

May 30, 1939.

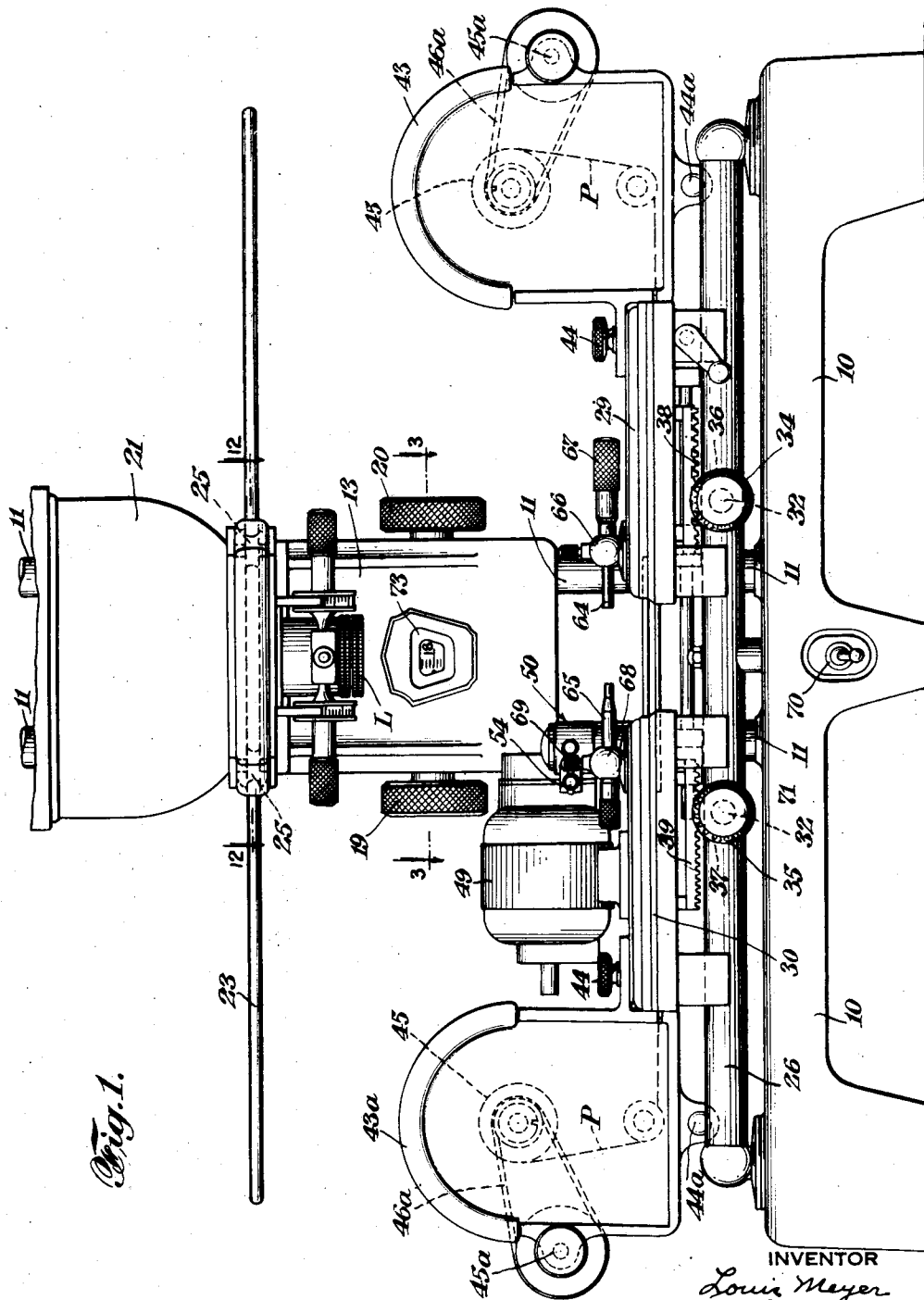
L. MEYER

2,160,750

PHOTOGRAPHIC COMPOSING MACHINE

Filed Aug. 15, 1936

5 Sheets-Sheet 1



INVENTOR
Louis Meyer
BY *Kernyn Kenyon*
ATTORNEYS.

May 30, 1939.

L. MEYER

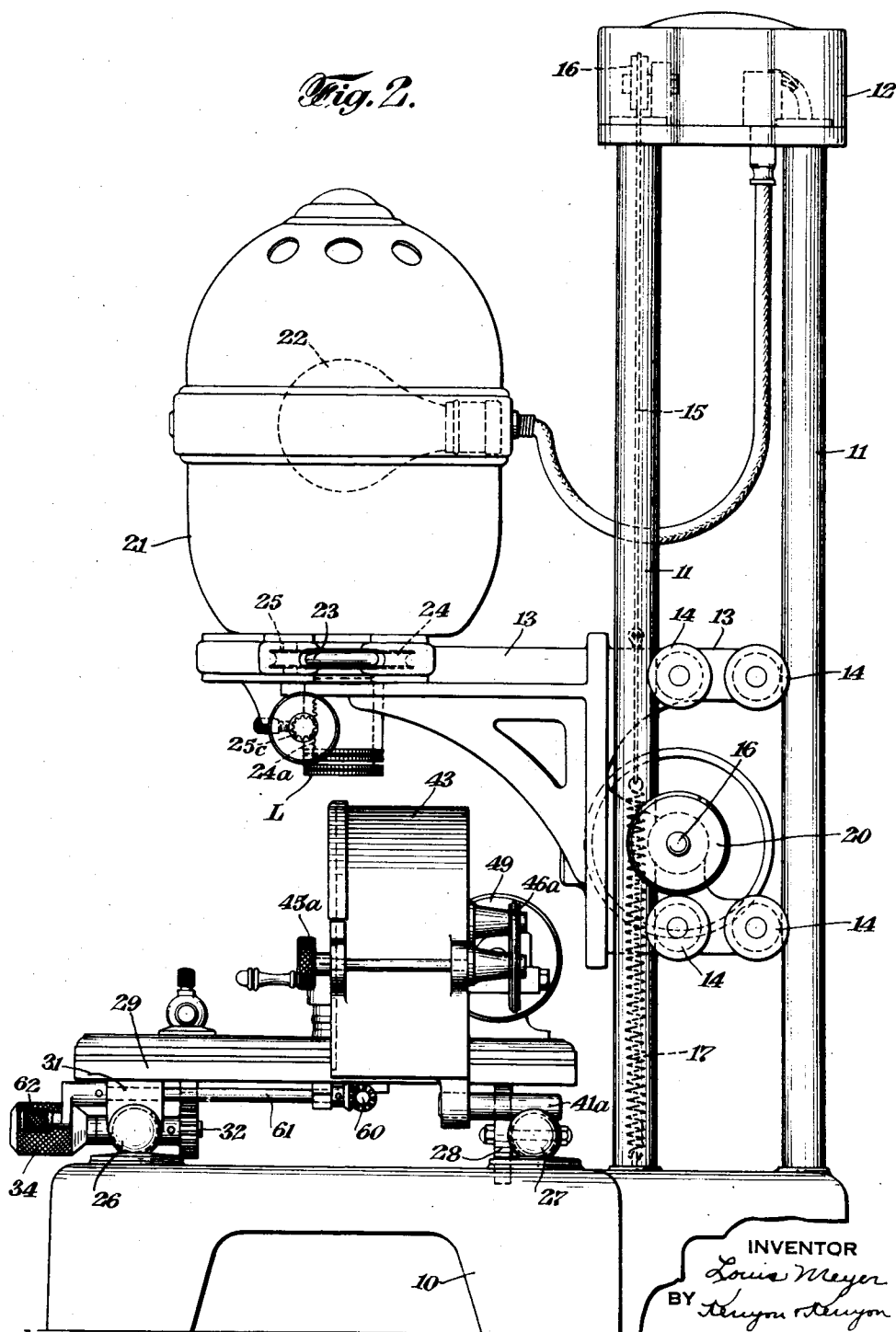
2,160,750

PHOTOGRAPHIC COMPOSING MACHINE

Filed Aug. 15, 1936

5 Sheets-Sheet 2

Fig. 2.



May 30, 1939.

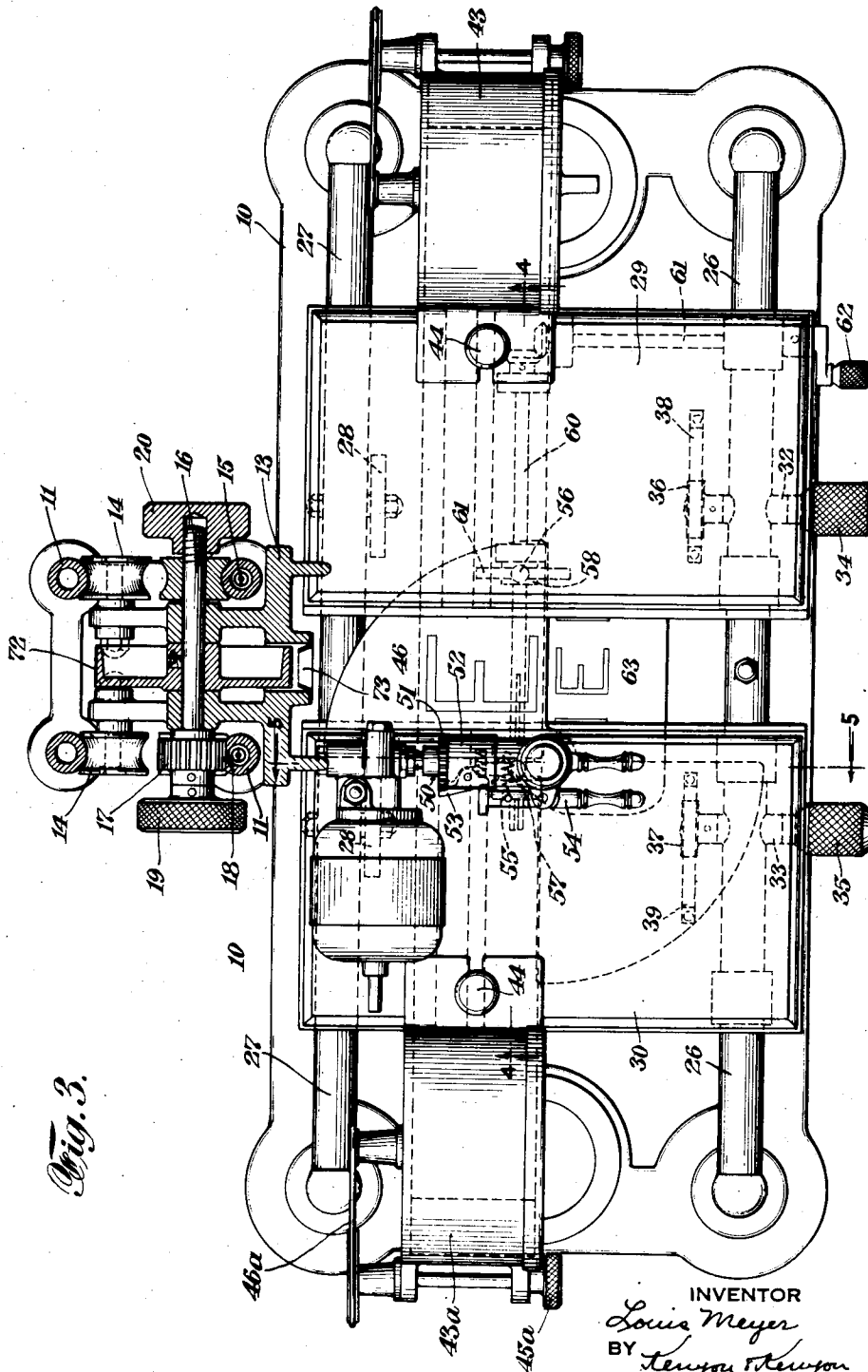
L. MEYER

2,160,750

PHOTOGRAPHIC COMPOSING MACHINE

Filed Aug. 15, 1936

5 Sheets-Sheet 3



INVENTOR
Louis Meyer
BY *Henry H. Kuyper*
ATTORNEYS.

May 30, 1939.

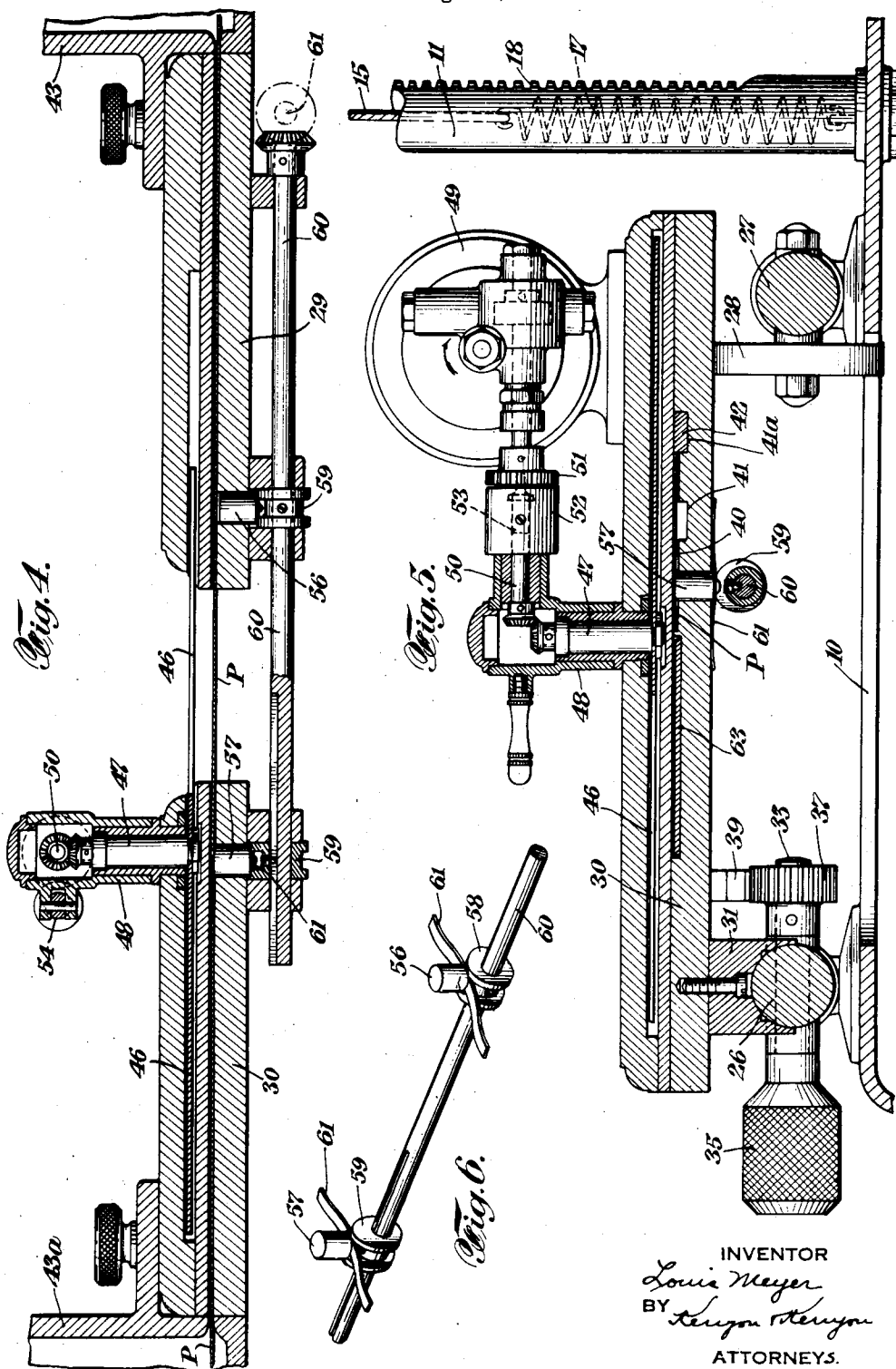
L. MEYER

2,160,750

PHOTOGRAPHIC COMPOSING MACHINE

Filed Aug. 15, 1936

5 Sheets-Sheet 4



INVENTOR
Louis Meyer
BY *Kenyon Kenyon*
ATTORNEYS.

May 30, 1939.

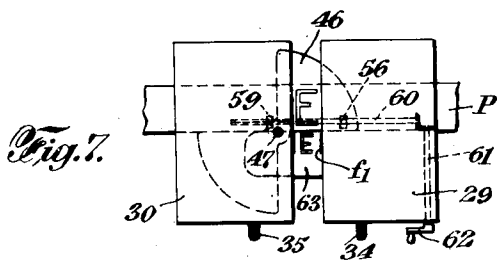
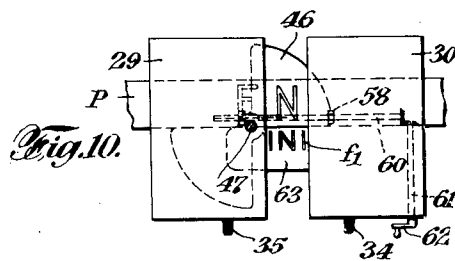
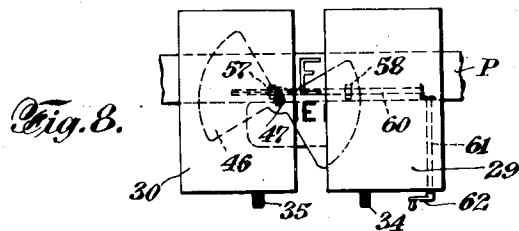
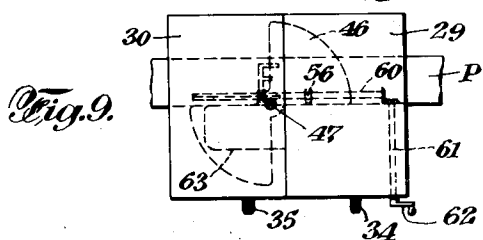
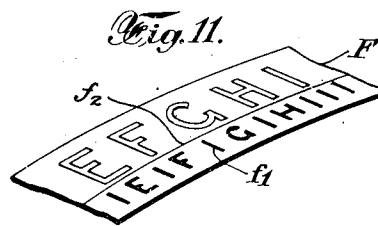
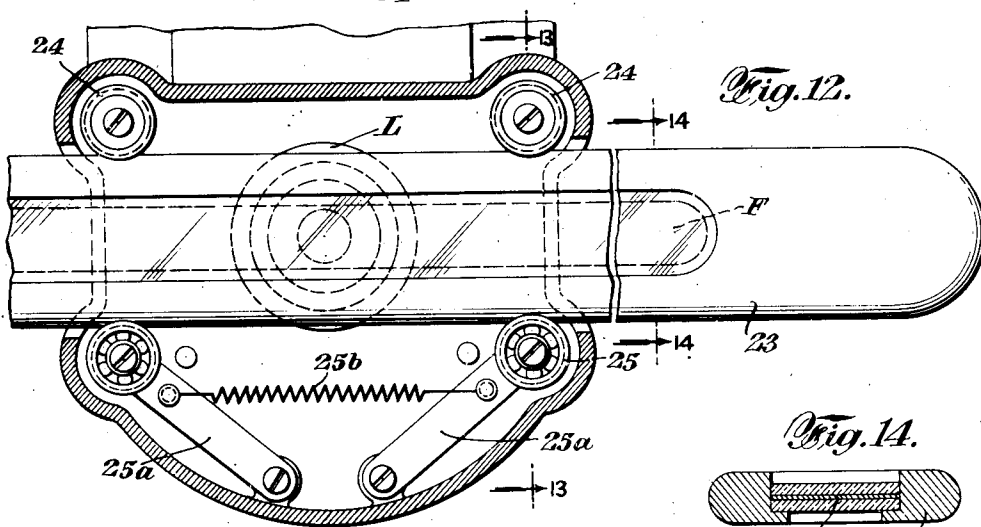
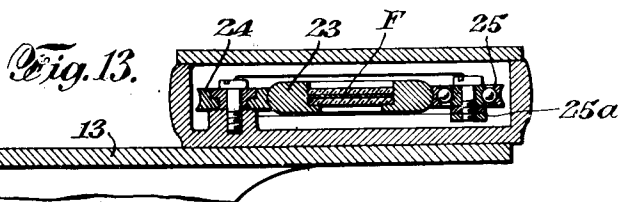
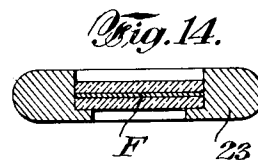
L. MEYER

2,160,750

PHOTOGRAPHIC COMPOSING MACHINE

Filed Aug. 15, 1936

5 Sheets-Sheet 5



INVENTOR
Louis Meyer
BY *Kenyon Kenyon*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,160,750

PHOTOGRAPHIC COMPOSING MACHINE

Louis Meyer, New York, N. Y., assignor, by mesne assignments, to American Type Founders, Inc., Elizabeth, N. J., a corporation of New Jersey

Application August 15, 1936, Serial No. 96,149

30 Claims. (Cl. 95—4.5)

This invention relates to photographic composing machines.

An object of this invention is a machine which is simple in operation to image successively a series of selected characters in desired relation upon a light sensitive surface for preparing photographic compositions for printing or other purposes.

One embodiment of the present invention comprises a machine consisting of a base and a projector mounted thereabove for vertical adjustment. On the base two carriages are supported for movement toward and away from each other. The carriages are provided with means for supporting a strip of photographic material for longitudinal movement and with means for feeding the strip longitudinally by relative movement of the carriages. One of the carriages is provided with a rotatable shutter which is arranged to cover that portion of the strip extending between the carriages when the latter are in spaced relation. In combination with the projector there is provided a film having transparent characters and means are provided for moving the film to bring the desired character into position for projection. An image of the desired character is formed on the shutter with the carriages properly spaced and then the shutter is rotated to permit projection of the image to the strip of photographic material. Upon return of the shutter to its overlying position with respect to the strip of photographic material, the carriages are manipulated to advance the strip sufficiently to obtain the desired spacing and the strip is then again exposed for the purpose of reproducing the next desired character which is determined by proper adjustment of the film. The operation of the machine is simple and the images of the desired characters may be easily and quickly produced on the photographic material in desired relation.

Other objects, novel features and advantages of this invention will become apparent from the following specification and accompanying drawings, wherein:

Fig. 1 is a front elevation partially broken off of a machine embodying the invention;

Fig. 2 is a side elevation thereof;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a section on the line 4—4 of Fig. 3;

Fig. 5 is a section on the line 5—5 of Fig. 3;

Fig. 6 is a perspective view of the strip feeding means;

Figs. 7 to 10 inclusive are diagrammatic figures illustrating the sequence of positions assumed by the carriages in operation of the machine;

Fig. 11 is a perspective view of the character film;

Fig. 12 is a section on the line 12—12 of Fig. 1; Fig. 13 is a section on the line 13—13 of Fig. 12, and

Fig. 14 is a section on the line 14—14 of Fig. 12.

In the embodiment disclosed, a rectangular base 10 supports at its rear portion four hollow posts 11 on the upper ends of which is mounted a head 12. A frame 13 is provided with grooved wheels 14 which engage the posts 11. Cables 15 extend from the frame 13 over pulleys 16 in the head 12 and are attached to springs 17 arranged in two of the posts 11 near the bottom thereof. A shaft 18 is journaled in the frame 13 and carries a pinion 17 which meshes with a rack 18 formed on one post 11. A wheel 19 is provided at one end of the shaft 18 for rotating the same to effect vertical adjustment of the frame through the interaction of the rack 18 and pinion 17. The springs 17 largely counterbalance the weight of the frame 13 and facilitate adjustment thereof. Threaded on to the end of the shaft 18 opposite the wheel 19 is a lock nut 20 which when tightened clamps the frame 13 in any position of adjustment.

The frame 13 constitutes a support for a lamp housing 21 in which a lamp 22 is mounted in the usual manner. A film supporting slide 23 is arranged below the lamp 22. One edge of the slide 23 is received in grooved rollers 24 having stationary axes and the other edge is received in grooved rollers 25 arranged at the ends of pivoted levers 25a with a spring 25b applying pressure to the levers 25a tending to move the rollers 25 toward the rollers 24. The slide 23 has a central slot in which, between two glass plates is arranged a strip of film F provided with transparent characters. An objective lens L is supported by the frame in cooperative relation to the lamp to produce images of the film characters. The position of the lens L is adjustable for focusing purposes by means of the rack 24a and pinion 25c.

Two rails 26 and 27 extend longitudinally of the base 10 and near the rail 27 are provided two rollers 28 having stationary axes. Two carriages 29 and 30 have their rear ends resting on the rollers 28 and have their front ends slidably supported by the rail 26 through the medium of bearing members 31 having grooves riding on the shaft 26. Journaled in the rails 26 are shafts 32 and 33 provided respectively with knurled buttons 34 and 35 at their outer ends and at their inner ends with pinions 36 and 37 which mesh

with racks 38 and 39 carried respectively by the plates 29 and 30. By proper rotation of the shafts 32 and 33 the carriages 29 and 30 may be moved toward and away from each other.

5 The carriages 29 and 30 are provided with aligned passageways 40, each passageway being provided with spaced grooves 41 and 41a. Housings 43 and 43a are removably attached to the carriages 29 and 30 by bolts 44 and have aper-
10 tures in alignment with the ends of the passageway 40. The housings 43 and 43a are provided with riders 44a which slide on the rail 27 and support the weight of the housing. Each of these housings is provided with a spool 45 for
15 supporting a roll of photographic paper P or the like, the paper being fed from one housing to the other through the passageway 40. Cooperating spindles 45a are connected to the spools 45 by belts 46a. Bars 42 are provided to be
20 received in the grooves 41 and 41a depending upon which of two widths of photographic strip is to be used. With the narrow strip the bars are arranged in the grooves 41 and with the wide strip they are arranged in the grooves 41a. The effective
25 width of the passageway 40 is thus adapted to the width of the strip P.

A shutter 46 is carried by the lower end of a vertical shaft 47 journaled in a housing 48 mounted on the carriage 30, both of the carriages
30 29 and 30 being suitably recessed to receive such shutter. The shutter is arranged at a higher level than the passageway 40 and is composed of two opposed 90° sectors. Driving means for the shutter comprises a motor 49 connected
35 through a clutch with a shaft 50 geared to the shaft 47. The clutch consists of a toothed wheel 51 driven by the motor and a drum 52 carried by the shaft 50, the drum 52 having a spring-actuated pivoted dog 53 adapted to fit between
40 the teeth of the wheel 51 and thus lock the latter to the drum 52. The dog 53 is normally held disengaged from the teeth of the wheel 51 by a lever 54 which is maintained in operative position
45 by a spring 55. Movement of the lever 54 into inoperative position releases the dog 53 which is then forced by its spring into engagement with the teeth of the wheel 51, thus causing rotation of the shutter. Rotation of the shaft 50 is stopped
50 after one complete revolution by withdrawal of the dog 53 by engagement of the lever 54 therewith, the lever having been returned to operative position by the spring 55. Thus the shutter is given one complete rotation upon each actuation of the lever 54 and is automatically stopped
55 at the end of the revolution. The position of the dog 53 is such that the shutter comes to rest in the position shown in Fig. 3; that is, with one sector projecting from the carriage 30 toward or into the carriage 29, depending upon the relative position of the two carriages.

60 Means are provided on the carriages for selectively clamping the strip P of photographic paper to one of the carriages. Such clamping means consists of vertical pins 56 and 57 arranged
65 respectively in vertical bores in the carriages 29 and 30 so located that the pins 56 and 57 are engageable with the under face of the strip P. Cams 58 and 59 mounted on the shaft 60 are provided for elevating the pins while springs 61
70 are provided for retracting the pins. The cam 59 is splined to the shaft 60 so that the latter may slide in the former upon relative movement of the carriages 29 and 30. The shaft 60 is geared to a second shaft 61 at right angles to it, the
75 latter shaft being provided with a crank handle 62. The arrangement of the cams on the shaft

60 is such that with the crank handle 62 depending in vertical position, both pins 56 and 57 are in inoperative position but when the crank handle 62 is swung to the left through a predetermined arc, the pin 57 is elevated into operative position
5 with the pin 56 still in inoperative position while upon movement of the lever 62 to the right through a predetermined arc, the pin 56 is elevated into operative position with the pin 57 remaining in inoperative position.

10 As shown in Fig. 11, one longitudinal portion of the film F is provided with transparent characters while the other longitudinal portion of the film is provided with transverse transparent
15 spacing lines f_1 between which, preferably, is included the corresponding character in reduced size. A transparent line f_2 extends longitudinally of the film and the arrangement of the film slide is such that the longitudinal transparent line f_2
20 passes through the optical axis of the projection system and its image coincides with the front edge of the strip P. The projector produces an image of the desired character focused in the plane of the strip P and images of the spacing
25 lines focused on the shield 63 which extends from one carriage to the other in horizontal alignment with the strip P.

The machine is conditioned for operation by passing a strip P of photographic material from the housing 43 through the aligned passageways 40
30 and into the housing 43a with the lever 62 in vertical position and both pins 56 and 57 in retracted position. The lever 62 is now swung to the left to elevate the pin 57, thereby clamping the strip P to the carriage 30. Next, with the motor
35 49 running and the lamp 22 turned on, the slide 23 is manipulated to produce an image of the desired character and the carriages 29 and 30 moved to locate them in spaced relation with the shutter 46 interrupting the images and images
40 of the spacing line appearing on the shield 63 (Fig. 3). Next, the two carriages 29 and 30 are moved to bring their inner edges into register with the images of the spacing lines f_1 whereupon the operator trips the lever 54, thereby clutching
45 the motor to the shutter and causing rotation of the latter (Fig. 8) thus effecting exposure of the strip P to the character image. After the shutter has completed its rotation and has again come to rest, the operator swings the lever 62 to the
50 right, thereby retracting the pin 57 to release the strip P from the carriage 30 and elevating the pin 56 to clamp such strip to the carriage 29. Next, the operator moves the two carriages into engagement by manipulation of the buttons 34 and
55 35, (Fig. 9) thereby moving the strip P into the carriage 30 a distance equal to the distance between the spacing lines. With the carriages in engagement, the operator again swings the lever 62 to the left to release the strip P from the carriage 29 and again clamp it to the carriage
60 30, thereby holding the strip in its advanced position. The carriages are now again manipulated to space their edges (Fig. 10) prior to being brought into alignment with the spacing line images of the next desired character. By the procedure just described, normal spacing of the
65 letters on the strip P is obtained.

Means are provided for obtaining less than or greater than standard spacing. This means consists of a pin 64 mounted on the carriage 29 and a pin 65 mounted on the carriage 30. The pin 64 is mounted in a post 66 for micrometer adjustment by means of the rotatable handle 67 and the pin 65 is slidably mounted in a post 68 and held in adjusted position by a clamp screw 69.
75

Normally, the pin 65 is claimed in the post 68 in such position that the end of the pin 65 is in vertical alignment with the inner edge of the carriage 30. In its zero position, the pin 64 has its inner end in vertical alignment with the inner edge of the carriage 29. If it be desired to obtain less than standard spacing, the pin 64 is adjusted so that it projects a predetermined amount beyond the inner edge of the carriage

9. Thus, when the carriages 29 are moved toward each other, the extent of movement is reduced and the extent to which the strip P is fed in the carriage 30 is correspondingly reduced. If greater than the standard spacing is desired, the screw 69 is released and the pin 64 properly adjusted. Then, after the carriages have been brought together and the handle 62 manipulated to release the strip P from the carriage 29 and clamp it to the carriage 30, they are pushed apart a slight distance by sliding the pin 65 to bring the shoulder 71 into engagement with the post and the lever 62 returns to its right-hand position and the carriages move again into contact. A dial 72 is fixed to the shaft 16 and has indicia which are visible through an aperture 73 in the frame 13. These indicia correspond to different type sizes and by reference to the indicia the projector may be set at the proper height to produce images of any desired type size.

Although the character carrier F has been specifically disclosed as a strip of film, it is to be understood that the invention is not limited to the use of film but that a strip of glass or other similar material may constitute the character carrier. Furthermore, although the character carrier has been described as being provided with transparent characters with an opaque background, the invention also contemplates a character carrier provided with opaque characters having a transparent background. With either type of character carrier, images of the characters may be projected, spaced and printed as above disclosed.

This application is a continuation in part of my copending application Serial 5,510, filed February 8, 1935.

I claim:

1. In a photo-printing machine, a character carrier having opaque and transparent sections defining the characters and spacing lines therefor, a pair of carriages movable toward and away from each other and having means for supporting a strip of photographic material for longitudinal movement in the direction of movement of said carriages, means to produce an image of a selected character on said strip between adjacent edges of said carriages, shutter means on one carriage for controlling exposure of said strip to said image and means on said carriages for selectively clamping said strip thereto.

2. In a photo-printing machine according to claim 1, adjustable means on said carriages for limiting movement thereof toward each other.

3. In a photo-printing machine, a character carrier having opaque and transparent sections defining the characters and spacing lines therefor, a pair of carriages movable toward and away from each other and having means for slidably supporting a strip of photographic material for longitudinal movement, means to produce an image of a selected character on said strip, a sector-shaped shutter rotatably supported by one carriage in overlying relation to said strip and normally projecting beyond the edge of its carriage in covering relation to said strip, and means

for rotating said shutter to expose said strip to said image.

4. In a photo-printing machine according to claim 3, adjustable means on said carriages for limiting movement thereof toward each other.

5. In a photo-printing machine according to claim 4, means for selectively clamping said strip to said carriages.

6. In a photo-printing machine, a character carrier having opaque and transparent sections defining the characters and spacing lines therefor, a pair of carriages movable toward and away from each other and having means for slidably supporting a strip of photographic material for longitudinal movement, means to produce an image of a selected character on said strip, a sector-shaped shutter rotatably supported by one carriage in overlying relation to said strip and normally projecting beyond the edge of its carriage in covering relation to said strip, a motor, driving means between said motor and shutter including a normally disengaged clutch, and automatic means for disengaging the clutch after rotation of said shutter through a predetermined arc.

7. In a photo-printing machine according to claim 6, adjustable means on said carriages for limiting movement thereof toward each other.

8. In a photo-printing machine according to claim 6, means for selectively clamping said film to said carriages.

9. A photo-printing machine comprising a pair of carriages mounted for movement toward and away from each other, said carriages having means for supporting a strip of photographic material for longitudinal movement, a character holder, means for producing an image of a character in the plane of said strip, a sector-shaped shutter rotatably supported by one carriage in overlying relation to said strip and normally projecting beyond the edge of its carriage in overlying relation to said strip, and means for rotating said shutter to expose said strip to the character image.

10. A photo-printing machine according to claim 9 characterized by adjustable means on said carriages for limiting movement thereof toward each other.

11. A photo-printing machine according to claim 9 characterized by means for selectively clamping said strip to said carriages.

12. A photo-printing machine according to claim 9 in which the shutter rotating means comprises a motor, a normally disengaged clutch between said motor and shutter, means for engaging said clutch, and automatic means for disengaging the clutch after rotation of the shutter through a predetermined arc.

13. In a photo-printing machine, a pair of carriages mounted for movement toward and away from each other, said carriages having aligned passageways to receive a strip of photographic material, a pin mounted in each carriage for movement into clamping engagement with said strip, an operating cam for each pin, and a common actuating member for said cams, said cams being so related to each other that in one position of the actuating member both pins are out of clamping relation and that in either of two other positions of the operating member one pin is in clamping relation while the other pin is out of clamping relation.

14. In a photo-printing machine, a pair of carriages mounted for movement toward and away from each other, said carriages having aligned pas-

sageways to receive a strip of photographic material, a housing supported by each carriage and having an aperture communicating with said passageway, means in each housing for supporting a roll of photographic material, and means on said carriages for selectively clamping said strip thereto.

15. In a photo-printing machine, an elongated character holder, supporting means therefor comprising a pair of stationary axes, groove rollers engaging one edge, a second pair of grooved rollers engaging the other edge, pivoted arms supporting said second pair of rollers and resilient means urging said second pair of rollers toward said first pair of rollers.

16. In a photo-printing machine, a pair of carriages mounted for movement toward and away from each other, said carriages having aligned passageways to receive a strip of photographic material, means on each carriage for clamping the strip thereto, and a common operating member for said clamping means, said clamping means being so related to each other that in one position of the operating member the first of said clamping means is operative and the second of said clamping means is inoperative while in a second position of the operating member said first clamping means is inoperative and said second clamping means is operative.

17. In a photo-printing machine, a pair of carriages mounted for movement toward and away from each other, said carriages having aligned passageways to receive a strip of photographic material, a first pin mounted in one carriage and a second pin mounted in the other carriage for movement into clamping engagement with said strip, an operating cam for each pin and a common shaft for said cams, said cams being so related to each other that in one position of said shaft the first pin is out of and the second pin is in clamping relation and that in another position of the shaft the first pin is in and the second pin is out of clamping relation.

18. A photo-printing machine comprising a pair of carriages mounted for movement toward and away from each other, said carriages having aligned passageways to receive a strip of photographic material, means on said carriages for clamping said strip thereto, a sector-shaped shutter rotatably supported by one carriage in overlying relation to a strip of paper in said passageways and normally projecting beyond the edge of its carriage, a shield extending from one carriage in horizontal alinement with said strip, a character carrier having a row of opaque and transparent sections defining the characters in one longitudinal portion thereof and corresponding opaque and transparent sections defining spacing indicia in the remaining longitudinal portion, means for selectively imaging said characters on said shutter and the corresponding indicia on said shield, and means for rotating said shutter.

19. A photo-printing machine according to claim 18 wherein the shutter rotating means comprises a motor, driving means between said motor and shutter including a normally disengaged clutch, manually operable means for engaging said clutch, and automatic means for disengaging said clutch after one complete revolution of said shutter.

20. A photo-printing machine comprising a movable character carrier having opaque and transparent sections defining the characters, a pair of carriages movable toward and away from

each other, means on said carriages to support a strip of photographic material and effect intermittent feed of the same by movement of the carriages toward and away from each other, means to produce an image of a selected character on said strip between said carriages, and shutter means on one carriage for controlling exposure of said strip to said image.

21. A photo-printing machine comprising a movable character carrier having opaque and transparent sections defining the characters, a pair of carriages movable toward and away from each other, means on said carriages to support a strip of photographic material and effect intermittent feed of the same by movement of the carriages toward and away from each other, means to produce an image of a selected character on said strip between said carriages, shutter means on one carriage for controlling exposure of said strip to said image, and adjustable means on said carriages for limiting movement thereof toward each other.

22. A photo-printing machine comprising a movable character carrier having opaque and transparent sections defining the characters, a pair of carriages movable toward and away from each other, means on said carriages to support a strip of photographic material and effect intermittent movement of the same by movement of the carriages toward and away from each other, a sector-shaped shutter rotatably supported by one carriage in overlying relation to said strip and normally projecting beyond the edge of its carriage in covering relation to said strip, a motor, driving means between said motor and shutter including a normally disengaged clutch, and manually operable means for effecting engagement of said clutch.

23. A photo-printing machine comprising a movable character carrier having opaque and transparent sections defining the characters, a pair of carriages movable toward and away from each other, means on said carriages to support a strip of photographic material and effect intermittent movement of the same by movement of the carriages toward and away from each other, a sector-shaped shutter rotatably supported by one carriage in overlying relation to said strip and normally projecting beyond the edge of its carriage in covering relation to said strip, a motor, driving means between said motor and shutter including a normally disengaged clutch, manually operable means for effecting engagement of said clutch, and automatic means for disengaging the clutch after rotation of said shutter through a predetermined arc.

24. A photo-printing machine according to claim 23 characterized by adjustable means on said carriages for limiting movement thereof toward each other.

25. A photo-printing machine comprising a movable character carrier having opaque and transparent sections defining the characters, a pair of carriages movable toward and away from each other, means on each carriage for supporting and clamping a strip of photographic material thereto, means to produce an image of a selected film character on said strip between the adjacent edges of said carriages, shutter means on said carriages for controlling exposure of said strip to said image, and a common operating member for said clamping means, said clamping means being so related to each other that in one position of the operating member the first of said clamping means is operative and the second

of said clamping means is inoperative while in a second position of the operating member said first clamping member is inoperative and said second clamping means is operative.

5 26. A photo-printing machine comprising a movable character carrier having opaque and transparent sections defining the characters, a pair of carriages movable toward and away from each other, means on said carriages for supporting
10 a strip of photographic material, means to produce an image of a selected film character on said strip between adjacent edges of said carriages, shutter means on said carriages for controlling exposure of said strip to said image, and means for selectively clamping said strip to said
15 carriages, said means comprising a first pin mounted on the one carriage and a second pin mounted in the other carriage for movement into clamping engagement with said strip, a supporting cam for each pin, and a common shaft for
20 said cams, said cams being so related to each other that in one position of said shaft the first pin is out of and the second pin is in clamping relation and in another position of the shaft the first pin is in and the second pin is out of clamping
25 relation.

27. A photo-printing machine comprising a pair of carriages mounted for movement toward and away from each other, said carriages having means for slidably supporting a holder adapted
30 to carry a light sensitive substance, a character holder, means for producing an image of the character in the plane of the sensitized sheet, and a shutter carried by one carriage in overlying relation to the plane of the sensitized sheet, said
35 shutter being normally arranged to cover that portion of the sheet extending between the carriages when in spaced relation and being movable

to expose the sensitized sheet to the character image.

28. A photo-printing machine comprising a pair of carriages mounted for movement toward and away from each other, a holder for a light
5 sensitive substance slidably supported by said carriages, a character holder, means for producing an image of the character in the plane of the sensitized sheet, a rotatable shutter carried by one carriage in overlying relation to the sensi-
10 tized sheet and normally arranged to cover that portion of the sheet extending between the carriages when in spaced relation, and means for rotating said shutter to expose the sensitized sheet to the character image.

29. A photo-printing machine comprising a pair of carriages mounted for movement toward and away from each other, said carriages having means for supporting a strip of photographic material for longitudinal movement in the direc-
20 tion of movement of said carriages, a character holder, means for selectively fixing said strip relatively to said carriages, means for producing an image of the character on said strip between said carriages, and shutter means controlling exposure of said strip to said image.

30. A photo-printing machine comprising a pair of carriages mounted for movement toward and away from each other, a strip of photo-
30 graphic material, means to effect longitudinal movement of said strip, a character holder having opaque and transparent sections defining characters and spacing lines therefor, means to selectively produce an image of a film character on
35 said strip in selected position, and shutter means for controlling exposure of said sheet to said image.

LOUIS MEYER.