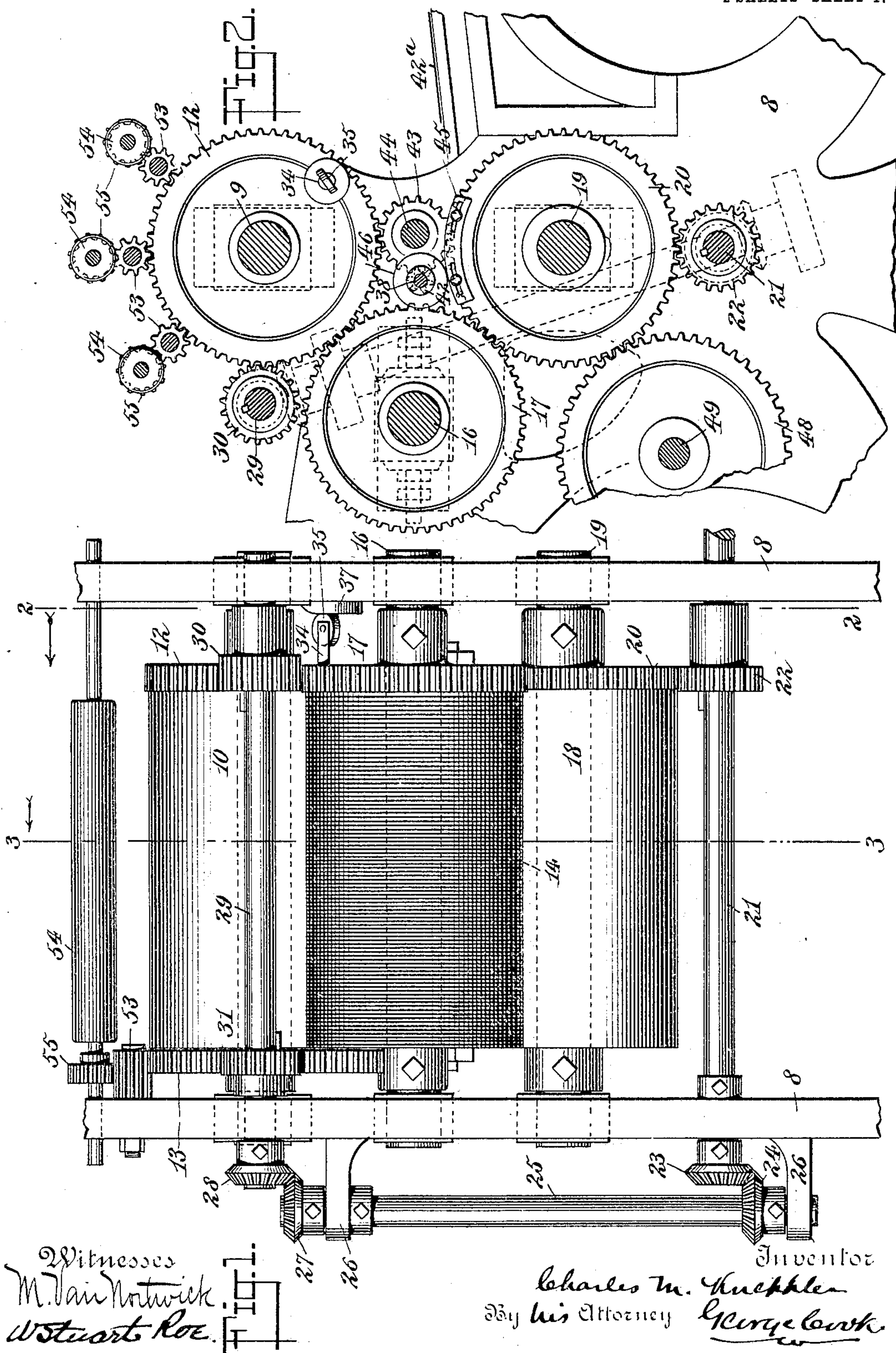


No. 788,139.

PATENTED APR. 25, 1905.

C. M. KNEPPLER.
LITHOGRAPHIC MACHINE.
APPLICATION FILED OCT. 27, 1904.

2 SHEETS—SHEET 1.

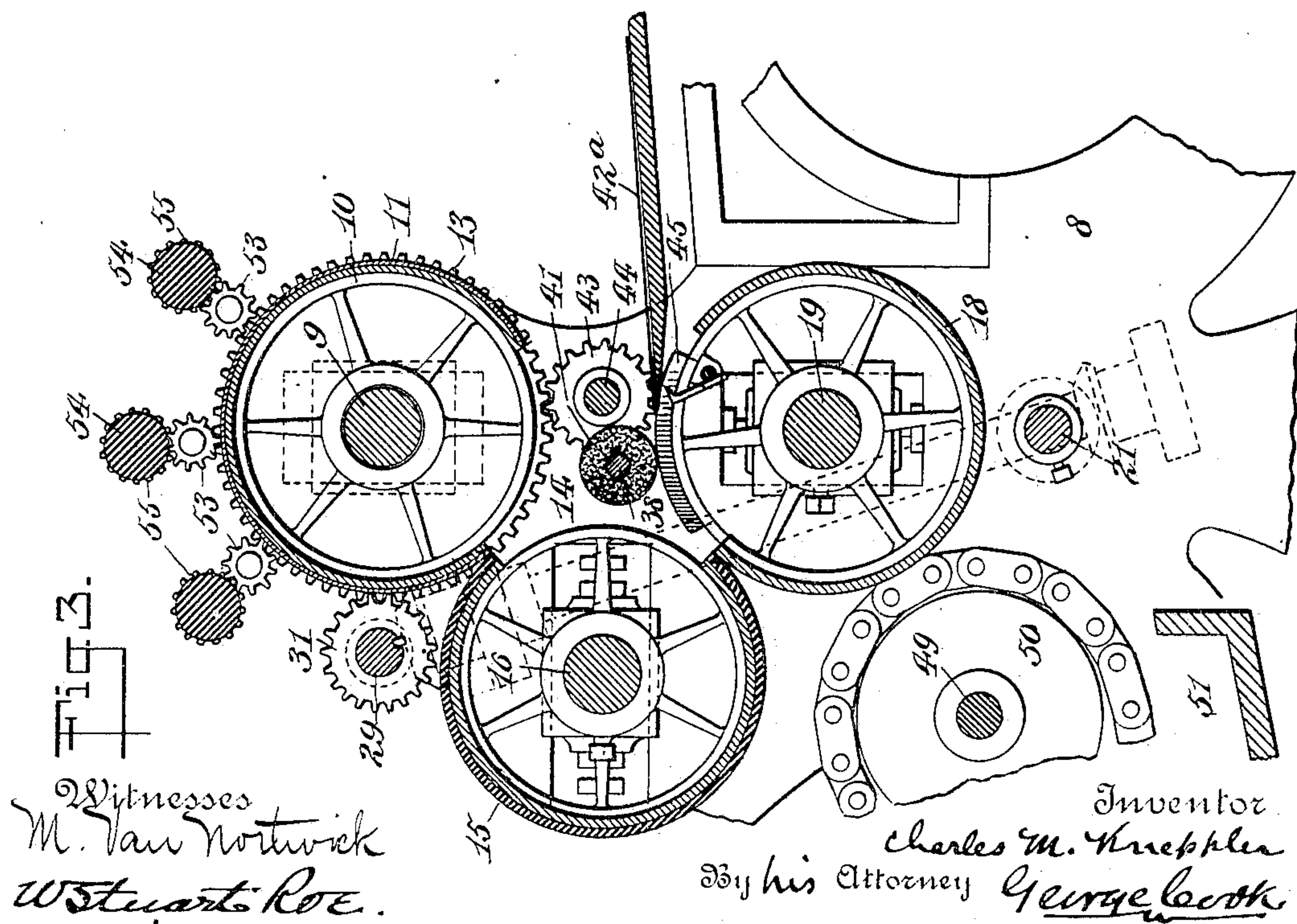
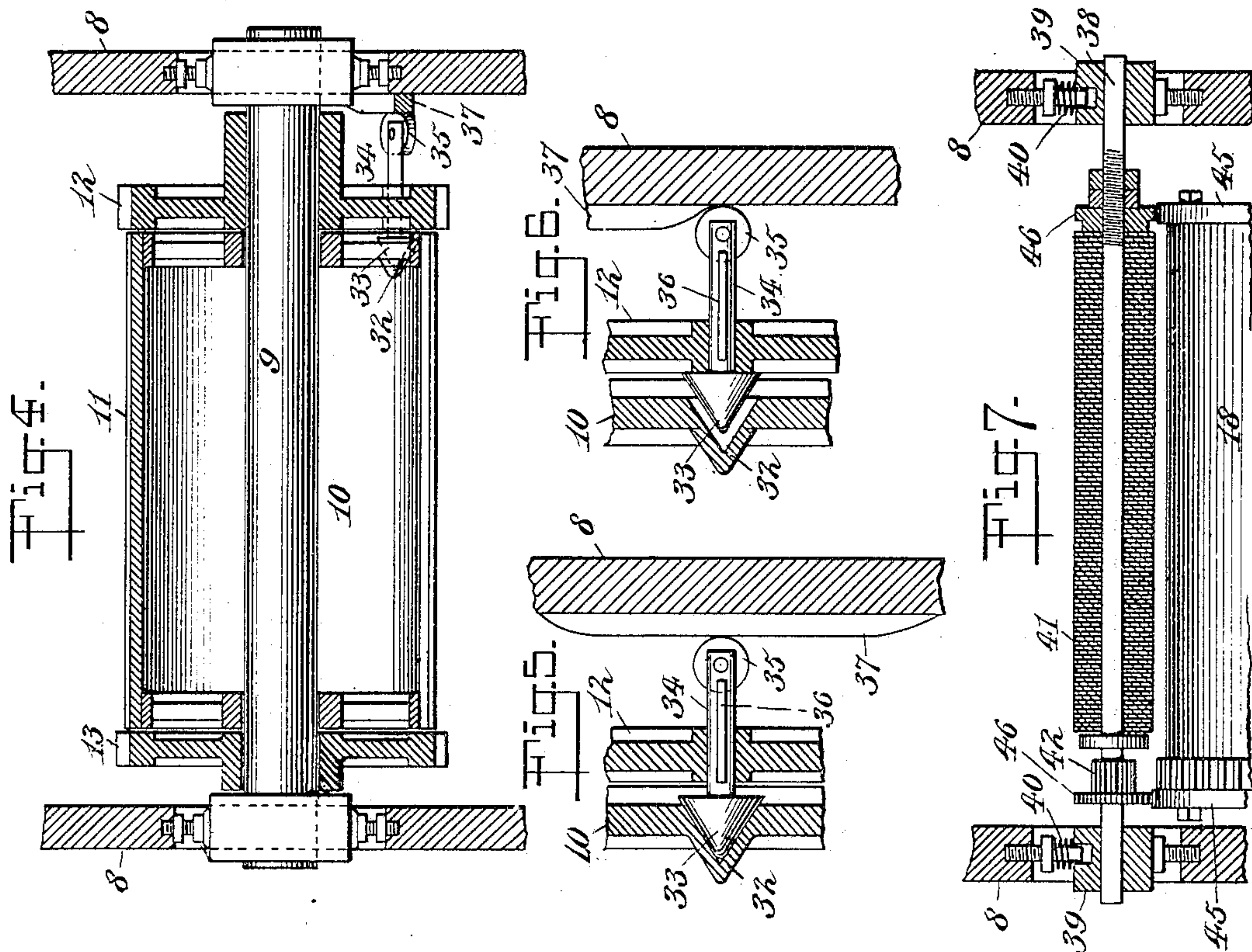


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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

CHARLES M. KNEPPLER, OF NEW YORK, N. Y., ASSIGNOR TO LOUIS E. KNEPPLER, OF NEW YORK, N. Y.

LITHOGRAPHIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 788,139, dated April 25, 1905.

Application filed October 27, 1904. Serial No. 230,161.

To all whom it may concern:

Be it known that I, CHARLES M. KNEPPLER, a citizen of the United States, and a resident of New York, borough of Brooklyn, in the county of Kings and State of New York, have made and invented certain new and useful Improvements in Lithographic Machines, of which the following is a specification.

My invention relates to an improvement in lithographic machines, and more particularly to that kind wherein a plate of aluminium, zinc, or any other suitable metal is employed as a substitute for stone, and in view of the fact that instead of printing directly from the plate the impression is transferred from the plate to a blanket of rubber or other suitable yielding material and from the latter transferred to the paper I term it a "lithographic offsetting-machine."

The object of my invention is to so construct the machine that all danger of slurring, especially when printing upon hard dry paper, will be overcome and to materially improve the quality of the work performed by the machine by producing a clean sharp impression even after the machine has been in use for some time and the parts subjected to wear.

With these and other ends in view the invention consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation, showing the relative arrangement and manner of gearing of the several rollers. Fig. 2 is a view taken on the line 2 2 of Fig. 1, showing the gears upon one side of the machine and a portion of the frame. Fig. 3 is a sectional view taken on the line 3 3 of Fig. 1 looking in the direction of the arrow. Fig. 4 is a sectional view of the roller carrying the metal plate. Figs. 5 and 6 are detail views showing the manner of locking the gear to the roller carrying the plate. Fig. 7 is a detail view showing the brush for cleaning the paper prior to receiving the impression.

Referring to the drawings, 8 represents the

frame, which may be of any desired style or pattern and adapted to carry the operative parts of the machine. In this frame is journaled a shaft 9, having loosely mounted thereon the cylinder 10, to which is secured a plate 11, extending part way around said cylinder and formed of aluminium, zinc, or other suitable metal from which to print, said shaft 9 having tightly secured thereto and near one end thereof the gear 12 and near the opposite end the loose gear 13. Below and in front of the cylinder 10 is located the cylinder 14, its surface being partially covered or encircled by a blanket 15, of rubber or other suitable yielding material or composition, adapted to take or receive the impression from the metal plate 11, with which it comes in contact, said plate and rubber blanket being of course so relatively placed on their respective cylinders that they will register during the rotation thereof. This cylinder 14 is tightly secured to the shaft 16, the ends of which latter are journaled in the frame 8, said shaft carrying a gear 17, meshing with the gear 12, secured to the shaft 9. Below the cylinders above referred to is located a third cylinder 18, mounted on the shaft 19, the ends of which are also journaled in the frame 8, said shaft 19 carrying a gear 20, adapted to mesh with the gear 17, the cylinder 18 being adapted to retain the paper in contact with the blanket 15 around the printing-cylinder 14, from which it receives the impression. In the frame 8 is also journaled the main driving-shaft 21, having tightly secured near one end thereof the gear 22, meshing with the gear 20, through which and by means of which power is transmitted to said gear 20, through the latter to the gear 17, and in turn to the gear 12. On the opposite end of the shaft 21 is secured the beveled gear 23, meshing with a similar gear 24, secured to the lower end of the rod 25, said rod being journaled in the brackets 26, secured to or formed on the frame 8. The upper end of the rod 25 is provided with the bevel-gear 27, meshing with a similar gear 28, secured to the outer end of the shaft 29, also journaled in the frame 8. This shaft is provided near one end with the gear 30, meshing with the gear 12,

and near its opposite end with the gear 31, meshing with the gear 13, loosely mounted upon the shaft 9, this system of gearing insuring an even and steady driving of the cylinders and preventing any vibration or loss of motion and consequent slurring of the work.

As before described, the plate-cylinder 10 is loosely mounted on its shaft 9, and in order to drive the same by means of the gear 12, secured tightly to said shaft, I form in the end of the cylinder a cone-shaped pocket or receptacle 32, adapted to receive the cone 33, secured to or formed on the end of the pin 34, the opposite end of the pin being provided with a roller 35, said pin 34 passing through an arm or web of the gear 12 and adapted to slide lengthwise therein, but prevented from revolving therein by means of the key 36.

On the frame 8 of the machine is formed the cam 37 and so placed or located that the roller 35 will come in contact therewith and ride up on the same at the time when one edge of the plate 11 comes in contact with the corresponding edge of the rubber blanket 15, the effect being that the pin 34 is forced inwardly and forcing the cone 33 into its similar-shaped pocket 32 in the end of the cylinder 10. Should one of the cylinders be slightly larger than the other, or, in other words, should the rubber blanket not exactly correspond in its circumference with the metal plate from which it receives the inked impression, a certain amount of rubbing will result, thereby slurring the impression on the blanket and producing an imperfect impression. By means of my improved device, however, should there be any danger of such rubbing of the plate on the blanket the frictional contact between the two parts will cause the conical head 33 of the pin 34 to be slightly forced outwardly, allowing the two respective cylinders 10 and 14 to rotate in unison, and at the time that the edge of the plate 11 approaches the edge of the blanket 15 said pin will be forced inwardly by the cam 37, thereby insuring the exact registration of the several parts at the moment the plate starts to transfer the impression to the rubber blanket. In other words, by locking the plate-cylinder to its respective gear by the means described the plate and blanket are necessarily caused to exactly register at the time that the former begins to transfer its impression to the latter, and should the parts be slightly worn, so that the circumference of the plate is slightly greater or smaller than that of the blanket, the frictional contact between the two will cause the blanket-cylinder to travel in exact unison with the plate-cylinder as the plate-cylinder is allowed to yield in its travel by means of the sliding pin 34, the cam 37 necessarily causing the plate-cylinder to exactly register with the blanket-cylinder at the beginning of each rotation.

In the frame of the machine is journaled the shaft 38, the bearings or journals 39 being allowed a slight vertical movement therein and retained in their lowered adjustments by means of the springs 40, as illustrated in Fig. 7. On this shaft is secured a brush 41, made of cloth or other suitable material and adapted to come in contact with the upper surface of the paper 42^a prior to its receiving the impression from the blanket 15 and remove therefrom any particles of dust or foreign matter liable to cause imperfections in the printing. This brush also assists in straightening out the sheet and prevents the creasing of the paper as it passes between the cylinders. This brush is rotated by means of the gear 42, secured to the shaft 38 and which meshes with a gear 43, secured to the shaft 44, the ends of which latter are also journaled in the frame 8, said gear 43 also meshing with the gears 12 and 20 and assisting in steadily rotating the same and preventing vibration and loss of motion therein. On the ends of the pressure-cylinder 18 and opposite that portion which registers with that portion of the cylinder 14 not covered or encircled by the blanket are secured the cams 45, with which come in contact the disks or rollers 46, secured to the shaft 38, thereby elevating the brush 41 at the time that the cylinder 14 is not printing. In other words, after the sheet of paper 42^a has been dusted or cleaned by the brush 41 and has passed from between the impression and pressure cylinders and the latter has rotated to that point where no printing is to be done the brush 41 is elevated, so that it will not come in contact with the surface of the pressure-cylinder, as the latter is apt to become smeared more or less with ink and dirt, which would be transferred to the brush should the latter be allowed to come in contact therewith.

With the gear 20 meshes a gear 48, secured to the shaft 49, the ends of which are journaled in the frame 8, the shaft 49 being provided with the usual grippers (not shown) and forming a part of the delivery mechanism, as does also the sprocket-wheel 50 and the tray or box 51. As this delivery mechanism is of the usual construction and forms no part of my invention, no detail description or illustration thereof is necessary.

The inking of the plate secured to the cylinder 10 may be done in any desired way, the gear 31 meshing with the gear 13, which in turn meshes with the pinion 53, which imparts its motion to the inking-roll 54 through the gear 55. A number of these rolls of course are provided and are arranged in any suitable manner whereby the ink from a suitable reservoir is transferred to the plate.

In practice a sheet of paper passes between the pressure-cylinder 18 and impression-cylinder 14, being first dusted or cleaned by

means of the brush 41. After receiving the impression from the blanket 15 it is caught by the grippers of the delivery mechanism and carried around thereby until finally delivered in the tray 51.

By means of the construction and arrangement of the several parts as above described I am enabled to secure a clean and sharp impression upon hard dry paper, all rubbing of the cylinders and consequent slurring of the impression on the blanket being avoided by allowing the plate-cylinder to slightly yield to the impression-cylinder should there be any difference in the sizes thereof and also by overcoming all vibration and lost motion in the gears by the novel manner of arranging the same.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination with a shaft journaled in the frame and having a gear tightly secured thereto for rotating the same, of a plate-cylinder loosely mounted on said shaft and means for yieldingly locking said plate-cylinder to said gear, substantially as described.

2. In a machine of the character described, the combination with a shaft journaled in the frame and having tightly secured thereto a gear for rotating the same, of a plate-cylinder loosely mounted on said shaft and a pin sliding in said gear and engaging said cylinder for yieldingly locking the same together, substantially as described.

3. In a machine of the character described, the combination with a shaft journaled in the frame and having tightly secured thereto a gear for rotating the same, of a plate-cylinder loosely mounted on said shaft, a pin sliding in said gear and engaging at one end with said cylinder, and a cam secured to the frame and engaging the opposite end of said pin for locking said cylinder to said gear, substantially as described.

4. In a machine of the character described, the combination with a shaft journaled in the frame and having tightly secured thereto a gear for rotating the same, of a plate-cylinder loosely mounted on said shaft and provided with a conical-shaped pocket at one end, a pin sliding in said gear and provided on one end with a cone adapted to fit in said cone-shaped pocket, and a cam secured to the frame

and adapted to engage with the opposite end of said pin, substantially as described.

5. In a machine of the character described, the combination with a plate-cylinder, of a gear secured thereto for rotating the same, an impression-cylinder provided with a gear adapted to mesh with said former gear, a pressure-cylinder having a gear secured thereto and meshing with the gear on said impression-cylinder, a main driving-shaft journaled in the frame and provided with a gear meshing with the gear on said pressure-cylinder, and a shaft provided with a gear also meshing with the gear on said plate-cylinder and driven by the gears on said main driving-shaft, substantially as described.

6. In a machine of the character described, the combination with a shaft 9 journaled in the frame and having a gear 12 secured thereto, of a plate-cylinder 10 mounted on said shaft and connected with said gear, a shaft carrying an impression-cylinder and having a gear 17 secured thereto and meshing with said former gear 12, a shaft 29 the ends of which are journaled in said frame and having a gear 30 secured thereto also meshing with said gear 12, said shaft also carrying on its opposite end the gear 31, a gear 13 loosely mounted on said shaft 9 and meshing with said gear 31, a pressure-cylinder 18 provided with a gear 20 meshing with said gear 17, a main driving-shaft provided with a gear 22 meshing with said gear 20, and intermediate gears connected to said driving-shaft and with said shaft 29 for rotating said gear 31, substantially as described.

7. In a machine of the character described, the combination with a shaft the ends of which are journaled in the frame, of a tight and loose gear mounted on said shaft, a plate-cylinder loosely mounted on said shaft and yieldingly secured to said tight gear, and a main driving-shaft provided with gears adapted to rotate said tight and loose gears on said former shaft, substantially as described.

Signed at New York, borough of Manhattan, in the county of New York and State of New York, this 26th day of October, A. D. 1904.

CHARLES M. KNEPPLER.

Witnesses:

M. VAN NORTWICK,
GEORGE COOK.