

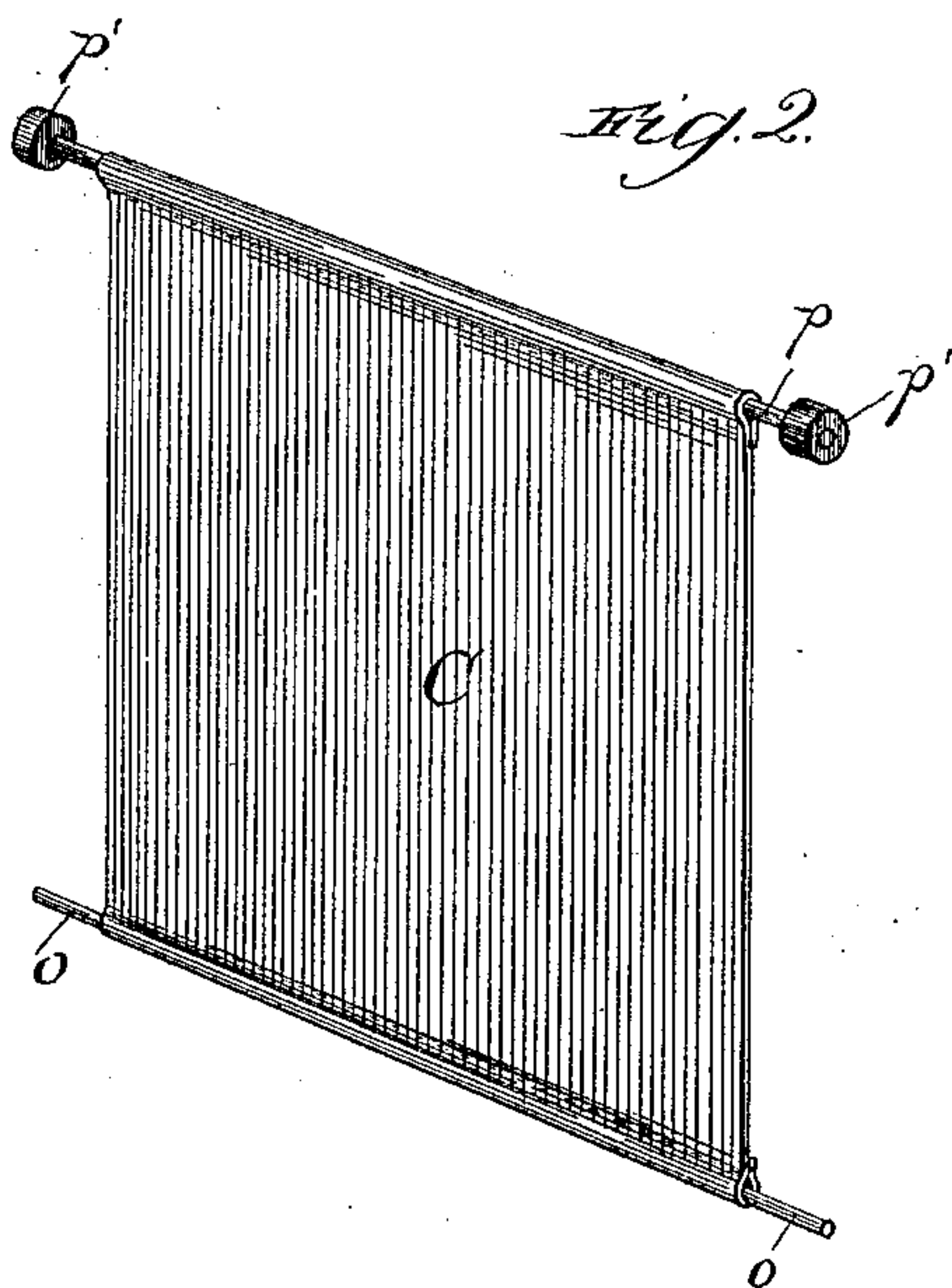
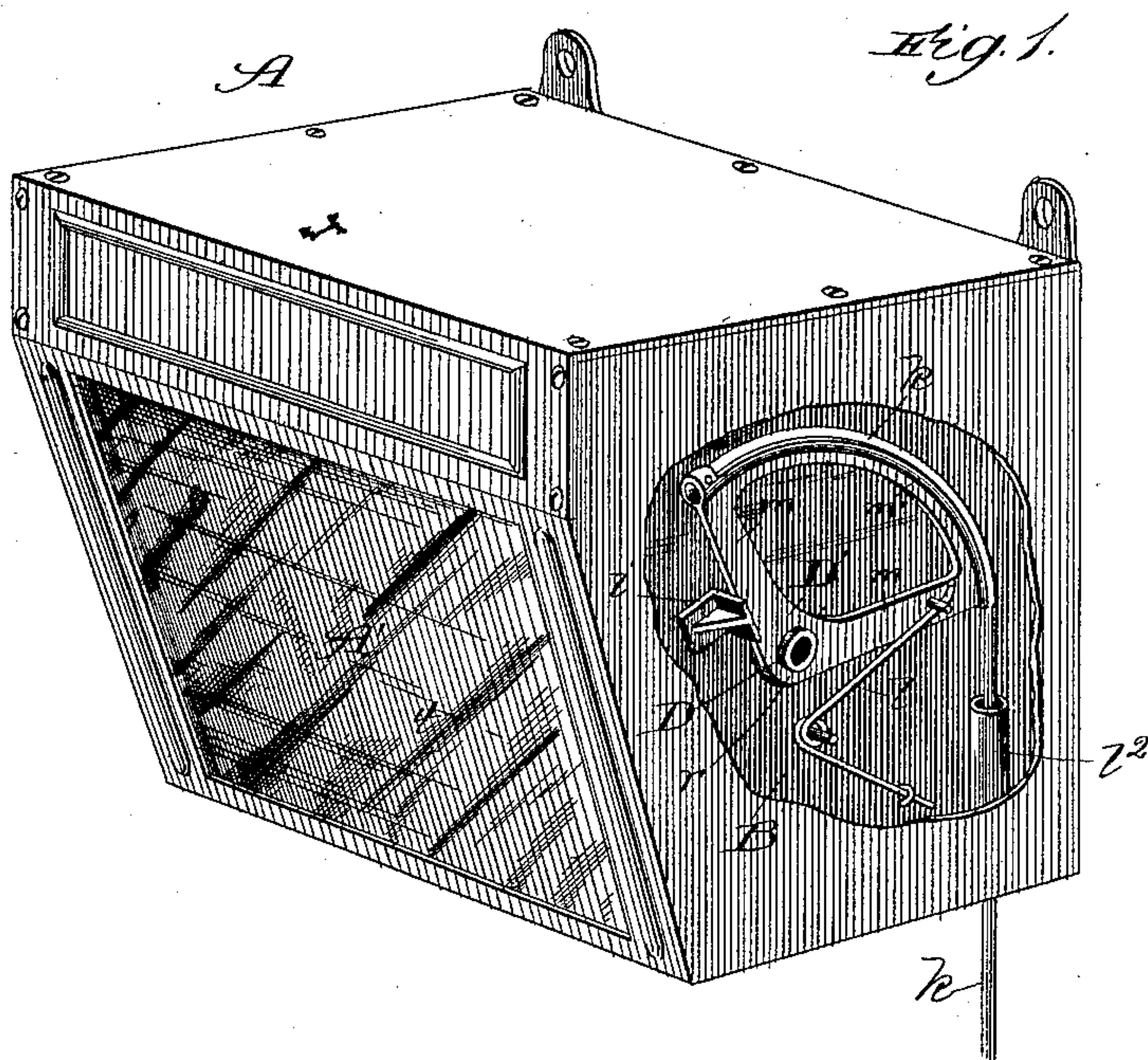
(No Model.)

3 Sheets—Sheet 1.

M. F. CONNETT.  
DISPLAY DEVICE.

No. 422,570.

Patented Mar. 4, 1890.



Witnesses:  
*Edw. J. Dyrenforth*  
*J. H. Dyrenforth*

Inventor:  
*Matthew F. Connett,*  
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*Attorneys*



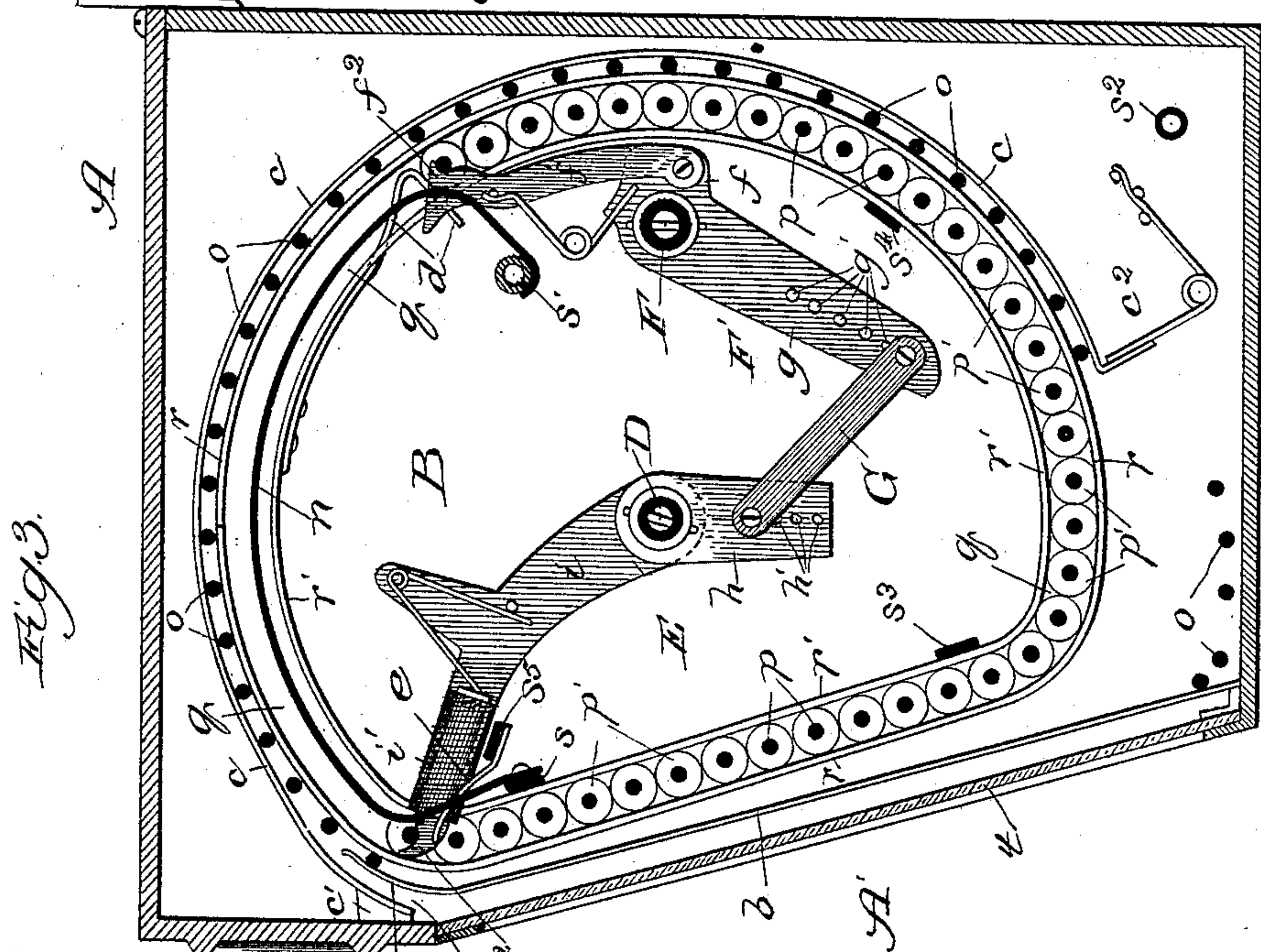
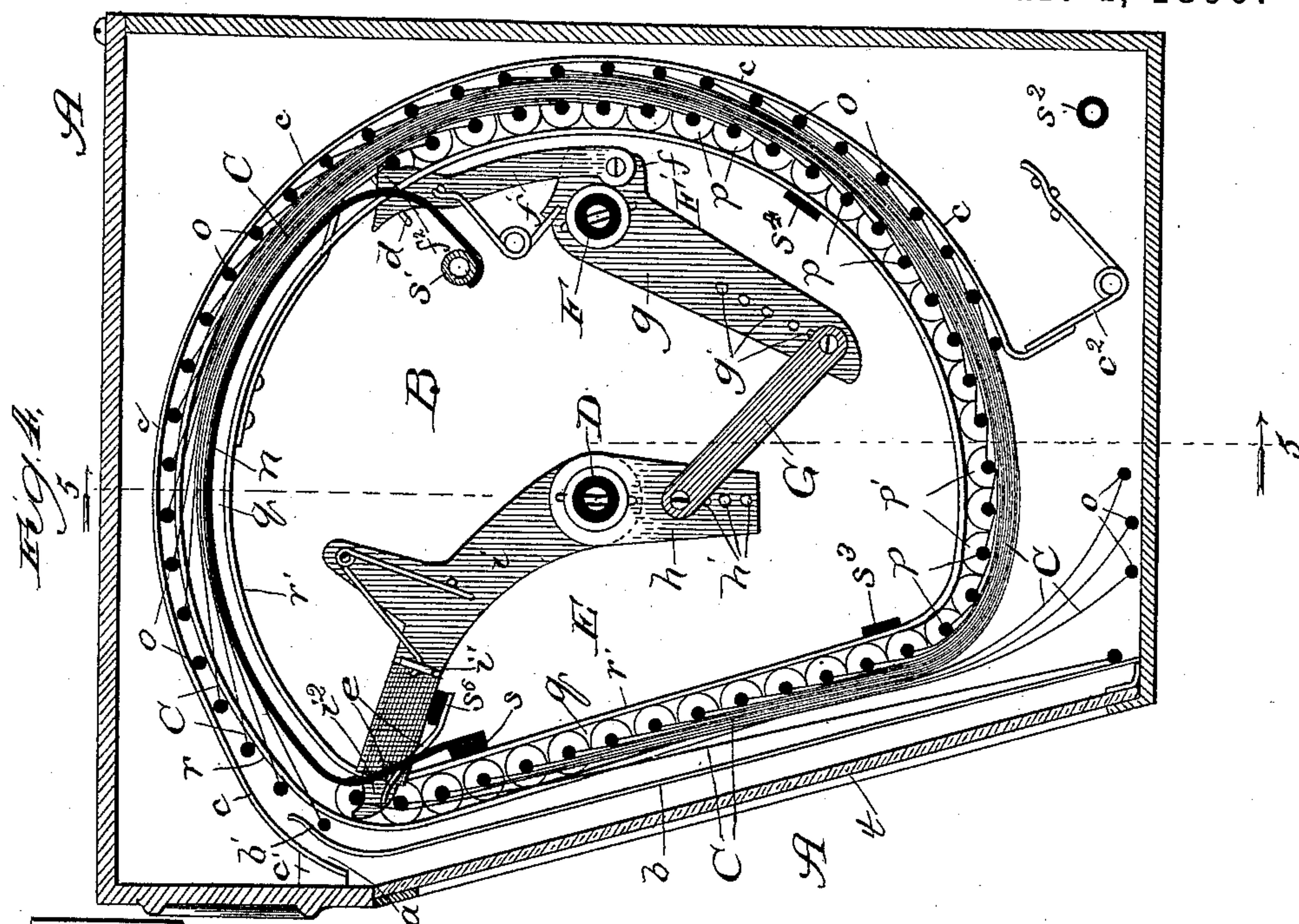
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3 Sheets—Sheet 2.

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Patented Mar. 4, 1890.



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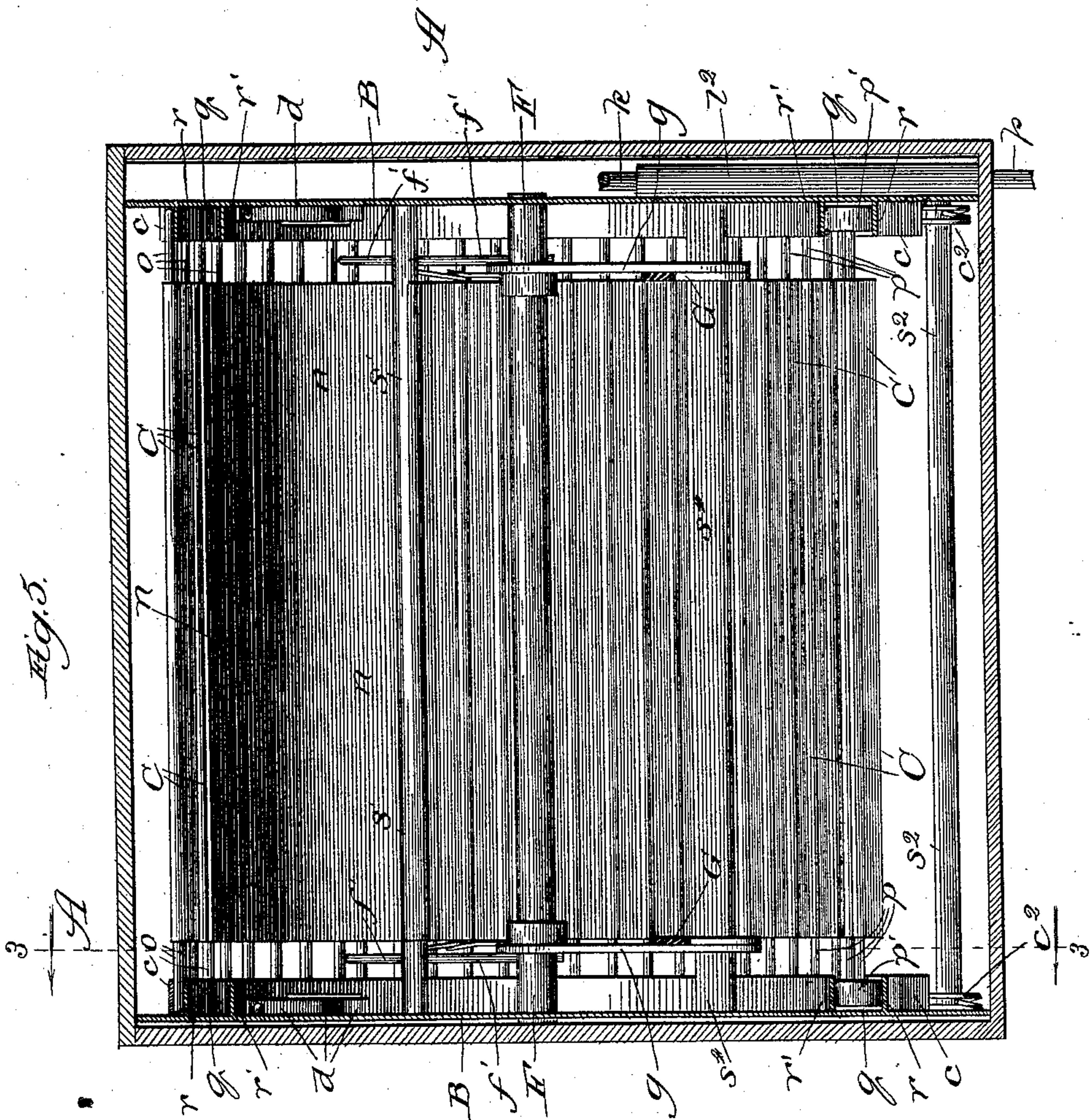
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M. F. CONNETT.  
DISPLAY DEVICE.

No. 422,570.

Patented Mar. 4, 1890.



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# UNITED STATES PATENT OFFICE.

MATTHEW F. CONNETT, OF KANSAS CITY, MISSOURI.

## DISPLAY DEVICE.

SPECIFICATION forming part of Letters Patent No. 422,570, dated March 4, 1890.

Application filed September 25, 1889. Serial No. 325,051. (No model.)

*To all whom it may concern:*

Be it known that I, MATTHEW F. CONNETT, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Improvement in Display Devices, of which the following is a specification.

My invention relates to an improvement in display devices of the class wherein a series of curtains is provided each having on its face matter to be displayed, (as advertisements, announcements, printed information, patterns, pictures, or the like,) and which, when actuated, causes the curtains to be successively brought into and removed from the field of view.

The object of my invention is to provide such a device of an improved construction which will enable a comparatively large number of curtains to be confined and successively displayed in a case of small dimensions, and which shall, furthermore, be readily operative, durable, and thoroughly effective in its operation.

As I desire to utilize my improvement more particularly in station or street indicators for railway-cars, I describe it in connection with a device for that purpose.

In the drawings, Figure 1 is a view in perspective of a street or station indicator provided with my improvements, showing, for purposes of illustration, part of one end of the inclosing-case broken away; Fig. 2, a perspective view of one of the curtains and its attachments; Fig. 3, a vertical cross-section of the indicator taken just beyond the edges of the curtains and looking in the direction of the adjacent end of the device; Fig. 4, a similar section taken on a line near the center of the device, and Fig. 5 a longitudinal section taken on the line 5 5 of Fig. 4.

A is the inclosing-case, having an open face A', which may be fitted with a pane of glass *t* and inclined, as shown, to facilitate inspection of the device when it is placed at an elevation. Within the case is a removable frame, which supports the curtains and the mechanism for actuating and guiding them,

all as hereinafter described, and which comprises end walls B, held together in fixed relation by rods or stays *s*, *s'*, *s*<sup>2</sup>, *s*<sup>3</sup>, *s*<sup>4</sup>, and *s*<sup>5</sup>. Upon the opposite inner faces of the walls B are endless guides *r r'*, forming between them grooves *q* of equal width throughout. Toward the top of the frame B and secured at its lateral edges to the rods *s s'*, respectively, is a smooth deck *n*, which extends at opposite ends near but not quite to the walls B, where it follows the curve of the grooves *q* in a plane about midway of the sides of the latter.

C C are the curtains, which are of flexible material, rectangular in shape, and all of like size. The upper or, more properly speaking, the forward edge of each curtain is fastened upon a rod *p*, which projects to an equal distance beyond the opposite sides of the curtain and carries enlarged end pieces *p'*, which are preferably just large enough to fit snugly but loosely into the grooves *q*. The rods *p* are of the proper length to reach from groove to groove and slide with their end pieces in the latter. The edge of each curtain opposite that secured to the rod *p* is fastened to a rod *o* of the same length as the rod *p*.

In placing the curtains into operative position they are caused to overlap each other, as shown in the drawings, the ends *p'* of the rods *p* resting in the grooves *q* and the rods *o* outside the guides *r*. D is a rock-shaft journaled in the opposite walls B, and extending beyond one of the latter, where it carries a crank D'. The crank D' is sectoral in form, comprising arms *m m*, connected at their ends by a circular cross-piece *m'*, having a groove in its periphery. A spring *l* on the wall B operates to maintain the crank in its normal position, which is up against a stop *l'*, also on the wall. Secured to the upper end of the crank is a cord *k*, which extends loosely along the groove, and thence down through a tube *l*<sup>2</sup> to without the case, whence it hangs to afford means for operating the device, as hereinafter described. The top of the tube may afford a stop to limit the downward movement of the crank.

Toward opposite ends of the shaft D, be-



tween the walls B, are rigid levers E, each having a long arm  $i$  and a short arm  $h$ . Each long arm  $i$  is provided on its free end with a catch in the form of a spring-actuated plunger  $i'$ , having its end pointed to afford an upturned hook  $i^2$ , having a convex face or cam on its under side. The short arm  $h$  of each lever is provided with a series of eyes  $h'$  in a line running longitudinally of the arm.

10 In rear of the shaft D and extending parallel with it is another rock-shaft F, also journaled in the walls B. The shaft F carries toward opposite ends rigid levers F' in the planes of the levers E. Each lever F' has a long arm  $g$ , which extends downward and has a line of eyes  $g'$  and a short arm  $f$ , upon which is pivoted a catch in the form of an upward-extending spring-actuated dog  $f'$ , having its end  $f^2$  formed with a hook on its under side and a cam-face on its upper side. Pivotal links G connect the short arms of the levers E with the long arms of the levers F', each link engaging at opposite ends, respectively, with an eye of the series  $h'$  and an eye of the series  $g'$ . The hooks  $i^2$  and  $f^2$  project normally across the grooves  $q$ , or for a sufficient distance within the grooves to bring them into the path of the rods  $p$ , which they are intended to engage between the edges of the curtains and the end pieces  $p'$ . When the curtains are in position, as before described, the rod  $p$  of the first curtain of the series or curtain being displayed is engaged from underneath by the hooks  $i^2$ , while the rod  $p$  of the last curtain of the series is engaged from above by the hooks  $f^2$ .

20 The device is actuated to remove a curtain from the field of view and supplant it by the next curtain in order, by a pull upon the cord  $k$ , to swing down the crank D'. This turns the shaft D and levers E, causing the hooks  $i^2$ , on the ends of the latter, to swing to a distance equal to the length of a curtain, and carry with them the curtain from the field of view and bring it into the position of last in the series. The lever F' being linked toward the free end of its long arm to the short arm of the lever E near the fulcrum of the latter, is given only a comparatively slight swing, and it is so gaged as to draw down the dog  $f'$  a distance corresponding with the diameter of the end pieces  $p'$ . Thus with each complete swing of the lever E to draw the first curtain its full length the lever F' is moved only a distance sufficient to cause the dog  $f'$  to force the rest of the curtains ahead far enough to move the curtain next succeeding the first to the position left by the latter. When the cord  $k$  is released, the resilience of the spring  $l$  causes the shaft and levers to resume their normal positions, in doing which the cam-faces of the plungers  $i^2$  strike the rod  $p$  of the curtain in the field of view, and, being retracted against their springs, plunge under the rod to engage the latter with the next manipulation. At the same time the spring-

dogs  $f'$  rise, and, springing over the rod  $p$  of the curtain which has just left the field of view, engage it as before described.

Spring-catches  $e$ , toward the front of the device and secured to the stay  $s^5$ , project into the path of the rods  $p$  just below the position of the first rod, and, without interfering with their upward movement, prevent the first rod from being forced with the rest of the series out of position by the plungers  $i^2$  as they spring over it. The spring-catches  $e$  also operate to prevent the second curtain of the series from being raised by the friction against it of the first curtain in the movement of the latter. Spring-catches  $d$ , secured toward the back of the device to the under sides of the guides  $r'$ , and bent over the latter, as shown, project across the grooves  $q$  just above the position of the last rod  $p$ , and prevent the latter from being raised by the spring-actuated dogs  $f'$  in their backward movement. As the rods  $o$  travel outside the guides  $r$ , they are always outside the path of the rods  $p$ . Thus in the movement of a curtain from the position of first to that of last in line it glides over the deck  $n$  between the latter and the next preceding curtain without material resistance. The deck  $n$  prevents the curtains from sagging, which would tend to interfere with the perfect working of the device by greatly increasing the frictional resistance offered the curtain, which is being independently moved from the field of view.

To prevent the rods  $o$  from being forced ahead by the independently-moving curtain, or from crowding each other as the curtains are drawn down across the back of the device, they are held with slight pressure against the guides  $r$  by clamping-strips  $c$  and the clamping ends of guide-strips  $b$ . The strips  $c$  are of spring metal, secured at one end to points  $c'$ , toward the upper forward part of the device, and they circle thence around the guides  $r$ , terminating at points near the bottom of the device, where springs  $c^2$  engage and press against them in the direction of their length, which tends to draw them throughout their extent against the guides  $r$ . The pressure which the strips  $c$  exert toward the guides  $r$  operates to retard movement of the rods  $o$  to the necessary degree. The guide-strips  $b$  are for the rods  $o$  to slide against as the curtains to which they are attached are moved from the field of view. The clamping ends  $b'$  of the strips  $b$  press normally against the guides  $r$  and operate to hold the rod  $o$  of the last curtain. Between the parts  $b'$  and the adjacent ends of the strips  $c$  are spaces  $a$ , which facilitate the insertion and extraction of the rods  $o$  when for any reason it is desired to replace any of the curtains with others.

The lines of perforations  $h'$  and  $g'$  in the levers E and F', respectively, afford means whereby the throw of the dogs  $f'$  may be accurately gaged to force the curtains forward the desired distance, so by raising the links G



in the perforations  $g'$  and lowering them in the perforations  $h'$  the dogs  $f'$  may be caused to force the curtains far enough forward to bring two or more curtains into positions to be moved at one time by the levers E.

The object of the parallel grooves  $q$  is to afford together a cyclic guide for the rods, whereby the movement of the whole series of curtains is recurrent. Instead of grooves, therefore, any other form of guide which would operate to hold the rods against displacement and permit their being operated, as described, would be the equivalents of the grooves  $q$ .

What I claim as new, and desire to secure by Letters Patent, is—

1. In a display device, the combination of a cyclic guide and a series of curtains overlapping each other and mounted upon supports placed one in advance of the other in the said guide and independently movable therein, whereby the curtains may be successively advanced into and out of the field of view, substantially as described.

2. In a display device, the combination of a cyclic guide, a series of curtains overlapping each other and mounted upon supports placed one in advance of the other in the said guide and independently movable therein, and mechanism, substantially as described, for engaging and advancing the foremost curtain, whereby the curtains are successively moved across the field of view, substantially as set forth.

3. In a display device, the combination of a guide comprising two corresponding opposing stationary cyclic ways, a series of curtains overlapping each other and mounted upon supports extending at their opposite ends into the said ways and arranged one in advance of the other and independently movable in the guide, and mechanism, substantially as described, for engaging and advancing the foremost curtain, whereby the curtains are successively moved across the field of view, substantially as set forth.

4. In a display device, the combination of a cyclic guide, a series of curtains overlapping each other and mounted upon supports placed one in advance of the other in the said guide and independently movable therein, mechanism, substantially as described, for engaging and advancing the foremost curtain, and mechanism for simultaneously moving the next succeeding curtain into the position vacated by the said foremost curtain, substantially as and for the purpose set forth.

5. In a display device, the combination of a guide comprising two corresponding opposing stationary cyclic ways, a series of curtains overlapping each other and mounted upon rods  $p$ , having end pieces  $p'$  extending into the said ways, the rods being placed one in advance of the other and independently movable in the guide, and mechanism, substantially as described, for engaging and ad-

vancing the foremost rod, whereby the curtains are successively moved across the field of view, substantially as set forth.

6. In a display device, a series of curtains, each provided toward one end with a rod  $p$ , having end pieces  $p'$  movable in a cyclic guide, and a rod  $o$  toward its opposite end movable in a plane outside the cyclic guide, and mechanism, substantially as described, for engaging the rods  $p$  and moving the curtains successively into and out of the field of view, substantially as set forth.

7. In a display device, the combination, with an inclosing-case having a display-face  $A'$ , of end supports B, endless guideways  $q$  on the supports, a rock-shaft D, journaled toward opposite ends in the supports, a series of curtains upon rods  $p$ , which are mounted toward opposite ends and movable in the guideways  $q$ , and levers E on the rock-shaft, provided at their free ends with catches  $i'$ , which project across and swing in the path of the rods  $p$ , whereby, when the rock-shaft is actuated, the catches  $i'$  will engage a rod  $p$  and move a curtain, substantially as and for the purpose set forth.

8. In a display device, the combination, with an inclosing-case having a display-face  $A'$ , of end supports B, guideways  $q$  on the supports, a rock-shaft D, journaled in the supports, a series of curtains C, secured at one edge to rods  $p$ , which are mounted toward opposite ends and movable in the guideways  $q$ , and secured at their opposite edges to rods  $o$ , movable outside the guideways  $q$ , and levers E on the rock-shaft, provided at their free ends with catches  $i'$ , which project across and swing in the path of the rods  $p$ , whereby, when the rock-shaft is actuated, the catches  $i'$  will engage a rod  $p$  and move a curtain, substantially as and for the purpose set forth.

9. In a display device, the combination, with an inclosing-case having a display-face  $A'$ , of end supports B, guideways  $q$  on the supports, clamping-strips  $c$ , extending part way around the guideways  $q$ , a rock-shaft D, journaled in the supports, a series of curtains C, secured at one edge to rods  $p$ , which are mounted toward opposite ends and movable in the guideways  $q$ , and secured at their opposite edges to rods  $o$ , movable between the strips  $c$  and guideways  $q$ , and levers E on the rock-shaft, provided at their free edges with catches  $i'$ , which project across and swing in the path of the rods  $p$ , whereby, when the rock-shaft is actuated, the catches  $i'$  will engage and move a curtain, substantially as and for the purpose set forth.

10. In a display device, the combination, with an inclosing-case having a display-face  $A'$ , of end supports B, guideways  $q$  on the supports, rock-shafts D and F, journaled in the supports, a series of curtains upon rods  $p$ , which are mounted toward opposite ends and movable in the guideways  $q$ , levers E on



the shaft D, provided at their free ends with catches  $i'$ , levers  $F'$  on the shaft F, carrying catches  $f'$ , the catches  $i'$  and  $f'$  all projecting across and swinging in the path of the rods  
5  $p$ , and mechanism, substantially as described, for actuating the rock-shafts D and F simultaneously, whereby the catches  $i'$  will engage and move a curtain of the series from

the field of view and the catches  $f'$  will advance the rest of the curtains, substantially 10 as and for the purpose set forth.

MATTHEW F. CONNETT.

In presence of—

J. W. DYRENFORTH,

M. J. FROST.