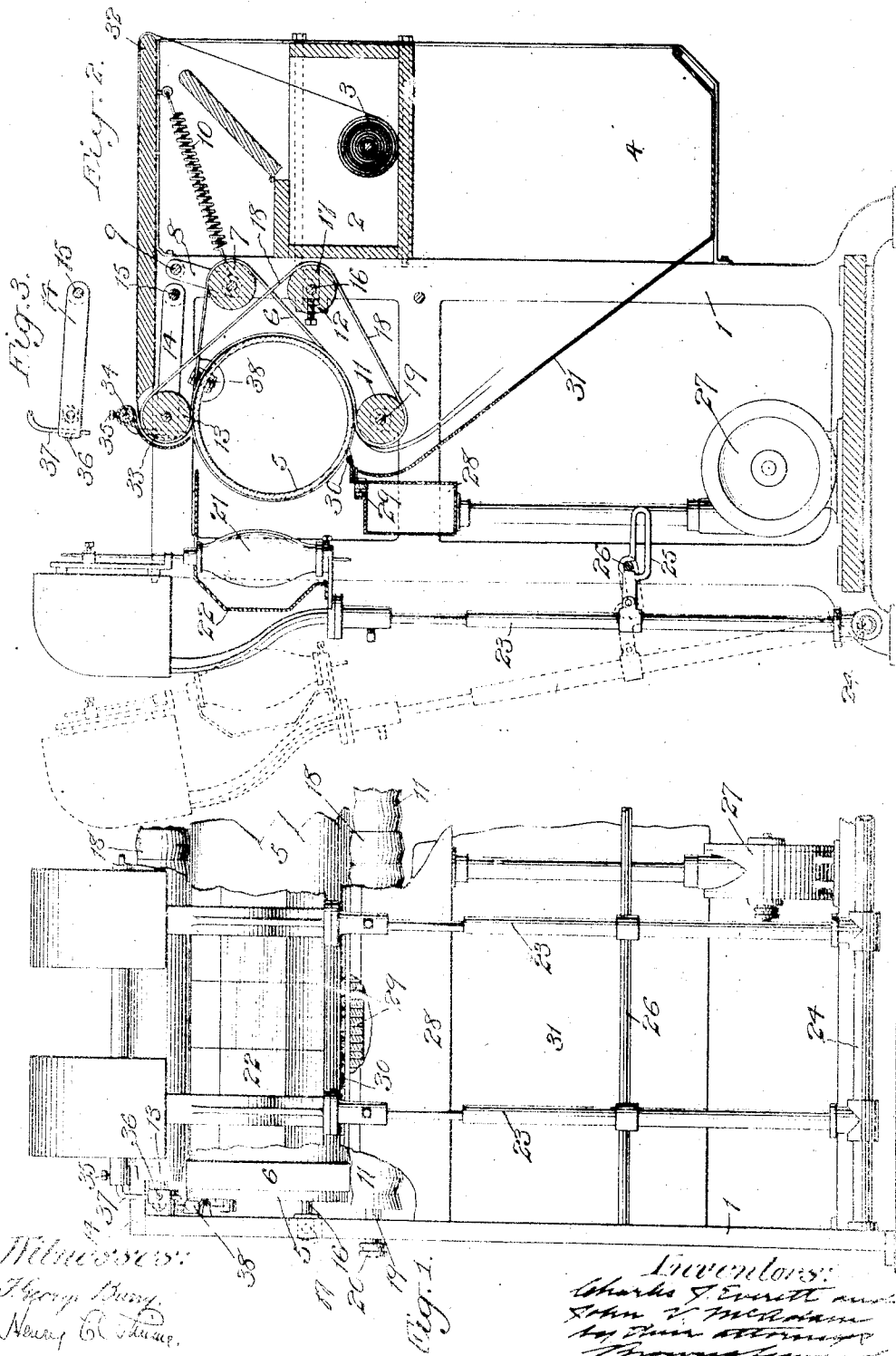


C. J. EVERETT & J. V. McADAM.
 PHOTOGRAPHIC PRINTING MACHINE.
 APPLICATION FILED JUNE 14, 1910.

1,034,772.

Patented Aug. 6, 1912.



Witnesses:
 George D. King,
 Henry C. Thomas.

Inventors:
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 by their attorneys
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UNITED STATES PATENT OFFICE.

CHARLES J. EVERETT AND JOHN V. McADAM, OF NEW YORK, N. Y., ASSIGNORS TO
REVOLUTE MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW
YORK.

PHOTOGRAPHIC-PRINTING MACHINE.

1,034,772.

Specification of Letters Patent.

Patented Aug. 6, 1912.

Application filed June 14, 1910. Serial No. 566,827.

To all whom it may concern:

Be it known that we, CHARLES J. EVERETT and JOHN V. McADAM, citizens of the United States, and residents of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Photographic-Printing Machines, of which the following is a specification.

10 Our invention relates to certain improvements in that class of photographic printing machines in which means are provided for continuous printing of long sheets or strips of drawings, such, for instance, as
15 drawings made on tracing cloth.

One object of our invention is to provide a continuous photographic printing machine with the lamps exterior to the cylinder, the arrangement of the parts of which shall
20 make it possible to make prints of any length whatever without the use of intervening partially transparent belts heretofore used, which belts absorb a large proportion of the actinic light and cause streaks in
25 the prints, due to joints in the belts.

A further object of our invention is to provide a mechanism in which the photographic paper and interposed drawings are passed onto and off of a revolving transparent cylinder, avoiding the sliding contact, which injures the surface of the drawing, where the printing is done, as in some machines, over a stationary transparent curved surface.

35 A further object of our invention is to provide a type of continuous photographic printing machine with which the most powerful lamps may be used to effect the most rapid and efficient printing and allow considerable space for ventilating apparatus for
40 carrying off the heat from the lamps.

In the accompanying drawings, Figure 1 represents in front elevation a portion of a photographic printing machine with our improvements applied thereto. Fig. 2 represents the same in vertical section, taken
45 from front to rear, and Fig. 3 is a detail section taken adjacent to one side of the machine and showing one of the rocking
50 arms which carry the top roll and its curved sheet guide.

The photographic printing machine frame is denoted by 1. It may be provided with the usual compartment 2 for the photographic sheet supply roll 3 and a box 4 for

receiving the photographic sheet and the sheet of drawings after the photographic sheet has been printed. The transparent cylinder is denoted by 5. Belts 6 pass around the ends of the cylinder 5, and
60 around a tension roll 7 mounted in rocking arms 8, one only of which is shown, pivoted on a cross bar 9. Coil springs 10, one only of which is shown herein, tend to pull the tension roll 7 away from the cylinder 5 and
65 thus keep the required tension upon the belts 6, one only of which belts is shown in the accompanying drawings. A cross roll 11 is mounted in close proximity to the bottom of the cylinder 5. Another cross roll 12 is
70 mounted a short distance from the cylinder 5 at the rear thereof. A third cross roll 13 is mounted in the free ends of rocking arms 14, one only of which is shown, pivoted to a cross bar 15, which roll 13 is arranged to rest
75 upon the top of the transparent cylinder 5.

The means for passing the photographic sheet and a sheet of drawings interposed between it and the exterior of the transparent cylinder 5 at the back thereof, comprises one
80 or more belts 18. In the present instance, a plurality of narrow belts 18 are shown which pass around the three rolls 11, 12 and 13, and partially around the cylinder 5. It will thus be seen that the cylinder 5 is held in
85 position by the belts 18 and the belts 6, the belts 18 tending to force the cylinder 5 outwardly and the belts 6 tending to draw the cylinder inwardly. The shaft 16 of the roll 12 is adjustable along a slot 17 in each side
90 of the frame 1 so that the roll 12 may be adjusted toward and away from the cylinder 5 for adjusting the tension of the belt or belts 18.

Any suitable mechanism may be provided
95 for driving the belts 18 and thereby rotating the cylinder 5 at the proper speed. In the present instance, the shaft 19 of the roll 11 is shown as being provided with a driving pulley 20, by which rotary movement may
100 be imparted to the roll 11 from any suitable source of power, not shown.

A row of lamps 21 is arranged exterior to and adjacent the front of the transparent cylinder 5 so that the light therefrom will
105 pass through both the front and back walls of the cylinder 5 before reaching the sheet of drawing which is interposed between the exterior surface of the back of the cylinder 5 and the photographic sheet. These lamps
110

21 may be provided with one or more suitable reflectors 22 for concentrating and giving proper direction to the light rays. These lamps 21 are mounted upon a suitable swinging frame 23 pivoted on a cross bar 24 at the base of the machine frame. The lamps 21 may be held at the limit of their inward movement and at the limit of their outward movement by a looped catch 25 arranged to engage a cross bar 26 on the machine frame.

To prevent the cylinder 5 from becoming too hot, owing to the heat of the lamps 21, we provide a suitable blower 27, the outlet box 28 of which is provided with a transverse series of holes 29 arranged to direct the jets of air upwardly between the lamps 21 and the front of the cylinder 5. This box 28 also serves as a support for a stripper 30 arranged to engage the bottom of the cylinder 5 just in front of the roll 11 for stripping the sheet of drawings and the photographic sheet from the cylinder. The front inclined wall 31 of the box 4 extends upwardly into close proximity to the stripper 30.

The machine is provided with a feed table 32 over which the photographic sheet passes after it leaves its box 2. On this table 32, the sheet of drawings may be placed on top of the photographic sheet. A curved guide 33 is located in close proximity to the front of the roll 13, which guide is adjustably supported in a rotary direction upon a cross bar 34 by means of set screws 35 and is adjustable vertically by means of set screws 36 which engage the depending ends 37 of the cross bar 34, the set screws 36 and depending ends 37 being engaged with the free ends of the rocking arms 14. This curved guide 33 serves to direct the photographic sheet and the sheet of drawings around the roll 13 into position to be grasped between the roll 13 and the top of the transparent cylinder 5. The adjustability of the guide permits it to be properly placed with respect to the feed roll and cylinder to cause the sheet to be fed accurately and evenly between the feed roll and cylinder. The transparent cylinder 5 is prevented from creeping endwise by providing guide rollers 38, one only of which is shown, engaging the ends of the cylinder.

It will be seen, from the above description, that the lamps are located exterior to the cylinder and that the light passes through both walls of the cylinder for purposes of printing. It will also be seen that the lamps may be readily swung out of their operative position for purposes of cleaning and replacement. It will also be seen that the lamps may be made of very high power without danger of overheating and thus breaking the cylinder 5, the blower serving to keep a proper circulation of cooling air between the lamps and the transparent cylinder. By mounting the roll 13 upon the

swinging arms 14, it will be seen that the roll will rest at all times upon the top of the cylinder 5 even if the cylinder is uneven.

In using the term "sheet of drawings", it is to be understood that we intend to cover by such expression, any sheet bearing characters capable of being printed upon a photographic sheet by the action of light.

What we claim is:—

1. In a machine of the character described, a rotary transparent cylinder, means for bringing a photographic sheet and an interposed sheet of drawings into and out of contact with a portion of the periphery of the cylinder, and one or more lamps located exterior to the cylinder and upon the side thereof opposite to said means.

2. In a machine of the character described, a rotary transparent cylinder, means for bringing a photographic sheet and an interposed sheet of drawings into and out of contact with a portion of the periphery of the cylinder, one or more lamps located exterior to the cylinder and upon the side thereof opposite to said means, and a movable support for said lamp or lamps.

3. In a machine of the character described, a rotary transparent cylinder, means for bringing a photographic sheet and an interposed sheet of drawings into and out of contact with a portion of the periphery of the cylinder, one or more lamps located exterior to the cylinder and upon the side thereof opposite to said means, and one or more reflectors for said lamp or lamps.

4. In a machine of the character described, a rotary transparent cylinder, means for bringing a photographic sheet and an interposed sheet of drawings into and out of contact with a portion of the periphery of the cylinder, one or more lamps located exterior to the cylinder and upon the side thereof opposite to said means, a reflector for said lamp or lamps, and a movable support for said reflector for said lamp or lamps.

5. In a machine of the character described, a rotary transparent cylinder, means for bringing a photographic sheet and an interposed sheet of drawings into and out of contact with a portion of the periphery of the cylinder, one or more lamps located exterior to the cylinder and upon the side thereof opposite to said means, and means for producing a circulation of air to carry off a part of the heat produced by said lamp or lamps.

6. In a machine of the character described, a rotary transparent cylinder, means for bringing a photographic sheet and an interposed sheet of drawings into and out of contact with a portion of the periphery of the cylinder, one or more lamps located exterior to the cylinder and upon the side thereof opposite to said means, and means for passing a current of

air between the cylinder and said lamp or lamps.

7. In a machine of the character described, a rotary cylinder, a plurality of rolls, one or more belts leading around the said rolls for passing a photographic sheet and a sheet of drawings into and out of contact with a portion of the periphery of the cylinder, and means, independent of the said belt or belts, for holding the cylinder in place against said belt or belts.

8. In a machine of the character described, a rotary cylinder, a plurality of rolls, one or more belts leading around the said rolls and contacting said cylinder for passing a photographic sheet and a sheet of drawings into and out of contact with a portion of the periphery of the cylinder, a roll, and independent belts passing around the ends of the cylinder and said last roll for holding the cylinder in place against the first-named belt or belts.

9. In a machine of the character described, a rotary cylinder, a plurality of rolls, one or more belts leading around said rolls and contacting said cylinder for passing a photographic sheet and a sheet of drawings into and out of contact with a portion of the periphery of the cylinder, one of said rolls also contacting said cylinder, and a support for said last-named roll movable toward and away from said cylinder to permit the roll to adjust itself to any unevenness in the cylinder.

10. In a machine of the character described, a rotary cylinder, a feed table, a plurality of rolls, one or more belts leading around said rolls and contacting said cylinder for passing a photographic sheet and a sheet of drawings into and out of contact with a portion of the periphery of the cylinder, a curved guide for one of said rolls arranged to guide the photographic sheet and sheet of drawings from said feed

table to said rotary cylinder, and means for adjusting said curved guide to permit it to be properly placed with respect to the feed roll and cylinder to cause the sheet to be fed accurately and evenly between the feed roll and cylinder.

11. In a machine of the character described, a rotary cylinder, a feed table, a plurality of rolls, one or more belts leading around the rolls and contacting said cylinder for passing a photographic sheet and a sheet of drawings into and out of contact with a portion of the periphery of the cylinder, a support, movable with respect to the cylinder, for one of the said rolls and a curved guide mounted on said movable support for guiding the photographic sheet and the sheet of drawings around said last-named roll from said feed table to the cylinder.

12. In a machine of the character described, a rotary cylinder, a feed table, a plurality of rolls, one or more belts leading around the rolls and contacting said cylinder for passing a photographic sheet of drawings into and out of contact with a portion of the periphery of the cylinder, a support, movable with respect to the cylinder, for one of the said rolls and a curved guide adjustably mounted on said movable support for accurately and evenly guiding the photographic sheet and sheet of drawings around said last-named roll from said feed table to the cylinder.

In testimony, that we claim the foregoing as our invention, we have signed our names in presence of two witnesses, this 26th day of April 1910.

CHARLES J. EVERETT.
JOHN V. McADAM.

Witnesses:

F. GEORGE BARRY,
HENRY C. THIEME.