

1,368,880.

Patented Feb. 15, 1921.

4 SHEETS—SHEET I.

Fig. 1.

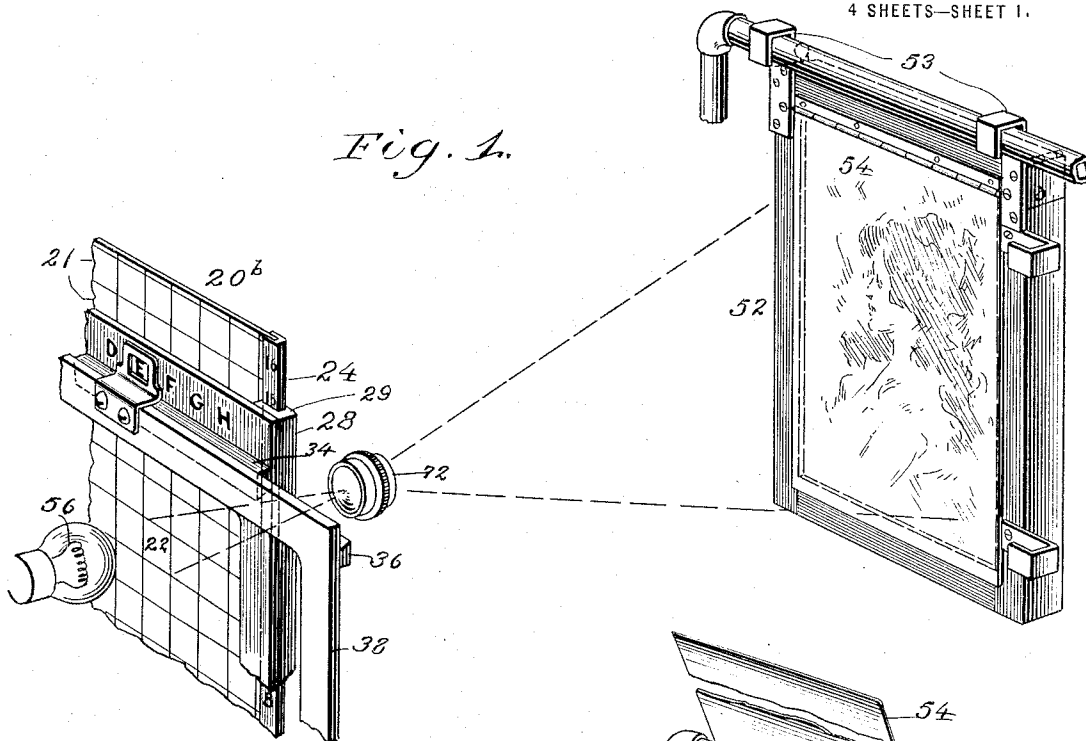
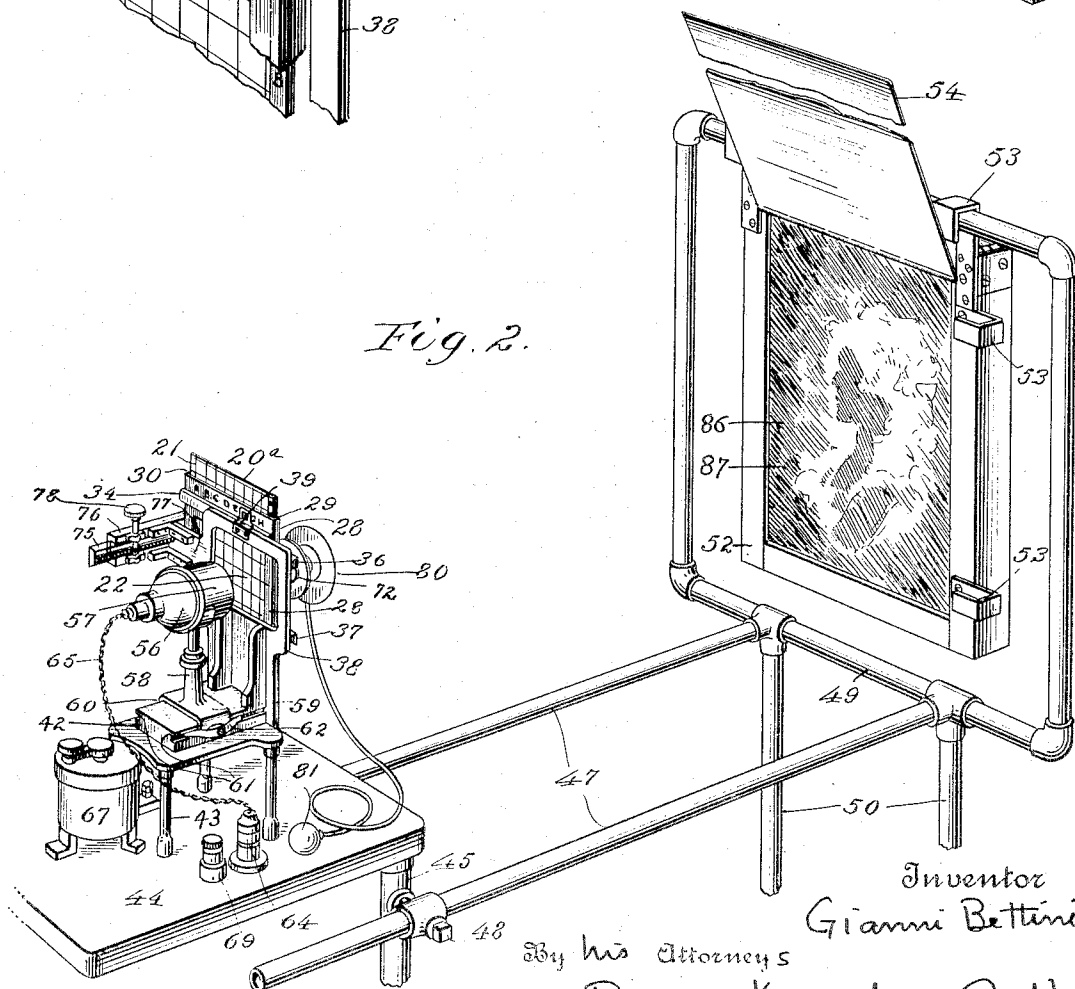


Fig. 2.



Inventor
 Gianni Bettini

By his Attorneys
 Rogers, Kennedy & Campbell

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G. BETTINI.
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4 SHEETS—SHEET 2.

Fig. 3.

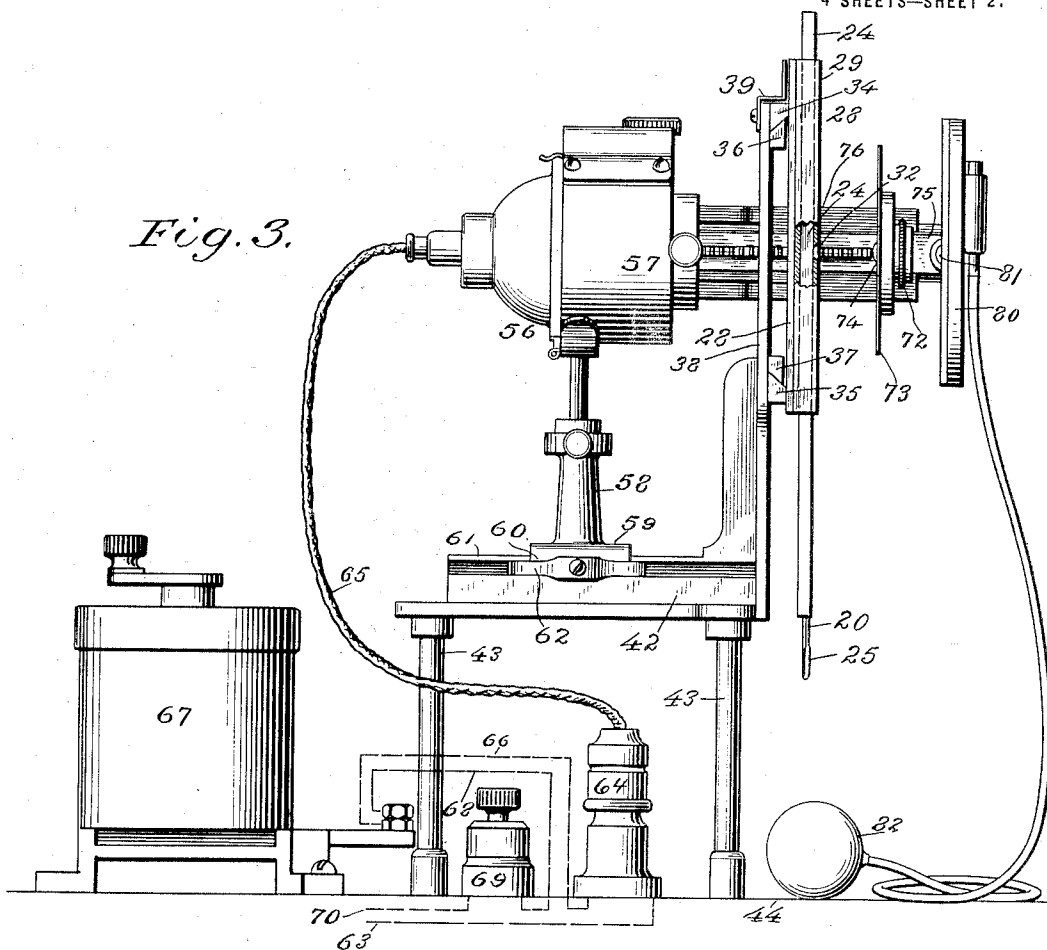
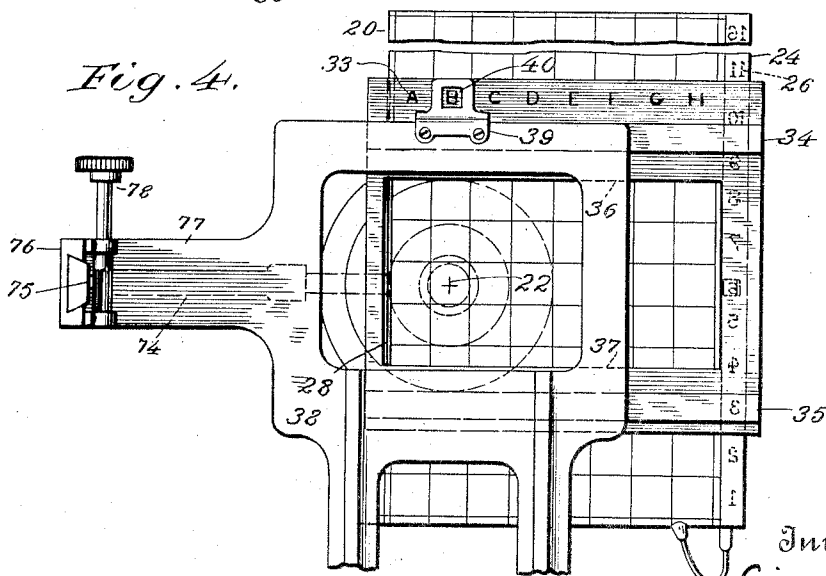


Fig. 4.



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4 SHEETS—SHEET 3.

Fig. 5.

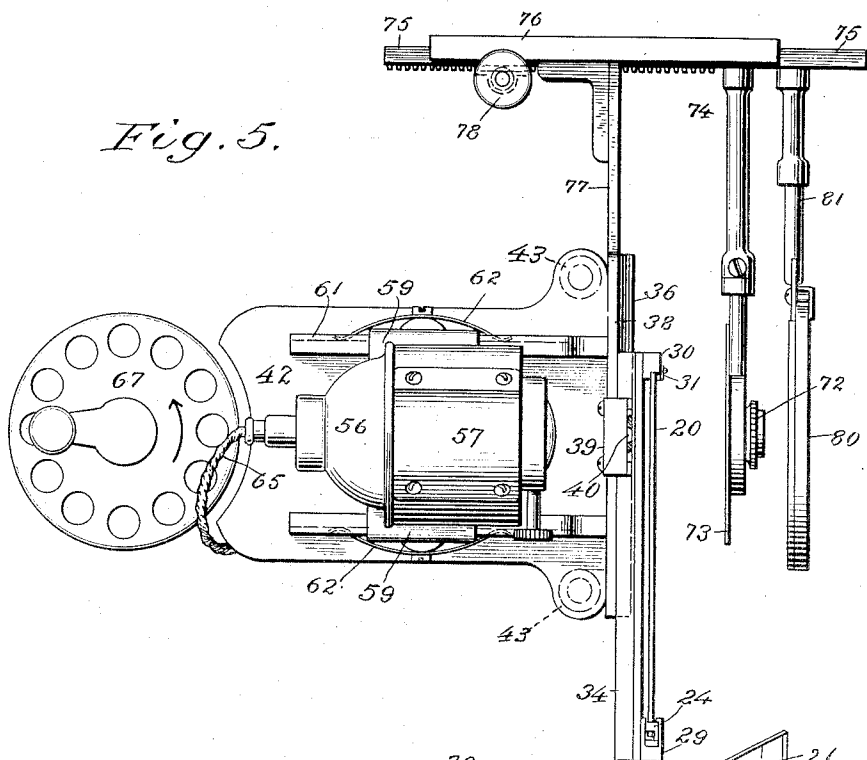


Fig. 6.

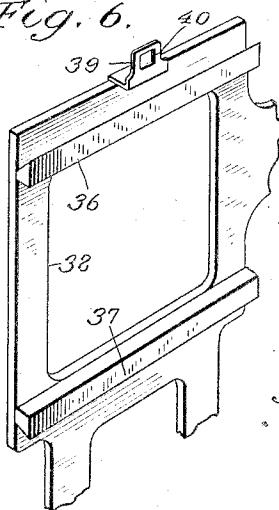


Fig. 7.

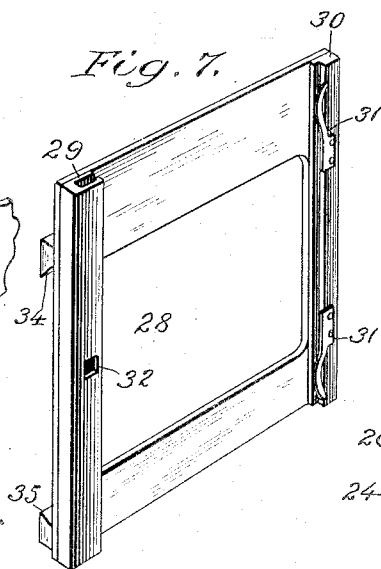
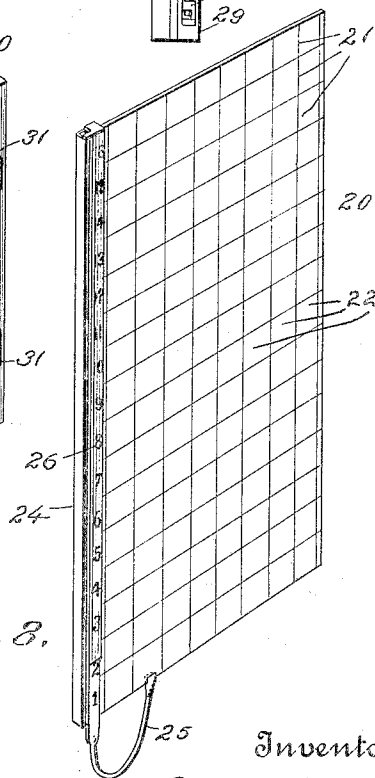


Fig. 8.



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4 SHEETS—SHEET 4.

Fig. 9.

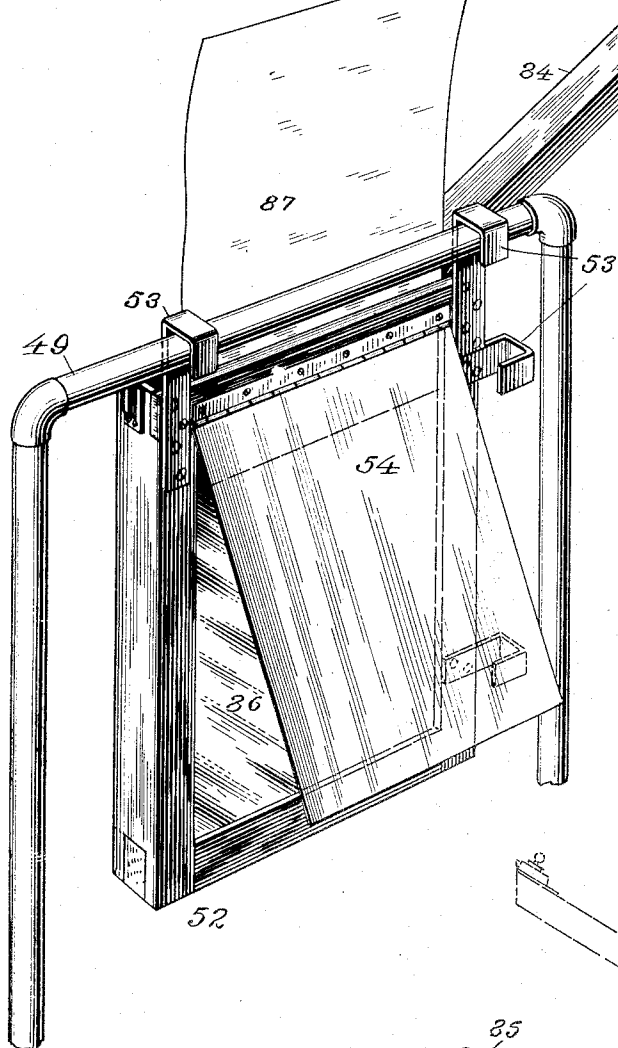


Fig. 10.

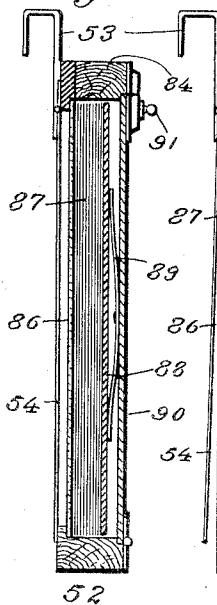


Fig. 11.

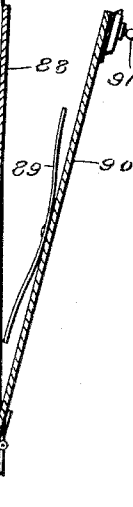


Fig. 12.

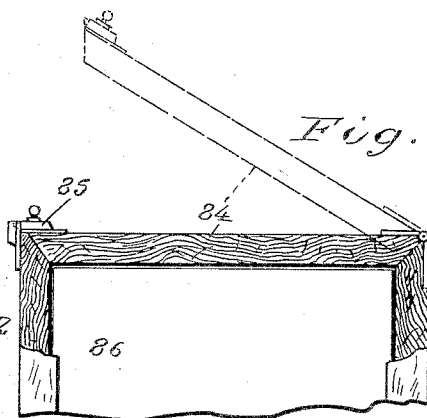
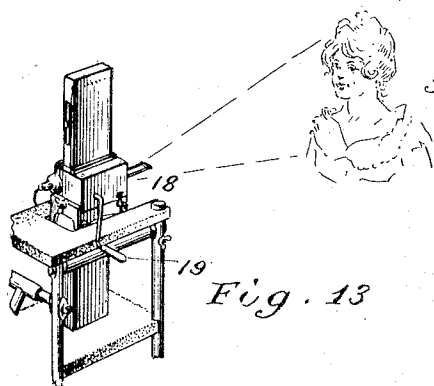


Fig. 13.

Inventor
Gianni Bettini
By his Attorneys
Rogers, Kennedy & Campbell.

UNITED STATES PATENT OFFICE.

GIANNI BETTINI, OF NEW YORK, N. Y.

PORTRAIT PHOTOGRAPHY.

1,368,880.

Specification of Letters Patent.

Patented Feb. 15, 1921.

Application filed November 21, 1917. Serial No. 203,164.

To all whom it may concern:

Be it known that I, GIANNI BETTINI, a subject of the King of Italy, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Portrait Photography, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to portrait photography, and involves both a novel system or method of securing satisfactory portraits of persons and a novel means or apparatus for carrying out the same. The principal object is to do away with the disadvantages and defects of the old system practised by regular portrait photographers, wherein the sitter would take different fixed poses, and for each one the photographer would set his camera and make an exposure. These are apt to be wholly unsatisfactory, because of the great difficulty in securing a truly natural pose when the sitter is compelled to take a fixed position, involving a strained attitude or expression lacking both in the qualities of action or life and of repose. Exceeding trouble and expense are involved, as is well-known, and frequently the sitter is recalled for further sittings.

The general plan of the present improvement is in a practical way available to portrait photographers to have the subject undergoing natural movements of action or repose before a suitable, mechanically actuated camera, which may be put into or out of operation at will, and which acts to expose a series, of greater or less number, as desired, of miniature images of continuously successive positions of expressions of the subject, from which subsequently, as will be described, highly satisfactory portraits may be selected and perfected.

I am, of course, aware that for ordinary motion picture purposes excellent portraiture has been obtained, but the system and apparatus involved in ordinary motion picture photography would be unavailable for the present purposes. The elongated, flexible films, which have to be rolled from one reel to another in use, are unwieldy in handling; the first and last of a short series of pictures might be separated by a distance of many feet. To attempt studio portraiture with this system would involve difficult and laborious manipulations, uncertainty in the location and identification of individual

images, and would require for examining and printing purposes, as well as for taking the pictures, a complicated and costly roll film apparatus. For these reasons the usual motion picture systems and apparatuses would be, practically speaking, of no value whatever to the portrait photographer. Upon the projection of the usual motion picture film an individual image can be selected, but to pass back to the original corresponding negative and to locate and utilize it would be prohibitive, and the only available procedure would be to produce a new and individual negative by printing from the positive film, and then printing the desired positives from such second negative; thus involving an additional step in the system and incurring the necessary loss of clearness by the repeated transpositions.

The system of the present invention is quite the contrary of any portrait photography system of which I am aware, and the apparatus hereof is totally novel in character. The present system of portrait photography may be described as consisting in operating a suitable camera while directed at a subject undergoing natural motion, such as the motions involved in smiling, laughing, talking, gesturing, the camera mechanism being such as to utilize a compact or glass plate of handy dimensions, such as 5x8½ inches employed by me, the camera mechanism being of a character to afford upon development of the exposed plate a negative plate which bears a number of rows of images with a number of miniature images in each row, for example, with the 5x8½ inch plate there may be eighteen rows of eight images each, a total of 144 pictures, and thereafter printing a positive image plate from the negative plate, then projecting upon the curtain or white surface an enlargement of a fractional part of the positive plate while adjusting the plate in the directions of both longitudinal and transverse dimensions, so as to permit deliberate inspection and selection of a favorable picture, after which the row and the position in the row of the selected image are to be noted, and the negative plate then substituted for projection of the corresponding negative image, which projection when properly focussed will be used for exposing a sensitive print, which on development will afford a satisfactory portrait of a suitably enlarged size.

The entire set of pictures on one plate or of one subject are not necessarily a continuous series, but may consist of numerous fragmental series, each comprising several consecutive pictures of the subject making each given kind of motion or gesture. Such a plate would be utterly unavailable for practical motion picture purposes, but of the highest character of value for portrait photography, since each pose or movement or gesture of the subject is illustrated by several consecutive pictures, from which the artist cannot fail to find those that are exactly as desired in matters of attitude, expression, life or repose.

The purposes of the present invention are, generally speaking, the accomplishment of the above recited objects and advantages, and to overcome the mentioned objections and defects of known systems and apparatuses, and further advantages of the present system and apparatus will be apparent to those skilled in the art, more particularly after consideration of the hereinafter following disclosure in detail of a system and apparatus constituting one convenient example of embodiment of the present invention.

In the accompanying drawings forming a part hereof, Figure 1 is a somewhat diagrammatic perspective showing projection of an image of the positive plate upon the curtain.

Fig. 2 is a similar perspective showing the apparatus more completely, and indicating projection through the negative image plate and exposing a sensitized print paper to the enlarged projected negative image.

Fig. 3 shows a side elevation of my novel plate carrying and projecting apparatus on a larger scale than in Fig. 2.

Fig. 4 is a rear elevation of the portion of the apparatus shown in Figs. 1 to 3, which carries the plate.

Fig. 5 is a top plan view of the parts shown in Fig. 3.

Fig. 6 shows the portion of the frame of the apparatus which supports and guides the supporting plate carriage.

Fig. 7 shows detached the sliding plate carriage.

Fig. 8 shows detached the picture plate, negative or positive, and its connected edge piece adapted to be vertically adjusted in the plate carriage.

Fig. 9 shows in perspective in partly open condition the holder for the curtain and print papers, shown also in Figs. 1 and 2.

Fig. 10 is a transverse cross-section of the holder in closed condition, and Fig. 11 is a similar section in open condition.

Fig. 12 is a face view partly broken away to show the hinged upper edge of the holder by which exposed prints may be removed for development and toning.

Fig. 13 is a perspective showing a suitable motion picture camera of the type referred to, directed toward the subject or sitter.

The first step in the preferred embodiment of the present invention is the preparation of a negative image plate of handy dimensions, and bearing a number of rows of images with a number of images on each row, and this may be done by using a motion picture camera such as the camera 18, indicated in Fig. 13, the same containing mechanism adapted to cause relative movement between the objective and the picture plate, so that a series of exposures will be laid back and forth across the plate. Since these pictures may be taken in small or fragmentary groups, the progress should be controllable at the will of the operator, for example, by reason of a hand drive, as indicated by handle 19. This enables the photographer to pose the subject in different attitudes or expressions while continuing in natural motion. The resulting negative would be useful for the present invention, but not necessarily of use for ordinary motion picture projection. It is unnecessary to show the interior parts and further details of the camera 18, since these are fully disclosed in a copending application of mine, Serial No. 239,961, filed June 14, 1918.

Development gives a negative image plate 20 or 20^a, which is preferably of glass, and therefore rigid, and although containing a great number of pictures, is compact and handy in size. The plate, for example, may be about five by eight inches, and contain about eighteen rows 21, each comprising about eight miniature individual images 22, a total of about one hundred forty four pictures, each approximately one-half inch square.

With a transparent picture plate 20 of such nature, whether it be a negative plate 20^a or a diapositive 20^b, as indicated in various figures of the drawings, it is possible to quickly, easily and surely locate and identify any individual image by giving the number or position of its row and column, and suitable numbers, letters or other characters may be applied along the rows or columns for this purpose. Instead of applying the characters directly on the plate, I prefer to apply them on the parts or apparatus which carries the plate during the processes of selecting, printing, etc., as will be described. Thus, Fig. 8 shows a binding strip or edge piece 24 along a longitudinal edge of the plate, this having a projection or positioning device 25, against which the plate end abuts to insure proper relations. Along the edge piece 24 are a series of characters 26, in this case numerals 1, 2, 3, etc., for the successive rows of pictures. The number 24 serves not only as an edge strip and an index, but also for cooperation with a guiding means in

which the plate 20 engages, with provision for longitudinal sliding to bring any given row of pictures in line with the optical devices.

5 Fig. 7 shows detached a slide carriage 28, having at one side a guide 29 for the edge piece 24 of the picture plate, and at the other side a guide 30 for the far edge of the plate, said guides containing friction pieces or
10 springs 31 to prevent displacement of the plate by gravity. The plate and carriage are shown engaged in Figs. 1 to 5, and the carriage also engaged on the frame of the apparatus. It will be observed that the plate
15 is slidable at will in one direction, that is, vertically in the carriage, while the carriage is likewise slidable in another direction horizontally at will, enabling any individual image to be brought into optical position.
20 Cooperating with the characters on the plate is an index piece or window 32 formed at the guide 29 of the carriage, so that the row can be quickly identified. The carriage also is provided with a series of characters 33, ar-
25 ranged horizontally across the rear of its top edge, as seen in Figs. 1, 2 and 4, the characters in this case consisting of the letters of the alphabet, so that the particular image in any given row is thus quickly identified.
30 The carriage 28 is fitted to the fixed parts of the machine through upper and lower beveled ribs 34 and 35, on the carriage, engaging corresponding upper and lower beveled ribs 36 and 37 on a fixed frame portion
35 38, which is shown separately in Fig. 6, and in its relation to the other parts in Figs. 1 to 5. This frame member is provided with an index piece 39 at the top, having a window 40 opposite the row of letter characters, so that the letter determining the column
40 may be quickly noted, for example, when any desired adjustment of the plate is obtained, the numeral 6 and the letter H may be exhibited through the windows 32 and 40, in which case H⁶ is representative of that picture, and it can always be restored to optical position either in the negative or positive by registering the plate and carriage to these characters.

50 The frame part 38 stands upright above a base piece 42, as best seen in Figs. 2 and 3, and below this base are columns 43 supporting the apparatus upon a stand or table 44, the legs 45 of which extend to the floor.

55 In order to locate the curtain or print paper at a suitable distance from the plate and optical devices, a pair of horizontal rails 47 are provided, extending longitudinally from the table legs 45, as shown in
60 Fig. 2, and secured in any desired adjustment by set screws 48. The far end of these rails carry a preferably hollow support 49, constructed of pipes, and from which extend downwardly legs 50 to the floor. A
65 holder 52 is shown hanging by hooks 53

from the hollow support 49, this frame having a hinged front or flap 54, serving as a curtain for examining the projected pictures and for focusing purposes, and the holder interiorly being fitted to maintain 70 a quantity of sensitive paper, which may be removed sheet by sheet as exposed.

The optical devices include a suitable lamp 56, arranged centrally behind the frame 38 and axially in line with the lamp, 75 but beyond the frame and plate, a lens 72. The lamp is contained in a hood 57, mounted on a stand 58, whose base 59 is slidable along a base piece 42, the lamp base having underreaching feet 60, engaging beneath 80 flange 61, so that the lamp may be adjusted somewhat toward or from the picture plate, friction springs 62 holding it in any adjustment. The electric circuit may conveniently be as follows. A line wire 63, Fig. 85 3, enters the socket 64, which has a lamp cord 65 extending to and from the lamp 56, and a conductor 66 extending from the socket to one terminal of a rheostat 67, the other terminal being connected by a con- 90 ductor 68 to a switch 69, which in turn connects with the other line wire 70; by which the current may be regulated and turned on or off.

The projecting lens 72 is located to 95 properly focus the rays from the lamp 56 upon the curtain 54, or upon the sensitive prints behind the curtain. The lens is provided with a shoulder 73 to shut off stray light, and is carried on a movable bracket 100 74, which may be adjusted to effect focusing operations. The bracket 74 is rigidly secured to a horizontal rack bar 75, mounted slidably in a fixed guide 76, which in turn is mounted on an extension 77 from 105 the frame 38. The guide 76 also carries a focusing nut 78, which through a pinion adjusts the rack bar, and therefore the lens, toward and from the picture plate. Adjacent the lens is also shown a shutter 80, 110 secured by a bracket 81 to the rack bar 75, the shutter being provided with a pneumatic bulb 82, by which the passage of light to the screen or sensitive print may be permitted or discontinued. 115

The holder 52 comprises a hollow frame, the top side 84 of which is openable, as indicated in Fig. 12, to permit the extrac- tion of exposed prints for development. A latch 85 holds the member 84 shut. At 120 the front, but behind the liftable flap 54, is a glass plate 86, behind which may be stored a supply of print papers 87. By means of a rigid board 88 behind the prints and a spring 89 on the hinged back 90 of 125 the holder, the papers are resiliently pressed forward against the glass 86. The hinged back 90 has a latch device 91 for securing it closed. It will be understood that after exposure of the foremost print paper, the 130

top piece 84 will be lifted, which at the same time releases the hinged back 90, and thus removes the pressure, so that the foremost print may be quickly slipped out without disturbing the others. The front flap or curtain 54 may be lifted by hand to the Fig. 2 position during the printing, and on being dropped protects the remaining prints from light.

The total system may be reviewed as follows. The camera 18, as seen in Fig. 13, may be operated at will to secure various series of exposures of the subject, the operation being so simple that the entire 144 images may be exposed in the course of a few minutes. Upon development we have a negative image plate of the kind shown at 20 or 20^a, containing a great variety and selection of pictures of the subject. From this glass negative a glass diapositive may next be produced by face to face printing and development of the positive, so that we have the negative image plate 20 or 20^a and the complementary positive image plate 20 or 20^b containing in the respective image spaces the corresponding pictures throughout the series. We may then insert the positive image plate 20 or 20^b in inverted position in the edge piece 24, bringing it up against the stop 25, as shown in Fig. 8, and these parts may then be inserted in the carriage 28, as seen in Figs. 1, 3, 4 and 5, upon which the parts are ready for projection, examination and selection. The lamp will be illuminated, the shutter opened and the lens adjusted to secure focus upon the white curtain or front flap 54 of the holder, as seen in Fig. 1, the holder having been adjusted to a considerable distance to secure the proper degree of enlargement. It will now be observed that the plate 20^b is freely movable either longitudinally, that is vertically, or transversely, that is horizontally, so as immediately to bring any picture space into optical position. In this way all the images may be in turn brought into projecting position either column by column, or row by row, or otherwise, until the photographer or the sitter perceives one of the enlarged projections which would be desirable as a portrait. The sitter in effect has an extensive picture gallery of himself, and has only to make note of the most desirable images. Each one as noted can be identified by its edge characters, such as H^c. He might find and note several suitable attractive or characteristic pictures. After the conclusion of this selecting operation, the photographer removes the positive plate and edge piece, and substitutes the inverted negative plate, first in the edge piece and then in the shifting carriage, as seen in Figs. 2-5. Naturally the positive plate will be inserted with its film side toward the lamp, while the negative plate will be inserted with the film side from the lamp. The negative image projected on the curtain is more or less meaningless, but no attention need be paid to this, as it is only necessary to set the plate to the adjustment H^a, which can be performed instantly and will bring the selected image into optical position. The image can be centered on the curtain by observation, and will then be accurately focused. The shutter may be operated to close the lens, and the curtain or flap 54 lifted, as shown in Fig. 2, upon which under suitable timing the shutter will be manipulated to give the desired exposure upon the foremost print paper 87. The shutter is closed and the flap 54 dropped, and then in the dark room the exposed print will be removed from the frame, as indicated in Figs. 9 and 11, and developed, toned or fixed in the usual manner.

The hereindescribed embodiment of my invention although attaining the advantages referred to may be varied in different feature without departing from the principles involved, and therefore in the appended claims there is no intention of limiting the invention to subordinate features except so far as specified in the claim itself.

What is claimed is:

The improved portrait photography apparatus for use with special image-plates each bearing a plurality of rows of miniature images of the subject, the same comprising in combination, a frame suitably supported between the light projecting means, and the print holding means, a carriage adjustably and freely at will shiftable transversely on the frame, a first index device indicating the position of the carriage on the frame, an edge piece adapted to carry and engage the image-plate in a predetermined relation, said carriage constructed to support said edge piece with image-plate so as to be adjustably and freely at will shiftable longitudinally with respect to the carriage, and a second index device indicating the position of the plate in the carriage; whereby a plural-row positive image-plate may first be inserted, shifted longitudinally and transversely to select a desirable image, its position noted by said two index devices, and then replaced by the corresponding negative plate for printing a portrait from the corresponding image.

In testimony whereof, I have affixed my signature hereto.

GIANNI BETTINI.