Nov. 4, 1952 C. H. ZIESE 2,616,741

EXTENDED ARTICLE-GRIPPING DEVICE

Filed Feb. 2, 1951

FIG. 1

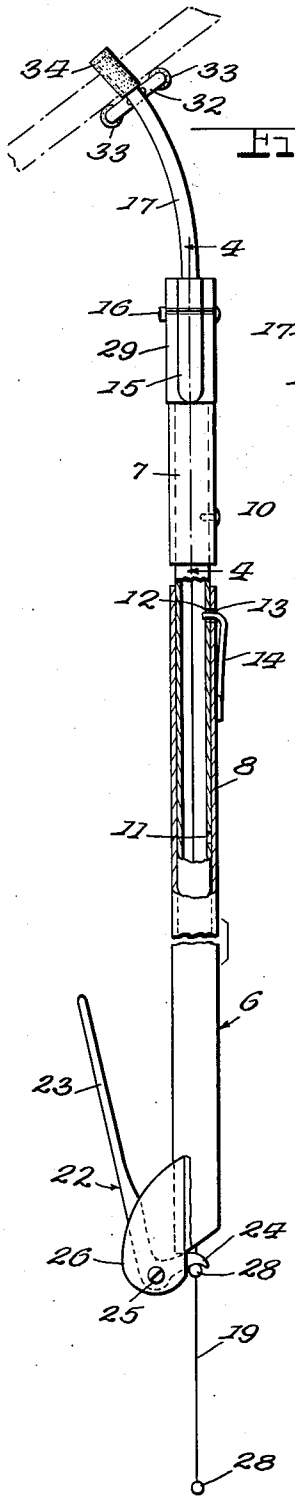


FIG. 3

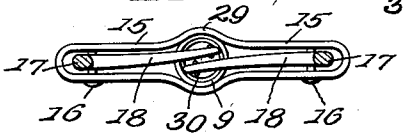


FIG. 4

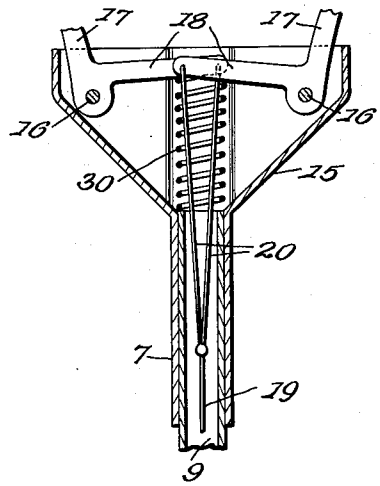


FIG. 5

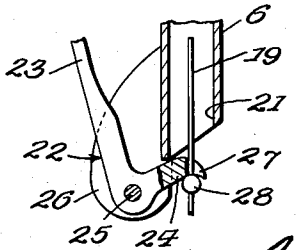
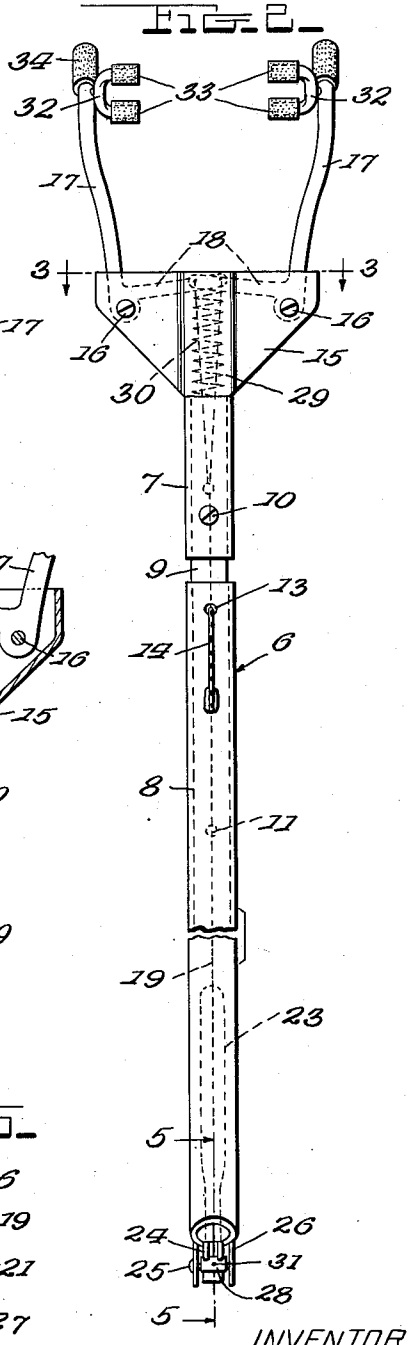


FIG. 2



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EXTENDED ARTICLE-GRIPPING DEVICE

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4 Claims. (Cl. 294—19)

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My invention consists in new and useful improvements in an extended article-gripping device and has for its object to provide a mechanically operated, manually controlled device primarily adapted for use by theater operators and the like, in periodically changing removable letters in advertising displays. Advertising boards or displays of this nature are usually located at a considerable elevation which requires an attendant to climb a ladder in order to accomplish a change of letters which is not only inconvenient and time-consuming, but often endangers person and property.

I am familiar with a number of prior extension devices for various uses such, for example, as inserting and removing light bulbs, and although some of these have been equipped with article-gripping tongs, none of the mechanisms which have come to my attention are adapted nor could they be used for the type of work to which my invention is directed. The principal objection to these prior devices lies in their failure to provide for adequate adjustability, operating leverage, and positive gripping action.

It is, therefore, a further object of my invention to provide a device of this character, including on elongated and longitudinally adjustable handle having at one end a specially designed gripping unit, capable of handling advertising letters or other articles of varying shapes and dimensions and adapted to firmly grasp and support the same during manipulation, said gripping unit being manually controlled by a toggle lever arrangement located at the opposite end of the handle.

A still further object of my invention is to provide a pair of pivoted gripping elements equipped with cooperating fingers or article supports for stabilizing the letters or articles being handled, said gripping elements and fingers preferably being provided with resilient protecting sleeves or coverings at the points of article engagement.

Still another object of my invention resides in its simplicity of structure and ease of operation while, at the same time, providing for positive action and maximum leverage.

With the above and other objects in view which will appear as the description proceeds, my invention consists in the novel features herein set forth, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

Referring to the drawings in which numerals of like character designate similar parts throughout the several views,

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Figure 1 is a view in side elevation, partly in section, to illustrate the telescoping adjustment and locking device.

Figure 2 is a view at right angles to Figure 1.

Figure 3 is a sectional view taken on line 3—3 of Figure 2, illustrating the transversely extended, overlapping levers of the gripping elements.

Figure 4 is a transverse sectional view taken on line 4—4 of Figure 1, showing the mounting structure of the gripping elementary on an enlarged scale, and

Figure 5 is a fragmentary sectional view of the manually controlled toggle lever, taken on line 5—5 of Figure 2.

In the drawings 6 generally represents the elongated or extended handle which preferably consists of two sections of steel tubing or the like 7 and 8, connected at their adjacent ends by an internal telescoping sleeve 9. The sleeve 9 is fixed to the section 7 by means of a screw or rivet 10 and is arranged for sliding engagement with the adjacent end of the section 8, the sleeve being provided with two or more longitudinally spaced transverse openings 11 and 12, respectively adapted to register with a locking opening 13 in the end of section 8. Adjacent the latter opening is a substantially L-shaped locking spring 14, the angular free end of which is adapted to enter the registering openings 12 and 13 or 11 and 13, as the case may be, upon the proper longitudinal adjustment of the sections 7 and 8 on the sleeve 9.

The gripping unit carried at one end of the handle 6, consists of a transversely extended hollow head or support 15 which may be formed integral with section 7 of the handle as shown in Figure 4, or rigidly secured thereto in any suitable manner. The head flares outwardly from its mounting point and adjacent the transverse extremities of its open mouth, is provided with a pair of spaced pivot pins 16 for supporting a corresponding pair of gripping elements 17, the operating ends of which project longitudinally from the open mouth of the head 15.

The gripping elements 17 are preferably composed of rigid metal members concentrically curved away from the longitudinal axis of the handle 6, as shown in Figure 1 and respectively formed at their bases with angularly disposed converging operating levers 18, the inner extremities of which overlap in spaced relation and are respectively extended transversely beyond the axis of the handle, as shown in Figure 3.

A flexible cable 19 preferably of suitable metal, is bifurcated at one end as at 20 and the respec-

tive bifurcations are connected to the overlapping ends of levers 18 on the gripping elements 17, as will be seen from Figure 4. The cable 19 extends longitudinally through the hollow handle 6 and emerges from its open opposite end 21 as shown in Figure 5. Adjacent this end of the handle 6, I mount a manually controlled toggle lever 22, which consists of a hand control lever 23 and an angularly disposed connecting arm 24 which intersects the axis of the handle 6. The toggle lever is preferably mounted on a pivot 25 which extends through a pair of spaced wings 26 welded or otherwise secured to the handle 6 on either side of the toggle lever.

The free end of the connecting arm 24 of the toggle lever 22 is slotted as the 27 to receive the cable 19 and is preferably shaped to provide a curved seat for receiving one of a series of abutments 28, arranged at spaced intervals on the cable 19, for purposes of adjustment, as will hereafter appear.

The head 15 is enlarged at its central portion as at 29 to accommodate a coil spring 30 which is interposed between the inner end of the head 15 and the overlapping converging ends of the levers 18, said spring normally urging the levers 18 outwardly to rock the gripping elements 17 toward their open positions. A further function of the spring 30 is to exert a constant tension on the cable 19 so as to maintain the engagement of the seat formed on the connecting arm 24, with a selected abutment 28. The spacing of the abutments 28 on the cable 19 is so related to the length of the handle sections and the spacing of the locking apertures 11 and 12, as to insure a positive engagement of the connecting arm 24 with the respective abutments 28, regardless of the movement of the gripping elements 17.

The abutments 28 may be in any form but preferably consist of cylindrical elements, transversely apertured to receive the cable 19 and provided with set screws 31 which may be tightened into engagement with the cable 19 for purposes of adjusting the abutments on the cable. This is shown more clearly in Figure 2.

Spaced inwardly from the respective operating ends of the gripping elements 17, I provide stabilizing fingers or supports 32 which preferably consist of U-shaped members mounted at right angles to the respective gripping elements in opposed relation, as may be seen from Figure 2. Both the operating ends of the gripping elements and the ends of the fingers 32 are provided with protecting sleeves 33 and 34, of rubber or other resilient material to avoid damaging the articles to be gripped.

In operation, the handle 6 is adjusted to the proper length and locked in place by means of the locking device 14. The gripping elements 17 are normally in open position due to the action of the spring 30 on levers 18 and upon the rocking movement of the toggle lever 22 by the operating lever 23, the cable 19 is drawn longitudinally through the handle 6, forcing the levers 18 inwardly and rocking the gripping elements 17 on their pivots. A letter or article is gripped by the operating ends of the elements 17 with its flat surface or base resting upon the angularly disposed fingers 32 which give further support and stability to the letters during manipulation. As long as the operating lever 23 is maintained under force in the direction of the handle 6, the gripping action of the elements 17 continues and the letter or article being handled can be inserted or removed from the advertising sign. The release of the operating lever 23 simultaneously releases the gripping action of elements 17 and the spring 30 returns the gripping elements to their open position.

It will be obvious that the overlapping arrangement and extension of the levers 18 afford a maximum leverage to effect positive gripping action with a minimum of pressure on the operating lever 23.

From the foregoing it is believed that my invention may be readily understood by those skilled in the art without further description, it being borne in mind that numerous changes may be made in the details of construction without departing from the spirit of the invention as set forth in the following claims.

I claim:

1. In an extended article-gripping device for substantially flat surfaced articles, including an elongated handle having a mounting head at one end, an article-gripping unit comprising a pair of diametrically opposed, substantially parallel arms, pivotally mounted on said head with their free ends directed substantially longitudinally of said handle, each arm terminating in a longitudinally projecting gripping finger, said arms being provided with stabilizing supports, consisting of cross-arms mounted in opposed relation on the inner sides of respective arms, at points spaced rearwardly from the projecting ends of respective fingers, each cross-arm extending transversely on opposite sides of respective fingers and terminating at opposite ends in inwardly directed, angularly disposed abutments which lie in parallel planes, substantially perpendicular to the plane of the corresponding finger, the abutments of each cross arm being arranged in diametrically opposed relation to the corresponding abutments of the opposite cross arm, and adapted jointly to form a stabilizing support for the contiguous flat surface of an article being gripped between said fingers, a manually controlled operating lever on said handle and means connecting the same to respective arms.

2. A device as claimed in claim 1, wherein said arms, adjacent their pivoted ends are curved in a common direction away from the longitudinal axis of said handle on two separate but equal radii of curvature.

3. A device as claimed in claim 1, wherein each of said stabilizing cross-arms is substantially U-shaped with the central portion of its base secured to its respective arm in directly opposed relation to the adjacent cross-arm.

4. A device as claimed in claim 1, wherein said fingers and stabilizing cross-arms are covered with cushioning material.

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