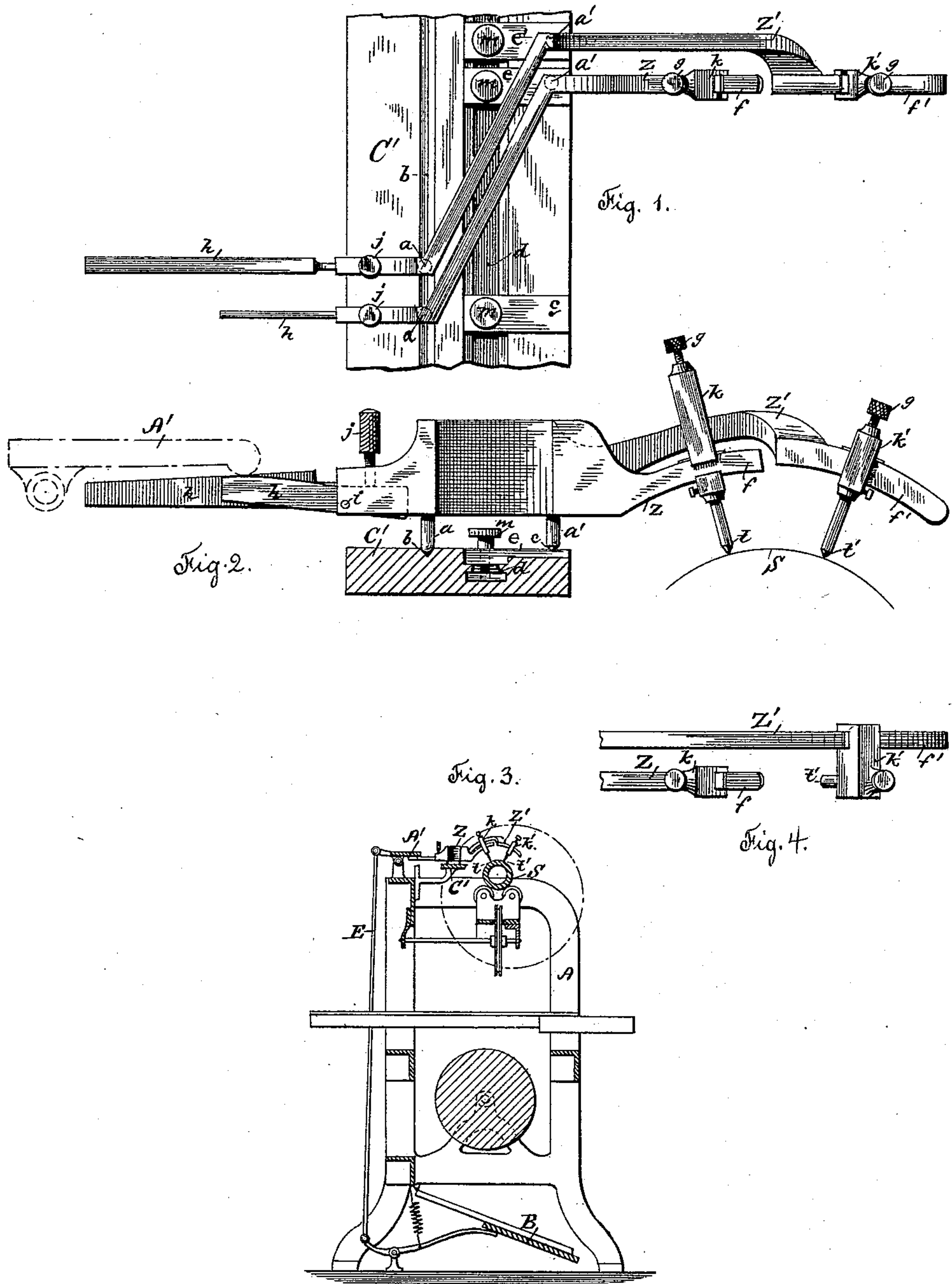


(No Model.)

J. HOPE, Jr.  
PANTOGRAPH MACHINE FOR TRACING DESIGNS UPON PRINTING CYLINDERS.  
No. 450,155. Patented Apr. 14, 1891.



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOHN HOPE, JR., OF PROVIDENCE, RHODE ISLAND.

PANTOGRAPH-MACHINE FOR TRACING DESIGNS UPON PRINTING-CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 450,155, dated April 14, 1891.

Application filed October 3, 1890. Serial No. 366,994. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HOPE, Jr., a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Pantograph-Machines for Tracing Designs upon Printing-Cylinders, of which the following is a specification.

The nature of my invention consists in the employment of two or more tracing-points or gravers arranged to operate one in advance of the other in a circumferential line on the surface of the printing-cylinder, the said tracing-points or gravers being attached to tilting levers which are held upon the lever-supporting carriage of the pantograph mechanism and adapted to be raised simultaneously from the printing-cylinder by the proper movement of the treadle and rocker-bar, whereby the same design can be traced or engraved upon two or more circumferential sections of the cylinder at the same time, thus accomplishing the work of engraving the whole cylindrical surface in a fractional part of the time heretofore required in pantograph-engraving machines.

My invention also consists in the improved construction of the tilting levers whereby the tracing-points or gravers are made adjustable, as hereinafter fully set forth.

Figure 1 represents a top view of the tilting levers which serve to carry the adjustable tracing-point holders. Fig. 2 represents a side elevation of the same. Fig. 3 represents a vertical section of the machine as shown in Fig. 3 of the drawings of Letters Patent of the United States No. 13,462, some of the parts there shown being omitted. Fig. 4 is a detail top view showing a tracing-point which is offset from the tilting lever.

In the accompanying drawings, A represents the frame of a pantograph-engraving machine, as shown and described in the Letters Patent of the United States No. 13,462, to which reference is made for a full description of a machine to which my invention is applicable.

B is the pedal, which serves to raise the tracing-points  $t$   $t'$  simultaneously from the surface of the cylinder S, the said tracing-points being attached to the sliding holders

$k$   $k'$ , which are adjustably held upon the tilting levers Z Z', arranged side by side and supported upon the pantograph-carriage C'. The tilting-levers Z Z' are arranged to rock upon the ends of the fulcrum-pins  $a$   $a'$ , the rounded end of the fulcrum-pin  $a$  being held in the longitudinal groove  $b$ , made in the upper surface of the carriage C', and the conical end of the fulcrum-pin  $a'$  is held in a conical recess or a hole  $c$ , made in the sliding shoe  $e$ , which is made adjustable in the longitudinal groove  $d$  in the pantograph-carriage by means of the screw  $m$ . The forward end of the lever Z is provided with the curved slide  $f$ , which is made concentric with the cylinder S, and upon the curved slide  $f$  is secured the tracing-point holder  $k$ , which is made adjustable along the slide by means of the screw  $g$ . The rearward end of the lever Z is provided with the adjusting-arm  $h$ , which is pivoted to the end of the lever Z at the point  $i$  and operated to its proper angular position for the adjustment of the tracing-point  $t$  in a vertical plane by means of the screw  $j$ .

The tilting lever Z', which is similar in construction to the lever Z, is placed at the side of the said lever Z, and the fulcrum-pins  $a$   $a'$  of the lever Z' are similarly held in the groove  $d$  and in an adjustable shoe  $e'$ , whereby the levers Z and Z' can be adjusted laterally with relation to each other upon the carriage C'. The forward end of the lever Z' is deflected, so that the curved slide  $f'$  will come in advance of the curved slide  $f$  and in line therewith, so that the tracing-point  $t'$  will come in circumferential line with the tracing-point  $t$  upon the surface of the cylinder S, any slight adjustment required to bring the tracing-points exactly in line being readily made by the proper movement of the sliding shoes  $e$   $e'$ , which serve to locate the relative positions of the levers Z Z'. Instead of deflecting the forward end of the lever Z' so that the curved slide  $f'$  will be in line with the curved slide  $f$  of the lever Z, the tracing-point holder  $k'$  may be offset from its holding-slide, as shown in Fig. 4, in order to carry the two tracing-points  $t$   $t'$  to the same transverse plane of the cylinder S.

The tracing-point holders  $k$   $k'$  may be adjusted upon their respective slides so as to



stand at any desired position upon the circumference of the cylinder S, according to the circumferential width of the sections to be traced, and separate sets of the levers Z Z' and tracing-points *t t'* can be employed at opposite sides of the cylinder, thus greatly increasing the rapidity of the execution of the work.

The levers Z Z' are operated to raise the tracing-points *t t'* from the surface of the cylinder by means of the rocker-bar A', which rests against the upper edge of the adjustable arms *h* of the tilting levers and is connected with the pedal B by means of the rod E.

I claim as my invention—

1. In a pantograph-machine for tracing designs upon a printing-cylinder, the combination, with the carriage adapted for rectilinear movement, of two or more tilting levers adjustably supported upon the said carriage and provided with tracing-points or gravers which are held for simultaneous operation in the same circumferential line upon the surface of a blank printing-cylinder which is adapted for rotary movement, substantially as described.

2. The combination, with the carriage adapted for rectilinear movement, of two or more tilting levers adjustably supported upon the said carriage and provided with tracing-points or gravers which are held for simultaneous operation in the same circumferential line upon the surface of a blank printing-cyl-

inder which is adapted for rotary movement, and means for raising the tracing-points or gravers simultaneously from the surface of the cylinder, substantially as described.

3. The combination, with the carriage adapted for rectilinear movement, of two or more tilting levers arranged side by side and provided with tracing-points or gravers which are held for simultaneous operation in the same circumferential line upon the surface of a blank printing-cylinder which is adapted for rotary movement, substantially as described.

4. The combination, with the carriage adapted for rectilinear movement and two or more tilting levers arranged side by side and made adjustable upon said carriage, of the tracing-points or gravers held for simultaneous operation in the same circumferential line upon the surface of a blank printing-cylinder adapted for rotary movement, and the sliding holders which are adjustable upon the tilting levers, substantially as described.

5. The combination, with the tilting lever provided with the curved slide, of the adjustable sliding holder, the tracing-point or graver, the pivoted arm, and the adjusting-screw, substantially as described.

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Witnesses:

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