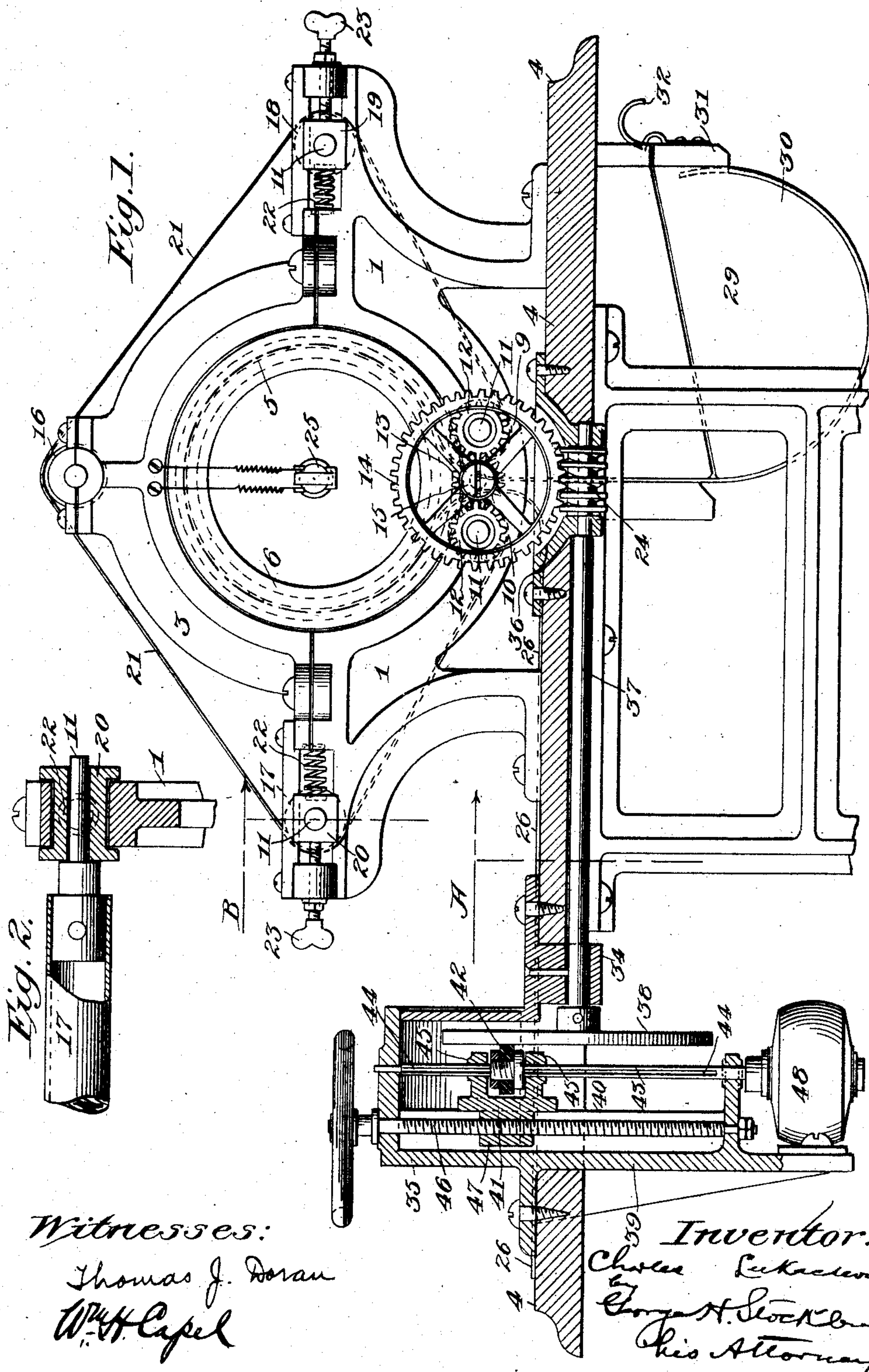


No. 883,322.

PATENTED MAR. 31, 1908.

C. LUKACSEVICS.
BLUE PRINTING MACHINE.
APPLICATION FILED MAR. 30, 1905.

3 SHEETS—SHEET 1.



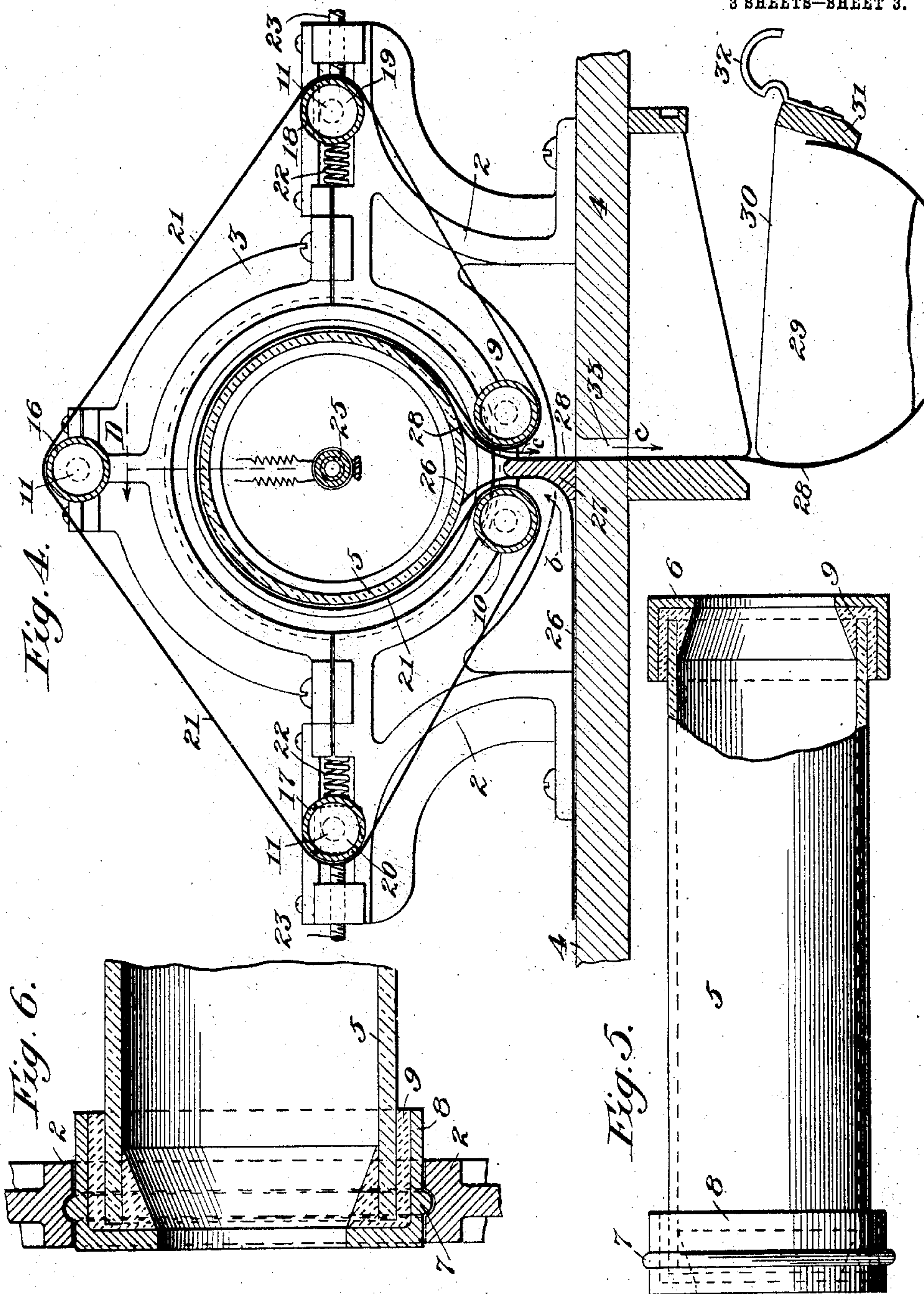
Witnesses:

Thomas J. Doran
W. H. Capel

Inventor:
Charles Lukacsevics
By George H. Stockbridge
his Attorney

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3 SHEETS—SHEET 3.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

CHARLES LUKACSEVICS, OF NEW YORK, N. Y.

BLUE-PRINTING MACHINE.

No. 883,322.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed March 30, 1905. Serial No. 252,869.

To all whom it may concern:

Be it known that I, CHARLES LUKACSEVICS, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Blue-Printing Machines, of which the following is a specification.

My invention relates to improvements in blue printing machines or apparatus, and has more particularly for its object to provide a machine for the continuous printing of long sheets of drawing,—such, for instance, as drawings made on long strips of tracing cloth.

A further object of the invention is to provide a cheap apparatus, occupying small space, the structure being so arranged that the work is carried on rapidly, continuously, and easily, and that the photographic and interposed sheets of drawing are held in exact alinement throughout the entire operation, the sheets of drawing being maintained in exact contact with the surface of a glass cylinder, in the center of which a source of light emanating from a tubular container is located. By this arrangement the glass cylinder or the cylinder of other transparent material may be made to travel around the source of light, thereby exposing the drawing sheets to uniform radiation and affecting the photographic sheets by uniform impressions. To this end I make use of an endless belt stretched and moved by the aid of suitable rollers.

Incidentally, the construction herein described provides a blue printing apparatus having unique and effective means for concentrating the light in the center of the glass or other transparent cylinder.

My invention is illustrated in the accompanying drawings, in which

Figure 1 represents the blue printing apparatus by means of a sectional end elevation; Fig. 2 is a section at the line B in Fig. 1; Fig. 3 is a sectional front elevation taken on the line A in Fig. 1; Fig. 4 is a vertical section along the line C—C in Fig. 3, showing the location of the surrounding belt and the leading sheets; Fig. 5 is an elevation of the glass cylinder when mounted with muffs; and Fig. 6 is a vertical section along the line D in Fig. 4, showing the connections of the cylinder on the left hand side.

The apparatus comprises, among other things, a right-side frame, 1, and a left side frame, 2, both having suitable covers, 3, and

supported on a board, 4. Side frames 1 and 2 have in the middle a bore of large diameter serving as bearings for the glass cylinder, 5. The said glass cylinder is supplied with a plain metal muff, 6, on the right hand side and with a muff, 8, on the left hand side, the same being provided with a guide rib, 7. The muffs 6 and 8 are fastened to the glass cylinder by plaster of paris, shown at 9.

The guide rib 7 coöperates with a suitable groove in the frame 2 and the cover 3, and the parts mentioned serve to keep the cylinder in a steady position either when stationary or when moving in the frames. This guide rib also enables the cylinder to revolve, in case the rings are not fastened to the glass cylinder precisely concentrically. At the lower portions of the side frames 1 and 2, tube rollers, 9 and 10, occupying a horizontal position, are employed.

A roller, 16, is located at the upper part of the frame, while rollers, 17 and 18, also in a horizontal position, are located in the side frames. The rollers 17 and 18, which are tube rollers, are mounted in slide bearings, 20 and 19, respectively, and serve to stretch a belt, 21, when in place, by the aid of springs, 22. Behind the slide bearings 19 and 20, set screws, 23, are employed, serving to regulate the play of the slide bearings. These rollers are surrounded by an endless rubber belt, 21, as shown in Fig. 4, the belt being stretched by means of the springs 22, in such a manner that the inner surface of the belt 21 almost entirely covers the outer surface of the glass cylinder, and is pressed against it so that when the lower rollers 9 and 10 are turned, the roller belt will be compelled to move around the other rollers simultaneously. This movement of the belt also compels the glass cylinder to move.

The rollers 9 and 10 are supplied with pins, 11, mounted in the frames, and the right hand pins extend through the right side frame 1 and are supplied with gears, 12. Between the gears 12, which are two in number, a spur gear, 13, is placed and joined to a worm gear, 14, in such a manner that they are supported by a bolt, 15. If, now, the gear wheel 14 is forced to move by means of the worm 24, the spur gear 13 will transmit the movement to the adjoining gears, 12, whereby the driving rollers 9 and 10 will be moved. Both driving rollers will have a motion to the left. This motion will cause the endless belt 21 to travel around the

other rollers and the cylinder in such a manner that in passing the driving roller 10 the belt continues to move along the glass cylinder, and being stretched, it presses itself on the surface of said cylinder and thereby compels the latter to move with it, carrying with it the drawings and exposing them to the electric tube light 25 placed in the center of the cylinder, whereby an exact and undisturbed relation is maintained between the exposed drawings, the belt, and the cylinder. To create a strong contact between the belt and the cylinder, it is advisable that the periphery of the cylinder be ground perfectly true.

To enable the drawings to be inserted between the endless belt 21 and the glass cylinder 5, a smooth celluloid sheet, 26, is so arranged as to cover the board 4, as shown in Fig. 4, the end extending up closely to the surface of the glass cylinder while being glued to a dividing support, 27. This forms a slippery guide by means of which the drawings can be carried in the direction of the arrow, *b*.

At the perpendicular side of the support, 27, another celluloid sheet, 28, is situated, extending up to the periphery of the cylinder in the same manner as the other sheet 26, the sheet 28 being, however, continued downward so as to form a receiving box, 29, limited on both sides by boards, 30. This receiving box is supplied with a brace, 31, having hooks, 32, to open or close the box. The celluloid sheet 28 serves to separate the exposed drawing sheets from the glass cylinder, and compels the same to follow the course indicated by the arrows, *c*, and enter through the slot, 33, into the receiving box 29, thus preventing a further exposure of the already printed paper which might have an injurious effect.

Inasmuch as different periods of exposure are needed by different sensitive papers, the apparatus is supplied with a speed regulating device whereby the speed given to the cylinder may be regulated or adjusted. Below the board 4 is a groove into which is sunk a shaft, 37, as shown, one end of which is supplied with a friction disk or roller, 38, the other being joined to the worm 24. This arrangement serves to transmit the power and reduce the speed of the driving rollers. The friction disk or roller 38 is covered by a box, 35, having an extension, 39, formed in

such a way that its inside is supplied with a support, 40, into which fits and in which moves a slide bearing, 41, supporting a small friction wheel 42. In the same box, 35, is located a vertical shaft 43, supplied with a key-way, 44, leading through the arms, 45, of the slide-bearing, 41, in which key-way the key of the friction wheel 42 is fitted, thus connecting both together and allowing at the same time the shifting of the slide-bearing up and down with the aid of a screw, 46, which leads through the screw box 47 of the slide-bearing 41. The vertical shaft 43 is connected with an electric motor, 48.

In the above description I have shown the construction of the driving and speed reducing apparatus, and it is to be understood that by turning the hand-wheel attached to the screw 46 the slide-bearing 41 can be shifted up or down at will. It is evident that the rolls on which the apron is supported form, in combination with the apron, a hollow geometric figure in the center of which the cylinder 5 is located.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent:—

1. In a photographic printing machine, traveling means for holding a sensitized sheet and a sheet from which a print is to be taken, said means comprising an endless apron supported by rolls, two of said rolls being in juxtaposition and positively driven, other of said rolls being so located as to form a hollow geometric figure, and a transparent cylinder located at the center of such figure, and over which said apron travels.

2. In a photographic printing machine comprising a traveling apron and a transparent cylinder over which such apron is adapted to move, means for driving said apron comprising a pair of juxtaposed, positively driven rolls, the arrangement being such that the apron passes from one of said rolls, over the surface of said cylinder, and then around the other of said rolls.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of February, 1905.

CHARLES LUKACSEVICS.

Witnesses:

JEROME H. BUCK,
WALTER FERNBACH.