

1,151,954.

Patented Aug. 31, 1915.

WV French.

THOMAS C. OLSON

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T. C. KORSMO & T. C. OLSON.
 AUTOMATIC PHOTOGRAPHIC PRINTING MACHINE.
 APPLICATION FILED AUG. 3, 1914.

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4 SHEETS—SHEET 2:

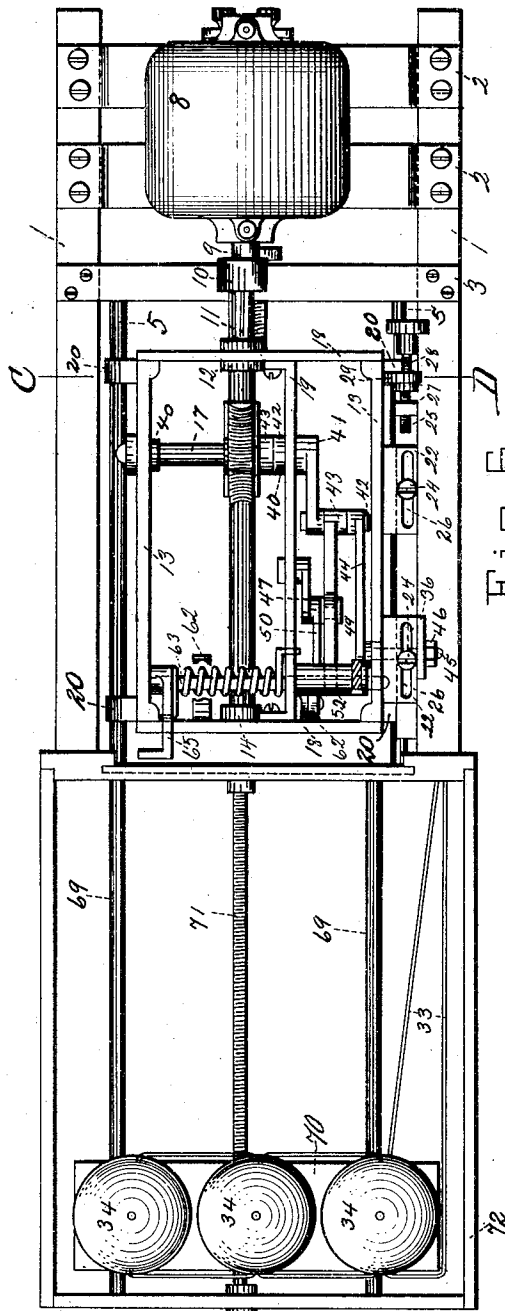


Fig. 6.

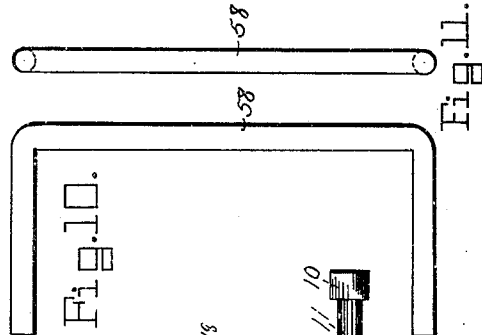


Fig. 10.

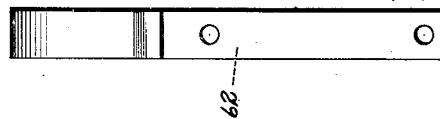


Fig. 7.

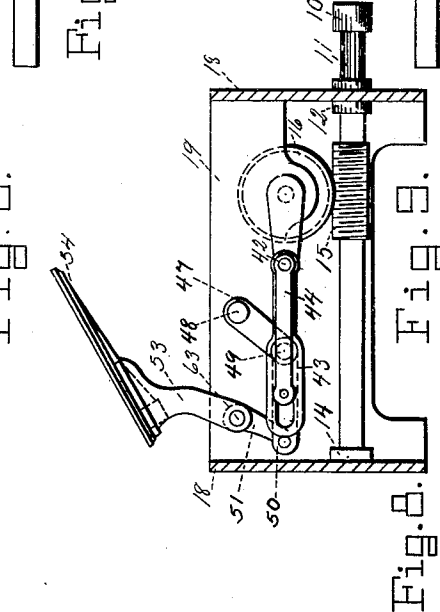


Fig. 9.

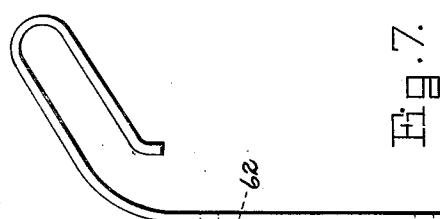


Fig. 11.

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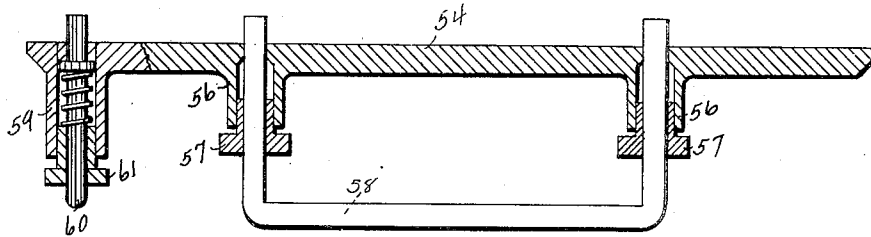


Fig. 12.

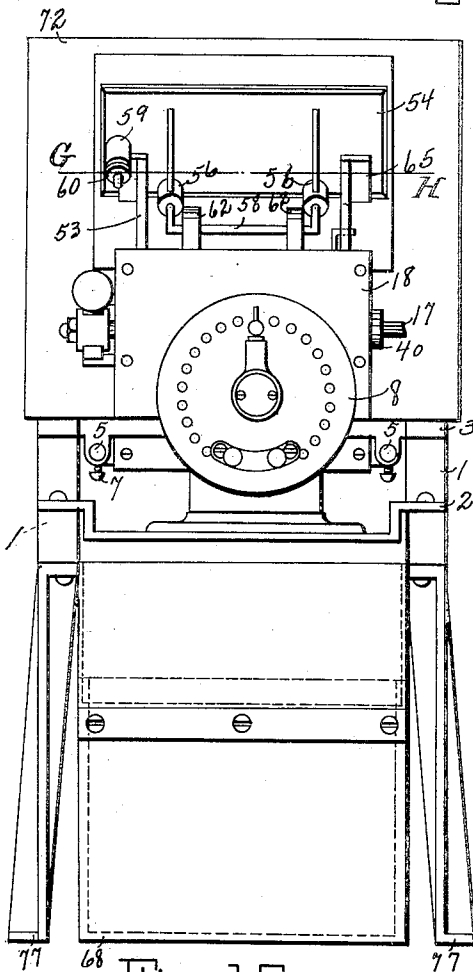


Fig. 13.

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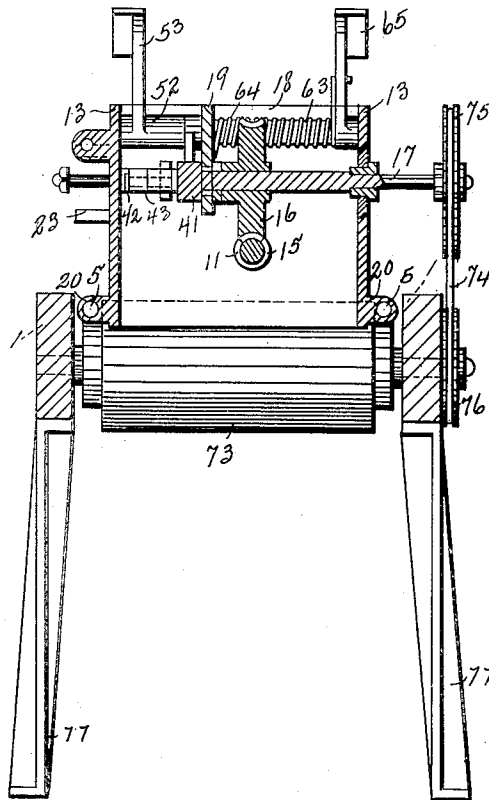


Fig. 14.

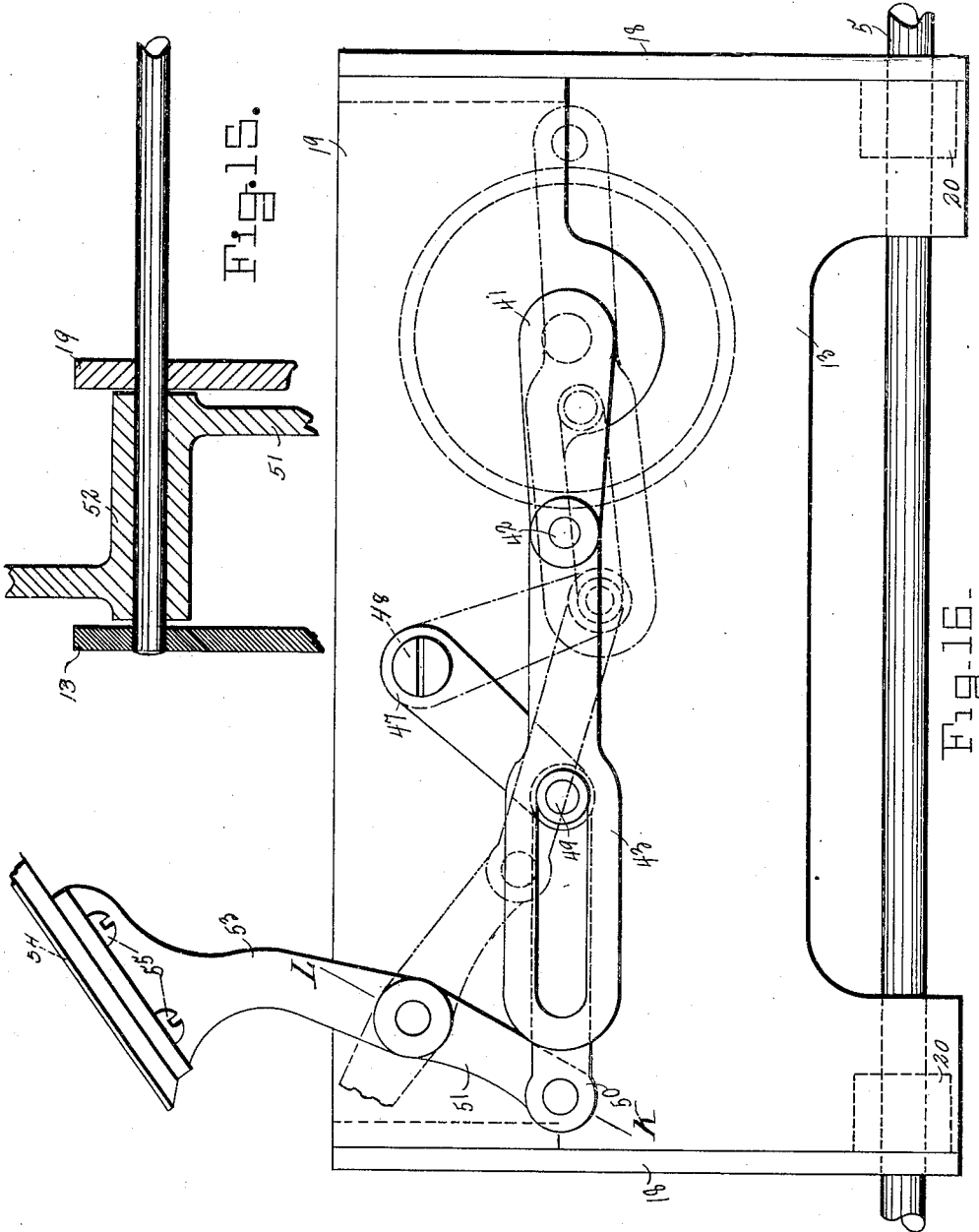
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UNITED STATES PATENT OFFICE.

TORBJURN CONRAD KORSMO AND THOMAS C. OLSON, OF MADISON, WISCONSIN.

AUTOMATIC PHOTOGRAPHIC-PRINTING MACHINE.

1,151,954.

Specification of Letters Patent.

Patented Aug. 31, 1915.

Application filed August 3, 1914. Serial No. 855,536.

To all whom it may concern:

Be it known that we, TORBJURN CONRAD KORSMO and THOMAS C. OLSON, citizens of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Automatic Photographic-Printing Machines, of which the following is a specification.

Our invention relates to motor driven automatic photographic paper or post card printing machines; and the objects of our invention are to provide a machine that will, upon placing a sheet of sensitized paper or post card upon a platen or receiver, carry the same to a negative, hold it in contact the desired time, release it and deposit the same in a darkened receptacle, to provide a machine that will time the exposure in proportion to the strength or brilliancy of the light source employed in the light cabinet, to provide a machine without shutters, that will regulate the time of exposure by closing or breaking the circuit leading to the light source in the cabinet.

Additional objects of the invention will appear in the following complete specification, in which the preferred form of the invention is disclosed.

In the drawings similar characters of reference indicate corresponding parts in all of the views, in which—

Figure 1, is a side elevation of our machine; Fig. 2, a vertical longitudinal section on line A—B, Fig. 3, of the reciprocating switch; Fig. 3, is an end elevation of the switch; Fig. 4, is a top view or plan of the switch; Fig. 5, is a front elevation of the switch; Fig. 6, is a plan of the machine with parts removed; Fig. 7, is a side elevation of one of the gage actuating links; Fig. 8, is a rear elevation of the same; Fig. 9, is a side view of the carriage with the outer plate removed; Fig. 10, is a plan of the gage; Fig. 11, is a rear elevation of the gage; Fig. 12, is a longitudinal section through the platen on lines G—H, Fig. 13; Fig. 13, is an elevation of the entire machine from the motor end; Fig. 14, is a vertical section on lines C—D, Fig. 6; Fig. 15, is a section on line K—L, Fig. 16; Fig. 16, is a view of the reciprocating and lever movements and connections.

The bed or frame of our machine comprises two longitudinal wooden rails 1, reduced in width for a distance and at one end

the said rails are spaced apart and secured to each other by metal bars 2. At the narrow ends, a distance from the bars 2, is disposed a bar 3, on top of the rails 1. Said bar 3, having three depending lugs, one adjacent each end and one approximately at the center thereof. The two outer lugs are drilled and into each is secured a round rod 5, which extends to the opposite end of the wooden rails 1, passing through depending lugs on the two transverse bars 4, and secured to the same by the set screws 7. The bars 2, are secured at their outer ends to the top of the rails 1, then depressed between the rails and on the top of the depressed portion an electric motor 8, is mounted. To the end of the motor shaft 9, a coupling 10, is secured, and to the opposite end of the coupling a shaft 11, is attached. Said shaft extending through the bearing 12, in carriage 13, and journaled at its opposite end in bearing 14. Upon said shaft 11, is cut the worm 15, and in mesh with the said worm is worm gear 16, mounted upon the transverse shaft 17.

The carriage 13, before mentioned comprises two side plates 13, two end plates 18, and one intermediate plate 19. Both side plates have outwardly extending bosses 20, adjacent their ends and lower edges adapted to slide upon a rod and to be secured in the desired location by the set screws 7. Through one end of the side plates 13, a longitudinal slot 21, is cut and above said slot lugs 22, are disposed. Below the slot are disposed the lugs 23. To the underside of the lugs 22, is secured by screws 24, a fiber bar 25, adapted to be moved longitudinally of the lugs by means of the slots 26. At one end of the fiber rail 25, a lug 27, extends upward and has a threaded hole through the same, adapted to receive the adjusting screw 28. Said screw being loosely disposed through a lug 29, which is integral with the side plate 13, thereby providing a means for adjusting the fiber bar when the screws 24, are loosened. Upon the lower side of the said bar 25, a metal plate 30, is secured flush with the same at one end and extending upward on the lug at the other end a distance sufficient to admit of attaching an electric conductor 29, by means of the binding screw 30. On the top of the lugs 23, is secured the fiber rail 31, which is covered on the top and both ends by a metal band 32. The said metal band being con-

connected to a source of current by the conductor 33, which passes from a motor through a series of lamps 34, and back to binding screw 35.

5 Mounted in sliding contact between the two fiber rails 25, and 31, is a switch block 36, constructed of fiber, with one hole passing from top to bottom thereof, and one passing upward a distance from the bottom. 10 In the first mentioned opening two carbon brushes 37, are disposed, having a coil spring between them. In the other and last mentioned opening a carbon plug 38, is disposed with a spring on the top thereof for purpose of balancing the switch on the rails. 15 The switch having a reciprocating movement on the rails and the lower carbons being in constant contact with the metal band 32, it is clear that when the switch passes to a point where the upper carbon brush 37, engages the metal plate 39, a circuit will be closed through the lamps and will remain closed until the switch on its return movement passes off of said plate 39. 20

25 The switch is operated by a crank movement connected to a motor's source of current being the same line that supplies the lamps, it is apparent that a weakening of the current would cause the motor to slow down and the brilliancy of the light to decrease thereby making necessary a longer exposure of the sensitized material. The motor's source of current being the same as that supplying the lamps, it is obvious that 35 the weakening of the light would effect the exposure controlling mechanism in like manner, and cause the time of exposure to increase in proportion to the brilliancy of the light, thereby avoiding weak or under-timed prints. 40

The before mentioned shaft 17, is journaled in bearings 40, in the carriage 13, and on one end is crank arm 41, integral therewith. In the outer end of said crank arm is disposed wrist pin 42, and upon the said wrist pin contiguous the arm is revolvably connected the slotted rod 43, and abutting the same on the pin is revolvably disposed one end of the connecting rod 44. The other end of said rod is secured to the wrist pin 45, which passes through the switch block 36, and is secured in operative relation thereto, by nut 46. To the inner wall 19, of the carriage 13, is pivotally attached the rocker arm 47, by the stud 48. In the lower end of said arm is disposed a wrist pin 49, which passes through the slot in the arm 43, and to which it is connected in sliding engagement. To the said wrist pin 49, between the rocker arm and the said slotted arm is pivotally attached a connecting rod 50, the opposite end of which is attached to a depending arm 51, integral with the barrel 52. Integral with said barrel and extending upward from the opposite end from 65

the depending arm is bracket 53, to the upper face of which is secured one end of the platen 54, by means of the screw 55. Upon the back of the said platen, a distance from each end and adjacent the lower edge are two round bosses 56, which are bored out to form stuffing boxes. A threaded gland or follower 57, is disposed in each one of said stuffing boxes. Said glands are drilled to admit of a bifurcated gage 58, being arranged to slide through said glands and platen. A form of packing being interposed to provide the desired resistance to the movement of the gage. Upon the back of the platen adjacent one end and intermediate the width thereof, is located a barrel 59, and a spring actuated guide pin 60, is arranged within the same and adjusted for resistance by the cap 61, see Fig. 12. 70

To one of the end plates 18, of the carriage 13, are secured the spring links 62. The loop portion of said links surrounding the central bar of the gage 58, impart an intermittent reciprocating movement to the gage coincident with a corresponding movement of the platen. Extending the gage ends through the platen when it is thrown back and the card placed thereon and receding when the platen closes against the negative, see Fig. 1. The intermittent movement referred to is produced by the slotted arm 43, allowing the rocker arm 47, to rest during a portion of the revolution of the crank arm 41. 75

A distance down from the top and back from the end of the carriage a shaft 63, is journaled and passes transversely through both side plates 13, and the intermediate plate 19. Upon said shaft between the front plate and the intermediate plate the barrel 52, is loosely mounted and to the opposite side of the intermediate plate a torsion spring is fastened at one end and surrounding said shaft extends to the bracket 65, to which the other end is attached. The brackets 53, and 65, are both rigidly secured to the back of the platen, see Fig. 13, and although the bracket carries the platen to an approximate contact with the negative, the torsion spring through its connection with the bracket 65, completes the contact. After the card 67, has been exposed the desired time and the platen starts on its backward movement, the card is released and drops down onto the endless belt 66, and is carried thereby to the box 68, which is light proof. Upon the end of the frame opposite the motor, a cabinet 72, is mounted and secured to the bars 4, in any convenient manner. Two rods 69, are disposed inside of said cabinet a distance from the bottom and sides thereof carrying in sliding contact, a fiber bar 70, transversely of the cabinet. Upon the top of said bar are mounted a plurality of electric lamps 34. On the 100 105 110 115 120 125 130

front side of said cabinet adjacent the top a portion is removed and the aperture, adapted to hold a negative or film, against which the platen deposits and holds the paper or card to be printed. The lamps aforesaid being mounted on the sliding bar can be located the desired distance from the negative and secured in that position by means of the adjusting threaded rod 71.

The endless belt 66, before referred to is mounted on rollers 73, disposed between the rails 1, and are driven by the belt 74, from sheave 75, on shaft 17, to sheave 76, see Fig. 14. The end of the frame 1, under the motor is mounted on standards 77. The cabinet end of the frame is inclosed in a suitable light proof casing to protect the prints in their passage from the negative to the box 68, and if desirable a ruby light can be mounted on the top of the cabinet to guide the operator.

It is obvious that the most minute adjustment of the platen in relation to the negative can be attained by sliding the carriage on the rods 5, by means of the adjusting screw 6, which is threaded and passes through a boss on the end plate 18, see Fig. 1.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

Having thus fully described the invention, what is claimed as new, is:—

1. In a photographic printing machine, a main frame comprising side rails, rods extending longitudinally thereof inside the rails, means for securing the rods to the frame, a carriage slidably mounted on said rods, a platen pivotally secured to said carriage, said platen adapted to carry a sheet of sensitized paper or post card into contact with a negative, a gage carried by said platen for holding the paper or card in proper position and releasing same after exposure, means within the carriage for imparting an intermittent reciprocating movement to the platen and gage, all substantially as described.

2. In a photographic printing machine, a main frame, an electric motor mounted upon one end of said frame, rods extending longitudinally of said frame, a carriage mounted on said rods, means for adjusting the carriage on said rods, a shaft extending from said motor, a coupling connecting said motor shaft to a second shaft, said second shaft revolvably disposed within journal boxes in said carriage, a worm integral with said second shaft, a worm gear meshing with said worm, a transverse shaft carrying the said worm gear, a crank arm at one end of said shaft, a wrist pin in the outer end of said crank arm, a slotted rod connected to said wrist pin contiguous the crank arm, a connecting rod connected to said wrist pin

next to the slotted rod, a rocker arm pivotally attached to the intermediate plate of the carriage by a pin, a wrist pin in the lower end of said rocker arm, a connecting rod connected to said wrist pin at one end and the other end attached to a depending arm which is integral with a barrel and bracket for operating a platen, the outer end of said wrist pin extending through the slot in the slotted rod and receiving an intermittent reciprocating movement therefrom, all substantially as described.

3. In a photographic printing machine, a main frame, a motor mounted on one end of the frame, rods extending longitudinally of the frame, a carriage mounted on the said rods, a shaft extending from the motor through the carriage, a worm on said shaft, a worm gear meshing with said worm, a shaft upon which said worm gear is mounted a crank arm at one end of said shaft, a wrist pin in said crank arm, a connecting rod attached at one end to said wrist pin and the other end of said rod connected to a switch block, through a slot in the side of the carriage, two outwardly extending lugs attached to the side of the carriage above and in alinement with said slot, a fiber bar secured to the underside of said lugs by screws disposed in slots in said lugs, an adjusting screw adapted to move said bar on said lugs, a metal plate secured to the lower side of said bar for a portion of its length from one end, a binding screw passing through said plate for attaching a wire thereto, a second fiber bar secured to the lugs on the carriage a distance below and in alinement with the first bar, a metal plate extending over the entire top and both ends of said second bar and secured thereto, a binding screw at one end of said plate for attaching an electric wire thereto, a switch block composed of fiber and disposed in sliding relation between the two fiber bars and operated by the connecting rod aforesaid, two carbon brushes in said switch, a spring between said brushes for insuring contact with the metal plates, substantially as described.

4. In a photographic printing machine, a main frame, a motor mounted on one end of said frame, rods extending longitudinally of said frame, a carriage mounted on said rods, a cabinet mounted on said rods adjacent the carriage rods within the cabinet, a fiber bar mounted on said rods within the cabinet, a plurality of electric lamps mounted on said fiber bar, means for moving said bar along said rods, means for securing a negative in an aperture in the end of said cabinet, wires connected to a source of current and attached to the binding post on one of the fiber bars aforesaid and through the lamps to the binding post on the other fiber bar, a reciprocating switch block in sliding

contact with said fiber bars for closing or breaking the current through the lamps, a carrier adapted to receive the prints from the platen and deposit the same in a light proof receptacle disposed under said carrier.

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5. In a photographic printing machine, a main frame, a motor mounted on one end of said frame, rods extending longitudinally of said frame, a carriage mounted on said rods, a shaft journaled in said carriage adjacent the top and one end, a barrel mounted on said shaft, a depending arm integral with said barrel, a means for oscillating said arm, a bracket also integral with said barrel, a platen secured at one end to said bracket, a second bracket loosely disposed on said

shaft and secured to the other end of said platen, a torsion spring disposed on said shaft one end of said spring attached to the second bracket and the other attached to the intermediate wall of the said carriage for the purpose of producing a spring pressure of the platen against the negative, substantially as described.

In testimony whereof we affix our signatures in the presence of two subscribing witnesses.

TORBJURN CONRAD KORSMO.
THOS. C. OLSON.

Witnesses:

E. S. BARMEN,
C. BOSTAD.