No. 730,553. PATENTED JUNE 9, 1903.

J. V. McADAM.

APPARATUS FOR MAKING BLUE PRINTS.

APPLICATION FILED APR. 9, 1903.

NO MODEL.

FIG. I.

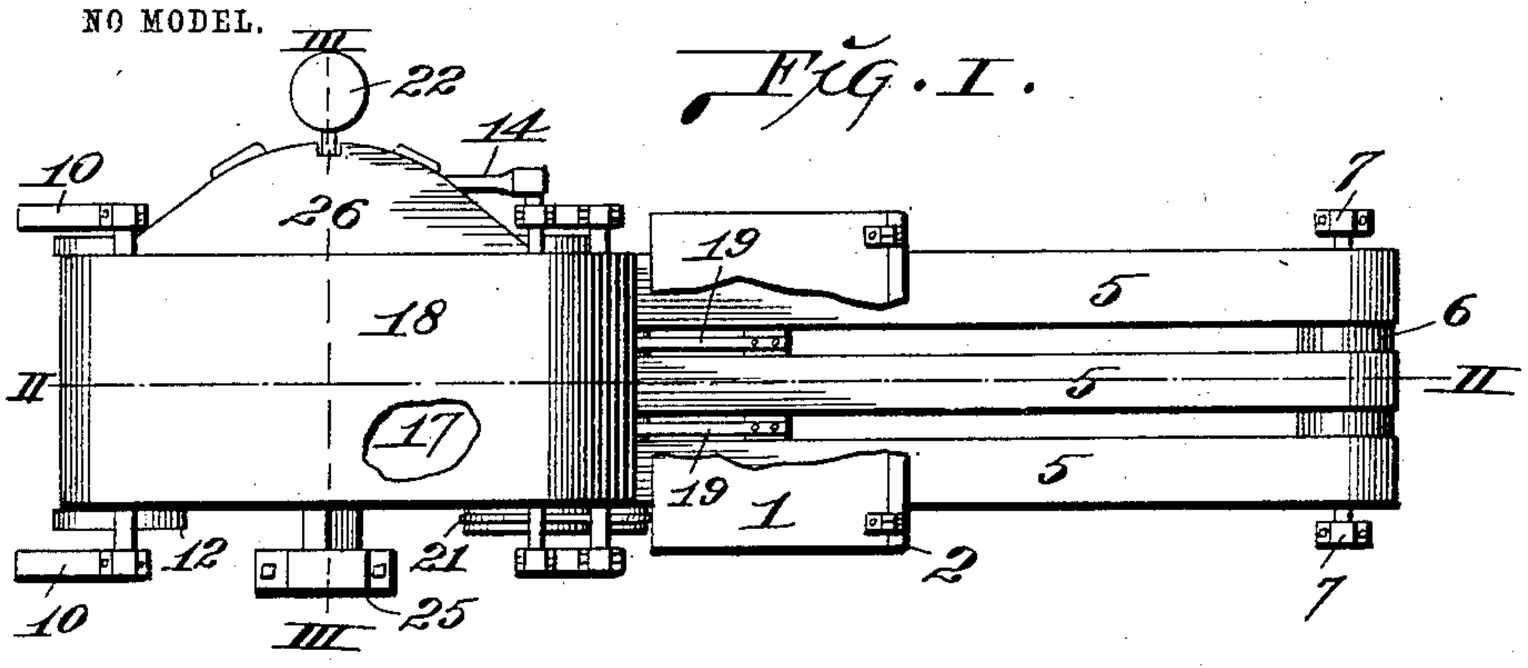


FIG. II.

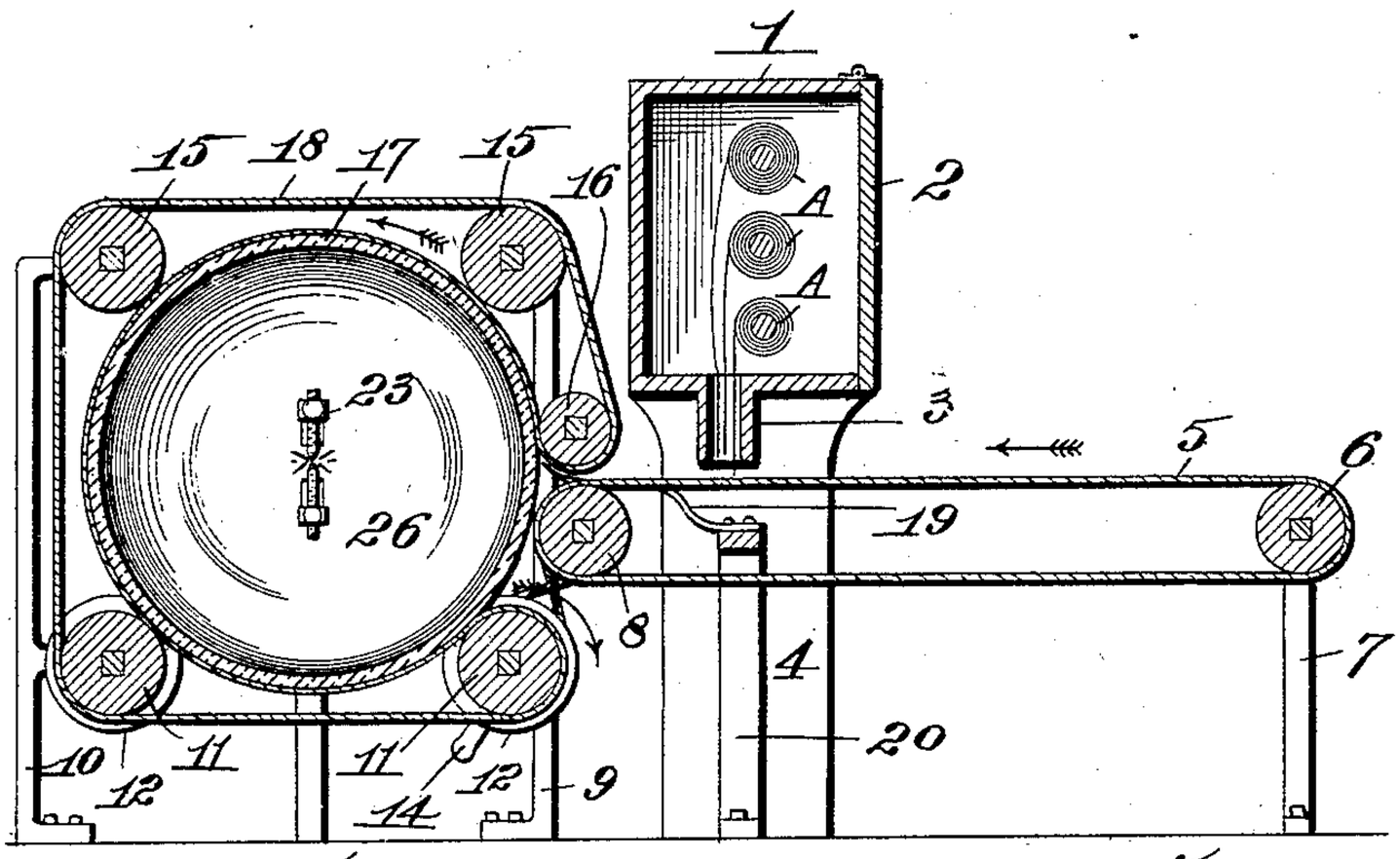


FIG. III.

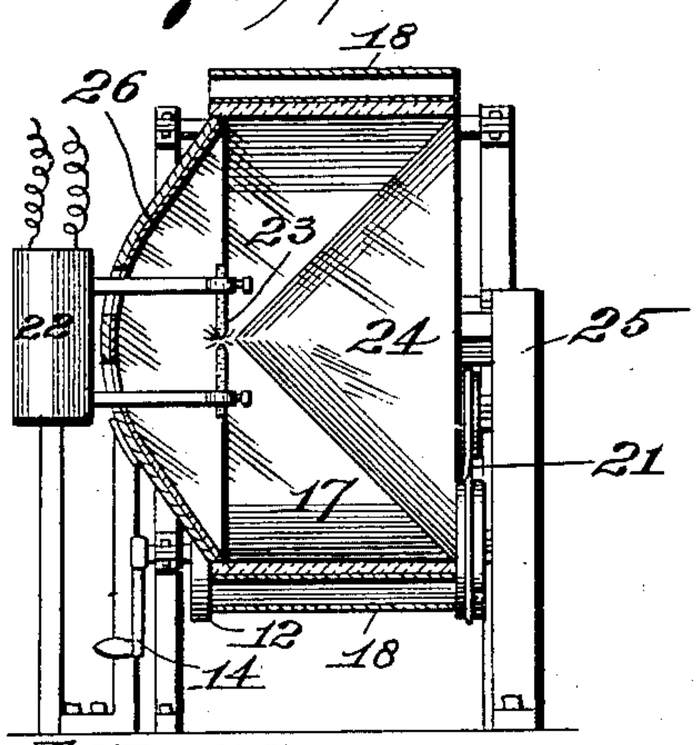
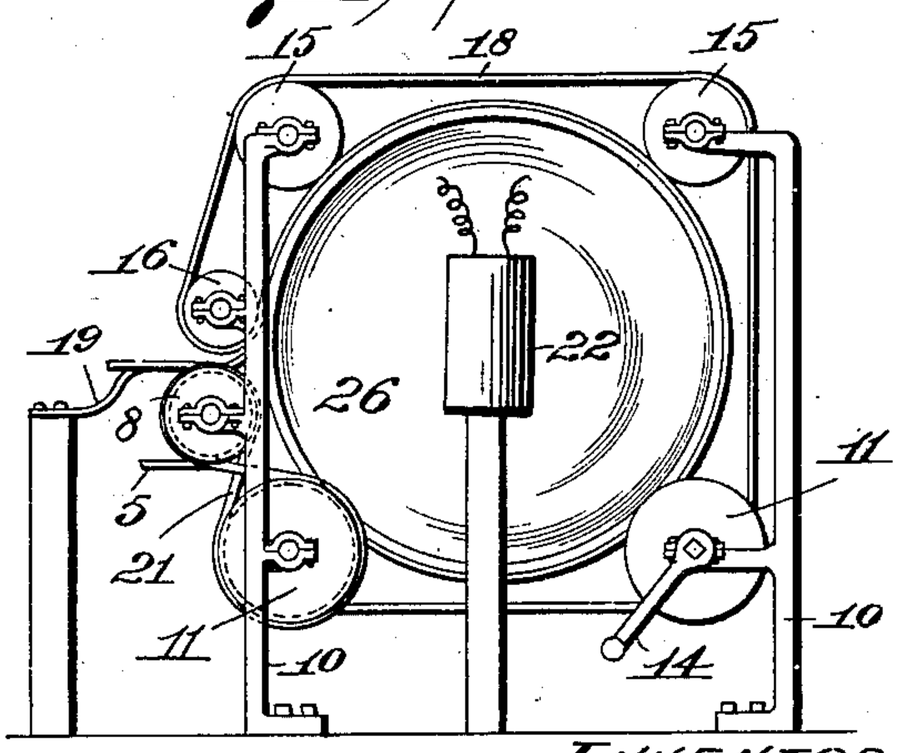


FIG. IV.



ATTEST:—
W. P. Smith.
E. S. Knight

INVENTOR:—
J. V. McAdam.
By Knight Bros atty.

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UNITED STATES PATENT OFFICE.

JOHN V. McADAM, OF ST. LOUIS, MISSOURI.

APPARATUS FOR MAKING BLUE-PRINTS.

SPECIFICATION forming part of Letters Patent No. 730,553, dated June 9, 1903.

Application filed April 9, 1903. Serial No. 151,835. (No model.)

To all whom it may concern:

Be it known that I, JOHN V. McADAM, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Apparatus for Making Blue-Prints, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an apparatus for making blue-prints by the use of artificial light, and, briefly stated, it comprises a horizontally-mounted rotatable transparent drum, means for conducting drawings and sensitized paper to and around said drum, a lamp positioned within said drum, and primary and secondary reflectors by which the rays of light from said lamp are projected through said drum to act upon the chemical elements of the sensitized blue-print paper.

The invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view of my apparatus. Fig. II is a vertical horizontal section taken on line II II, Fig. I. Fig. III is a vertical transverse section taken on line III III, Fig. I. Fig. IV is a side elevation of the printing portion of the apparatus looking at the side thereof at which the lamp is located.

1 designates a roll-containing box provided with a door 2 and in which rolls A, of blue-print paper of varying widths, are mounted. The paper on the rolls A is withdrawn from the box 1 through a passage-way 3, located at the bottom of the box. The box 1 is supported by uprights 4.

5 designates endless carriers that are travelingly mounted upon an outer roller 6, supported in posts 7, and an inner roller 8, that is mounted and rotated in a manner to be hereinafter explained.

9 and 10 designate standards, the former of which is located at the inner end of travel of the carriers 5 and which serves as a support for the carrier-roller 8.

11 designates a pair of lower rollers journaled to the standards 10 and provided with flanges 12. (See Fig. II.) The shaft of one of the rollers 11 bears a crank 14, by which said roller may be rotated. 15 designates upper rollers journaled to the standards 9 and 10. 16 is an idler-roller journaled to the standard 9 above the carrier-roller 8.

17 designates a transparent drum, preferably of glass, that is horizontally positioned between the rollers 11 and 15.

18 is an endless apron that traverses the rollers 11, 15, and 16 and leads around the transparent drum 17 in the direction indicated by the arrow, Fig. II, passing beneath the rollers 16 and 15, above the rollers 11, thence downwardly beneath the forward one of said rollers, and rearwardly to the rear roller 11, from which it passes upwardly and over the upper rollers 15 and returns to the idler-roller 16. During such movement of the endless apron almost a complete circuit of the transparent drum 17 is made when the apron is travelingly operated by the rotation of one of the lower rollers 11 through the medium of the crank 14. During the travel of the apron 18 the transparent drum is rotated within the inner portion of the circuit of said apron through the medium of the apron.

19 designates guide-fingers mounted upon a support 20 and having their free ends projecting rearwardly between the endless carriers 5 and into a position above the carriers and beneath the apron 18, where it passes underneath the idler-roller 16 onto the drum 17. (See Fig. II.)

21 is a crossed driving-belt leading from the forward roller 11 to the roller 8 and by which rotation is imparted to said roller 8 upon the rotation of the roller 11 to effect the travel of the carriers 5. The drawings of which blue-print copies are to be made are during the operation of the apparatus, while the carriers 5 and endless apron 18 are in motion, placed upon said carriers and are conducted rearwardly beneath the roll-containing box 1. As the sheets of drawing pass beneath said box sensitized paper from one of the rolls A is withdrawn from the box onto the drawing, and the sheets of drawing and sensitized paper are conducted to the guide-fingers 19, which present them in an upwardly-projected position between the transparent drum 17 and the endless apron 18 traveling thereagainst. The drawings and sensitized paper are thus delivered to the perimeter of the drum and are conducted thereabout in the

rotation of the drum and travel of the apron, finally being discharged over the forward roller 11 beneath the drum.

22 designates a lamp, preferably of electric-arc type, the burner 23 of which is preferably positioned within the transparent drum 17.

24 is a conical reflector supported by a post 25 at one side of the drum 17 and projecting into the interior of said drum and having its apex presented to the burner of the lamp 22, as seen in Fig. III.

26 is a parabolical reflector positioned back of the lamp-burner 23 and opposing the conical reflector 24.

In the practical use of my apparatus the drawings and sensitized paper are conducted around the transparent drum 17 in the manner hereinbefore fully set forth, and during the travel of the drawings and paper the rays of light from the burner 23 are constantly projected through the transparent drum to "set" the chemical ingredients upon the sensitized paper where unprotected by the lines of drawing, as in the usual practice of making blue-prints. The parabolical reflector 26 receives the direct rays of light from the burner 23 and projects them in a uniform manner onto the conical reflector, and the rays are refracted from said conical reflector through the transparent drum. It will be seen that the lamp-burner 23 being in position approximately central of the diameter of the transparent drum and the apex of the conical reflector 24 being in a correlative position the strongest rays of light are projected onto the apex of the conical reflector, and therefore their strength for refraction is much greater than that of the rays of light which are projected onto the base of the conical reflector. This is important in that the rays of light projected from the apex must be thrown a greater distance to reach the transparent drum from the location of the burner than those thrown from the base of the conical reflector after being reflected thereonto from the parabolical reflector 26.

I claim as my invention—

1. In an apparatus for making blue-prints, the combination of a transparent drum, a conical reflector extending into said drum, a parabolical reflector facing said conical reflector, and a lamp positioned between said reflectors, substantially as set forth.

2. In an apparatus for making blue-prints, the combination of a rotatable transparent drum, a conical reflector extending into said drum, a parabolical reflector facing said conical reflector, and a lamp positioned between said reflectors, substantially as set forth.

3. In an apparatus for making blue-prints, the combination of a rotatably-mounted transparent drum, an endless apron traversing said drum, means for imparting motion to said apron to rotate said drum, a conical reflector extending into said drum, a parabolical reflector facing said conical reflector, and a lamp interposed between said reflectors, substantially as set forth.

4. In an apparatus for making blue-prints, the combination of a rotatably-mounted transparent drum, an endless apron traversing said drum and through the medium of which said drum is rotated, a conical reflector extending into said drum, a parabolical reflector facing said conical reflector, a lamp positioned between said reflectors, and means for conducting drawings and sensitized paper to said drum, substantially as set forth.

5. In an apparatus for making blue-prints, the combination of a transparent drum, reflectors situated within said drum, a lamp positioned between said reflectors, an endless apron traversing said drum, an endless carrier leading to said drum and endless apron, and guide-fingers projecting from said endless carrier into proximity with said endless apron, substantially as set forth.

JOHN V. McADAM.

In presence of—
E. S. KNIGHT,
M. P. SMITH.