

No. 624,III.

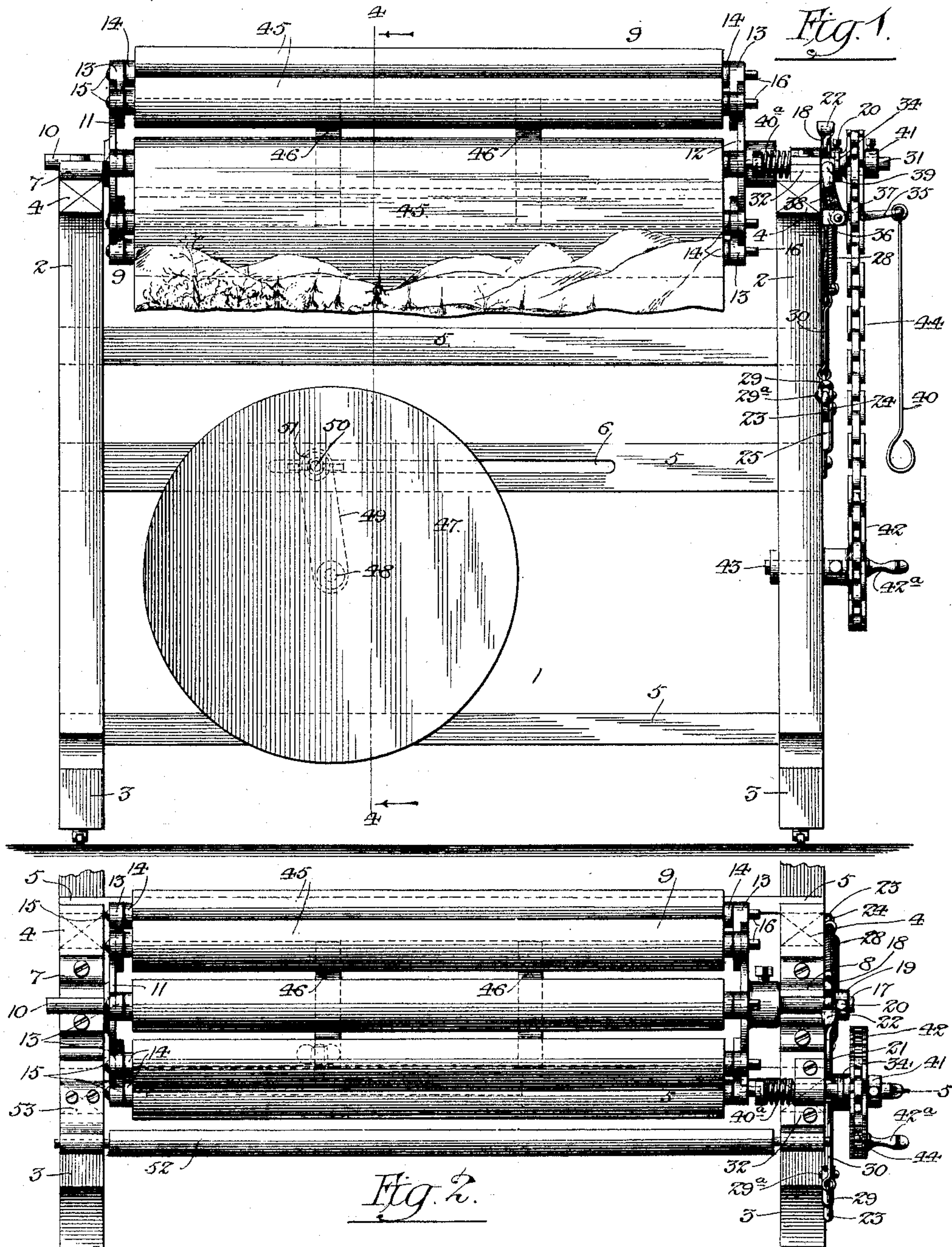
Patented May 2, 1899.

C. A. SNOW.
PHOTOGRAPHIC BACKGROUND CARRIER.

(Application filed Mar. 11, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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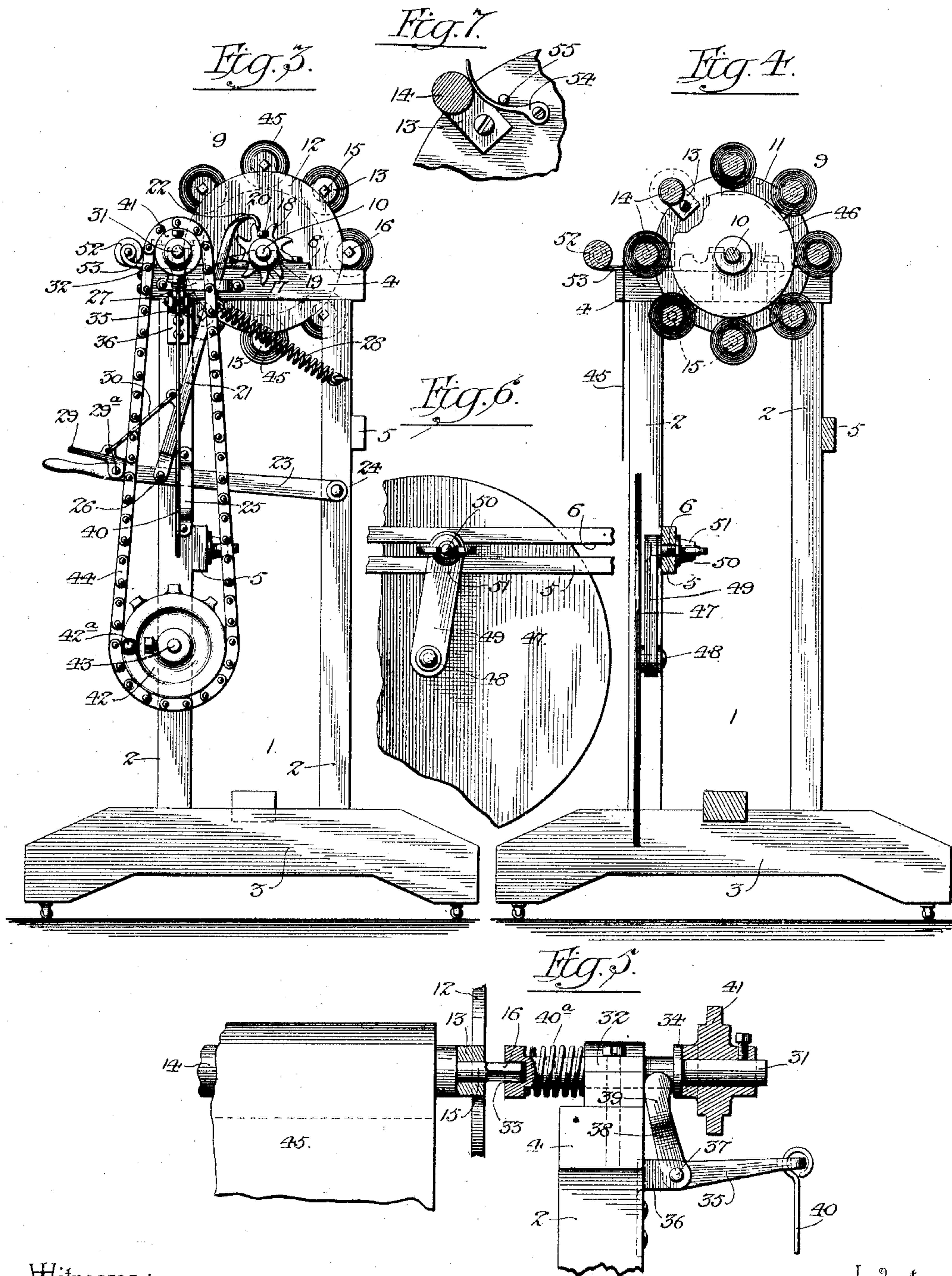
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UNITED STATES PATENT OFFICE.

CHARLES A. SNOW, OF LIME SPRINGS, IOWA.

PHOTOGRAPHIC-BACKGROUND CARRIER.

SPECIFICATION forming part of Letters Patent No. 624,111, dated May 2, 1899.

Application filed March 11, 1898. Serial No. 673,508. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. SNOW, a citizen of the United States, residing at Lime Springs, in the county of Howard and State of Iowa, have invented a new and useful Photographic-Background Carrier, of which the following is a specification.

My invention relates to improvements in photographic-background holders; and the object that I have in view is to provide an apparatus adapted to carry a number of photographic backgrounds either of which may be easily and quickly brought into position for service, thus placing at the use of the photographer a variety of backgrounds suited to the needs of the service.

A further object is to provide means by which the carrier-reel may be brought to the desired position for unwinding therefrom either of the series of backgrounds and also to provide for the convenient unwinding or winding of the backgrounds, the winding device being adapted for use in connection with either of the background-rolls.

A further object of the invention is to provide means to prevent the unwinding of the background-rolls on either of the shafts of the carrier-reel except the particular background which it is desired to use, to provide for the locking of the carrier-reel in either of its adjusted positions, to enable the carrier-reel to be turned with a step-by-step adjustment, and to arrange the adjusting devices for the carrier-reel and the roll-winding device within convenient reach of the operator stationed at one side of the apparatus.

A further object of the invention is to provide a headground adapted to be used in connection with the apparatus and to be adjusted at different elevations thereon to meet the requirements of the operator in taking a photograph.

With these ends in view the invention consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of a photographic-background holder constructed in accordance with my invention, the drapery-holding rod and its supporting means being omitted. Fig. 2 is a plan view of the holder. Fig. 3 is an elevation looking at the right-hand end of the apparatus. Fig. 4 is a vertical cross-sectional elevation on the plane indicated by the dotted line 4 4 of Fig. 1 looking in the direction indicated by the arrow. Fig. 5 is a detail longitudinal sectional elevation on the plane indicated by the dotted line 5 5 of Fig. 2. Fig. 6 is a detail rear elevation of the headground, illustrating the means for supporting the same. Fig. 7 is a detail view of a spring-brake to hold each of the background-rolls against axial rotation and accidental unwinding of the background.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

In carrying my invention into practice I provide a main frame 1 of suitable height to sustain a background of proper dimensions suited to the field of view of the camera-lens. In the embodiment of the frame illustrated by the drawings it comprises the standards or legs 2, the feet 3, the cross-rails 4 at the upper part of the frame, and suitable braces 5. All of these parts are joined rigidly together to provide a substantial and durable frame, and in this connection I desire to call attention to the construction of one of the braces 5 with a horizontal longitudinal slot 6 adapted to receive the clamping means by which a headground may be adjustably supported on the frame of the apparatus.

On the cross-rails 4 at the upper end portions of the main carrying-frame are provided the journal-bearings 7 8, adapted to receive a shaft of the carrier-reel 9, and one of these bearings (the bearing 7) is a duplicate structure, which enables an endless-chain carrier to be supported on the apparatus should the operator desire to substitute for the carrier-reel another type of carrier for the backgrounds, which substitute type of carrier may consist of endless chains with a series of rolls supported thereon. I prefer, however, to employ a carrier in the form of the reel 9, and in this embodiment of the invention the reel consists of a central shaft 10, the heads 11 12,

and the background-rolls 14, arranged in circular series around the axial reel-shaft 10 and journaled idly in the reel-heads 11 12. The background-rolls 14 are provided with suitable trunnions 15, journaled idly in the coincident bearings 13 of the reel-heads, and one trunnion of each roll 15 is extended through its bearing 13 in the reel-head 12, said extended trunnion being squared or made polygonal, as at 16. The reel 9 is arranged in a horizontal position compactly within the frame 1, and one of its shafts 10 is extended, as at 17, beyond the bearing 8. This extended end of the reel-shaft protrudes beyond one side of the main frame, and to it is fitted a ratchet or toothed wheel 18, the latter being provided with a hub 19, which carries the clamping-screw 20, adapted to bind upon the extended end 17 of the reel-shaft, and thereby firmly clamp the ratchet or toothed wheel to the reel-shaft for the purpose of making said wheel rigid with the shaft and to insure rotation of the reel with the ratchet or toothed wheel. The reel is thus mounted for axial rotation within the frame, and I provide mechanism by which the reel may be rotated with a step-by-step motion to bring either of the background-rolls 14 thereof into position for service. The feeding mechanism for the carrier-reel also serves to lock the said reel in its adjusted position against rotation, and in the preferred embodiment of this part of my invention I employ an elongated feeding and locking pawl 21. The upper extremity of this pawl 21 is provided with a hook-shaped beak 22, adapted to engage with the ratchet or toothed wheel 18. The pawl is operated by an adjusting-lever 23, arranged in a substantially horizontal position at the right-hand end of the frame, and one end of this lever is fulcrumed, as at 24, to one of the uprights or legs of the frame 1, while the other end of said lever projects beyond the opposite upright or leg of said frame, thus enabling the operator to readily grasp the lever when it is desired to actuate the pawl 21 to feed or rotate the carrier-reel. The adjusting-lever 23 is guided near its free end in a vertical keeper 25, which is suitably fastened to the frame 1, and the adjusting-lever and pawl 21 are pivotally coupled together by means of a pivotal bolt or pin 26, which passes through the lever 23 at a point intermediate of its length and through the lower end of the vertically-disposed pawl 21. The pawl is guided at or near its upper free end in a keeper 27, which is attached in a fixed position to one of the cross-rails 4 of the frame 1 at one end of the latter, thus confining the pawl in operative relation to the ratchet or toothed wheel 18 of the carrier-reel. To the pawl is connected one end of a coiled spring 28, the other end of which is attached to the frame 1, and this spring serves to normally pull the beak 22 of the pawl into engagement with the toothed wheel 18. The pawl is thus controlled by a spring to engage with the

toothed wheel of the carrier-reel and prevent the latter from rotating in a backward direction; but when it is desired to feed or rotate the carrier-reel the operator depresses the adjusting-lever 23, which pulls downward on the pawl 21 and causes its beak to turn the toothed wheel 18, which in turn moves the carrier-reel an angular distance equivalent to the space between two adjacent rolls 14 of the series of background-rolls. I also provide means by which the feed-pawl 21 may be thrown out of engagement with the toothed wheel on the carrier-reel, and this means consists of a handpiece 29, pivotally attached to the adjusting-lever, as at 29^a, and a link 30, which is pivoted at its ends to the handpiece 29 and to the pawl 21 at a point above its pivotal connection with the adjusting-lever. This construction permits the handpiece 29 to be depressed without moving the lever 23 on its fulcrum, and the pull on said handpiece and the link 30 retracts the beak 22 of the pawl from engagement with the toothed wheel of the carrier-reel.

As the carrier-reel is elevated by the main frame a distance out of reach of the operator, it is necessary to provide mechanism by which either of the background-rolls 14 may be rotated after the adjustment of the carrier-reel to present the desired background at a position where it may be uncoiled from the roll journaled in the carrier-reel. My mechanism for rotating the background-roll consists of a winding-shaft 31, arranged in a horizontal position on the upper part of the frame 1 and adjacent to the polygonal ends 16 of the background-rolls, and this shaft 31 is mounted in a bearing 32 to have rotary and sliding movement therein, whereby the shaft may be retracted out of the path of the polygonal ends of the background-rolls by an endwise movement, or it may be rotated to turn the background-rolls axially for the purpose of uncoiling the background from or coiling it on its proper roll 14. The bearing 32 is fixed rigidly to the frame 1, and the shaft 31 is mounted idly or loosely in said bearing. At its inner end said shaft 31 is formed with an angular or polygonal socket 33, and the shaft is furthermore provided with a collar 34, which is formed thereon at a point intermediate of its length, the collar 34 and socket 33 being spaced on the shaft 31 to lie on opposite sides of the bearing 32 and at a distance from each other sufficient to allow the shaft 31 to have the desired endwise movement or play in said bearing. The endwise movement of the shaft is effected by means of an angular lever 35, which is fulcrumed in a bracket 36 by means of a transverse bolt or pin 37, and the vertical arm 38 of this lever 35 is forked at its upper extremity, as at 39, to engage with the shaft 31 and to impinge against the collar 34 thereon. The other end of the angular lever 35 projects outwardly from the frame, and to the free end of the offstanding part of said lever is connected a pull-rod 40,

which depends a suitable distance alongside of the frame, so as to be within convenient reach of the operator. The winding-shaft 31 is normally pressed inward by a coiled spring 40^a, which is fitted loosely around said shaft 31 to have its respective ends seated against the socketed end 33 of the shaft and the fixed bearing 32. The shaft 31 is rotated by gear connections within convenient reach of the operator, and, as shown by Fig. 3, sprocket-gearing is used to rotate said winding-shaft. A sprocket-pinion 41 is clamped or fixed rigidly to a protruding end of the winding-shaft 31, and a master or driving sprocket 42 is journaled on a short stub axle or shaft 43, supported on the frame at a suitable elevation from the floor. The sprocket-pinion and master-sprocket are operatively connected together by an endless sprocket-chain 44, which passes over the sprocket-pinion and under the master-sprocket, and this master-sprocket is further provided with a hand-crank 42^a, by which it may be conveniently rotated for the purpose of imparting traveling motion to the chain and rotating the sprocket-pinion to likewise actuate the winding-shaft 31.

Each of the idly-journaled rolls 14 in the carrier-reel is provided with a flexible background 45, adapted to be coiled thereon or uncoiled therefrom. Each background consists of a length of suitable fabric or other appropriate material painted or otherwise ornamented with scenery or other views, and said flexible background is suitably attached to its proper roll. When the backgrounds are not in use, they are designed to be compactly coiled on their rolls and to be contained within the carrier-reel out of the way of the operator, and in the rotation of the carrier-reel these coiled-up backgrounds are prevented from uncoiling from their rolls by the friction or brake disks 46, which are clamped on the reel-shaft 10 within the circular series of rolls and backgrounds provided on the heads of said reel. The friction or brake disks 46 are spaced at suitable intervals along the length of the shaft 10, and they are of suitable diameter to have the necessary frictional contact with the backgrounds while on the rolls 14 to prevent the latter from uncoiling. At the same time the roll 14 may be positively rotated by the action of the winding-shaft 31 to uncoil the proper background from its roll when the shaft engages with said roll, and in like manner the background may be coiled on its roll when the shaft 31 engages therewith and is rotated by the described sprocket-gearing.

In taking some kinds of pictures the photographer does not desire to use a background covered with scenery or the like, and to adapt the holder or carrier for service under these conditions I provide what I term a "head-ground." This headground is indicated at 47 in the accompanying drawings as of circular or disk-like contour and of any suitable

material. The headground is attached by a bolt 48 to the outer extremity of a carrying-arm 49, which is arranged on the back or rear side of said headground, so as to be out of view. The free end of the carrying-arm is adjustably fastened to the slotted cross rail or brace 5 of the frame 1, and this is effected by means of the bolt 50 and the clamping-nut 51. (Clearly represented by Figs. 1, 4, and 6 of the drawings.) The bolt 50 is fitted in the free end of the carrying-arm 49 and in the slotted rail 5, and on said bolt is screwed the clamping-nut 51, which is adapted to bind against the cross-rail 5 and rigidly clamp the carrying-arm and headground in position. The headground is adjustable in a horizontal plane on the frame of the apparatus, because the bolt 50 may be moved in the longitudinal slot 6 of the rail 5, and said headground is also adjustable in a vertical plane, because the arm 49 may be turned to different angular positions with relation to the slotted rail 5, the clamping-bolt and its nut serving to hold the carrying-arm and the headground in either of their adjusted positions.

The operation of my background-holder may be described as follows: The adjusting-lever 23 may be manipulated to actuate the feed-pawl 21 to turn the carrier-reel by the step-by-step motion until the proper background-roll is in alinement with the winding-shaft 31. The pull-rod 40 is depressed to move the angular lever 35 on its fulcrum to retract the shaft 31 out of the path of the polygonal end of the background-roll and, when the roll 14 assumes the correct alined position with the shaft 31 the pull-rod is released to allow the spring 40^a to impel the shaft 31 endwise for the socket 33 of said shaft to receive the angular or polygonal ends 16 of the background-roll. The pawl 21 engages with the notched wheel 18 to restrain the carrier-reel from rotation on its axis, and the master-sprocket 42 may now be rotated to rotate the shaft 31, which in turn rotates the background-roll 14 in the direction to uncoil the background from the roll. The headground 47 may or may not be detached from the frame of the apparatus, and the flexible background uncoiled from its roll may be adjusted in front of the apparatus and within the field of the camera-lens. The operator when through with an unrolled or exposed background may rotate the master-sprocket in a direction to drive the roll 14 and coil the background thereon, after which the pull-rod 40 is actuated by hand to move the shaft 31 against the tension of its spring and retract said shaft out of engagement of the roll 14. The lever 23 may now be operated to rotate the carrier-reel and bring another of the background-rolls 14 into position for service, and thus the apparatus may be used to enable the operator to select and adjust either of the series of flexible backgrounds. If desired, the scenery-backgrounds may be coiled on their respective rolls and the headground 47

used as the background for the picture, said headground being adjustable in horizontal and vertical planes by its carrying-arm and its clamping-bolt.

5 By reference to Fig. 3 of the drawings it will be observed that the means for adjusting the carrier-reel, the means for retracting the winding-shaft out of the path of the background-rolls on said carrier-reel, and the
10 means for rotating the winding-shaft are all arranged at the right-hand end of the apparatus, and thus either of the devices may be adjusted by the operator without moving from his position. At the same time all of these
15 adjusting devices are adapted for independent operation or control, and they are arranged as shown to avoid interfering one with the other.

In taking some kinds of pictures the operator may desire to use curtains as a back-
20 ground either independently of or in connection with the flexible backgrounds on the rolls of the carrier-reel, and to enable such curtains to be employed I provide a curtain-rod
25 52, which is arranged in a horizontal position on the upper part of the frame across the latter and in advance of the carrier-reel. This curtain-pole is attached by suitable brackets 53 to the carrying-frame 1, and on it the cur-
30 tains may be supported in any of the usual ways.

As the frictional contact of the brake-disks 46 with the background-rolls may not operate efficiently under all conditions to restrain
35 the rolls 14 from axial rotation and prevent the backgrounds from unwinding, I prefer to provide a spring-brake 54 for the individual rolls, as represented by Fig. 7. This spring-brake consists of a leaf-spring having one end
40 fixed to the bearing 13 or a part of the carrier-head and with its other end in contact with the roll near one end thereof. A fixed stop 55 is arranged to engage with the roll and to give the necessary tension to the spring
45 in order to cause it to efficiently serve in braking or arresting the rotation of the roll. It will be understood that each roll 14 has a spring-brake.

I am aware that changes in the form and
50 proportion of parts and in the details of construction may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of this invention, and I therefore reserve the right to make such mod-
55 ifications as clearly fall within the scope of the invention.

Having thus described the invention, what I claim is—

1. In a photographic-background carrier,
60 the combination with a carrier-reel having a series of background-rolls journaled therein, of a mechanism for adjusting said background-reel with a step-by-step motion consisting of a toothed wheel on the reel-shaft,
65 an adjusting-lever, and a pawl connected with

lever and engaging with said toothed wheel, substantially as described.

2. In a photographic-background holder, the combination with a carrier-reel having a series of background-rolls journaled therein, 70 of a toothed wheel fixed to the reel-shaft, an adjusting-lever, a pawl pivoted to said lever and engaging with the toothed wheel, and a spring connected to the pawl to hold the latter in engagement with said toothed wheel, sub- 75 stantially as described.

3. In a photographic-background holder, the combination with a carrier-reel having a series of background-rolls, of a toothed wheel fixed to the reel-shaft, an adjusting-lever, a 80 spring-controlled pawl pivoted to said lever and engaging with the toothed wheel, and a handpiece pivoted on the lever and linked to the pawl, for the purpose described substantially as set forth. 85

4. In a photographic-background carrier or holder, a rotatable carrier-reel, a series of background-rolls journaled idly therein, and means engaging with said background-rolls to restrain the latter from rotation on their 90 axes during the rotary adjustment of said reel, in combination with mechanism for positively rotating the carrier-reel, and mechanism for rotating either of the background-rolls to coil the background thereon or uncoil 95 said background therefrom, substantially as described.

5. In a photographic-background holder, a carrier-reel having an axial shaft, a series of background-rolls journaled idly in said car- 100 rier-reel, and friction or brake disks mounted on the reel-shaft and engaging with backgrounds coiled on said rolls, for the purpose described, substantially as set forth.

6. In a photographic-background holder, 105 the combination with a rotatable carrier-reel having a series of background-rolls journaled therein, of a winding and unwinding shaft provided with a polygonal socket to engage with a corresponding tenon on either of the 110 background-rolls and also provided with a collar, a bearing for said shaft, an angular lever having a forked arm which engages with the shaft and its collar, a pull-rod connected to one arm of the lever, a coiled spring fitted 115 to the shaft to impel the latter into engagement with one of the background-rolls, and gearing for rotating the shaft, substantially as described.

7. In a photographic background, the com- 120 bination with a frame, of a carrying-arm extending from said frame and attached by a horizontally-slidable pivot-joint to said frame for adjustment in either horizontal or vertical planes on said frame, and a means for 125 firmly holding the headground attached to the carrying-arm to partake of the adjustments thereof, substantially as described.

8. In a photographic background, the com- 130 bination of a frame having a horizontal slot,

a clamping-bolt fitted in said slot for adjustment horizontally therein, a carrying-arm fitted on said bolt for adjustment vertically thereon as an axis and also adjustable horizontally therewith, and a headground attached to said arm, substantially as described.

my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES A. SNOW.

Witnesses:

A. J. BAERMAN,
F. M. CLARK.

In testimony that I claim the foregoing as