Oct. 11, 1960 R. D. BERG 2,955,820

ARTICLE ALIGNING FIXTURE WITH QUICK-ACTING CLAMPING DEVICES

Filed Feb. 10, 1958

FIG. 1

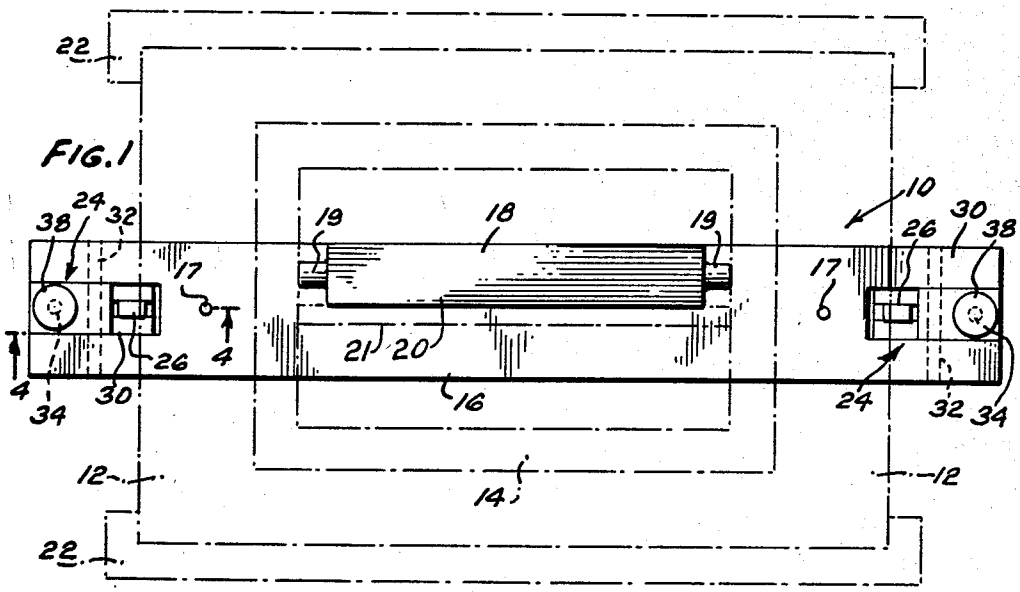


FIG. 2

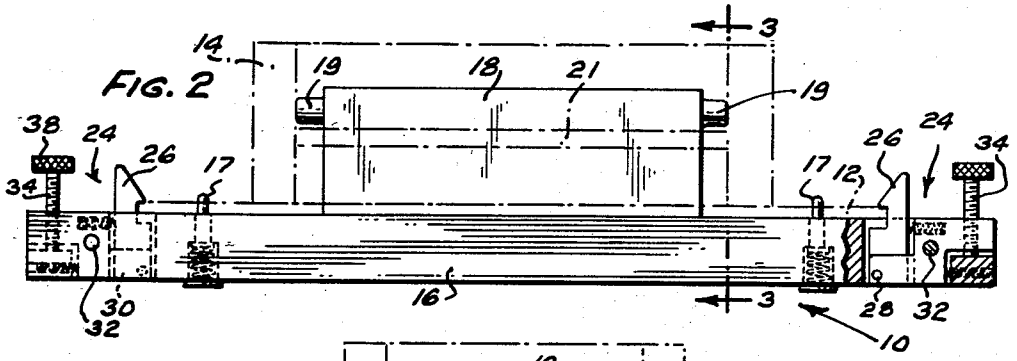


FIG. 3

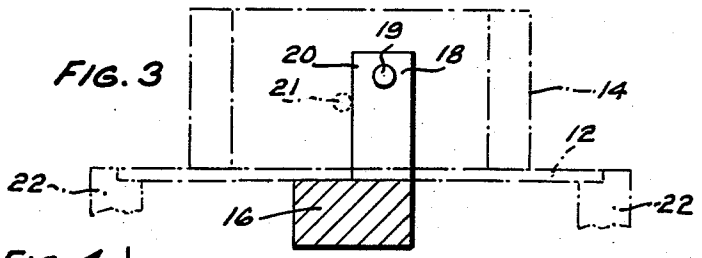


FIG. 4

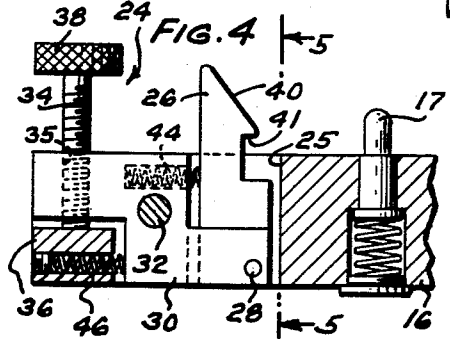
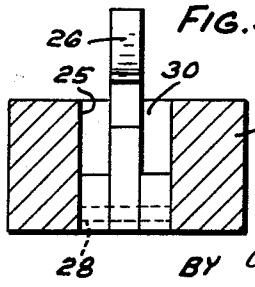


FIG. 5



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United States Patent Office 2,955,820
Patented Oct. 11, 1960

2,955,820

ARTICLE ALIGNING FIXTURE WITH QUICK-ACTING CLAMPING DEVICES

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Filed Feb. 10, 1958, Ser. No. 714,413

3 Claims. (Cl. 269—155)

This invention relates to an article-aligning fixture and more particularly to a fixture having quick-acting devices for latching and clamping articles thereto.

An object of the present invention is to provide a holding device for effecting a quick latching and clamping engagement between itself and an article.

Another object of the invention is the provision of an aligning fixture having quick-acting devices thereon for latching and clamping an article thereto.

With these and other objects in view, the invention contemplates a member for supporting a first component of a composite article and having means for aligning the first component and a second component applied to the first. Latching and clamping devices are provided on opposite ends of the member for holding the first component and the member together and each device includes a hooked latch engageable with the first component and pivotally mounted on one end of a lever which is pivotally secured intermediate its ends on the member and has a thumb screw threadedly mounted in the other end thereof for actuating the lever, whereby after the fixture and the first component are brought into engagement with each other and the latches are hooked over the first component, the thumb screws may be turned to actuate the levers and move the latches toward the member to clamp the first component thereto.

Other objects and advantages of the invention will become apparent by reference to the following detailed description thereof and the accompanying drawings, in which:

Fig. 1 is a plan view of the aligning fixture with clamping devices embodying the invention and showing in dotted lines components of an article to be assembled thereon;

Fig. 2 is a side elevational view of the aligning fixture and clamping devices and showing the components of the article in dotted lines;

Fig. 3 is a cross sectional view of the fixture taken on the line 3—3 of Fig. 2 and showing in dotted lines the components of the article to be assembled thereon;

Fig. 4 is an enlarged fragmentary vertical longitudinal sectional view of the aligning fixture and clamping device taken on the line 4—4 of Fig. 1; and

Fig. 5 is a cross sectional view of the fixture taken on the line 5—5 of Fig. 4.

Referring to the drawings, a fixture **10** selected to illustrate one embodiment of the invention has article-aligning elements thereon and is used for aligning a plate component **12** and a hollow rectangular component **14** in a predetermined position relative to each other preparatory to securing the components to each other. The fixture **10** comprises a base member **16** in the form of a bar having a flat upper surface in engagement with the plate **12** and having a pair of upwardly directed aligning pins **17** engageable in apertures in the plate **12** for locating the plate in a predetermined position on the member **16**. A gage **18** on the member **16** extends upwardly through a central aperture in the plate **12** and

has end elements **19** and a side surface **20** engageable with the end walls and a rod **21**, respectively, of the component **14** to locate the component in a predetermined position on the plate **12**. During the assembly of the components **12** and **14**, the plate component **12** is supported along opposite longitudinal edges thereof on a pair of standards **22** (Figs. 1 and 3) and the fixture is applied to the underside of the plate **12**.

A latching and clamping device **24** is provided at each end of the base member **16** for effecting the ready attachment of the fixture to the plate **12**, or vice versa, and the quick clamping of the plate **12** to the base member **16** of the fixture. Each of the devices **24** is disposed in an aperture **25** in the end portions of the member **16** and comprises an upstanding latch **26** pivotally connected at its lower end by a pin **28** to one end of a lever **30**. This lever is pivotally mounted intermediate its ends on a pin **32** secured to the member **16**. A thumb screw **34**, threadedly mounted in a threaded aperture **35** in the other end of the lever, has an end engageable with an abutment portion **36** of the member **16** and has an enlarged head **38** by means of which it may be turned to actuate the lever. The upper end of the latch is hook shaped and has a sloping cam surface **40** by means of which the latch is oscillated outwardly by the plate **12** as the plate and the fixture **10** are brought together, and the latch **26** has a shoulder **41** engageable with the upper surface of the plate **12** for holding the plate **12** against movement away from the base member **16**. The lever **30** is Z-shaped as viewed from the side (Fig. 4) and has a recess for supporting a spring **44** which urges the latch **26** into a normal position in the path of movement of the plate component **12** and for yieldably maintaining the latch in locking engagement therewith. A spring **46**, supported in a recess in the abutment portion **36** of the base member **16**, stresses the lever **30** for rotation tending to raise the latch to a normal operative position.

In the operation of aligning the components **12** and **14**, the plate component **12** is positioned horizontally on the upper end of the supporting standards **22** and the aligning fixture **10** is positioned beneath the plate component **12** and raised into engagement therewith to cause the gage **18** of the fixture to project through the central aperture of the plate **12**, the pins **17** to engage the aligning perforations in the plate **12**, and the latches **26** to be cammed outwardly and snapped into latching engagement with opposite edge portions of the plate **12**. With the latches **26** latched onto the ends of the plate component **12**, the fixture is loosely interconnected therewith. The operator may then turn the thumb screws **34** to rock the levers **30** which move the latches **26** downwardly and cause them to pull the plate **12** and the member **16** into firm clamping engagement with each other. The arrangement of the parts is such that the thumb screws **34** need be turned through only a relatively small movement, less than one revolution, to effect the clamping of the plate **12** to the base member **16**.

Although the quick-acting latching and clamping device **24** is disclosed herein as being applied to an aligning fixture, it is manifest it may be applied to or form a part of various fixtures for latching and clamping parts thereto. It is to be understood that the above-described arrangements are simply illustrative of the application of this invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

1. In a device for clamping an article, a member to which the article is to be clamped, a lever pivotally supported intermediate its ends on said member, a latch pivotally mounted at one end to one end of the lever and

having a hook shaped other end engageable with the article for clamping the article to the member, said latch being reciprocable by said one end of the lever in one direction toward and away from the member and being supported on the lever for movement of the hooked end transversely of said one direction to a normal position in the path of movement of the article for latching the article, said latch having a sloping cam surface capable of being engaged by said article for moving the latch laterally from said normal position in response to movement of the article into engagement with said member, resilient means for moving said latch to said normal position, and actuating means mounted on the other end of said lever and engageable with said member for turning the lever to effect the clamping of the article to the member.

2. In a device for holding an article, a member engageable with one side of the article, a lever pivotally supported intermediate its ends on said member, a latch pivotally mounted at one end to one end of the lever and having a hook shaped other end engageable with another side of the article opposite to said one side for clamping the article to the member, said latch being movable by said one end of the lever in one direction toward and away from the member and being supported on the lever for movement of the hooked end transversely of said one direction to a normal position in the path of movement of the article for latching the article, said latch having a sloping cam surface capable of being engaged by said article for moving the latch laterally from said normal position in response to movement of the article into engagement with said member, spring means for moving said latch to said normal position, a threaded element adjustably mounted on the other end of said lever and engageable with said member for turning the lever to effect the clamping of the article to the member, and spring means for urging the lever in a direction to move the latch from the member.

3. In a device for holding an article, a base member having a surface engageable with one side of the article, aligning means projecting from said one side of said base member for aligning the article in a predetermined position on the base member and for guiding the article thereonto in a predetermined direction, a pair of levers pivotally mounted intermediate their ends on said base member in spaced relation to each other for receiving said article therebetween and for movement of the ends of the levers substantially parallel to said direction, each of said levers having a latch pivotally connected at one end of the latch to one end of the lever for movement toward and away from said base member, each of said latches having a hook-shaped other end forming a shoulder extending transversely of said direction and engageable with another side of said article opposite to said one side for clamping the article against said base member and having an obliquely disposed cam surface capable of being engaged by the article for moving the latch transversely of said direction in response to movement of the article into engagement with said base member, resilient means for urging said latches laterally to normal positions in latching engagement with said article and in the path of movement thereof, and threaded members mounted on the other ends of said levers and engageable with said base member for actuating the levers to effect the movement of the latches toward the base member and the clamping of said article thereto.

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