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MATERIAL HANDLING SOLUTIONS

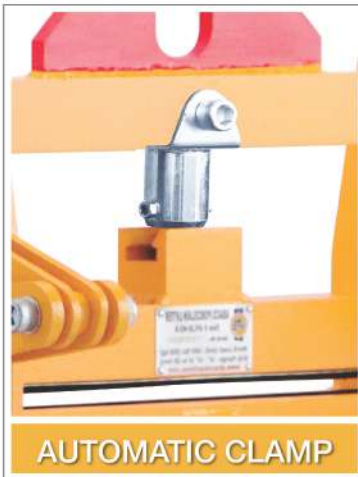
# ABACO PORCELAIN LIFTER

**APL20**



APL20 is designed to lift and move materials which are flat, long, thin, delicate and breakable such as porcelain, glass, ceramic, etc.

<b>Work Load Limit</b>	<b>660 lbs (300kg)</b>
<b>Grip Range</b>	<b>3/16" ~ 13/16" (4 mm ~ 20 mm)</b>



**AUTOMATIC CLAMP**



**GUIDE SHAFT**

## US PATENT #10,633,224



US 10,633,224 B2

**United States Patent**  
Nguyen

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 (22) Filed: **Oct. 5, 2018** 2010 0666189 A1 \* 7/2010 Otake ..... 046C 1 48  
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 (05) **Pub. Publication Date** 2014 0828078 A1 \* 1/2014 LaValley ..... 05C 1 44  
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**Related U.S. Application Data**

(09) Provisional application No. 62/781,008, filed on Oct. 15, 2017, government application No. 62/584,923, filed on Nov. 17, 2017, prior-provisional application No. 62/741,255, filed on Oct. 5, 2018, provisional application No. 62/741,557, filed on Oct. 5, 2018.

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**ABSTRACT**

A clamping device for lifting and moving objects, can include a fixed and movable jaw facing in opposite and movable jaws, which is actuated by an arm assembly coupled to a fixed body. The clamping device can include a lead-line mechanism for swiveling between a clamping position and a jaw opening position for inserting the object. The clamping device can include a sliding mechanism for guiding an object to the space between the jaws, effectively engaging the jaw opening for ease of clamping on thicker objects.

29 Claims, 16 Drawing Sheets

FIG. 1(a) FIG. 1(b) FIG. 1(c)

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