

A. R. MURRAY.
 BLUE PRINT MACHINE.
 APPLICATION FILED JAN. 27, 1908.

949,084.

Patented Feb. 15, 1910.

3 SHEETS—SHEET 1.

FIG. 1.

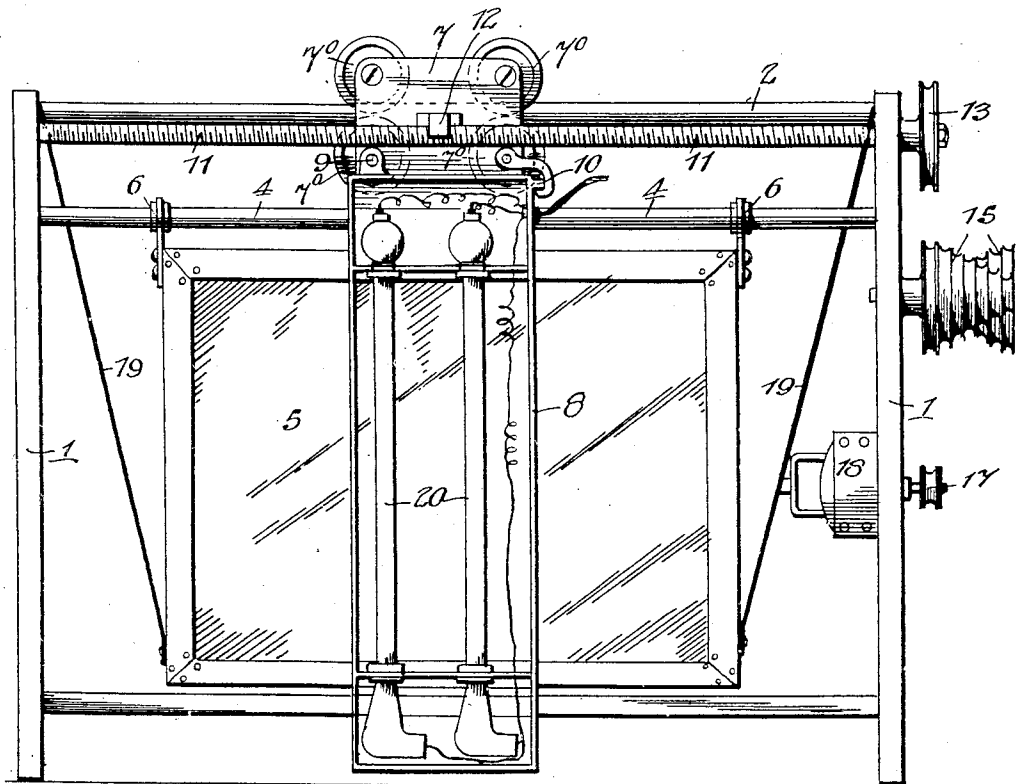
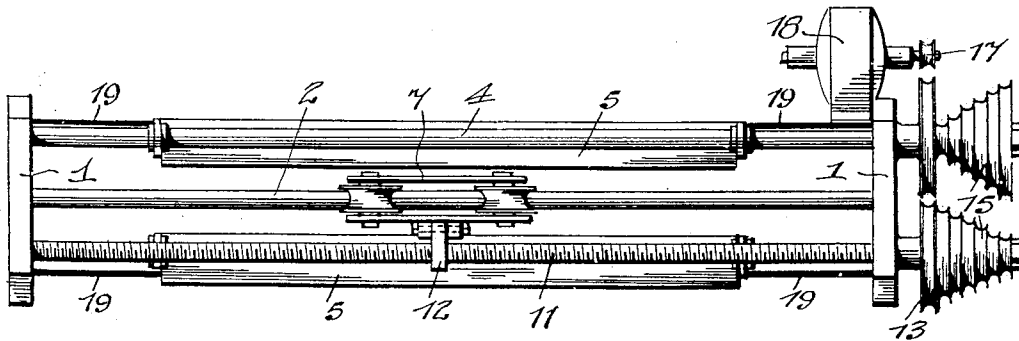


FIG. 2.

WITNESSES
 Chas. T. Davis,
 Myron G. Clear

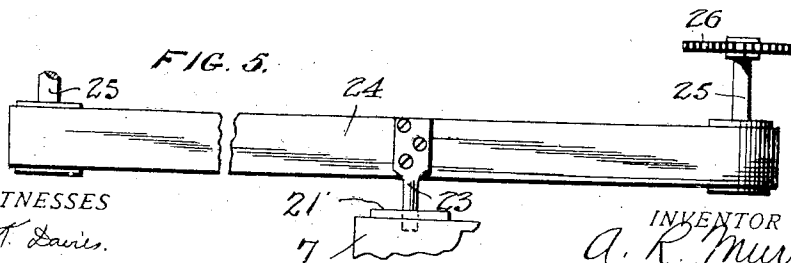
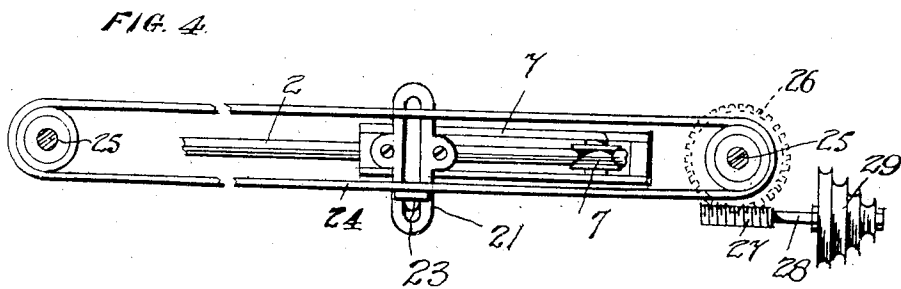
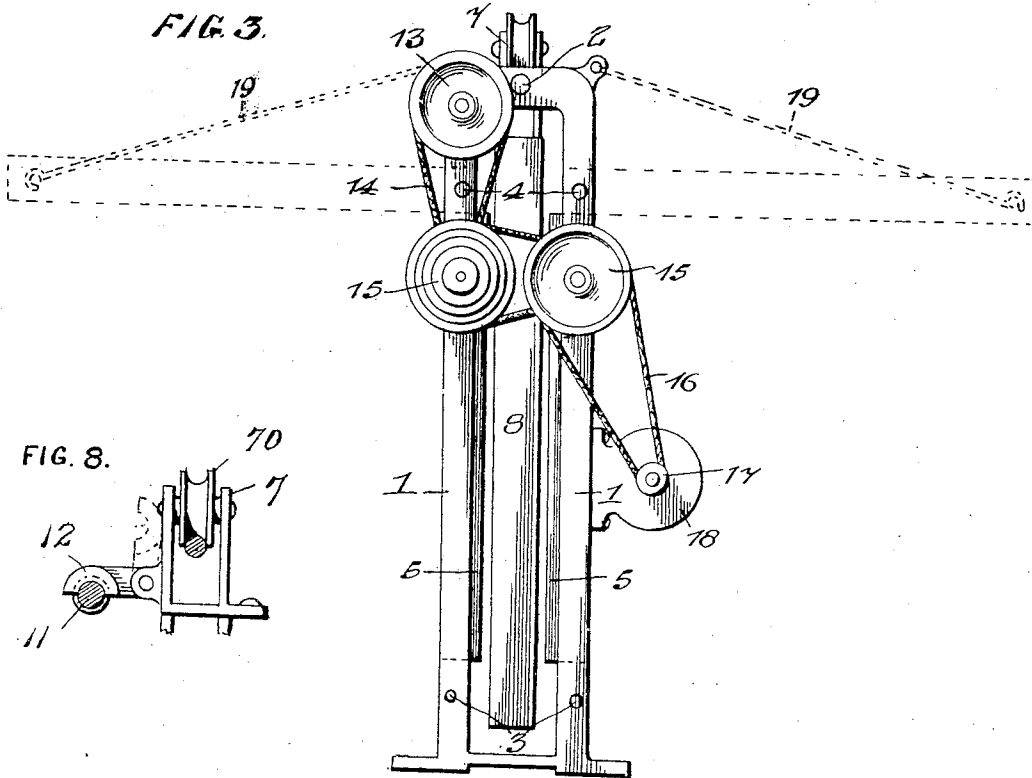
INVENTOR
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 by E. L. Parker
 Attorney

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3 SHEETS—SHEET 2.



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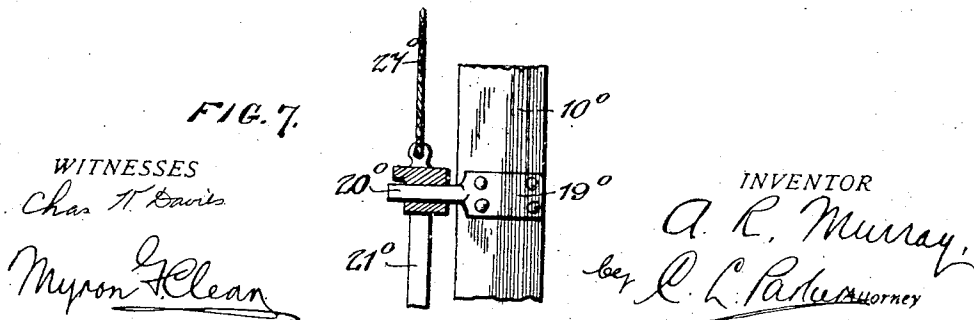
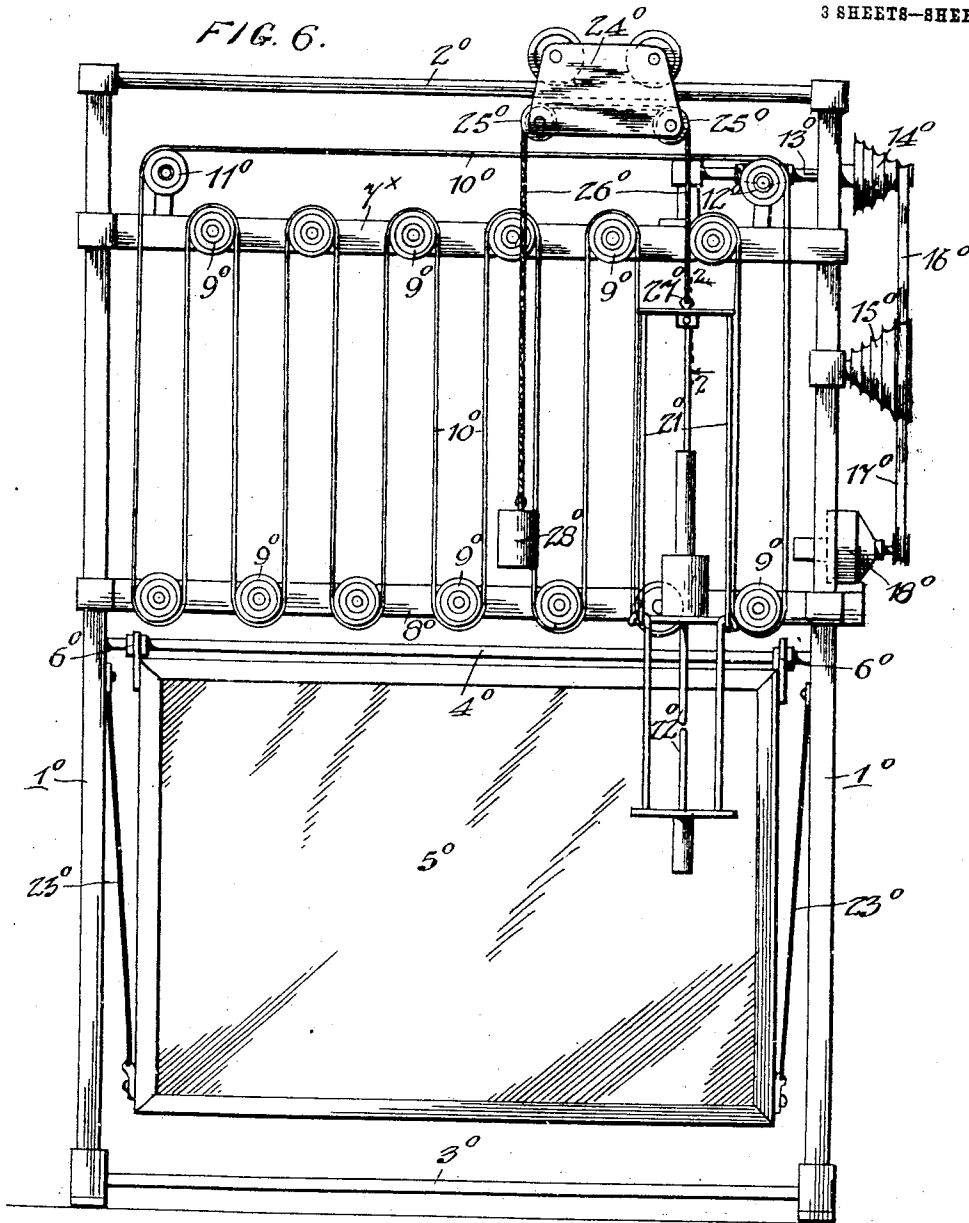
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 BLUE PRINT MACHINE.
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

ARISTIDES R. MURRAY, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO
CHARLES F. PEASE, OF CHICAGO, ILLINOIS.

BLUE-PRINT MACHINE.

949,084.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed January 27, 1908. Serial No. 412,861.

To all whom it may concern:

Be it known that I, ARISTIDES R. MURRAY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Blue-Print Machines, of which the following is a specification.

My invention relates to blue print machines and particularly contemplates the provision of a simple, compact and inexpensive structure comprising a relatively stationary blue print frame, and a suitable light of the necessary strength mounted to move across the face of the frame or frames, together with means for moving said light and means for regulating the speed of its travel, the object in view being to complete the print when the light has reached its limit of travel.

My invention further and specifically resides in the following features of construction, arrangement and operation as will be hereinafter described with reference to the accompanying drawings forming a part of this specification in which like numerals are used to designate like parts throughout the several figures, and in which,

Figure 1 is a top plan view of my improved apparatus, Fig. 2 is a front elevation thereof, Fig. 3 is an end elevation of the same, Fig. 4 is a plan view of a modified form of drive mechanism. Fig. 5 is a side elevation of the drive belt and the operating member carried thereby and used in the form illustrated in Fig. 4, Fig. 6 is a front elevation of a modified form of blue printing apparatus, Fig. 7 is a sectional view, broken away, and taken through the same on the line 2—2 of Fig. 6, and Fig. 8 is an end view of the carriage shown in Figs. 1, 2 and 3 and illustrating the engagement of its threaded member with the operating bar.

In the practical embodiment of my invention, and with particular reference to Figs. 1 to 3 inclusive, I provide a frame comprising spaced end members 1, connected at their upper and lower ends by transverse supporting rods 2 and 3 respectively, and provided with rods 4 therebetween intermediate the upper and lower transverse rods 2 and 3, said rods 4 serving to support the ordinary blue print frames 5 by means of hangers 6.

Mounted on the upper transverse rod 2 is

a carriage 7 adapted to travel thereon and having pairs of wheels 7^o disposed on opposite sides of said rod 2, and a lamp box 8 pivotally secured at 9 thereon and held in a vertical position by means of a catch 10, said lamp box being located between the opposing frames 5, as clearly shown in Fig. 3.

An operating screw bar 11 is journaled through the end members 1 of the frame and is engaged by a threaded half nut 12 pivotally mounted on the carriage 7 to move the same along its support upon the rotation of said bar 11. The operating screw bar 11 is provided with a pulley 13 fixedly secured at one end of said shaft outside the frame and arranged to be connected by means of a belt 14 to one of a pair of speed changing cone pulleys 15, rotatively mounted on short shafts extending from one of the end members 1 said cone pulleys being driven in turn by a belt 16 from a pulley 17 fixedly secured upon a shaft of a small motor or the like 18. It will thus be seen that the speed at which the carriage 7 is reciprocated, may be regulated by adjusting the connecting belt between the cone pulleys 15.

The blue print frames 5 are swingingly mounted upon their supporting rods as before stated, and said frames are provided with supplemental supporting rods 19 pivotally secured upon the frame 1, and provided with hooked ends for engaging said frames to hold the same in a horizontal position, as shown in dotted lines in Fig. 3. This is to enable the operator to substitute new material within the frames when it is desired.

The lamp box 8 is provided with mercury vapor 20 of the ordinary type to supply the necessary light, and in operation, the frames 5 having been dropped to the position shown in full lines in Fig. 3, the motor is started and the carriage 7 caused to move between the frames 5 and across the faces thereof, by means of the screw bar 11 and the threaded half nut 12, and at such a speed as to produce a finished print when the lamps have passed beyond the other end of the frames. The half nut is then raised, stopping the actuation of the carriage 7 and after new material has been substituted within the frames, the carriage is run back by the operator, the half nut 12 dropped to engage bar 11 and the printing is repeated.

In the modified forms shown in Figs. 4

and 5, the carriage 7 is provided with a top frame 21, having a recess formed therein at right angles to said carriage for the reception of an operating member 23 secured upon an endless belt 24 traveling between short vertical shafts 25 mounted upon the frame of the machine. The shafts 25 may either one be rotated by means of a worm wheel 26 mounted upon one of them, and with which a worm 27 formed upon one end of the horizontal shaft 28, which shaft 28 carries upon its outer end a speed changing cone pulley 29. It will be seen that the same result will be accomplished by this construction inasmuch as the carriage 7 will be moved along its rod 2 by means of the member 23 engaging within the recess 22, upon the rotation of the belt 24.

In the modified form shown in Figs. 6 and 7 I provide a supporting frame comprising end uprights 1°, having horizontal supporting bars 2° and 3° arranged between the upper and lower ends thereof respectively. The uprights 1° are further provided with a horizontal rod 4° intermediate their length, upon which a blue print frame 5°, of the ordinary construction is pivotally hung by the hangers 6°, and is adapted to be swingingly adjusted upon said rod 4° as its pivot, in order to obtain the rays of light thereon at a desired angle. Above the frame 5°, between its rod 4° and the upper supporting bar 2°, of the frame are arranged upper and lower horizontal supporting bars 7° and 8° respectively, along which a plurality of rollers 9° are mounted in relative staggered relation, and are arranged to receive therein an endless belt 10° trained in a tortuous manner over and under the opposing rollers 9° of the upper and lower sets respectively, and over rollers 11° and 12° respectively, mounted in the main frame above the upper set of rollers 9°. The roller 12° constitutes a drive roller for said belt 10° and is driven from a horizontal shaft 13° having a cone pulley 14° mounted on its end outside the main frame. The cone pulley 14° has a second cone pulley 15° mounted below and connected with the same by a belt 16° adapted to be adjusted upon said pulleys to regulate the speed at which the roller 12° is driven. The pulley 15° has connection by a belt 17° or the like with a suitable motor 18° mounted at a convenient point within the main frame. The endless belt 10° is provided at a suitable point thereon with a metallic plate 19° having a pin 20° projecting outwardly beyond the edge of said belt and adapted to engage within a central opening adjacent the top of the lamp frame 21°, said lamp frame carrying thereon suitable carbon lights 22°, and being adapted to follow

the movement of the endless belt 10° and to thereby take a tortuous path across the face of the blue print frame 5°, and follow said belt upwardly over the rollers 11° and 12° to the starting point. The print within the frame 5° will be completed by the time the light 22° has passed over the entire surface thereof, and said frame may be swung to a horizontal position on its hangers 6° by means of the adjusting rods 23°, and fresh material substituted while said lamp is passing again to the starting point. The lamp 21° in its movement across the face of the blue print frame 5° is steadied and balanced by means of a carriage 24° having rollers superposed upon the upper horizontal bar 2° of the main frame and having rollers 25° below said running rollers, over which a rope 26° is trained and is connected at its end 27° to said lamp frame and is connected at its other end to a counter-balancing weight 28°. From the foregoing it will be understood that in this form the frame 5° may, by means of the rods 23°, be adjusted at a desired angle to the light 22°, and that said light in its tortuous passage across the face of said frame will be steadied and balanced by the rolling carriage and its weight- ed rope attachment.

Having thus fully described my invention, what I claim is:

1. A blue printing machine comprising a stationary upright frame, a blue print frame mounted within said frame to swing in a vertical plane, a lamp mounted to move across the face of said blue print frame, means for moving said lamp, embodying a pair of grooved cone pulleys and a belt connecting said pulleys, whereby the speed of said means may be regulated, and the movement thereof reversed, by twisting the belt, substantially as described.

2. A blue printing machine comprising a stationary frame, a blue print frame mounted therein, a carriage mounted to travel within said frame, a lamp box carried by said carriage to move across the face of said blue print frame, a motor mounted within said stationary frame, a rotating element also mounted therein, means carried by said carriage and loosely detachably engaging said element, whereby the lamp box may be stopped without stopping the motor and the rotating element, and speed adjusting means connecting said motor and said element, substantially as described.

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

ARISTIDES R. MURRAY.

Witnesses:

JOHN F. BOWMAN,
THOS. H. SMITH.