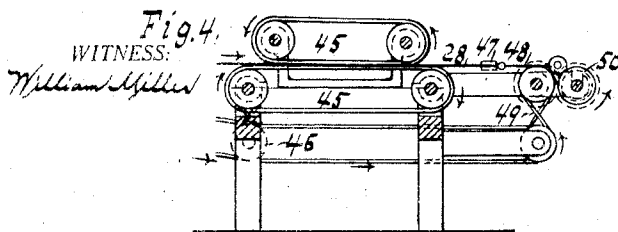
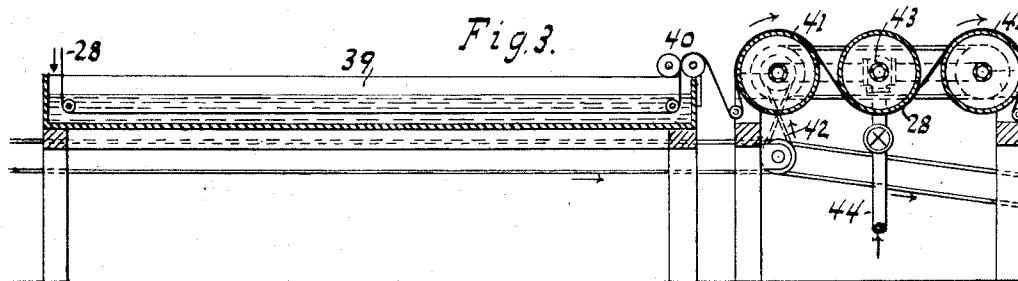
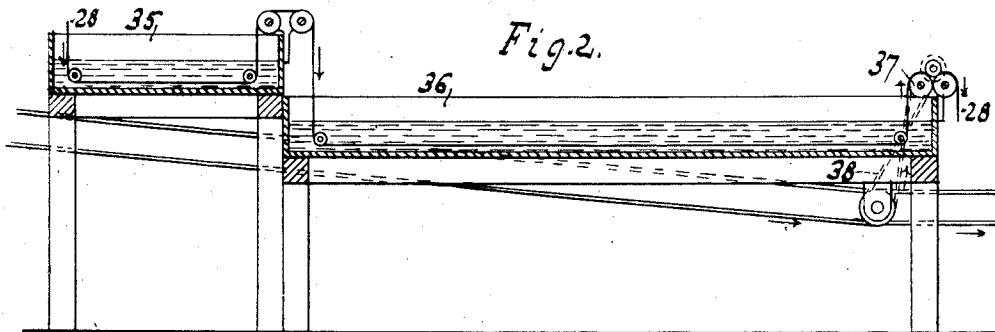
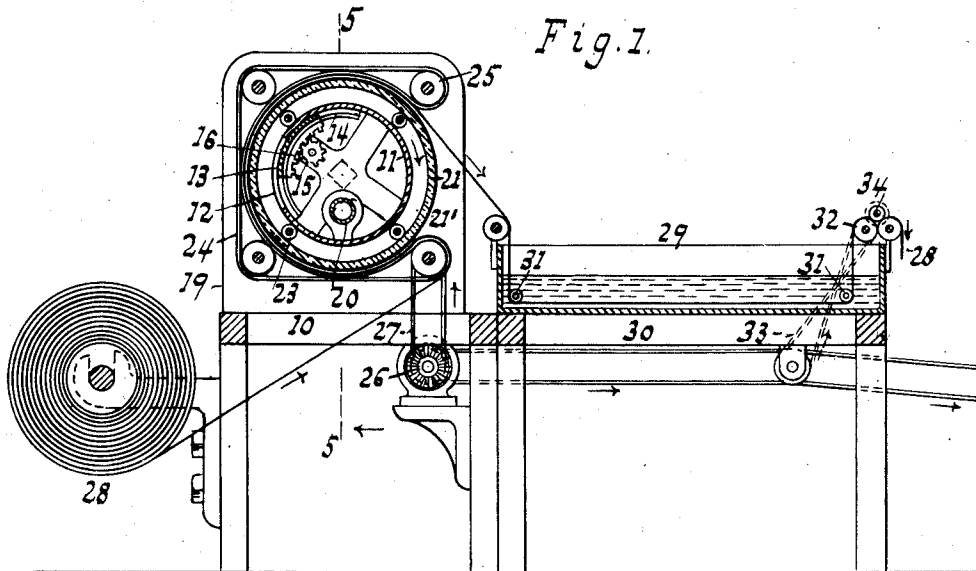


H. WEISS.
 PHOTOGRAPH PRINTING APPARATUS.
 APPLICATION FILED APR. 4, 1919.

1,361,555.

Patented Dec. 7, 1920.
 2 SHEETS—SHEET 1.



WITNESS:
William Miller

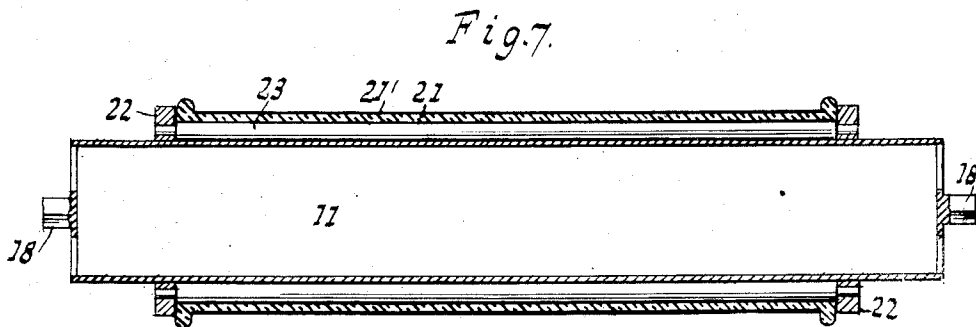
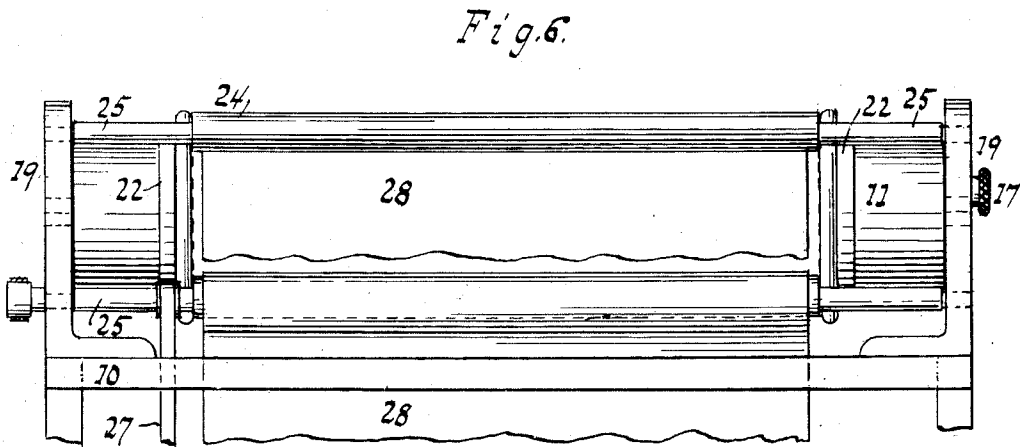
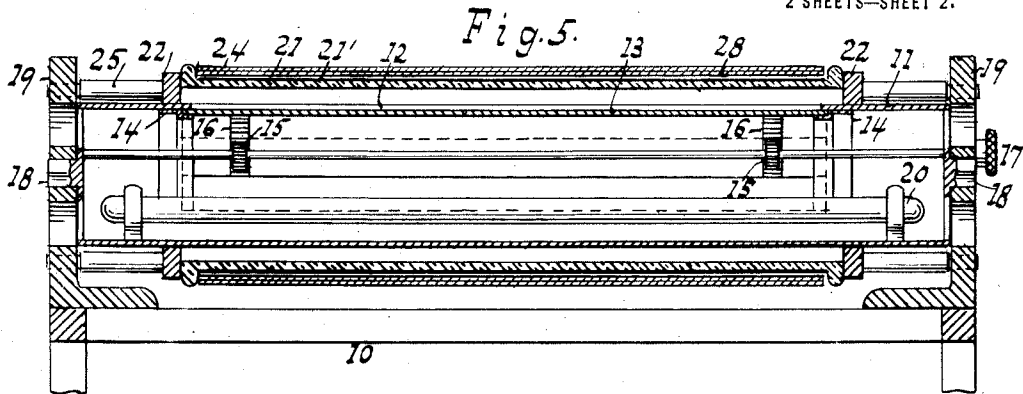
INVENTOR.
Hugo Weiss
 BY
Hauff & Farland
 ATTORNEYS

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UNITED STATES PATENT OFFICE.

HUGO WEISS, OF NEW YORK, N. Y.

PHOTOGRAPH-PRINTING APPARATUS.

1,361,555.

Specification of Letters Patent.

Patented Dec. 7, 1920.

Application filed April 4, 1919. Serial No. 237,594.

To all whom it may concern:

Be it known that I, HUGO WEISS, a citizen of Hungary, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Photograph-Printing Apparatus, of which the following is a specification.

This invention relates to a photograph printing and developing apparatus in which a stationary drum projects a light onto a negative carried by a transparent tubular roller arranged to revolve about the drum.

The object of the invention is to provide a conveyer passing partly around the tubular roller and pressing a web of sensitized paper firmly against the negatives to expose it to the light from the drum.

Another object of the invention is to provide the drum with an opening to project the light and a sliding shutter to regulate the size of the opening.

Another object of the invention is to provide means for continuously feeding the paper web after the print has been produced to a number of tanks where the print is thoroughly developed and dried.

Another object of the invention is to provide means for drawing the initial portion of the web through the conveyer and the different tanks, and a reel for winding the drawing means.

The novel features of the invention are more fully described in the following specification and claims and illustrated in the accompanying drawings in which:—

Figure 1 represents a sectional side elevation of a printing device and a developing tank.

Fig. 2 is a similar section of an acid and a hypo. tank.

Fig. 3 is a similar section of a water tank and a drying apparatus.

Fig. 4 is a similar section of a smoothing and rewinding device.

Fig. 5 is a vertical section taken along the line 5—5 of Fig. 1.

Fig. 6 is a front elevation of the same.

Fig. 7 is a sectional side elevation of the drum and tubular roller.

In the drawing the numeral 10 designates a frame which supports a printing or exposing device consisting of a drum 11 having a rectangular opening 12 located in the side of the drum. A segmental shutter 13 is mounted to slide in guides 14 fixed inside of

the drum. The shutter is preferably operated to control the size of the opening by means of pinions 15 engaging racks 16 carried by the shutter. By rotating a finger button 17, see Fig. 5, the pinions are actuated to move the shutter in an arc concentric with the axis of the drum. The drum is fixed by means of trunnions 18, each located on a spider secured to the end of the drum, to a pair of plates 19 supported on the frame. A mercury electric vacuum lamp 20 is supported on the inside of the drum.

Surrounding the drum is a glass tubular roller 21 having open ends and on the periphery of the roller is mounted a flexible sheet of film negatives 21' made of celluloid or paper. A pair of flanges 22 attached to the drum adjacent to the ends of the roller prevent longitudinal movement thereof. The roller is spaced from the periphery of the drum and positioned concentric therewith by being supported on a series of balls or rollers 23 having their ends journaled in the flanges of the drum. An endless conveyer 24 passes partly around the circumference of the roller and is guided by means of a series of rollers 25 journaled in the plates. A motor 26 with belt connection 27 to one of the rollers 25 is made to drive the conveyer.

The web from a roll of sensitized paper 28 passes over the film sheet on the roller and is held in contact therewith by the conveyer serving as a back. It will be seen that by means of the conveyer the web of paper engages practically about three quarters of the circumference of the film sheet. The roller revolves in a concentric circle about the drum in the direction in which the web of paper travels by its engagement with the conveyer. The web travels slowly around the roller and the light projected through the opening in the drum, strikes the negatives opposite the opening to fix the pictures or images on the web.

As indicated in Fig. 1 the web of paper travels from the conveyer to the developing tank 29 supported on a frame 30. The web is immersed in the tank by being guided around rollers 31 located in the tank. A roller 32 at one end of the tank keeps the web moving forward. The roller is driven by a belt connection 33 from the motor, and it can be geared to a small roller 34 to guide the web in the desired direction.

After the web leaves the developing tank

it travels to a small tank 35 containing a weak solution of acetic acid, best seen in Fig. 2, and from thence it moves to the hypo. tank 36 where it is fixed. The web is drawn through the liquid by a roller 37 mounted on the end of the tank and driven by a belt 38 from the motor. The roller can be geared to a small roller as shown to guide the web.

The web then travels to a water tank 39, 10 as indicated in Fig. 3, and thence to a pair of rollers 40 where the moisture is squeezed from the web. The web then travels to a drier including a plurality of drums 41 driven by a belt connection 42 from the motor. Each drum is preferably heated by a 15 pipe 43 located in the drum and supplied with fuel by a branch pipe 44 connected to a gas or steam supply. The web thence passes to an ironing machine, best seen in 20 Fig. 4, having a pair of endless belts 45 driven by a belt 46 connected to the motor. The web travels between the two endless belts so as to completely smooth it out and from there it can be rewound on a reel if 25 desired.

Before passing the web through the apparatus the initial end is clamped to a pair of jaws 47 when it is unwound from the roll. The jaws are provided with a belt 48 which 30 pulls the web through the exposer and the developing tanks to a rewinding device having a driving roller 49 geared to a rewinding roller 50. After the belt 48 is wound on the roller and the jaws are in the position shown 35 in Fig. 4, they can be unclamped to release the web and the roller removed. Another roller or reel can then be substituted and the web wound thereon. The action of the apparatus is continuous from the time the 40 web is exposed to the rays of light until it reaches the rewinding device.

I claim:—

1. A photograph printing apparatus comprising a drum having an opening, a light 45 mounted within the drum for exposure through said opening, a tubular transparent roller having a film thereon and arranged about the drum, a conveyer to press a web against the film, and means for driving the conveyer. 50

2. A photograph printing apparatus comprising a drum having an opening, a light mounted within the drum for exposure through said opening, a tubular transparent 55 roller having a film thereon and arranged about the drum, a conveyer to press a web against the film and revolve the roller, and means for driving the conveyer.

3. A photograph printing apparatus comprising a drum having an opening, a light 60 mounted within the drum for exposure through said opening, a tubular transparent roller having a film thereon and arranged about the drum, a conveyer partly surrounding the roller to press a web against 65

the film and revolve the roller, and means for driving the conveyer.

4. A photograph printing apparatus comprising a drum having an opening, a light mounted within the drum for exposure 70 through said opening, a tubular transparent roller having a film thereon and concentrically arranged on the drum, anti-friction means between the drum and the roller, a conveyer to press a web against the film, 75 and means for driving the conveyer.

5. A photograph printing apparatus comprising a drum having an opening, a light mounted within the drum for exposure through said opening, a tubular transparent 80 roller having a film thereon and concentrically arranged on the drum, anti-friction means between the drum and the roller, means for preventing longitudinal shifting of the roller, a conveyer to press a web of 85 sensitized paper against the film, and means for driving the conveyer.

6. A photograph printing apparatus comprising a stationary drum having an opening, a light mounted within the drum for 90 exposure through said opening, a tubular transparent roller having a film of negatives thereon and arranged about the drum, a conveyer partly surrounding the roller to press a web of sensitized paper against the 95 film, a series of rollers for guiding the conveyer, and means for driving one of the rollers to operate the conveyer.

7. A photograph printing apparatus comprising a stationary drum having an opening, a light mounted within the drum for exposure through said opening, a shutter made to regulate the size of the opening, a tubular transparent roller having a film of negatives 105 thereon and arranged about the drum, a conveyer partly surrounding the roller to press a web of sensitized paper against the film, a series of rollers for guiding the conveyer, and means for driving one of the rollers to 110 operate the conveyer.

8. A photograph printing apparatus comprising a stationary drum having an opening, a light mounted within the drum for exposure through said opening, a shutter made to regulate the size of the opening, 115 means for actuating the shutter, a tubular transparent roller having a film of negatives thereon and arranged about the drum, a conveyer partly surrounding the roller to press a web of sensitized paper against the 120 film, a series of rollers for guiding the conveyer, and means for driving one of the rollers to operate the conveyer.

In testimony whereof I have hereunto set my hand in the presence of two subscribing 125 witnesses.

HUGO WEISS.

Witnesses:

KATHARINE S. KEANE,
WILLIAM MILLER.