

Oct. 20, 1953

A. L. GUYETTE

2,656,049

CLIP EXPANDER

Filed Jan. 27, 1949

2 Sheets-Sheet 1

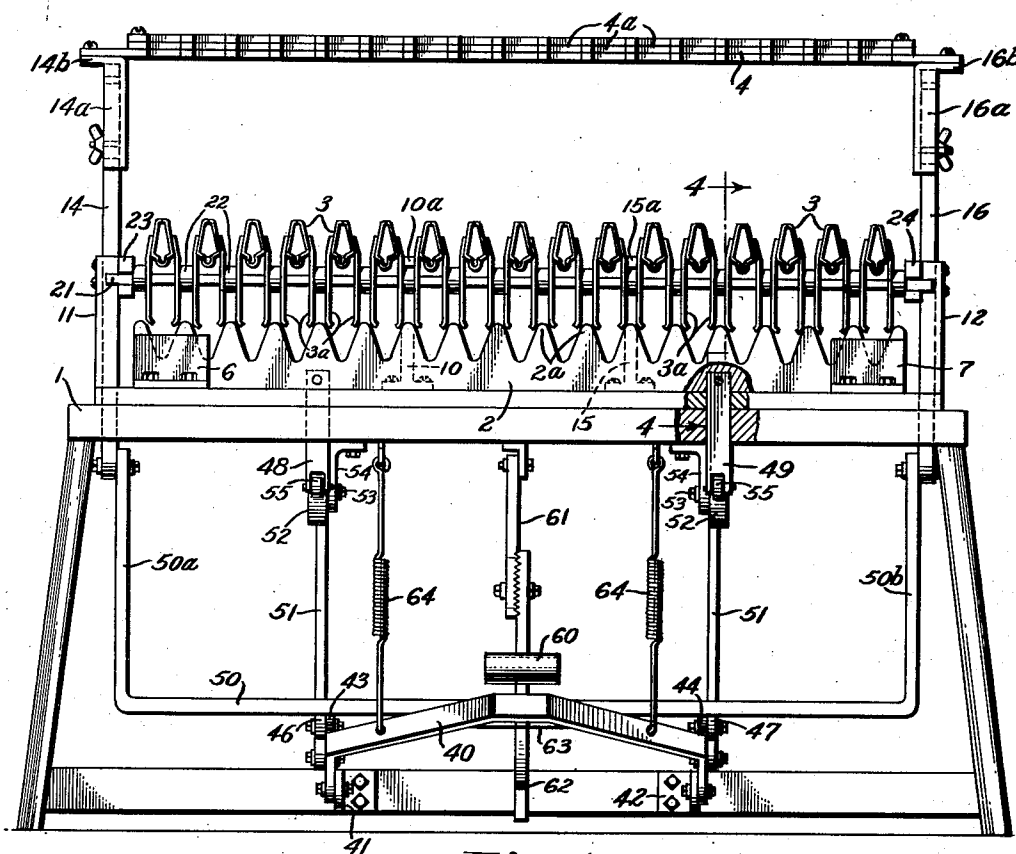


Fig. 1

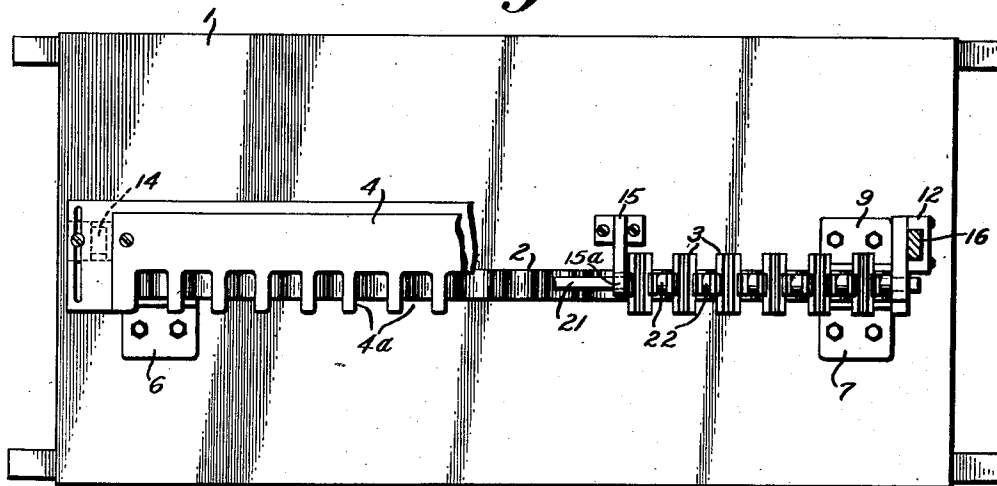


Fig. 2

INVENTOR,
Albert L. Guyette
By Macon, Fenwick & Lawrence
Attorneys

Oct. 20, 1953

A. L. GUYETTE

2,656,049

CLIP EXPANDER

Filed Jan. 27, 1949

2 Sheets-Sheet 2

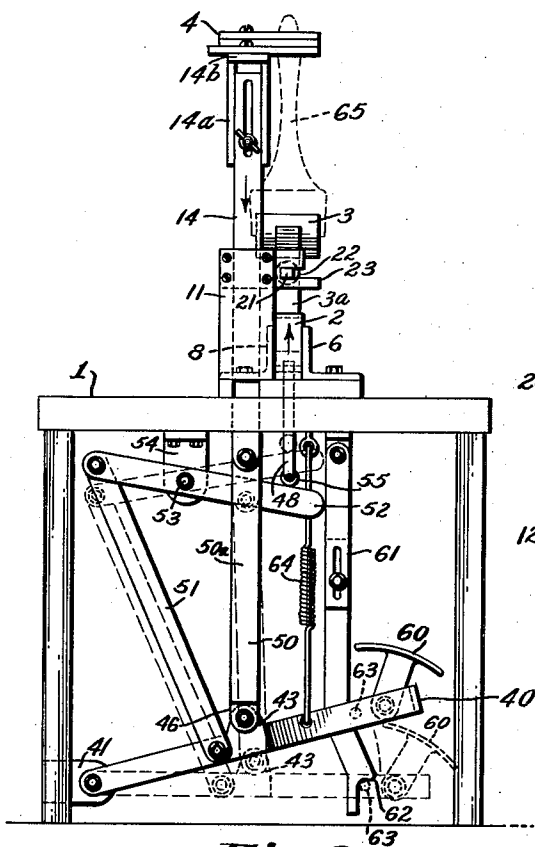


Fig. 3

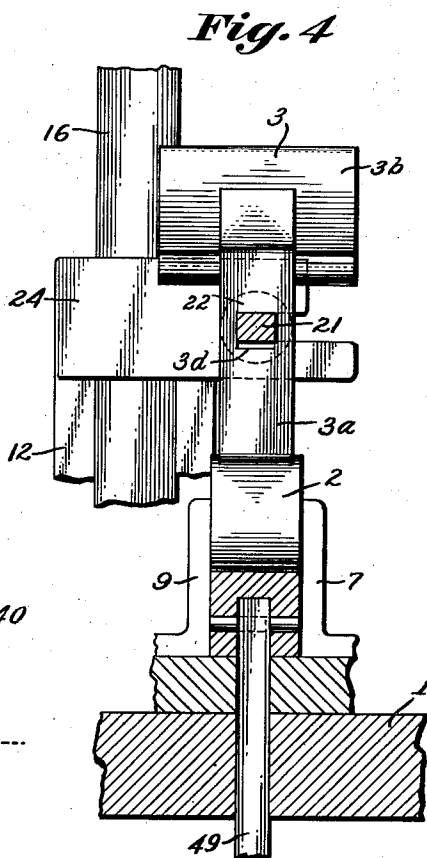


Fig. 4

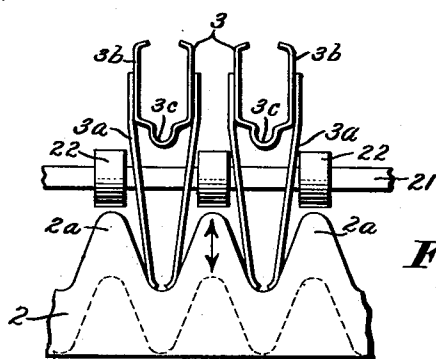


Fig. 5

Inventor

Albert L. Guyette

By *Mason, Twick, & Lewis*
Attorneys

UNITED STATES PATENT OFFICE

2,656,049

CLIP EXPANDER

Albert L. Guyette, Keene, N. H.

Application January 27, 1949, Serial No. 73,208

2 Claims. (Cl. 214—1)

1

This invention relates to an apparatus for facilitating the ganged processing of articles and is particularly directed to an apparatus which may be used for operating a plurality of alligator type clips which may be used to hold a plurality of articles during dipping, drying or other processes.

The primary object is to provide a simple and inexpensive apparatus which can be used in connection with factory operations for the purpose of arranging and holding a plurality of articles which it is desired to dip or process in some similar manner. There are many articles, for instance paint brush handles, which are usually subjected to sequential operations during the fabrication of brushes. Taking as an example the dipping operation, it will be readily understood that it is necessary to provide a device for holding the individual articles during the dipping operation in such a manner that there will be minimum interference with the dipping process. It is common to hold these articles in alligator type clips. When it is necessary to operate all of the clips individually to load articles therein which are to be dipped, a very large number of individual hand operations are necessary, resulting in an excessive labor cost. The present invention provides a simple apparatus in which a plurality of the clips or gripping devices can be assembled in ganged relation with means for opening and holding open simultaneously all of the jaws of the gripping devices while the operator places the devices to be dipped between the open jaws. Then with a single subsequent manipulation all of the jaws may be closed simultaneously to grip the articles which can then be dipped as a unit in a single operation.

Accordingly, another object of the invention is to provide an apparatus of the type described in which a plurality of clips may be opened and closed simultaneously with little effort on the part of the operator, preferably by a foot operated device, so that the operator's hands are free to load and unload the articles in the clips.

Other and further objects will become readily apparent from the following description when considered in connection with the accompanying drawings, illustrating an embodiment of the invention, and in which:

Figure 1 is a front elevation of a device made in accordance with the present invention;

Figure 2 is a plan view of Figure 1;

Figure 3 is a side elevation of Figure 1;

Figure 4 is an enlarged partial detail section on line 4—4 of Figure 1; and

2

Figure 5 is an enlarged partial front elevation showing in detail the arrangement of two of the clips on the gang bar and the manner in which the operating arms of the clips are engaged by the corrugated platen.

The embodiment of the present invention shown for the purposes of illustration comprises a main supporting frame 1 which, as will be apparent from Figure 2, is of rectangular shape. The main frame 1 supports a movable platen 2 and appropriate mechanism for holding a plurality of ganged alligator type clips 3 and an article guide member 4 which serves to position the articles in alignment with the respective jaws of the clips 3. The platen 2 is provided with corrugations or tapered teeth 2a having inclined surfaces which, in effect, constitute V-shaped notches which are adapted to engage the operating arms 3a of the alligator type clips to open the jaws. The platen 2 is adapted to be moved upwardly from the main frame 1 and is guided on the front side by two right angle members 6 and 7, on the back side by two right angle members 8 and 9. Two brackets 10, 15 have transverse ends 10a and 15a, respectively, which prevent the bending of clip supporting rod 21 when platen 2 is forced upward against the clips or gripping devices 3.

In the embodiment shown, clips 3 are made in the form of substantially U-shaped elements 3b, preferably made of spring steel. As will be readily seen from Figures 3 and 4, the jaws of the clips or gripping devices are of substantial width so that they can hold an article such as a paint brush handle. This U-shaped element is provided with a semi-circular loop 3c at the bottom for the purpose of distributing the localized stresses and permitting the necessary pivotal movement of the jaws of the clip. Suitable flat operating arms 3a are attached to the opposite sides of the element 3b such as by welding or riveting. As will be clear from the drawings, the semi-circular loop 3c becomes the fulcrum of the clipping device so that as the operating arms 3a move toward each other the jaws of the clipping device move apart. The flat operating arms 3a are provided with suitable rectangular apertures 3d so that they may be assembled on a gang rod 21 as will be hereinafter explained. As shown in Figure 4, the apertures 3d are preferably of such dimensions that the arms cannot rotate about the gang rod and are also dimensioned in one direction so as to permit the necessary pivotal movement of the arms.

Upstanding channeled guide members 11 and

3

12 are fixed to the upper side of the main supporting frame 1 and are adapted to receive respectively, slide members 14 and 16. To the upper ends of these slide members are attached suitable extension members 14a and 16a, respectively. These extension members are provided with outturned flanges 14b and 16b, respectively, which serve as points of attachment for the article guide member 4. As will be apparent from Figure 1, the extension members 14a and 16a are adjustable with respect to the slide members 14 and 16, respectively, and can be held in relative fixed positions by tightening the thumb nuts on the bolts. The article guide member 4, as illustrated, is a laminated structure and as shown in Figure 2 is provided with a plurality of rectangular notches 4a, one of the notches being aligned respectively with each of the clips 3. These notches are adapted to receive and guide one end of each of the articles which are to be gang-assembled and processed. The article guide member 4 is suitably fixed to the top of the extension member 14a and 16a by means of suitable screws or bolts.

The alligator type clips 3 are assembled in side-by-side relation on a square gang rod 21, the clips being spaced by means of suitable collars 22. The ends of the rod 21 are adapted to be engaged in horizontal slots in transverse members 23 and 24 which are secured, respectively, to the guide members 11 and 12. The notched members 23 and 24 provide a convenient means for receiving and holding the square rod 21 on which all of the clips are assembled. It will be readily apparent that a gang or plurality of articles held by the individual clips 3 may be handled as a unit.

In the embodiment illustrated suitable means are provided in the form of a foot-operated mechanism for causing relative vertical movement between the platen 2, the article guide member 4, and the bar 21 supporting the clips or gripping devices 3. Also, it will be readily apparent that since the clips 3 are fixed with respect to the main frame 1, movement of the platen 2 in an upward direction will cause the teeth or corrugations 2a of the platen 2 to engage the operating arms of the alligator clips. The actuating mechanism comprises a yoke member 40 which is pivoted to the lower part of the main frame 1 by means of suitable brackets 41 and 42, it being clear from the drawings that the yoke member 40 is U-shaped. The two sides of the yoke member 40 are provided with suitable bosses 43 and 44 to which are pivotally connected suitable ears 46 and 47 welded to a U-member 50, the upper ends of arms 50a and 50b of which are connected to slide members 14 and 16, respectively. Guide pins 48 and 49 are fixed to the opposite ends of platen 2. Suitable linkage is also connected to the yoke member to cause the platen 2 to move in the direction opposite from that of the movement of the article guide member 4. To this end, suitable links 51 are connected to the opposite sides of the yoke member 40 adjacent the ears 46 and 47, respectively, the upper ends of links 51 being pivotally connected to levers 52 which are in turn fulcrumed as at 53 to suitable brackets 54 carried by the main frame 1. The opposite ends of the links 52 are adapted to engage rollers 55 which are mounted on the lower ends of the guide pins 48 and 49. A suitable treadle 60 is pivotally connected to the fore part of the yoke member 40.

4

It will be apparent from the above description and from Figure 3, that when the yoke member 40 is depressed by means of the treadle 60, the levers 52 will rotate in a counter-clockwise direction around the fulcrums 53 as viewed in Figure 3 so that the right-hand end of the levers 52 will engage the rollers 45 to move the platen 2 in an upward direction. Simultaneously through the arms 50a and 50b the slide members 14 and 16 will be moved downward carrying with it the article guide member 4. It will be readily apparent that since the alligator clips 3 are fixed with respect to the frame 1 the upward movement of the platen 2 will cause the operating arms 3a to move toward each other along the inclined surfaces of the teeth or corrugations 2a, thereby opening the jaws of the clips. The yoke member 40 can be held in its lowered position by means of a gravity latch 61 which pivotally depends from the frame 1 and is provided with a notch 62 on its lower end which is adapted to engage a pin 63 which extends between the sides of the yoke. Suitable springs 64 are provided for the purpose of returning the yoke member 40 to its upward position. With the alligator clips 3 in the open position as shown in Figure 5, the operator is free to use both hands to place articles, such as the paint brush handles 65, in the slots 4a of the guide member 4 so that the lower ends of the brush handles are between the jaws of the clips 3. The operator then pushes downward and backward on the treadle 60 so that it engages the gravity latch 61 and pushes it to the rear and causes it to become disengaged from the pin 63, the springs 64 returning the yoke 40 to its uppermost position. When the yoke member 40 returns to the upper position, the platen 2 returns to its lowered position so that the teeth 2a disengage the arms 3a of the clips thus permitting the jaws of the clips to grip the paint brush handles 65. The operator then removes the bar 21 which carries the clips and all of the paint brush handles may be subjected to processes such as dipping, painting and the like. After the desired processing, the bar 21 can, if desired, be replaced in the transverse slots in the brackets 23 and 24, and the yoke member 40 can be depressed to raise the platen 2 so that the jaws of the clips move to the open position. The operator then removes the processed paint brush handles 65 and reloads the clips with other articles to be processed while the treadle 40 is held in the lower locked position.

The construction described above comprises a very simple, efficient, and inexpensive apparatus for greatly facilitating the loading and unloading of a plurality of devices which are to be subjected to subsequent processes. By reason of the fact that the articles may be handled in groups, it will be readily apparent that the physical manipulations of the operator per article are greatly reduced.

Although the invention has been described in considerable detail, it will be apparent to those skilled in the art that many variations are possible without departing from the inventive concept. It is therefore desired that the invention not be limited except insofar as is made necessary by the prior art and by the appended claims.

What is claimed is:

1. Apparatus for facilitating the gang processing of a plurality of articles comprising a supporting frame, upstanding supporting brackets

5

on the opposite sides of said frame, said brackets having transverse horizontal open slots, a rectangular bar adapted to fit into said slots, a plurality of alligator type gripping devices having flat operating arms on one side of the fulcrum and gripping jaws on the opposite side thereof, said flat arms having rectangular openings therein adapted to engage said bar when a plurality of said devices are assembled on said bar in side-by-side relation so that said gripping devices are also supported in fixed relation to said frame, means having a pair of converging surfaces for each of said operating arms adapted to be moved toward the latter and means for moving said latter means toward said operating arms to cause the latter to move toward each other to manipulate simultaneously all of the jaws of said gripping devices.

2. Apparatus for opening a plurality of ganged article clamps to facilitate simultaneous processing of a plurality of articles comprising a supporting frame, upstanding supporting brackets on the opposite sides of said frame having transverse horizontal open slots therein, a rectangular bar adapted to fit into said slots, a plurality of alligator type gripping devices having flat oper-

6

ating arms on one side of a fulcrum and gripping jaws on the opposite sides thereof, said flat arms having rectangular openings therein adapted to engage said bar when a plurality of said devices are assembled in side-by-side relation, so that said gripping devices are also supported in fixed relation to said frame, platen means movably supported on said frame having cam surfaces thereon for contacting and actuating the operating arms of each of said gripping devices, and means for moving said platen means towards said operating arms to cam the same toward each other and simultaneously open all of the jaws of said gripping device of said platen means permitting the jaws of said gripping devices to close on reverse movement of said platen means.

ALBERT L. GUYETTE.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
760,582	Taylor	May 24, 1904
951,671	Armstrong	Mar. 8, 1910
1,115,426	Green	Oct. 27, 1914
1,500,939	Howell	July 8, 1924
1,924,224	West	Aug. 29, 1933