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ARTICLE GRASPING AND HANDLING DEVICE

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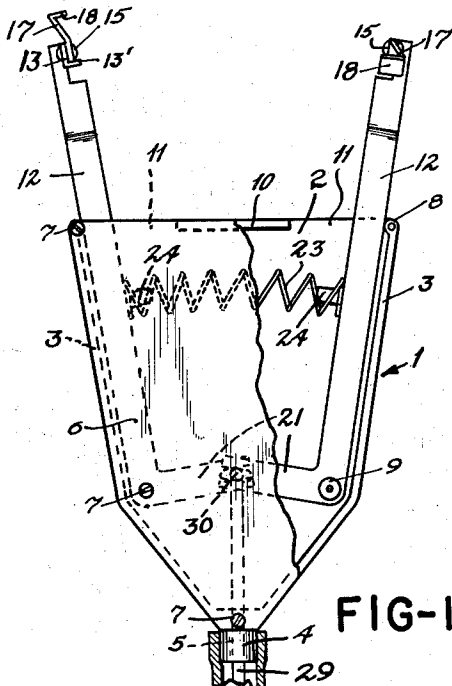


FIG-1

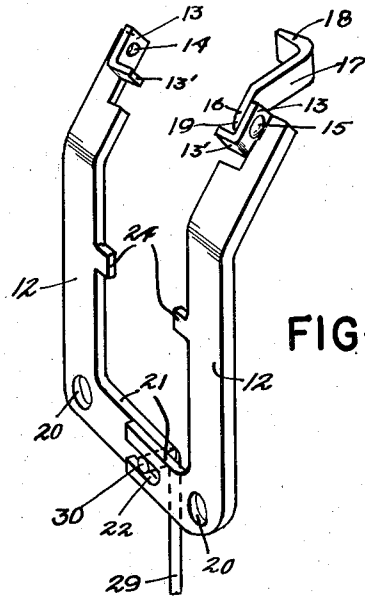


FIG-2

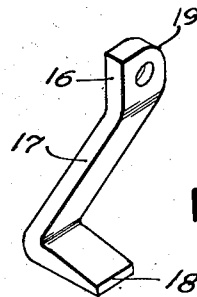


FIG-3

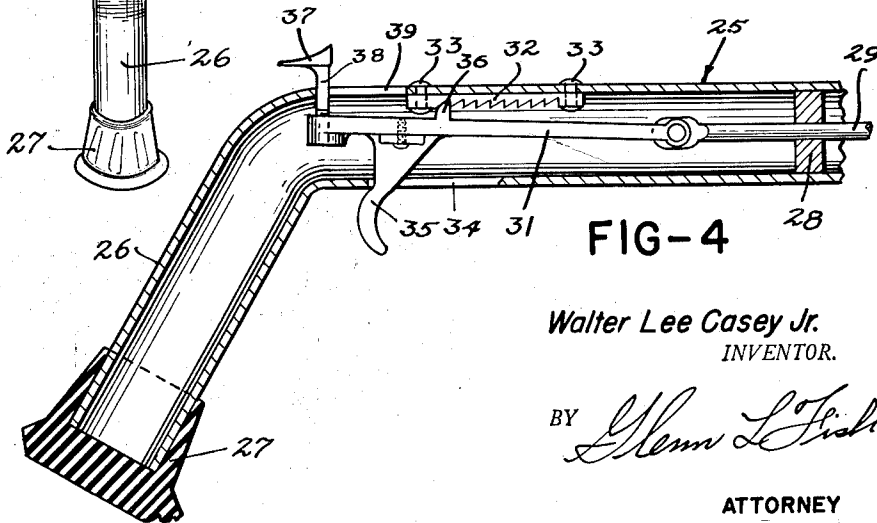


FIG-4

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ARTICLE GRASPING AND HANDLING DEVICE

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4 Claims. (Cl. 294-19)

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This invention relates to an improved article grasping and handling device and constitutes an improvement over the device covered by my prior Patent No. 2,493,108. While the device is particularly adapted for grasping and removing or applying letters of a theatre marquee it will be understood that it is not restricted to this particular use but may be used for grasping and holding any articles which can be gripped between a pair of arms movable towards each other to a gripping position.

One object of the invention is to provide a device of this character having a pair of arms mounted in an improved manner in a hollow head and allowed to have free pivotal movement about pivot members but prevented from accidentally slipping out of pivotal engagement with the pivot members.

Another object of the invention is to provide a head which is hollow and has a wall or cover which is removably secured by screws engaged in lugs formed upon a second wall and serving as pivots for pivoted arms as well as socket portions into which the securing screws are mounted.

Another object of the invention is to provide a device of this character wherein the arms have their outer front ends so formed that article-engaging fingers may be pivoted thereto and pivotal movement of the fingers limited so that when the device is in use the fingers will be held in proper position for grasping an article between them when the arms are swung towards each other to a gripping position.

Another object of the invention is to provide improved arm-operating means including a rod slidable longitudinally through a tubular handle and having at its rear end improved means for shifting the rod longitudinally and releasably holding it in position to hold the arms in a gripping position.

With these and other objects in view the invention consists of an improved construction and arrangement of parts, one embodiment of which is illustrated in the accompanying drawings wherein:

Figure 1 is a view in elevation of the improved article gripper and handler with portions broken away.

Figure 2 is a perspective view of the arms, the finger of one arm being removed.

Figure 3 is a perspective view upon an enlarged scale of one finger.

Figure 4 is a view showing the rear end portion of the tubular handle in longitudinal section.

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This improved article grasping and handling device has a head 1 which is hollow and is reduced in width towards its rear end, the rear end portion of the body being tapered to a point. The cast body or wall 2 of the head is bordered along its side edges by flanges 3 constituting side edge walls of the body and intersecting at the extreme rear end thereof where they merge into each other and constitute a support for a short shank 4 which is circular in cross section and formed with a central bore 5 extending through the junction of the side walls and communicating with the interior of the head. A removable wall or cover plate 6 rests upon the side edge walls where it is secured by screws 7 passed through openings in the cover plate and engaged in threaded openings formed in bosses 8 and 9, the bosses 8 being at front ends of the edge walls and the bosses 9 at opposite sides of the substantially triangular rear end portion of the head. One of the screws passes through the tip of the triangular rear end portion of the cover plate and into a threaded opening at the junction of the edge walls. The head is open across its front end and midway the width of the head the body or fixed wall 2 carries a flange 10 which blocks this portion of the front end of the head and defines front openings 11.

Within the hollow head are arms 12 which extend longitudinally thereof and project through the openings 11 and forwardly from the head. These arms are formed of stiff metal and their forwardly projecting portions extend diagonally so that when the device is held in a lifted position the protruding portions of the arms will be disposed parallel with a letter to be removed from a sign. Ears 13 extend upwardly from inner side edge portions of the front ends of the arms and at their rear ends carry tongues constituting abutment tongues 13'. Openings 14 are formed through the ears 13 to receive rivets 15 by means of which rear end portions 16 of fingers 17 are pivotally connected with the ears. The fingers are bent so that they extend diagonally from their rear end portions and their front end portions are bent to form bills 18 projecting towards each other. The heels or rear ends of the fingers each has a corner 19 rounded, as shown in Figure 3, so that the fingers may tilt in one direction about the fasteners 15, tilting movement in an opposite direction being limited by contact of edge faces of the heels with the abutments 13. Rear ends of the arms are formed with openings 20 of sufficient size to receive the bosses 9 and thus pivotally mount the arms for swinging

movement towards and away from each other. At their rear ends the arms are formed with extensions 21 which project laterally from inner side edges of the arms towards each other and overlap as shown in Figure 2. One of these extensions is formed with a longitudinally extending slot 22 and the other with an opening registering with the slot. The arms are to be normally held apart and in order to do so there has been provided a helical spring 23 which extends transversely of the head between the arms and has its ends fitting about lugs 24 to hold the spring in operative engagement with the arms.

The handle 25 is formed of metal tubing and has its front end fitting tightly about the shank 5 and its rear end portion bent to form a grip 26. The grip extends diagonally of the handle and to its rear end is applied a rubber cap 27. The handle may be of any length desired and within it are a suitable number of blocks 28 serving as supports and guides for a rod 29. This rod passes through the bore of the shank 4 and into the hollow head and at its front end the rod is bent to form a pin or bill 30 which passes through the opening in the extension 21 of one arm and through the slot 22 in the extension of the other arm. This is clearly shown in Figures 1 and 2, and referring to these figures it will be seen that when rearward pull is exerted upon the rod the arms will be tilted about the bosses 9 and swung towards each to a gripping position. A letter may thus be gripped between the fingers 17 and lifted from a sign or applied to the sign where it remains when the arms are released and the spring 23 forces them apart and returns them to the normal position against the side edge walls 3 of the body.

In order to actuate the rod there has been provided a bar 31 which extends longitudinally in the handle and at its front end is pivoted to the rear end of rod 29. Over the bar a rack 32 is mounted in the handle longitudinally thereof with its teeth facing rearward, the rack being secured by rivets 33. Under the bar the handle is formed with a longitudinally extending slot 34 and through this slot passes a trigger 35 carried by and extending downwardly from the bar. By placing a finger against the trigger and exerting rearward pull the bar and the rod will be shifted rearwardly and the arms swung towards each other to a gripping position. As the bar moves rearwardly its upstanding tooth 36 slides along the rack from one tooth thereof to another and forward pull exerted upon the rod by action of the spring 23 causes the tooth 36 to be frictionally held in engagement with the rack and thus prevent movement of the arms to a releasing position until the tooth is moved out of engagement with the rack. Release of the tooth 36 from the rack is accomplished by means of a button 37 which is disposed over the handle and has a shank or stem 38 which passes downwardly through a slot 39 formed in the handle back of the rack. When this button is pressed downwardly the bar 31 is depressed and its tooth 36 freed from engagement with the rack, thus allowing the bar to freely move forwardly as the spring 23 forces the arms away from each other. As long as the tooth remains in engagement with the rack the arms will be held in their gripping position and a letter being applied to or removed from a sign cannot drop from the fingers between which it is gripped.

Having thus described the invention, what is claimed is:

1. An article holder comprising a hollow head having top and bottom walls and side walls and being open at its front, a bored shank extending rearwardly from said body, the top wall being removable, a tubular handle into which the front end of said shank fits, arms extending longitudinally in said head adjacent opposite side walls thereof and pivoted at rear ends for swinging movement transversely of the head towards and away from each other, said arms projecting forwardly through the open front of the head and having outer front end portions bent diagonally across the front edge of the bottom wall, ears projecting upwardly along inner side edges of front ends of said arms and having bent rear portions forming abutment tongues, lugs projecting from inner side edges of said arms within the body, a spring in said head extending transversely thereof with its ends fitting about said lugs and urging the arms apart, extensions extending towards each other from inner ends of said arms and overlapped, one extension being formed with an opening and the other with a longitudinal slot, jaws pivoted to the ears at front ends of said arms and each having an inwardly extending bill at its front end, pivoted movement of the jaws being limited by engagement with said flanges, and an actuating rod extending longitudinally through the handle and the shank into the head and at its front end having a pin passing through the opening and the slot in said extensions and serving to swing the arms transversely of the body when the rod is shifted longitudinally.

2. An article holder comprising a hollow head tapered rearwardly and at its rear end having a bored shank, a tubular handle into the front end of which the bored shank fits, arms extending longitudinally in said head and forwardly from the front end thereof and at their front ends having upwardly projecting side ears and abutments at rear ends thereof, a spring in said head extending transversely thereof between said arms and urging the arms apart, said arms being pivoted at their rear ends and at their rear ends having portions extending towards each other and overlapped, fingers pivoted to said ears and projecting forwardly from the arms and limited in their pivotal movement by contact with the abutments, a rod extending longitudinally in said handle and through the bored shank into said head and at its front end having a pin passing through the overlapping portions of the side extensions of said arms, a rack mounted longitudinally in said handle, a bar pivoted to the rear end of said rod and extending rearwardly therefrom and provided with a tooth for engaging the rack, a trigger extending from said bar and out of the handle and constituting means for shifting the bar and the rod rearwardly and swinging the arms towards each other to an article-gripping position, and a button projecting upwardly from the rear end of said bar and out of the handle and constituting means for tilting the bar downwardly and moving the tooth out of engagement with the rack.

3. An article holder comprising a hollow head, a tubular handle extending rearwardly from said head, arms in said head pivoted at their rear ends for transverse movement into and out of a gripping position and having forward portions projecting outwardly through the front end of the head, fingers at front ends of said arms adapted to grip an article between them by movement of the arms towards each other, a spring urging

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the arms apart, a rod slidable longitudinally through said handle and into said head and connected with rear ends of the arms and moving the arms towards each other when the rod is shifted rearwardly, a rack extending longitudinally in said handle, a bar pivoted to the rear end of said rod and extending rearwardly therefrom in the handle, a tooth carried by said bar and engageable with the rack for holding the bar and the rod in a rearwardly shifted position and thereby holding the arms in a gripping position, a trigger for said bar projecting from the handle, and a button extending from the bar outwardly from the handle and when pressed inwardly releasing the bar and its tooth from the rack.

4. An article holder comprising a head, a tubular handle extending rearwardly from said head, arms extending longitudinally of said head and forwardly therefrom and having rear ends pivoted to the head and provided with side extensions projecting therefrom towards each other, article engaging fingers pivoted to front ends of said arms and having front ends provided with bills extending towards each other and overlapping a rod slidable longitudinally in said handle and at its front end pivoted to the side extensions

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of said arms and when shifted rearwardly serving to swing the arms towards each other to a gripping position, a bar extending longitudinally in said handle back of said rod and at its front end pivoted to the rear end of the rod, a rack mounted longitudinally in said handle over said bar, a tooth carried by said bar and engaging the rack to hold the bar and the rod shiftable rearwardly with the arms in a gripping position, a trigger extending from said bar through a slot formed in the handle opposite the rack, and a button carried by said bar and passing outwardly through a slot formed in the handle back of the rack, said button when pushed inwardly serving to depress the bar and move its tooth out of engagement with the rack.

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20 The following references are of record in the file of this patent:

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