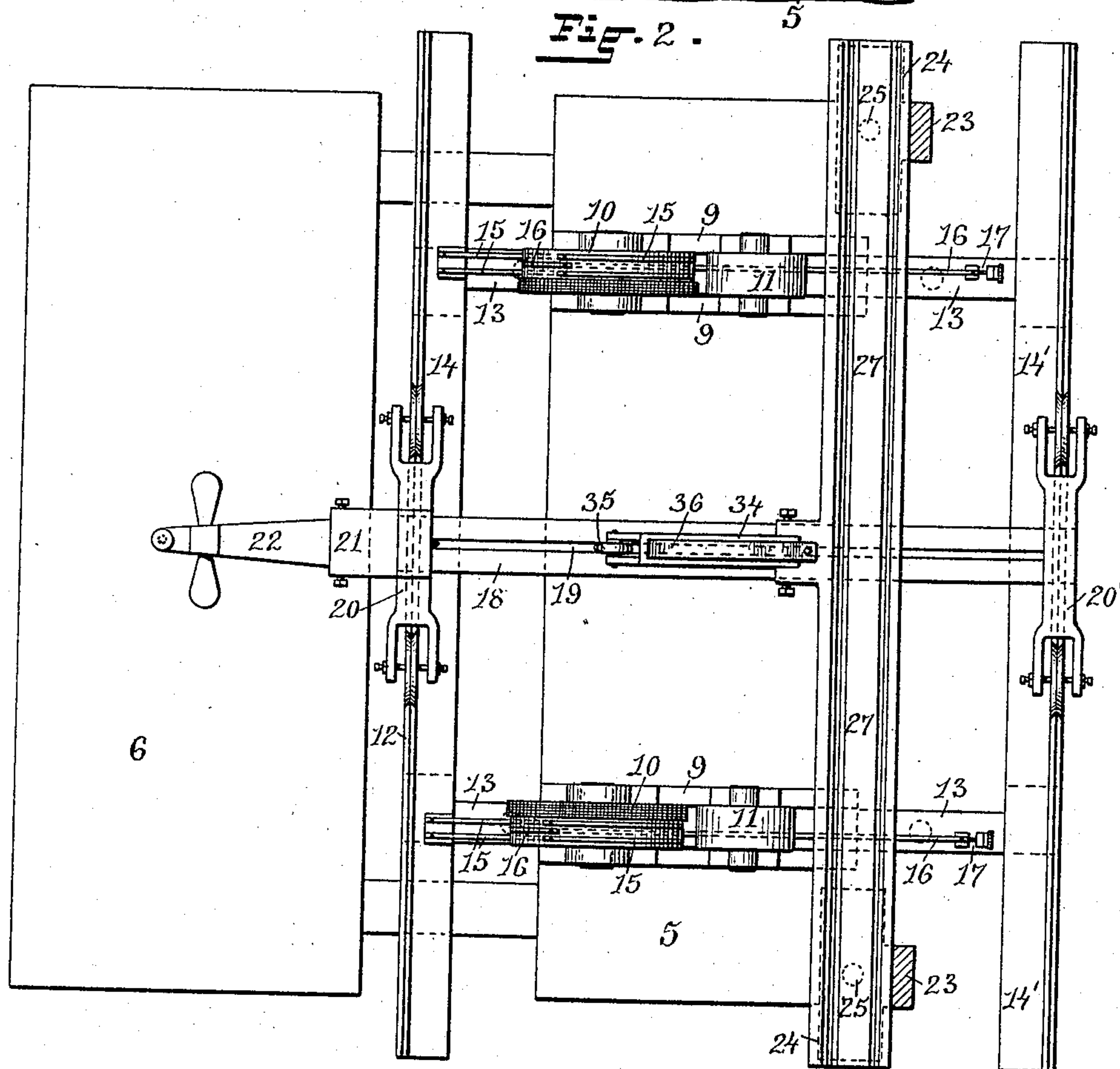
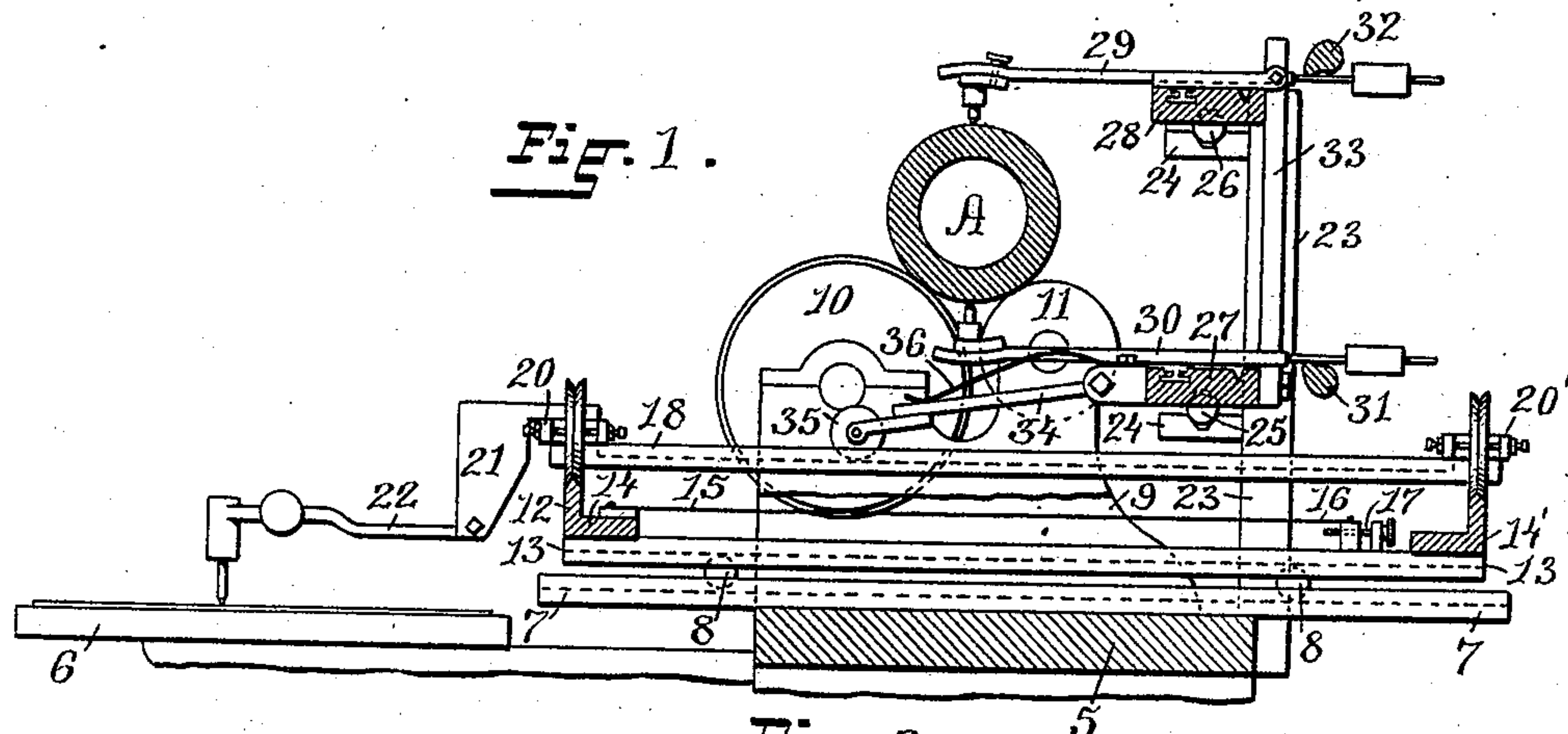


(No Model.)

J. HOPE.
PANTOGRAPH ENGRAVING MACHINE.

No. 486,210.

Patented Nov. 15, 1892.



WITNESSES:

Chas. H. Luther Jr.
W. F. Bligh.

INVENTOR:

John Hope
by Joseph A Miller & Co.,
attorneys.

UNITED STATES PATENT OFFICE.

JOHN HOPE, OF PROVIDENCE, RHODE ISLAND.

PANTOGRAPH ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 486,210, dated November 15, 1892.

Application filed August 9, 1892. Serial No. 442,574. (No model.)

To all whom it may concern:

Be it known that I, JOHN HOPE, of the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Pantograph Engraving-Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to improvements in machines for simultaneously engraving two exactly-similar patterns on a printing-roll corresponding in size and design to that over which a pointer is moved by the operator.

The object of the invention is to produce an engraving-machine which, owing to its simple construction, will greatly reduce the frictional wear and the labor of operating a multiplicity of parts.

The further object of the invention is to produce an engraving-machine in which the stylus and carriages are connected directly to the wheel-heads which give motion to the copper cylinder or other device on which the pattern is to be engraved.

The invention consists in certain peculiar features of construction and combination of parts, which will hereinafter be more fully described, and pointed out in the claims.

Figure 1 represents an end view of the improved machine, partly in section, to more clearly show the construction of the same. Fig. 2 represents a plan view of the same, the copper cylinder being removed and portions of the upper carriage broken away.

Similar numbers of reference designate corresponding parts throughout.

In the drawings, 5 indicates the bed-plate of the machine, and 6 the pattern-table, both of which are supported on substantial frames. Across each end of the bed-plate 5 is secured the rail 7, which has a longitudinal groove in its upper surface, in which rest the balls 8 8 to serve as bearings for the lower carriage. On each side of each of these rails 7 are secured brackets 9 9 in bearings, in the upper part of which are journaled the ends of the shafts carrying the large wheel-heads 10 and the smaller wheels 11. The lower carriage 12 is furnished with the cross-bars 13, in the

lower surfaces of which are formed longitudinal grooves, these bars resting on the balls 8 8, held in the grooves of the rails 7 7, and being free to move thereon. The ends of the bars 13 are secured to the rails 14 and 14', the vertical portions of which have inverted-V-shaped edges to form a track on which the wheels of the stylus-carriage may travel. The large wheel-heads 10 have a portion of their circumferences cut away to form a step, the remaining portion thereof being roughened to better engage the surface of the copper cylinder A in order to turn the same. Secured to the step formed by cutting away the circumferences of the wheel-heads are thin metallic straps 15 15, which extend rearwardly around a portion of the step and are then brought forward and secured to the rail 14 of the lower carriage. Also secured on each of these steps is a similar metallic strap 16, which extends forwardly partially around the same and is then carried beneath and backward of the same, being secured to the take-up 17, one of which is carried by each of the bars 13 of the lower carriage.

The stylus-carriage is formed by a cross-bar 18, having the groove 19 in its upper surface and connected at its ends with the members 20 and 20', between arms on the ends of which are journaled wheels having V-shaped grooves in their edges, which travel on the edges of the rails 14 and 14'. To the member 20 is secured a forwardly extending and depending bracket 21, to which is pivoted the stylus-arm 22, provided with a suitable handle by which it can be lifted or moved over the lines of the pattern.

Secured to the back of the bed 5 are the vertical standards 23, projecting inwardly from which, at suitable distances apart, are the bearing-plates 24, having longitudinal grooves in their upper surfaces, in which rest the balls 25 and 26, and on these balls are supported the upper and lower securing-rails 27 and 28 of the upper carriage. The rails 27 and 28 have grooves in their lower surfaces, in which the balls 25 and 26 bear, means being provided in the upper surfaces of these rails for securing the counterweighted arms 29 and 30, to the forward ends of which the engraving-points are fastened. The arm 29 extends above the copper cylinder A and that marked 30 below

the same. The counterweighted ends of these arms may be operated in opposite directions by the cams 31 and 32 for removing the engraving-points from contact with the surface of the cylinder. The rails 27 and 28 are secured together by means of the stay-pieces 33, and pivoted to a central bracket on the rail 27 is an arm 34, having the disk 35 journaled in the forward end thereof, while a spring 36, secured to said bracket, tends to depress the arm 34 to hold the disk 35 in the groove 19 of the stylus-carriage.

It will be apparent that by moving the stylus and the stylus-carriage backward and forward the copper cylinder A will be revolved by the rotation of the wheel-heads 10, against which it rests. These wheel-heads being operated by the bands 15 and 16, the upper carriage will remain stationary, and if the engraving-points be in contact with the surface of the cylinder A circumferential tracings will be made thereon. If, however, the stylus-carriage be moved sidewise, the motion will be conveyed through the disk 35 and arm 34 to the upper carriage, which will move in unison with the stylus-carriage, thus through the medium of the engraving-points tracing longitudinal lines on the surface of the cylinder. By a combination of the back-and-forth and side movements any combination of lines may be traced on the surface of the cylinder, these lines always corresponding in length to the movement of the stylus, the design traced on the cylinder being of the same size as the pattern over which the stylus is moved.

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

1. In a pantograph engraving-machine, the combination, with a stylus-carriage and wheel-heads operated thereby adapted to support the object to be engraved, of a carriage having upper and lower engravers and means by which the lateral movement of the stylus-carriage will be conveyed to said engraver-carriage, as described.

2. In a pantograph engraving-machine, the combination, with wheel-heads suitably jour-

naled on which the object to be engraved is supported and by which it may be moved under an engraving point or points, of a stylus-carriage and means connecting the same with the wheel-heads, whereby they are operated by the movement of the carriage, as described.

3. In a pantograph engraving-machine, the combination, with a compound-carriage formed of a lower transversely-movable carriage and an upper stylus-carriage longitudinally movable, of wheel-heads suitably journaled, adapted to support the object to be engraved and to move the same, and flexible connections between the wheel-heads and the lower carriage, as described.

4. In a pantograph engraving-machine, the combination, with the transversely-movable carriage 12, having the cross-bars 13 13 supported on the balls 8 8 and the rails 14 and 14' and a stylus-carriage longitudinally movable thereon, of the wheel-heads 10 10, the wheels 11 11, and the bands 15 and 16, secured to the wheel-heads and to the carriage 12, as described.

5. In a pantograph engraving-machine, the combination, with the carriage 12, transversely movable on the balls 8 8, supported in grooves in the rails 7 7, a stylus-carriage longitudinally movable on said carriage 12, the wheel-heads 10 and wheels 11, suitably journaled, and the bands 15 and 16, secured to the wheel-heads and to the carriage 12, of the vertical standards, the bearing-plates 24, supported thereby and having grooves in their upper surfaces, an upper carriage formed by the rails 27 and 28, suitably braced and supported on the balls 25 and 26, and means intermediate the rail 27 and the stylus-carriage, whereby the operation of the stylus-carriage is conveyed to the upper carriage, as described.

In witness whereof I have hereunto set my hand.

JOHN HOPE.

Witnesses:

HENRY J. MILLER,
JOSEPH A. MILLER.