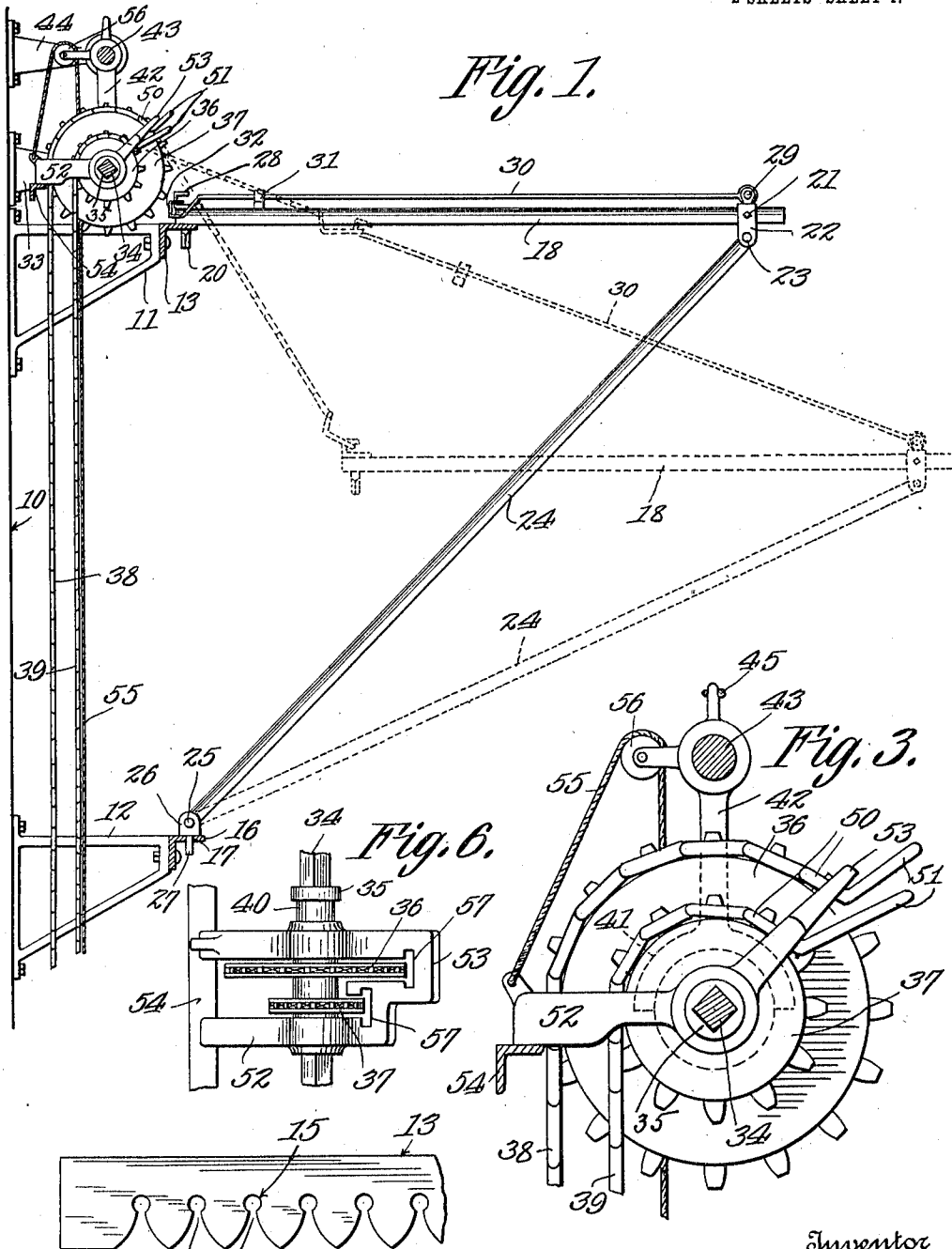


E. M. DOUGHERTY.
 DISPLAY APPARATUS.
 APPLICATION FILED OCT. 13, 1913.

1,099,345.

Patented June 9, 1914.

2 SHEETS—SHEET 1.



Witnesses
 L. Barron
 J. W. Miller

Fig. 8.

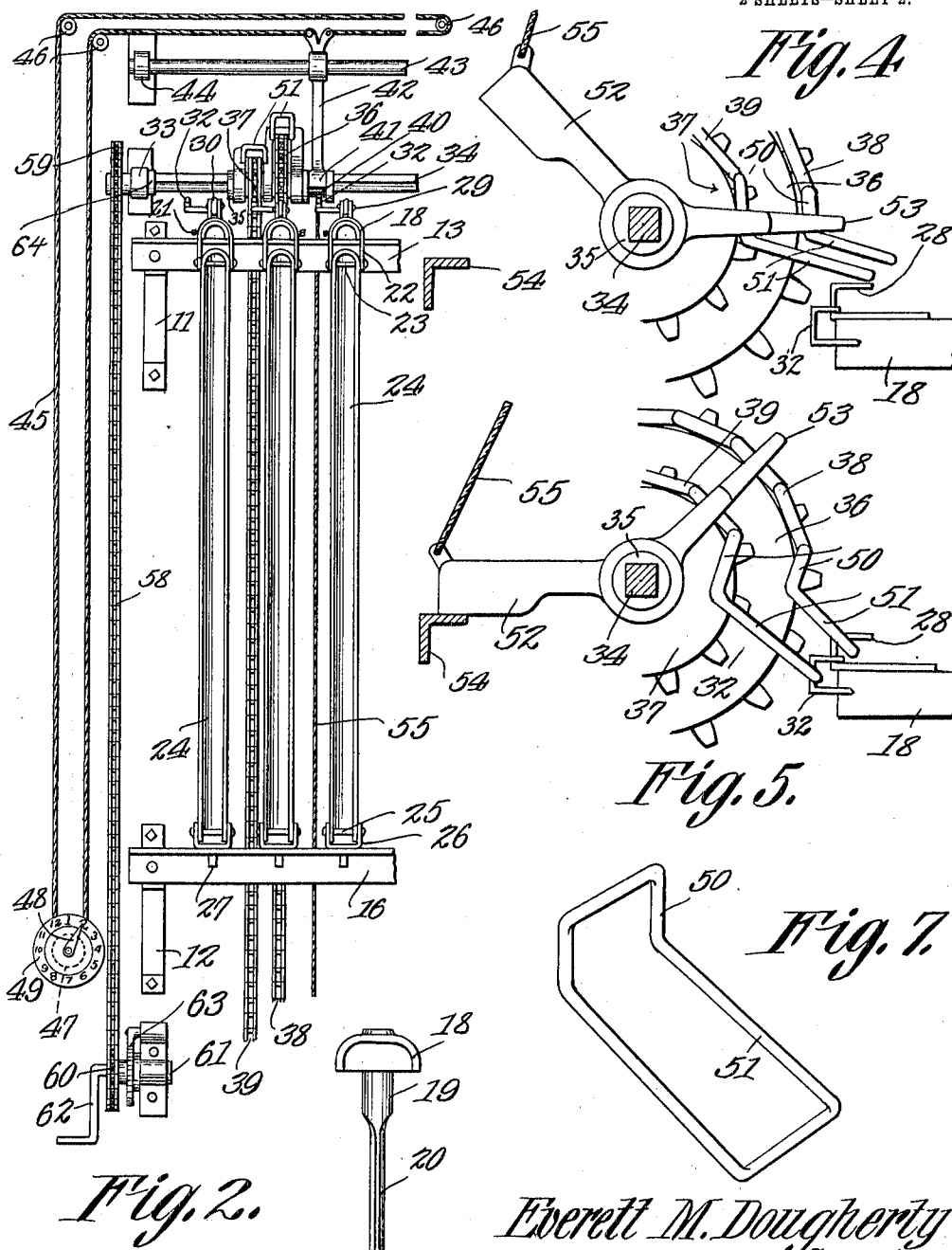
Inventor
 Everett M. Dougherty
 by Max A. Schmidt
 Attorney

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Fig. 9. by *Everett M. Dougherty*
Max A. Schmidt

Attorney

UNITED STATES PATENT OFFICE.

EVERETT M. DOUGHERTY, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO READY RAX MANUFACTURING COMPANY, OF ESCANABA, MICHIGAN.

DISPLAY APPARATUS.

1,099,345.

Specification of Letters Patent.

Patented June 9, 1914.

Application filed October 13, 1913. Serial No. 794,889.

To all whom it may concern:

Be it known that I, EVERETT M. DOUGHERTY, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Display Apparatus, of which the following is a specification.

This invention relates to display apparatus designed more particularly for displaying rugs and similar articles, a series of racks being provided which are mounted side by side on a suitable support, each rack comprising a horizontal arm which may be lowered to permit the rug or other article to be conveniently mounted thereon or removed.

The invention has for its object to provide novel and improved means for lowering the display arms at will, a hoisting device being provided which is adjustable for attachment to any one of the arms which is to be operated.

The invention also has for its object to provide an indicator which enables the hoisting device to be quickly and accurately positioned to engage the desired display arm.

Other objects and advantages of the invention will be pointed out in the detailed description appearing hereinafter, and in order that the invention may be better understood, reference is had to the accompanying drawings in which—

Figure 1 is a side elevation of the apparatus. Fig. 2 is a front elevation showing one end of the apparatus. Figs. 3, 4 and 5 are diagrams showing different positions of the hoisting mechanism. Fig. 6 is a plan view of the link-engaging and disengaging lever. Fig. 7 is a perspective view of a special link. Fig. 8 is a plan view of the supporting rail of the display arms. Fig. 9 is an end view of one of the display arms, showing the pivot thereof.

Referring specifically to the drawings, 10 denotes a wall or other suitable support on which the apparatus is mounted. The wall carries top and bottom brackets 11 and 12, respectively. To extremity of the top bracket is secured a horizontal rail 13 composed of an angle iron having one of its flanges outstanding, in the edge of which flange are slots 14 which are flared toward

their outer ends and have their inner ends enlarged to form a circular hole 15. The bottom brackets carry a horizontal rail 16 which is also an angle iron with one of its flanges outstanding, said flange having pivot apertures 17.

At 18 are shown the supporting arms of the rugs or other articles to be displayed. The arms are horizontal and each arm has at its inner end a depending pivot stem 19 which is adapted to seat in one of the holes 15, whereby the arm is pivoted to swing in a horizontal plane. The lower portion of the stem is flat, as indicated at 20, so that it may pass through the slot 14 leading to the hole 15. To the outer end of the display arm 18 is secured, by means of a set screw 21, a yoke 22 to which is pivotally connected, beneath the arm, as indicated at 23, a diagonal brace 24 which extends downward and rearward, and has its lower end pivoted, as indicated at 25, to a swiveled block 26 having a depending stem 27 which seats in the aperture 17 which is in vertical alinement with the pivot hole 15 in which the stem 19 seats. A pivotal connection for the brace is therefore provided, and the same is free to swing with the arm 18. The pivots 23 and 25 permit the brace to fold when the arm 18 is lowered, as will be presently described.

A number of display arms 18 mounted as herein described is provided, and in order that any one of the arms may be lowered, the following mechanism is provided: To the inner end of each display arm 18, at the top thereof, is secured a hook 28. To the yoke 22, above the display arm, is pivoted, as indicated at 29, a rod 30 having near its rear end a prop 31 which engages the top of the display arm and holds the rod spaced therefrom and parallel to said arm when the latter is in elevated position. The rear end of the rod has a hook 32 which is offset to one side of the hook 28.

On the support 10 are mounted bearing brackets 33 which support a horizontal shaft 34, said shaft being angular in cross-section, and located above the inner ends of the display arms 18. On the shaft is slidably mounted a boxing 35 carrying sprocket wheels 36 and 37, respectively, of different diameters, the sprocket wheel 36 being the largest. Over these sprocket wheels pass

chains 38 and 39, respectively, designed for connection to the hooks 28 and 32 for lowering the display arms 18.

The boxing 35 is slidable on the shaft 34 in order that the sprocket wheels 36 and 37 may be properly positioned with respect to the particular arm 18 to be lowered. In order that this adjustment of the boxing may readily be made, one end of the same has an annular groove 40 in which seats a yoke 41, the stem 42 of which is slidably mounted on a shaft 43 mounted above the shaft 34 and extending parallel thereto. The shaft 43 is supported by brackets 44 mounted on the support 10. To opposite sides of the yoke-stem are made fast the two opposite ends of a line 45 which line passes over guide pulleys 46 in such a manner that its ends extend parallel to the shaft 43 in opposite directions from the yoke-stem. Thus, a pull on one end of the line slides the yoke along the shaft 43 in one direction, and a pull on the other end slides the yoke in the opposite direction, whereby the boxing 35 is adjusted lengthwise on the shaft 34 for the purpose stated. The line 45 also passes over a pulley 47 having an indicator 48 which points on a dial 49 numbered to correspond to the number of display arms 18. Thus the operator can tell at a glance when the sprocket wheels 36 and 37 reach their proper position with respect to the display arm to be lowered.

In order that the chains 38 and 39 may be automatically connected to the hooks 28 and 32, the following devices are provided: The chains hang free from the sprocket wheels 36 and 37, and to their ends which are in front of the sprocket wheels are connected special links which are bent intermediate their ends to form angularly disposed portions 50 and 51, respectively. These links are wide enough to straddle the sprocket wheels and their portions 50 are loosely or pivotally connected to the end links of the chains, leaving the portions 51 free to be swung over the hooks 28 and 32.

On the boxing 35 is fulcrumed a lever, the same being angular, and the two arms being indicated at 52 and 53, respectively. The arm 52 is heavier than the arm 53 and normally rests on a rail 54 carried by the brackets 33, in which position of said arm the arm 53 extends upward and forward at an angle of about 45 degrees to the shaft 34. To the arm 52 is connected a line 55 for swinging the same to lower the arm 53, said line passing upward to a guide pulley 56 and thence extending downward and hanging free. The herein-described lever is fork-shaped so that it may straddle the sprocket wheels 36 and 37, the space between the fork branches being sufficiently wide to accommodate said sprocket wheels and the chains which pass over the same.

This space is enlarged at the outer end of the arm 53 to form recesses 57 of sufficient width to accommodate the link portions 50.

The operation of connecting the links to the hooks 28 and 32, and of lowering a display arm 18 is as follows: Fig. 2 shows the mechanism set for lowering the second display arm. The lever arm 53 is normally in elevated position, and the link portions 50 seat in the recesses 57 in which position the links are held elevated above the hooks 28 and 32, as shown in Figs. 1 and 3. The chains 38 and 39 are now paid out slightly, and the line 55 is pulled down to swing the lever to lower the arm 53 thereof to horizontal position as shown in Fig. 4. This movement of the lever arm lowers the links and places the parts 50 in vertical position relative to the lever arm 53, so that when the same is allowed to swing back to elevated position, it slips off the links and allows the parts 51 to drop by gravity over the hooks 28 and 32 as shown in Fig. 5. The lever swings back to its normal position when the line 55 is released, as its arm 52 is heavier than the arm 53.

The link part 51 of the chain 38 is shorter than the link part 51 of the chain 39, hence the former takes hold of the hook 28 while the latter is still loose on the hook 32. Thus, when the sprocket wheels 36 and 37 are rotated slightly to wind the chains backward, the inner end of the arm 18 is tilted upward and the stem 19 rides above the rail 13, and when the chains are paid out the flat part 20 of the stem passes through the slot 14 from the hole 15. Upon continuing to pay out the chains, the display arm is lowered. The disengagement of the stem 19 from the pivot hole 15 is effected solely by the chain 38 which passes over the large sprocket wheel 36. The other chain lets the arm tilt downward at the outer end as it lowers. The chains are operated by rotating the sprocket wheels 36 and 37, the same being fast on the boxing 35, and the shaft 34 being rotatable by means of an endless chain 58 passing over sprocket wheels 59 and 60, the former being fast on one end of the shaft 34. The sprocket wheel 60 is mounted on a shaft 61 having a crank handle 62, and provided with a pawl and ratchet device 63 to hold the shaft 34 stationary. The shaft 34, being angular, is fitted with boxings 64 which turn in the bearing brackets 33.

When the display arm 18 lowers, the rod 30 swings upward, as shown by dotted lines in Fig. 1, and as it is connected to the outer end of the arm, and the hook 28 is on the inner end of the arm, the latter is thus suspended from its extremities and prevented from sagging under the weight of the rug or other article supported thereon. As the display arm travels a greater distance than

the rod, the chain 38, which is connected to the hook 28 thereof, passes over the larger sprocket wheel 36. To raise the display arm 18 and insert the stem 19 back into the pivot hole 15, the shaft 34 is turned by means of the crank handle 62 and the sprocket and chain gearing in a direction to wind back the ends of the chains 38 and 39 which are connected to the hooks 28 and 32. The display arm is elevated until the flat part 20 of the stem 19 passes through the slot 14 into the hole 15, and the arm is then pushed sidewise in either direction, after which the chains 38 and 39 are paid out slightly until the stem 19 properly seats in the hole 15. Swinging the arm sidewise lets the part 20 pass the slot 14 so it will drop into the hole 15. The link parts 51 are now again in the position shown in Fig. 5, and they are still engaged with the hooks 28 and 32, and to disengage the same the lever arm 53 is swung down to horizontal position by a pull on the line 55 connected to the lever arm 52. It will be noted that when the links are in engagement with the hooks, the parts 50 are at an inclination to the horizontal, hence when the inner walls of the recesses 57 engage the parts 50 as the lever arm 53 swings down to horizontal position, the links are swung upward out of the hooks. The lever arm 53 is now allowed to swing back to elevated position and the chains are given a slight pull so that the links are carried upward with the lever arm. The links are now back to their normal position with their parts 50 seating in the recesses 57, as shown in Figs. 1 and 3.

The link parts 51 may be tense or loose on the hooks 28 and 32 as it is possible to pay out the chains 38 and 39 until said parts are hanging loose on the hooks, after which the disconnection as herein described is readily made. Should the chains, when paid out to insert the stem 19 into the hole 15, be dangling loosely, it would merely be a matter of pulling the chains up, whereupon the link parts 50 would slip back into the recesses 57 to effect the disengagement of the links from the hooks as hereinbefore described. The operator would not necessarily be required to crank the chains, as they could be pulled back by hand. It will also be noted that when the lever arm 53 is lowered to horizontal position to disengage the links, there is a tendency of the links to press against the hooks, since they are tense, but as the lever arm takes its horizontal position it pays out enough chain to permit the links to be readily disengaged from the hooks.

I claim:

1. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of

the series of arms, a sprocket wheel slidable on the shaft, a chain trained over the sprocket wheel, a loose link on one end of the chain, hooks on the arms adapted to be engaged by the loose link, and means for engaging the loose link with the hook of a selected arm and for disengaging said link.

2. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a boxing slidable on the shaft and rotatable therewith, a sprocket wheel fast on the boxing, means for sliding the boxing on the shaft, a chain trained over the sprocket wheel, a loose link on one end of the chain, hooks on the arms adapted to be engaged by the loose link, and means for engaging the loose link with the hook of a selected arm and for disengaging said link.

3. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a boxing slidable on the shaft and rotatable therewith, adjusting means for the boxing, an operating line connected to said means, guide pulleys over which the line passes, an indicator associated with one of the guide pulleys, a sprocket wheel fast on the boxing, a chain trained over the sprocket wheel, a loose link on one end of the chain, hooks on the arms adapted to be engaged by the loose link, and means for engaging the loose link with the hook of a selected arm and for disengaging said link.

4. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a hoisting device slidably mounted on the shaft, means for adjusting the hoisting device, an operating line connected to said means, guide pulleys over which the line passes, an indicator associated with one of the guide pulleys, and means for engaging the hoisting device with a selected arm of the series for releasing said arm from the support and lowering the same.

5. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a sprocket wheel slidable on the shaft, a chain trained over the sprocket wheel, a loose link on one end of the chain, hooks on the arms adapted to be engaged by the loose link, and a lever slidable on the shaft with the sprocket wheel, said lever having means for engaging the loose link with the hook of a selected arm and for disengaging said link.

6. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of

arms, a boxing slidable on the shaft and rotatable therewith, a sprocket wheel fast on the boxing, a chain trained over the sprocket wheel, a loose link on one end of the chain, hooks on the arms adapted to be engaged by the loose link, and a lever carried by the boxing, said lever having means for engaging the loose link with the hook of a selected arm and for disengaging said link.

7. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a sprocket wheel slidable on the shaft, a chain trained over the sprocket wheel, a loose angular link on one end of the chain, hooks on the arms adapted to be engaged by the free end of the link, and a lever slidable on the shaft with the sprocket wheel, said lever having a recess engageable by the inner end of the link.

8. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a boxing slidable on the shaft and rotatable therewith, a sprocket wheel fast on the boxing, a chain trained over the sprocket wheel, a loose angular link on one end of the chain, hooks on the arms adapted to be engaged by the free end of the link, and a lever carried by the boxing, said lever having a recess engageable by the inner end of the link.

9. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a sprocket wheel slidable on the shaft, a chain trained over the sprocket wheel, a loose angular link on one end of the chain, hooks on the arms adapted to be engaged by the free end of the link, and a lever slidable on the shaft with the sprocket wheel, said lever having a recess engageable by the inner end of the link and said lever being forked to straddle and clear the sprocket wheel and the chain.

10. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a sprocket wheel slidable on the shaft, a chain trained over the sprocket wheel, a loose angular link on one end of the chain, hooks on the arms adapted to be engaged by the free end of the link, the inner end of the link being inclined when engaged with a hook, and a lever slidable on

the shaft with the sprocket wheel, said lever having a recess engageable by the inner end of the link.

11. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a hoisting device slidably mounted on the shaft, said device including a chain having a loose link on one end, hooks on the arms adapted to be engaged by the free end of the loose link, and means for automatically engaging the loose link with the hook of a selected arm and for disengaging said link.

12. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a hoisting device slidably mounted on the shaft, said device including a chain having a loose angular link on one end, hooks on the arms adapted to be engaged by the free end of the link, and a lever slidable on the shaft, said lever having a recess engageable by the inner end of the link.

13. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a hoisting device slidably mounted on the shaft, said device including a chain having a loose angular link on one end, hooks on the arms adapted to be engaged by the free end of the link, the inner end of the link being inclined when engaged with a hook, and a lever slidable on the shaft, said lever having a recess engageable by the inner end of the link.

14. A display apparatus comprising a series of horizontally swinging arms, a support for the arms from which they are disengageable, a shaft extending lengthwise of the series of arms, a hoisting device slidably mounted on the shaft, said device including a chain having a loose link on one end, hooks on the arms adapted to be engaged by the loose link, and a lever slidable on the shaft, said lever having means for engaging the loose link with the hook of a selected arm and for disengaging said link.

In testimony whereof I affix my signature in presence of two witnesses.

EVERETT M. DOUGHERTY.

Witnesses:

H. J. RUSHTON,
ANNA HODGINS.