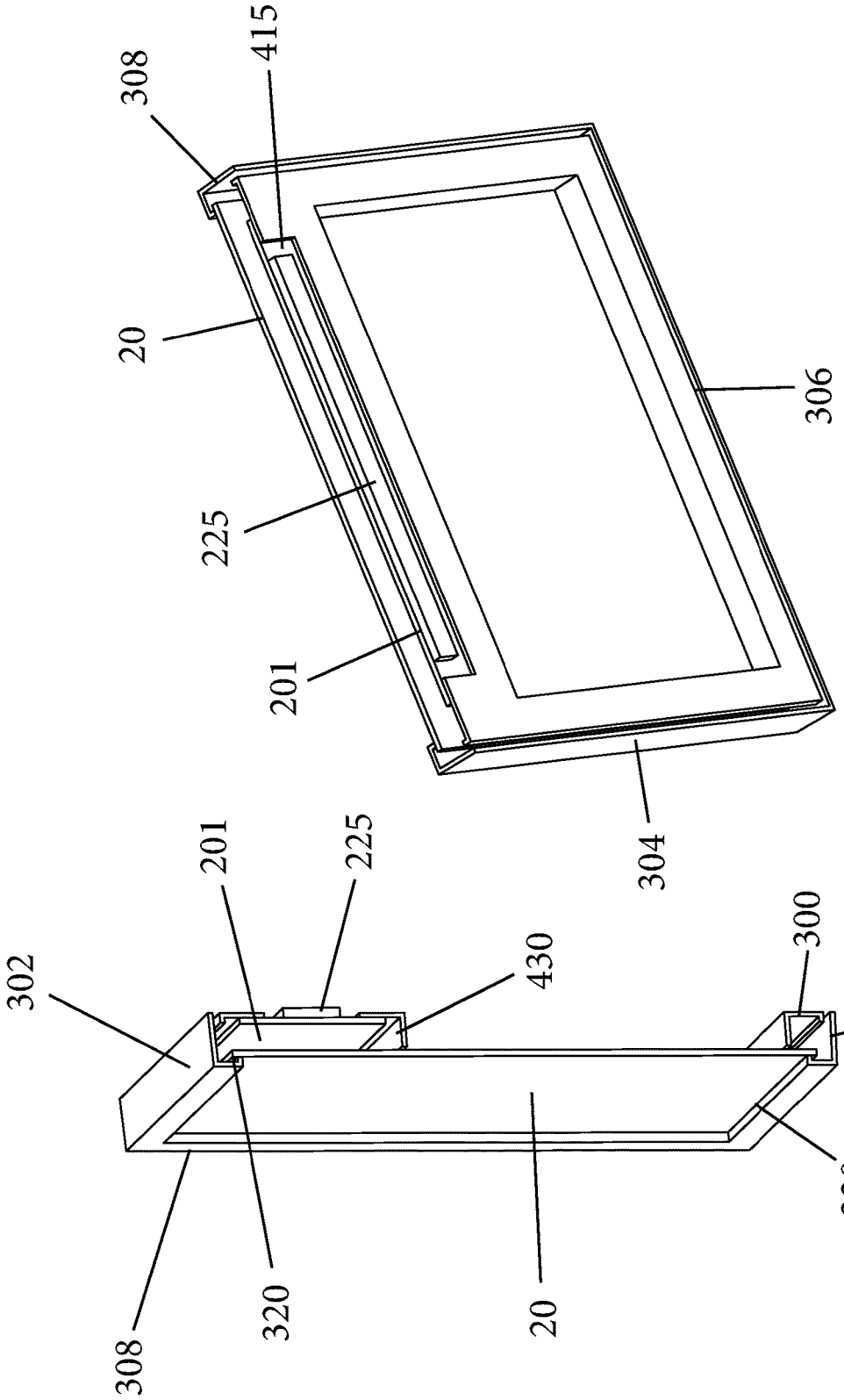


Fig. 7

Fig. 6

ADJUSTABLE FRAMING SYSTEM

CROSS-REFERENCE TO RELATED PATENT APPLICATIONS

This application is based on and claims priority to U.S. Provisional Patent Application 63/108,586, filed Nov. 2, 2020, the entire contents of which is incorporated by reference herein as if expressly set forth in its respective entirety herein.

TECHNICAL FIELD

The present disclosure is directed to a frame for displaying an object, such as a photograph or artwork, and more particularly, relates to a framing system (frame) or assembly that includes a rear component for fixed attachment to a support surface and a front component that is adjustable relative to the fixed rear component to allow adjustments to be made to the framing system without removal from the support surface.

BACKGROUND

For many years it has been customary to display photographs or other artwork on walls enclosed in picture frames. The design of these frames has virtually remained unchanged, consisting of a wooden molding outer frame with enclosed backer board, upon which a photograph is placed covered in part at the edges with a chipboard mat with bevel cut opening, covered by a pane of glass. A wire line draped from edge to edge on the backside of the frame is then used to hang the frames on a nail/hook or screw imbedded into the wall.

Alternative mounting systems have been commercialized including the use of an adhesive as part of the mounting system. However, one of the challenges of using an adhesive is that it can mar the support surface and also, it is difficult if not impossible to make minor adjustments to the frame position on the support surface. If an adhesive bond is broken with the support surface for the purpose of repositioning of the frame, not only can marring of the support surface occur but also once the adhesive bond is broken, it weakens and reapplication to the support surface results in a weaker bond.

There is therefore a need to provide a framing system that is easy to assembly and also allows for repositioning of the framing system on the support surface without suffering from the deficiencies of the existing frame products.

SUMMARY

A frame system according to one embodiment includes a mount body having an inner surface and an opposing outer surface. The outer surface has an adhesive body applied thereto. The adhesive body has an adhesive on an outer surface thereof for contacting and bonding with a support surface. The frame system further includes an outer frame element having a first opening through which an image substrate is visible. The outer frame element has a first surface against which the image substrate seats. A back plate is configured for attachment to the outer frame element and the back plate includes a second opening that receives the adhesive body. The back plate further includes a forward protrusion against which the image substrate seat. A mount space is defined between the outer frame element and the back plate in which the mount body is disposed and is configured to move in at least two directions for adjusting a position of the frame system on the support surface. At least one biasing element (e.g. a spring) applies a force against the mount body for holding the assembled outer frame element and back plate in a desired position relative to the mount body.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. **1** is a view of an adjustable framing system according to a first embodiment;

FIG. **2** is a side elevation view thereof;

FIG. **3** is a rear elevation view thereof;

FIG. **4** is a cross-sectional view taken along the line A-A of FIG. **3**;

FIG. **5** is an exploded perspective view thereof;

FIG. **6** is a first cross-sectional view; and

FIG. **7** is a second cross-sectional view.

DETAILED DESCRIPTION OF CERTAIN EMBODIMENTS

Adjustable Framing System **100** (FIGS. **1-6**)

In accordance with the present disclosure, as illustrated in FIGS. **1-6**, a framing system or assembly (kit) **100** is shown and described and is configured to create a framed article that can be displayed either on a support surface, such as a wall. The framed article is configured to display an image that is part of an image substrate **20** that is held and displayed within the framing system **100**. The image substrate **20** is typically a rigid substrate on which an image is displayed. While the image substrate **20** is illustrated in the figures as a single layer, it will be appreciated that the image substrate **20** can include more than one layer, such as a rigid backing layer and a photo layer or the like. The image displayed can take any number of different forms including a paper clipping, a photo, artwork including a painting on canvas, or other artistic expression.

As described herein, the framing system **100** provides an easy to use and easy to assemble kit that allows a user to assemble the frame and position and retain the image substrate **20** therein.

The framing system **100** has two main parts, namely, a mount **200** that is configured to be fixedly attached to the support surface and a frame subassembly that is formed of an outer frame element **300** and a back plate **400** that mates with the outer frame element **300** to form the assembled frame. As described herein, the outer frame element **300** and the back plate **400** are attached to one another with a mechanical fit and more particularly, can snap-fittingly mate with one another.

Mount **200**

The mount **200** is constructed and intended to be fixedly attached to the support surface (wall), while allowing the frame subassembly to be adjustable coupled to the mount **200**. As described herein, this arrangement allows for the frame subassembly to be adjusted, in a rotational direction, while the entire framed article is mounted to the support surface. In other words, the framed article does not have to be taken down in order to make (rotational) adjustments.

The mount **200** has a body **201** that has an inner surface **212** and an outer surface **214**. The mount **200**. In the illustrated embodiment, the mount **200** is an elongated member and more specifically, the mount **200** can have a rectangular shape. In the illustrated embodiment, the body **201** of the mount **200** has a top edge **202**, an opposite bottom

edge **204**, a first end **206**, and an opposite second end **208**. When assembled into the frame subassembly, the top edge **202** faces towards the top of the framed article, the bottom edge **204** faces towards the bottom of the frame article, the first end **206** faces towards one side of the framed article, and the second end **208** faces towards the other side of the framed article.

The outer surface **214** of the mount **200** includes an adhesive pad **225**, such as a double-sided adhesive pad that is bonded to the outer surface **214** along an inner surface of the adhesive pad. The outer surface of the adhesive pad **225** can include a release layer that is removed to reveal an adhesive layer, such as a permanent adhesive layer. The mount **200** is attached to the support surface by pressing the adhesive layer onto the support surface.

The shape of the adhesive pad **225** is complementary to the shape of the mount **200** and therefore, in the illustrated embodiment, the adhesive pad **225** has a rectangular shape. In the illustrated embodiment, the footprint of the adhesive pad **225** is less than the footprint of the mount **200**.

Outer Frame Element **300**

The outer frame element **300** is a hollow piece that has a main body that defines a hollow center opening **305**. The outer frame element **300** can have any number of different shapes and sizes based on the intended shape and size of the framed article. The main body of the outer frame element **300** has a plurality of (e.g., four) interconnected walls **302**, **304**, **306**, **308**. The illustrated main body has a square shape and therefore, each of the interconnected walls **302**, **304**, **306**, **308** can be in the form of a rail or the like. Each of the walls **302**, **304**, **306**, **308** has an outer surface and an inner surface. The illustrated outer surface represents the portion of the frame system **100** that is readily visible and therefore, it can be smooth or it can have a decorative finish (and thus is not limited to being a smooth surface).

As shown in FIG. **6**, the outer frame element **300** can include an inwardly directed lip **320** along the front of the outer frame element **300**. This lip **320** defines a surface against which the image substrate **20** seats when the frame assembly **100** is fully assembled.

The outer frame element **300** can be formed of any number of suitable materials including suitable plastics (e.g., injection molded plastics).

Back Plate **400**

The back plate **400** serves as the rear part of the frame assembly **100** that is located behind the image substrate **20** and the engagement of the back plate **400** to the outer frame element **300** serves to capture and hold the image substrate **20** between the back plate **400** and the outer frame element **300**.

As mentioned, the back plate **400** attaches to the outer frame element **300** and closes off the back of the frame system **100**. As also described herein, the image substrate **20** is disposed and held between the back plate **400** and the outer frame element **300**. The back plate **400** includes a forward protrusion **405** that serves to contact the image substrate **20** and more particularly, the image substrate **20** can be held between the forward protrusion **405** and the lip **320** of the outer frame element **300**. The forward protrusion **405** thus provides a surface against which the image substrate **20** seats. In the illustrated embodiment, the forward protrusion **405** has a square shape defined by four rails with a hollow space therebetween. As shown in FIG. **5**, the forward protrusion **405** occupies a bottom region of the back plate **400** and in the illustrated embodiment, the forward protrusion **405** occupies more than a majority of the footprint of the back plate **400**.

A mount space **430** is formed a top wall of the forward protrusion **405** and the wall **302**. A bottom of the mount space **430** is defined by the top wall of the forward protrusion **405**, the top of the mount space **430** is defined by the wall **302**, a first end of the mount space **430** is defined the wall **304** and the opposite second end of the mount space **430** is defined by the wall **308**. As described herein, the mount **200** is received within the mount space **430**.

An upper region of the back plate **400** includes an opening **415**. The opening **415** is sized and shaped to receive the adhesive pad **225** to allow the adhesive pad **225** to extend rearward to the back plate **400** and into contact with the support surface (wall). The adhesive pad **225** is thus fixedly attached to the support surface and since the adhesive pad **225** is fixedly attached to the body **201** of the mount **200**, the body **201** of the mount **200** is likewise fixedly attached to the support surface. As described herein, the oversized nature of the mount space **430** relative to the mount **200** allows for adjustment of the frame subassembly by moving the frame subassembly relative to the fixed mount **200**. The mount space **430** must be sized to allow for the up and down movement of the back plate **400** relative to the body **201** as well as left and right movement. Moreover, the opening **415** must also be sized to allow for this up, down, left and right movement of the back plate **400** relative to the adhesive pad **225**. These arrangements allow for adjustments of the frame subassembly after it is mounted to the mount **200** as described herein.

Biasing Element **500**

The frame system **100** also includes a biasing element **500** that is configured to apply a biasing force in rear direction toward the support surface (wall). More specifically, the biasing element **500** is designed to apply a force against a front (surface) face of the body **201** of the mount **200** so that the body **201** is pressed against the front surface of the back plate **400**.

The biasing element **500** can take the form of one or more springs that are disposed between a first surface and the inner surface **212** of the mount **200**. The first surface can be a rear face of the image substrate **20** or can be a face of the outer frame element **300**.

The function of the biasing element **500** is to apply a force to the body **201** so that the body **201** seats against the back plate **400**. In this way, the frame subassembly **300**, **20**, **400** is coupled to the mount **200** and can maintain a position that is set by the user, while permitting the user to make up/down and left/right adjustments of the frame subassembly **300**, **20**, **400** relative to the mount **200**. In other words, the force applied by the biasing element(s) to the mount body **201** causes the frame subassembly to remain in place against the fixed mount **200**. The force of the biasing element **500** seats the frame subassembly against the mount **200** such that the frame subassembly does not freely move relative to the mount **200**.

The biasing element **500** can thus be in the form of one or more separate springs that are disposed in the mount space **430** or the biasing element can be integrally formed with the mount body **201**. In other words, the body **201** can include one or more integral spring members that contact the first surface (e.g., the image substrate **20** or the outer frame element **300**) and push forward the mount body **201** against the back plate **400**.

The back plate **400** can be formed of any number of suitable materials including suitable plastics (e.g., injection molded plastics). As shown, the back plate **400** is preferably an integral single piece structure.

Mounting Process

First the mount **200** is secured to the support surface by removing the release cover and then pressing the exposed adhesive pad **225** against the support surface resulting in the mount **200** being fixedly attached to the support surface. The back plate **400** is then positioned relative to the fixed mount **200** by orienting it such that the adhesive pad **225** passes through the opening **415** formed in the back plate **400**. The mount body **201** is located forward of the opening **415** within the upper region of the back plate **400**.

The back plate **400** is designed to snap fit with the outer frame element **300** with the mount **200** being located with the mount space **430** that is formed when the outer frame element **300** and the back plate **400** are attached to one another. The biasing element(s) **500** apply the rearward force against the mount body **201** so that the mount body **201** itself seats against the back plate **400** thereby holding and maintaining the position of the frame subassembly relative to the fixed mount **200**.

Adjusting the Framing System

In accordance with the present disclosure, the framing system **100** is designed so that it can be incrementally adjusted in the up direction, down direction, left direction and right direction relative to the fixed mount **200**. In particular, the height of the mount space **430** defines the degree of up and down movement of the back plate **400** relative to the fixed mount **200** and similarly, the width of the mount space **430** defines the degree of left and right movement of the back plate **400** relative to the fixed mount **200**. As mentioned, the wall **302** defines the maximum lowered adjustment position of the frame subassembly relative to the fixed mount **200** in that the wall **302** acts as a stop when the top edge of the mount body **201** contacts the wall **302**. The top wall of the forward protrusion **405** defines the maximum raised adjustment position of the frame subassembly relative to the fixed mount **200** in that the top wall of the forward protrusion **405** acts as a stop when the bottom edge of the mount body **201** contact this top wall. The wall **304** defines the maximum right adjustment position of the frame subassembly relative to the fixed mount **200** in that the wall **304** acts as a stop when the right edge of the mount body **201** contact this wall **304**. The wall **308** defines the maximum left adjustment position of the frame subassembly relative to the fixed mount **200** in that the wall **308** acts as a stop when the right edge of the mount body **201** contact this wall **308**.

The biasing element **500** continues to apply a biasing force to the mount body **201** as the frame subassembly is adjusted relative to the mount **200**. As a result of this biasing force, the adjustment is a smooth process and the frame subassembly does not slip and maintains the new repositioned position due to the biasing force pressing the mount body **201** against the back plate **400**.

The ability for the frame subassembly to move relative to the fixed mount **200** allows the user to make small adjustments of the framed article in one or more of the following directions: up direction, down direction, left direction and right direction. It will also be appreciated that the frame subassembly can be slightly rotated in order to adjust it as well. Thus, the present system allows for one or more of axial adjustment (in multiple directions) and rotational adjustment (in different directions). This capability allows for the framed article to be properly positioned on the support surface including positioning of the framed article relative to other framed articles. The user simply grasps the outer frame element **300** and moves the frame article in the desired direction (e.g., up, down, left or right) and once the desired repositioned location is reached, the user releases the grasp on the outer frame element **300**. The force applied by the biasing element maintains the framed article in the desired repositioned location.

It will be appreciated that as the frame subassembly **300**, **20**, **400** moves relative to the fixed mount **200**, the at least one biasing element **500** accommodates such sliding action. For example, in some embodiments, the at least one biasing element **500** can slide relative to one or more of: (1) the image substrate or outer frame element and (2) the mount body **201**.

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms "a", "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising", when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not precludes the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

Also, the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting. The use of "including," "comprising," or "having," "containing," "involving," and variations thereof herein, is meant to encompass the items listed thereafter and equivalents thereof as well as additional items.

The subject matter described above is provided by way of illustration only and should not be construed as limiting. Various modifications and changes can be made to the subject matter described herein without following the example embodiments and applications illustrated and described, and without departing from the true spirit and scope of the present invention, which is set forth in the following claims.

What is claimed is:

1. A frame system comprising:

a mount body having an inner surface and an opposing outer surface, the outer surface having an adhesive body applied thereto, the adhesive body having an adhesive on an outer surface thereof for contacting and bonding with a support surface;

an outer frame element having a first opening through which an image substrate is visible, the outer frame element having a first surface against which the image substrate seats;

a back plate configured for attachment to the outer frame element, the back plate including a second opening that receives the adhesive body, the back plate further includes a forward protrusion against which the image substrate seat; and

a mount space that is defined between the outer frame element and the back plate in which the mount body is disposed and is configured to move in at least two directions for adjusting a position of the frame system on the support surface; and

at least one biasing element applying a force against the mount body for holding the assembled outer frame element and back plate in a desired position relative to the mount body.

2. The frame system of claim **1**, wherein the outer frame element and the back plate are coupled by a snap-fit.

3. The frame system of claim **1**, wherein the first surface comprises an inwardly directed peripheral lip.

4. The frame system of claim 1, wherein the forward protrusion is square shaped and is located below the second opening and defines a surface against which a rear surface of the image substrate seats.

5. The frame system of claim 4, wherein the mount body is located above a top wall of the forward protrusion and the top wall defines a bottom of the mount space.

6. The frame system of claim 5, wherein a top of the mount space is defined by a top wall of the outer frame element, a first end of the mount space is defined by a first side wall of the outer frame element and an opposite second end of the mount space is defined by a second side wall of the outer frame element.

7. The frame system of claim 1, wherein a first ratio is equal to a width of the mount space relative to a width of the mount body; a second ratio is equal to a height of the mount space relative to a height of the mount body, a third ratio is equal to a height of the second opening relative to a height of the adhesive body and a fourth ratio is equal to a width of the second opening relative a width of the adhesive body, wherein the first ratio is equal to or greater than the fourth ratio and the second ratio is equal to or greater than the third ratio.

8. The frame system of claim 1, wherein an area of the second opening is greater than an area of the adhesive body.

9. The frame system of claim 1, wherein a footprint of the adhesive body is less than a footprint of the mount body.

10. The frame system of claim 1, wherein the at least two directions include a top and down direction and a left and right direction.

11. The frame system of claim 1, wherein a height of the mount space is greater than a height of the mount body and a width of the mount space is greater than a width of the mount body.

12. The frame system of claim 1, wherein the at least one biasing element comprises at least one spring that is disposed between and seats against one of the image substrate and the outer frame element and the mount body.

13. The frame system of claim 12, wherein there are a pair of springs.

14. The frame system of claim 12, wherein the at least one spring seats at a first end thereof against the image substrate and seats at a second end thereof against the mount body.

15. The frame system of claim 1, wherein the at least one biasing element comprises a spring element that is integrally formed as part of the mount body.

16. The frame system of claim 1, wherein the adhesive body comprises an adhesive pad with a removable release cover.

17. The frame system of claim 1, wherein the at least one biasing element urges the mount body flush against the back plate.

* * * * *