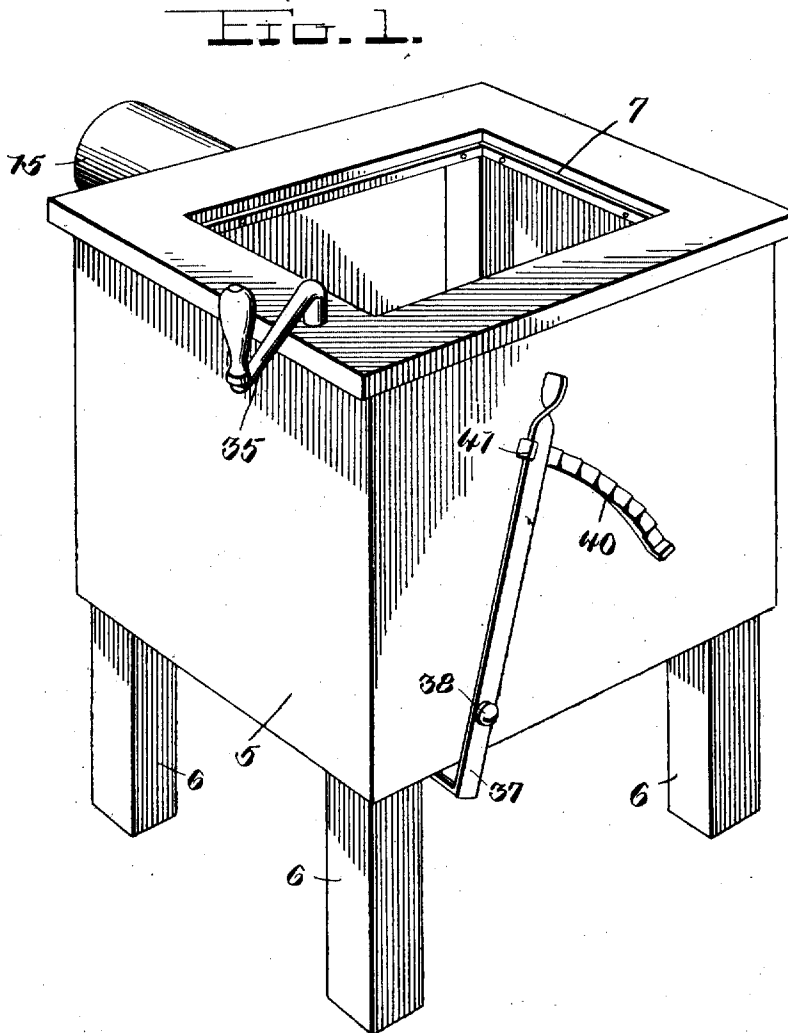


G. R. OLSON.
PHOTOGRAPHIC PRINTING MACHINE.
APPLICATION FILED NOV. 28, 1910.

1,008,362.

Patented Nov. 14, 1911.

6 SHEETS-SHEET 1.



Inventor
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Witnesses
Chas. L. Griestauer.
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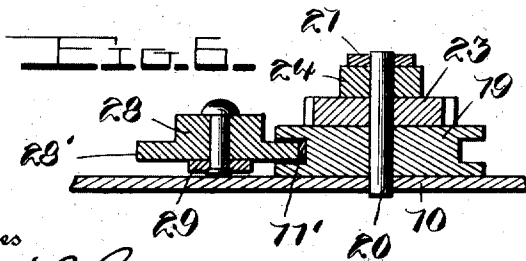
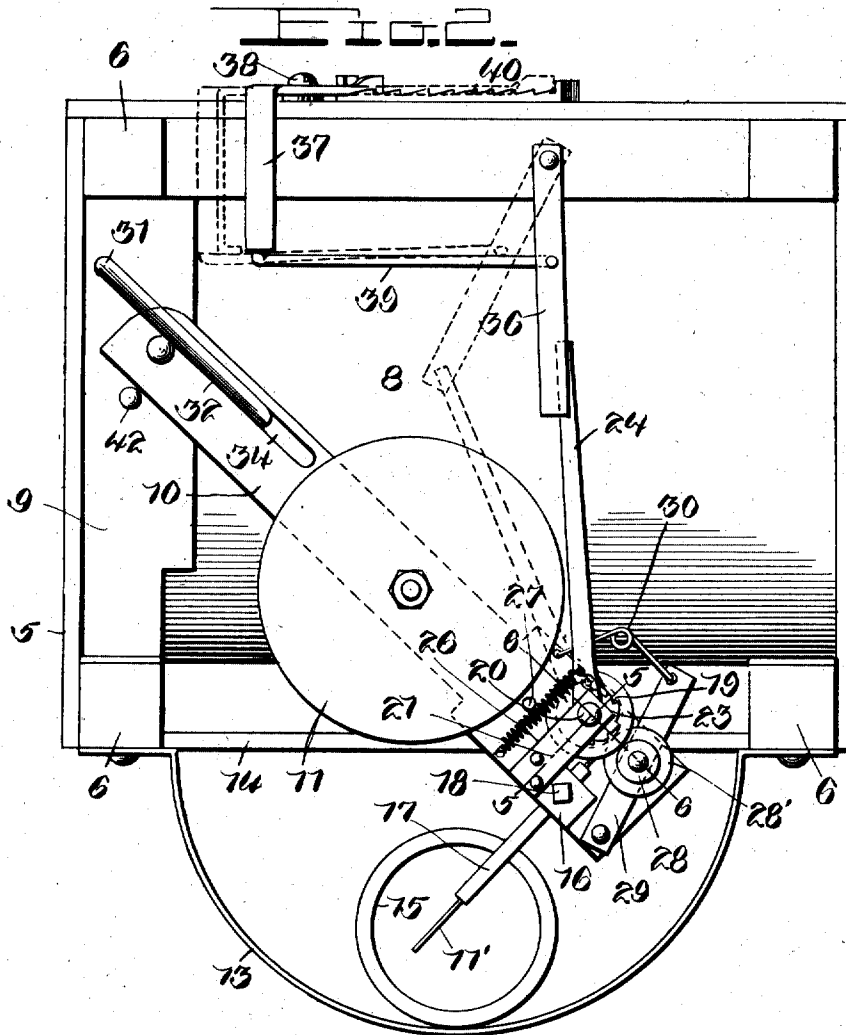
By Watson E. Coleman
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6 SHEETS—SHEET 2.



Witnesses

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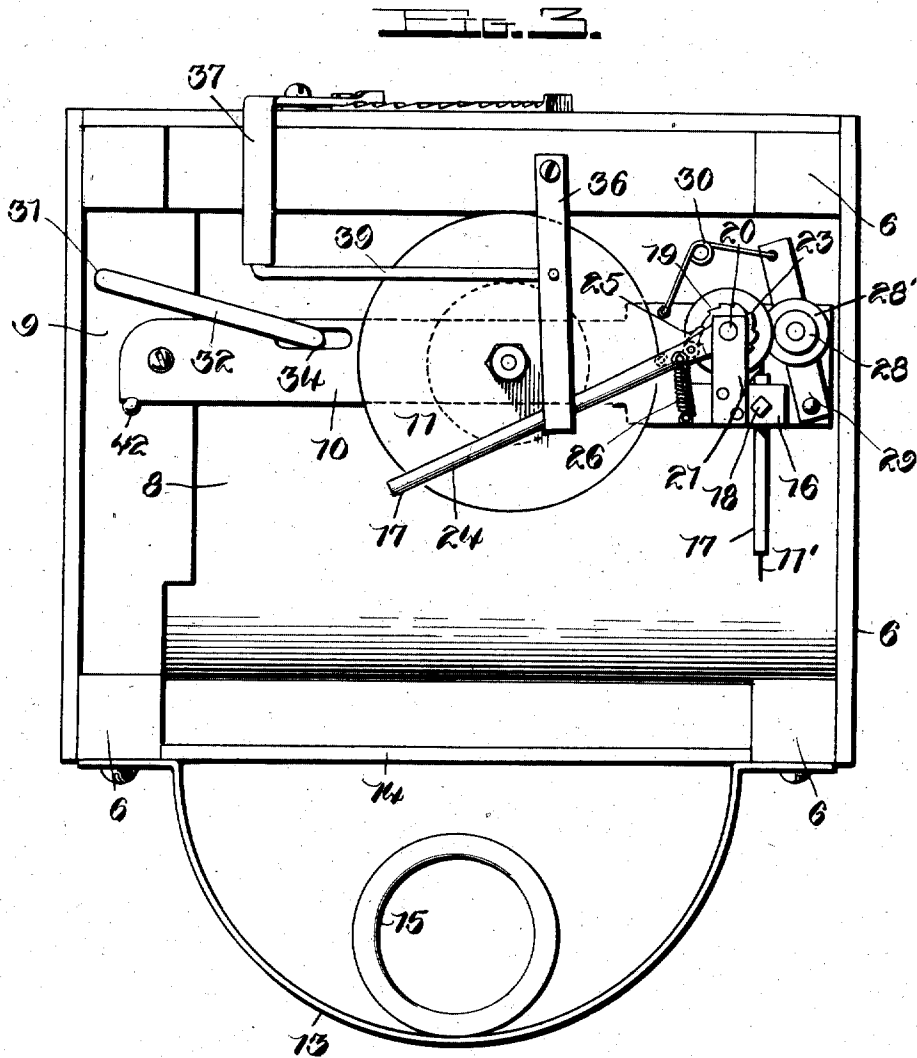
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6 SHEETS-SHEET 3.



Witnesses

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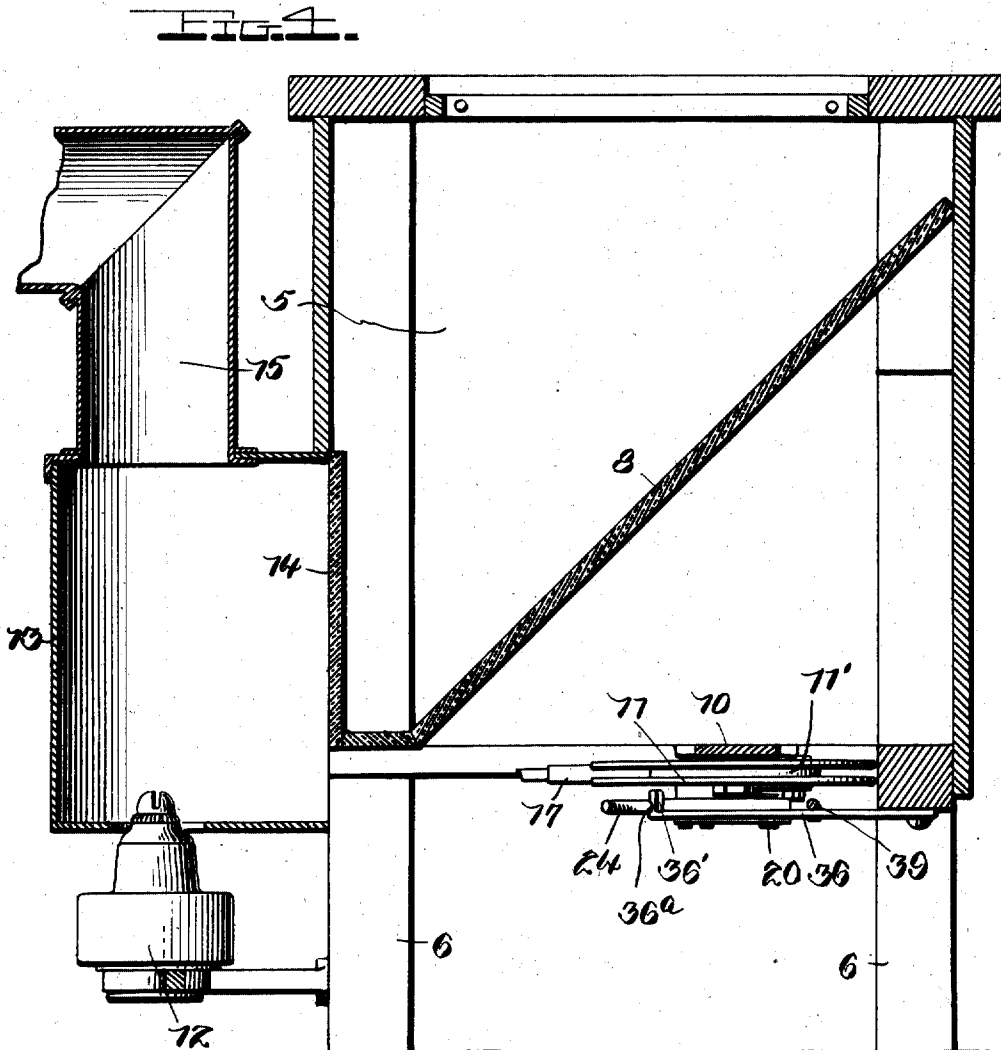
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6 SHEETS—SHEET 4.



Witnesses
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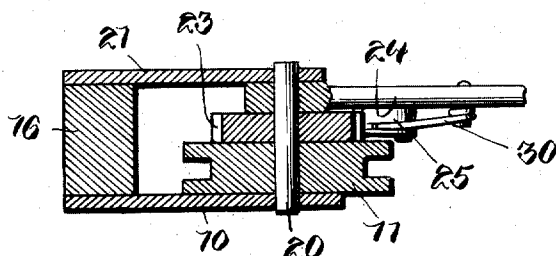
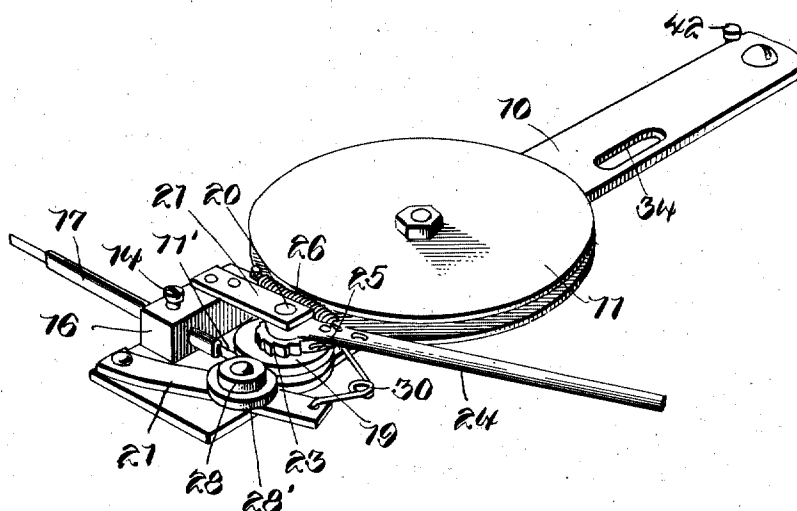
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1,008,362.

8 SHEETS--SHEET 6.

FIG. 7.



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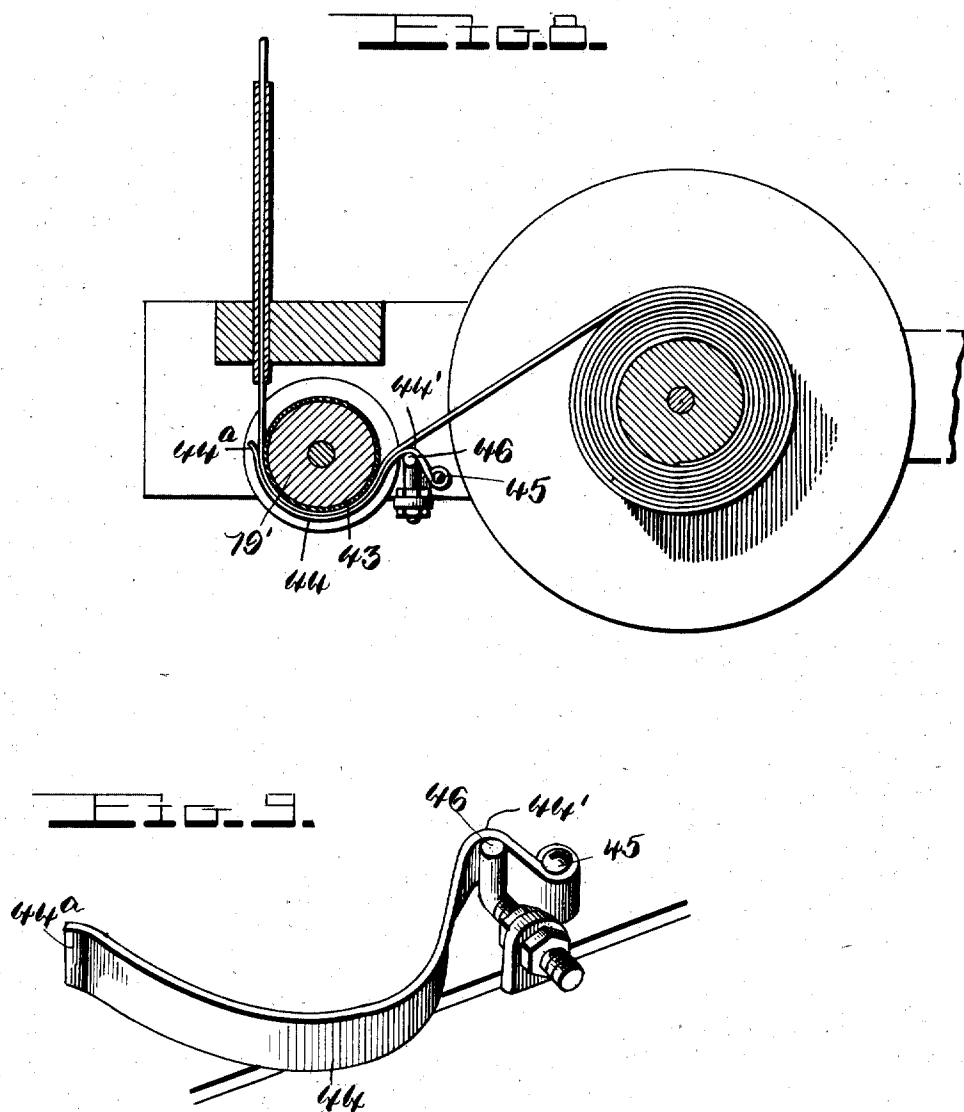
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G. R. OLSON.
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1,008,362.

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6 SHEETS-SHEET 6.



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UNITED STATES PATENT OFFICE.

GUSTAVE REUBEN OLSON, OF PLATTSMOUTH, NEBRASKA.

PHOTOGRAPHIC-PRINTING MACHINE.

1,008,362.

Specification of Letters Patent.

Patented Nov. 14, 1911.

Application filed November 28, 1910. Serial No. 594,524.

To all whom it may concern:

Be it known that I, GUSTAVE R. OLSON, a citizen of the United States, residing at Plattsmouth, in the county of Cass and State of Nebraska, have invented certain new and useful Improvements in Photographic-Printing Machines, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to photographic printing machines and has for its object to provide novel means for providing an artificial light by means of which the print is obtained from the negative.

15 Another object of the invention resides in the provision of very novel means for feeding a combustible material over a torch and directing the light thus produced upon the negative.

20 A further object of the invention is to provide means whereby the amount of combustible material which is fed to the torch may be regulated to vary the intensity of the light in the production of various kinds of prints.

25 Still another object of the invention is to provide a roll of magnesium ribbon arranged beneath a negative supporting box or case, said ribbon extending through a tube, and means for swinging the ribbon reel and tube and simultaneously feeding the combustible ribbon over the flame of a torch mounted upon the case whereby the ribbon is ignited to provide the desired light for the printing operation.

35 The invention has for a further object, the provision of a printing machine of the above described character wherein comparatively few elements are employed in its construction so that the machine may be produced at a low cost, such operating mechanism being very compactly arranged so that the machine in its entirety will occupy but a small space.

45 With the above and other objects in view, the invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

50 Figure 1 is a perspective view of a machine embodying my improvements; Fig. 2 is a bottom plan view; Fig. 3 is a similar view showing the tape reel swung inwardly under the bottom of the case and the feeding lever in position for feeding the tape

over the torch in the outward movement of the reel; Fig. 4 is a vertical section through the machine; Fig. 5 is a section taken on the line 5—5 of Fig. 2; Fig. 6 is a section taken on the line 6—6 of Fig. 2; Fig. 7 is a detail perspective view of the friction roller for feeding the tape and the pivoted bar upon which it is mounted; Fig. 8 is a section illustrating a slightly modified form of the tape directing means; and Fig. 9 is a detail perspective view of a part of the modified construction.

Referring in detail to the drawings 5 designates a rectangular box or case which is suitably mounted upon the legs 6 which are arranged at each corner thereof. The top of the case is provided with an opening 7 to receive a plate of glass upon which the negative and the sensitized printing sheet are adapted to be positioned. Suitable holding means may be provided for retaining the negative and printing sheet in position. This negative holder will not be specifically described in the present application as the same is made the subject matter of a separate application for patent filed coincident herewith. Within the case or body 5 of the machine, a reflecting plate 8, preferably of mirror glass is arranged. This plate is disposed at an inclination as shown in Fig. 4 and diffuses the light which is provided by means of the mechanism to be hereinafter fully set forth, over the entire surface of the negative, thus assuring the operator of the best results.

In the bottom of the case 5 and between opposite supporting legs 6, a bar 9 is fixed. Upon this bar the plate 10 is pivoted at one of its ends and the reel 11 is rotatably mounted on this plate, approximately at the center thereof. This reel carries a roll of magnesium tape, or other combustible material which is to be fed over a torch 12 arranged as shown in Fig. 4 in the lower end of the casing 13. The side of the box or body 5 of the machine, on which the casing 13 is arranged, is provided in its lower end with a ground glass plate 14, the lower edge of said glass plate and the lower end of the inclined plate 8 arranged in the case 5 being in the same plane. The casing 13 is provided in its upper end with a pipe 15 to carry off the smoke and fumes from the torch. The magnesium tape 11' is fed over the torch to be ignited thereby in a predetermined amount, the amount of tape to be

ignited being varied or regulated by suitable means which I provide, as will be made apparent from the following description. A block 16 is rigidly fixed to the pivoted plate 10 adjacent to its free end and in this block one end of a laterally extending rectangular tube 17 is removably fixed by means of the set screw 18. The combustible tape 11 is extended through this tube and moves over a peripherally grooved wheel 19 which is mounted upon a shaft 20 fixed in the plate 10 and in an arm 21 which is secured to the block 16. A ratchet 23 is also fixed upon the shaft 20, and a lever 24 is loosely mounted on said shaft at one end adjacent to the ratchet. A spring pressed pawl 25 is arranged on the lever for engagement with the teeth of the ratchet to lock the lever upon the shaft and rotate the same together with the wheel 19 which is fixed thereon. One end of a spring 26 is secured to the lever and the other end thereof to the block 16, said spring acting to move the lever in one direction, the pawl idly moving over the teeth of the ratchet. A pin 27 is fixed upon the plate 10 and the combustible tape moves around said pin and is held thereby closely upon the base of the groove in the wheel 19. A pressure roller 28 is mounted upon a pivoted bar 29. This roller is formed with an annular flange 28' for engagement in the groove of the roller 19 upon the magnesium tape. A spring 30 is fixed at one end to the plate 10 and engages upon the free end of the bar 29 at its other end, said spring yieldingly retaining the pressure roller upon the tape. In this manner sufficient friction is produced to insure the positive feeding of the combustible tape with each operation of the machine. An operating rod 31 is vertically mounted in one side of the box or case and at its lower end is formed with a crank 32, the extremity of which is upturned and extends through a short longitudinal slot 34 in the pivoted plate 10. The upper end of the operating rod is also formed with a crank 35 which provides a suitable handle whereby the rod may be rotated to swing the pivoted plate, the magnesium tape roll and the feeding mechanism carried thereby as will be later described.

The free end of the lever 24 is supported by means of a bar 36 which is pivotally mounted at one end upon the bottom of the box or case and extends inwardly beneath the same. The free end of said bar is vertically flanged as indicated at 36' and is provided with a notch 36" to receive the end of the lever 24. A regulating lever 37 is pivoted, as shown at 38, upon one side of the box or case 5 and at its lower end is transversely disposed beneath said box. A connecting rod 39 connects the lower extremity of this regulating lever with the

pivoted bar 36. By adjusting the lever 37, and positioning the end of the bar 36 with relation to the extremity of the lever 24, the amount of combustible tape which is fed to the torch may be varied in accordance with the different requirements. This will be readily apparent from a comparison of Figs. 2 and 3. When the bar 36 and lever 24 occupy a substantially horizontal position, a greater amount of the ribbon will be fed through the tube 16, than when this bar and the lever are in the relative positions shown in dotted lines in Fig. 2, when a comparatively small amount of the ribbon is fed to the torch. When the bar 36 and lever 24 are in substantial alinement in the position of the feeding mechanism as shown in Fig. 2, upon the swinging movement of the plate 10, the lever 24 which is held in engagement with the end of said bar will move through an arc of more than 90° to the position shown in Fig. 3. When the lever 37 is moved so as to dispose the bar 36 in the angular position as shown in dotted lines in Fig. 2, it will be obvious that when the feeding mechanism is moved to the position shown in said figure, the lever 24 will describe an arc of considerably less degree so that a less amount of the combustible material is fed to the torch flame. A rack 40 is secured to the side of the case 5, the teeth of which are engaged by a projection formed on said lever, whereby the regulating lever is held in its adjusted position. A stop 41 is also secured to the case to limit the movement of this regulating lever in one direction. A stop pin 42 is also secured to the bar 9 upon which the plate 10 is pivoted and limits the inward swinging movement of said plate, thereby preventing contact of the feed mechanism with the side of the case and thus causing probable breakage of the parts.

In the operation of my improved printing machine, the negative and the sensitized paper are first arranged over the opening in the top of the case, and the pressure backs of the holder 7 engaged thereon. The torch 12 is then lighted and the machine is ready for the printing operation. Assuming that the carrier plate 10 is in the position shown in Fig. 2, the operator now rotates the rod 31, thereby swinging the plate 10 inwardly beneath the case and sliding the lever 24 in the notched inner end of the pivoted bar 36. In this movement, the lever 24 is moved on the shaft 20 by the contraction of the spring 26, the feed rolls for the combustible tape remaining stationary. The rotation of the rod 31 is then reversed and the plate 10 swung outwardly beneath the case. In this movement of the plate, the bar 36 being stationary locks the lever 24 on the shaft 20 to rotate the same and the roller 19. The rotation of this roller moves the tape off of

the reel, the friction roller 28 moving in the opposite direction and directing the tape into and through the tube 17. In this manner the combustible tape is fed over the flame of the torch whereby a light is produced and reflected through the glass plates 14 and 7 upon the negative which is arranged in the top of the case.

In the modified form of the invention shown in Figs. 8 and 9, wherein a much simpler arrangement of parts for positively feeding the combustible tape to the torch flame is disclosed, the peripherally grooved guide wheel 19' has arranged in the base of the groove an endless band of rubber or other friction material 43, over which the combustible tape or ribbon passes in its movement from the reel to the directing tube. In lieu of the friction roller 28 and parts 29 and 30 shown in connection with the preferred form of the machine, a spring 44 is employed. From reference to Fig. 9 it will be observed that this spring is in the form of a resilient sheet metal plate and is substantially semicircular so that in its operative position the same lies in concentric relation to the wheel 19' and between the peripheral flange portions of said wheel which are formed by the provision of the tape receiving groove. At one end the resilient plate 44 is bent upon itself as indicated at 44' and has its extremity fixed upon a pin 45 which is secured in the base upon which the guide wheel is mounted. Said spring at the bend 44' thereof passes around a second pin 46. This pin is adapted to retain the spring plate yieldingly upon the combustible tape which passes between the same and the base of the peripheral groove in the wheel 19', in its movement from the reel upon which it is carried, to the directing tube. The other extremity of the spring plate 44 is slightly bent or curved as at 44^a so that the free end of said plate will not interfere with the passage of the tape or ribbon in the operation of the parts. By means of this modified construction, I am enabled to dispense with several elements utilized in connection with the previously described form by the substitution of the very simple spring element 44. In this manner the cost of manufacture is materially reduced without sacrificing the efficiency of the machine.

From the foregoing it is thought that the construction and operation of my improved photographic printing machine will be readily understood. The mechanism is all very compactly arranged and the machine is extremely easy to operate. The cost of construction is also comparatively small and by the provision of the feed regulating means for the combustible ribbon, the feed thereof may be varied for different purposes, thus reducing the expense of oper-

ation to a minimum and also insuring the very best results.

While I have shown and described the preferred construction and arrangement of the invention, it will be understood that the device is susceptible of considerable modification without departing from the essential feature or sacrificing any of the advantages thereof.

Having thus described the invention what is claimed is:—

1. In a photographic printing machine, in combination, a pivotally mounted carrier plate, a tape roll arranged upon said plate, manually operable means for moving the plate, igniting means, feeding mechanism arranged upon the plate, and means operable in the movement of said plate in one direction to automatically feed a predetermined amount of the tape to the igniting means.

2. In a photographic printing machine, in combination, a movable carrier plate, manually operable means for moving said plate, a tape roll revolubly mounted on the plate, a feeding mechanism arranged upon said plate, a lever for actuating said mechanism in one direction of movement of the plate, igniting means, and adjustable feed regulating means co-acting with said lever to predetermine the amount of tape fed to the igniting means.

3. In a photographic printing machine, in combination, a movable carrier element, manually operable means for moving said element, a combustible material arranged upon the carrier, feed mechanism arranged on the carrier, igniting means, means for actuating said feed mechanism in one direction of movement of the carrier to feed a predetermined amount of the combustible material to the igniting means, said last named means including an adjustable element to predetermine the amount of material fed to the igniting means.

4. In a photographic printing machine, in combination, a carrier element, means for actuating the same, a combustible material carried by said element, igniting means, feed mechanism arranged upon the carrier, a lever for actuating said feed mechanism in one direction of movement of the carrier to feed the material to the igniting means, a pivoted bar co-acting with said lever, and means for adjustably positioning said bar with relation to the lever to predetermine the amount of material fed to the igniting means.

5. In a photographic printing machine, in combination, a pivotally mounted plate, a roll of combustible tape carried by said plate, feeding mechanism for the tape arranged on the plate, igniting means, means carried by the plate for directing the tape, means for swinging the plate upon its pivot,

and means for actuating the feed mechanism in one direction of pivotal movement of the plate to feed a predetermined amount of the tape to the igniting means.

5 6. In a photographic printing machine, in combination, a movably mounted combustible tape carrying reel, igniting means, feeding mechanism movable with the reel to feed a predetermined amount of the tape
10 to the igniting means, means for directing the tape, and means for actuating the feeding mechanism in one direction of movement of the tape reel.

7. In a photographic printing machine,
15 in combination, a movably mounted combustible tape carrying reel, igniting means, feeding mechanism movable with the reel to feed a predetermined amount of the tape to the igniting means, means for directing
20 the tape, and adjustable relatively stationary means coöperatively associated with the feeding mechanism in the movement of the reel to vary the amount of tape fed to the igniting means.

25 8. In a photographic printing machine, in combination, a pivotally mounted plate, a combustible tape carrying reel carried by said plate, igniting means, means for directing the tape, feeding mechanism arranged
30 on the plate, said mechanism comprising a guide wheel for the tape, means frictionally engaging the tape on said wheel, a lever for rotating the guide wheel, and means for moving said lever in the pivotal movement
35 of the plate in one direction to feed the combustible tape to the igniting means.

9. In a photographic printing machine, in combination, a pivotally mounted plate, a roll of combustible tape carried by the
40 plate, igniting means, means arranged on the plate to direct the tape, feed mechanism including a lever carried by said plate to feed a predetermined amount of the tape, and relatively stationary adjustable means
45 engaging said lever to vary the amount of tape fed to the igniting means.

10. In a photographic printing machine, in combination, a plate pivotally mounted at one end, a combustible material carried
50 by said plate for movement therewith, igniting means, means arranged on the plate to direct the material, feeding mechanism carried by the plate to feed the combustible material to the igniting means, an operating
55 rod connected to said plate to swing the same upon its pivot, and relatively stationary adjustable means associated with the feeding mechanism to actuate the same in one direction of pivotal movement of said
60 plate to feed the combustible material and to vary the amount of said material fed to the igniting means.

11. In a photographic printing machine, in combination, a pivotally mounted plate,
65 a roll of combustible tape mounted on the

plate and movable therewith, a tube carried by the plate, said tape being movable through the tube, igniting means, feed rollers rotatably mounted on the plate to feed the tape to the igniting means, and means for rotating said rollers in one direction of the pivotal movement of said plate to feed the combustible tape.

12. In a photographic printing machine, in combination, a plate pivotally mounted at one end, a roll of combustible tape carried by said plate for movement therewith, a torch, a directing element to receive said tape and direct the same to the flame of the torch, feed mechanism mounted on the plate, said mechanism comprising a shaft, a guide wheel on said shaft, said wheel being peripherally grooved to receive the tape, a friction roller having an annular flange to engage in said groove and bear upon the tape, a lever loosely mounted on the shaft, a ratchet fixed on said shaft, a pawl carried by the lever for engagement with the teeth on the ratchet, a spring connected to said lever placed under tension in the movement of the plate in one direction, and relatively stationary adjustable means engaging said lever to limit its movement and vary the amount of combustible tape fed to the torch flame.

13. In a photographic printing machine, in combination, a plate pivotally mounted at one of its ends, a tape roll carried by said plate for movement therewith, a torch, lever actuated feed mechanism arranged on the plate to feed a predetermined amount of the tape to the torch flame, a rotatably mounted operating rod, one end of said rod being provided with a crank, said plate having a slot therein to receive the end of the crank whereby said plate is swung upon its pivot when the operating rod is rotated, an adjustable pivotally mounted regulating lever, means for securing the lever in its adjusted position, and means connected to said lever and movably engaging the actuating lever of the feed mechanism to vary the extent of movement of said lever and regulate the amount of tape fed to the torch flame.

14. In a photographic printing machine, in combination, a movable element, a combustible material carried by the movable element, a torch, lever actuated feed mechanism arranged on said movable element to feed a predetermined amount of the combustible material to the torch flame in the movement of said element in one direction, an adjustable pivotally mounted lever, a rack for securing said lever in its adjusted position, a bar pivoted at one of its ends, said actuating lever for the feed mechanism being slidably engaged with the other end of said bar, a connecting rod between said bar and adjustable lever, and an operating rod for moving said element to feed

the combustible material to the torch flame.

15 In a photographic printing machine, in combination, a pivotally mounted plate, a combustible material carried by said plate, a torch, feed mechanism for feeding the material to the torch flame, an operating rod connected to said plate to swing the same upon its pivot, an adjustably mounted lever, and movable connections between said lever

and the feed mechanism to vary the amount of the combustible material fed to the torch flame in one direction of movement of the pivoted plate.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

GUSTAVE REUBEN OLSON.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."