(No Model.)

C. H. HOPE.

PANTOGRAPH ENGRAVING MACHINE.

No. 474,324. Patented May 3, 1892.

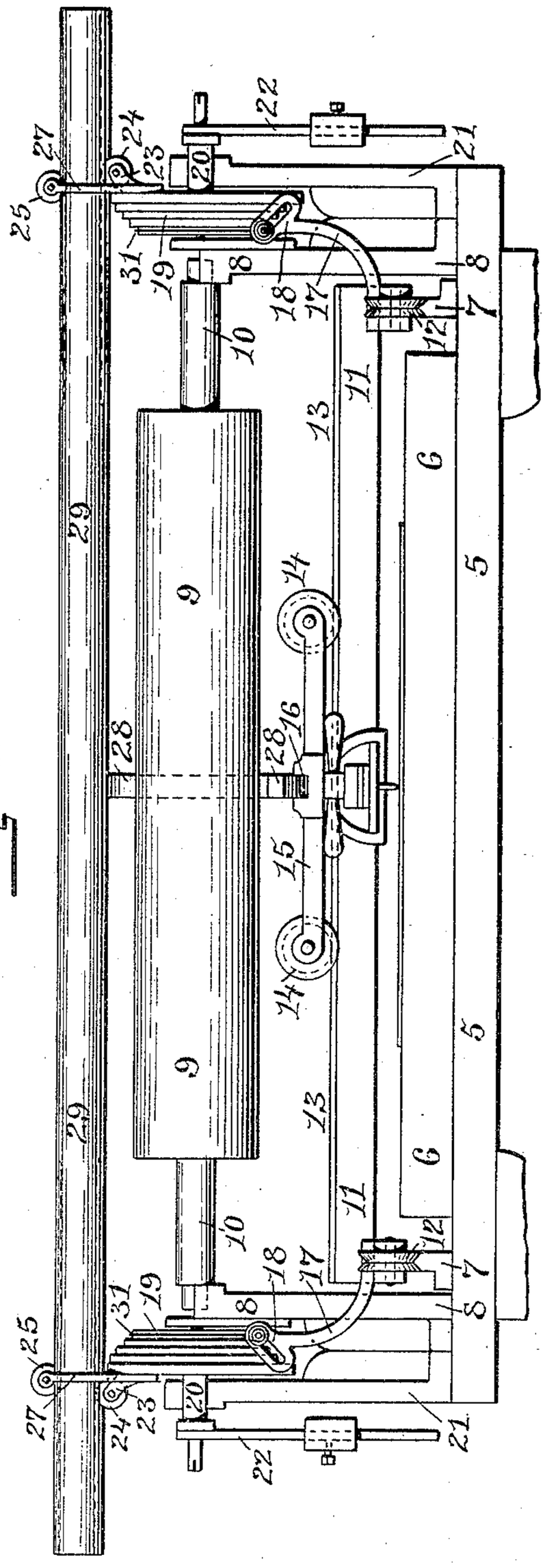

Fig. 1.

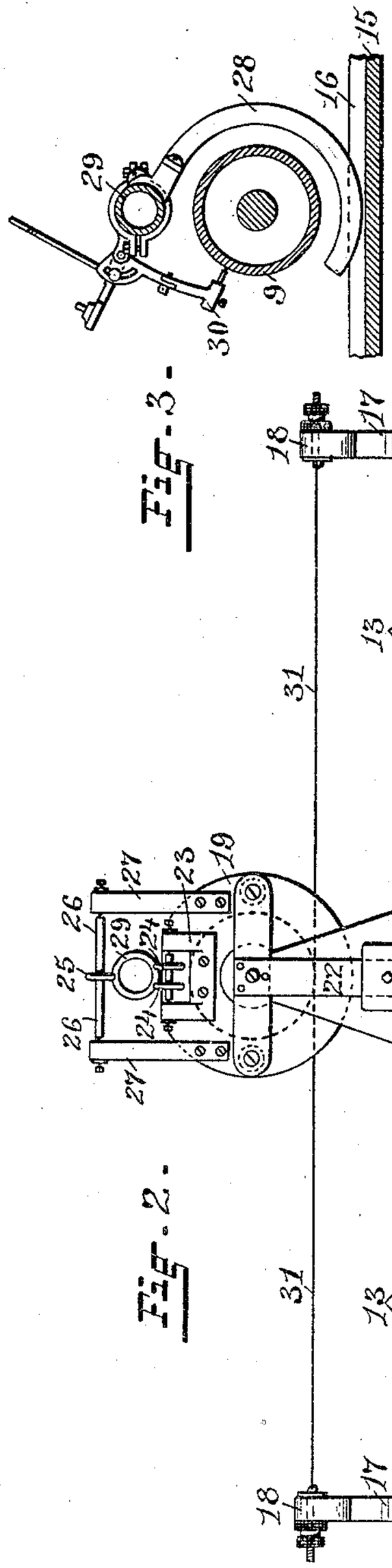

Fig. 3.

Fig. 2.

WITNESSES:

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PANTOGRAPH ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 474,324, dated May 3, 1892.

Application filed November 4, 1891. Serial No. 410,819. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. 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 devices for transferring a design from a flat surface to the surface of a roll on which the design or pattern is to be etched.

The objects of this invention are to simplify the construction of the device and to increase its efficiency.

The invention consists in the peculiar construction of the various parts and their novel combination into a complete machine, as will be more fully described hereinafter, and pointed out in the claims.

Figure 1 represents a front view of the improved pantograph engraving-machine, the tracing-points and their clamping devices being removed. Fig. 2 represents an end view of the same, the stylus-carriage being removed. Fig. 3 represents a cross-sectional view through the copper roll and the tracing-point-supporting shaft, also showing a horizontal section through a portion of the traverse-groove formed in the center of the stylus-carriage, with the curved guide-bar movable therein.

Similar numbers of reference designate corresponding parts throughout.

In the drawings, 5 indicates the bed-plate of the engraving-machine, on which rests the pattern-bed 6, and which is provided with the rails 7 7, extending across the same in a direction transverse to the length of the copper roll supported in the machine, the brackets 8 8 being secured to the bed-plate 5 and supporting the copper roll 9 in bearings, into which the ends of the roll-shaft 10 fit.

The traverse-carriage 11 is provided with the grooved wheels 12 12, traveling on the rails 7 7, and is movable in the direction of said rails. This carriage is also provided with rails 13 13, extending in directions parallel to the surface of the roll when supported in the machine, and on these rails the wheels 14 14 of the stylus-carriage 15 are free to move. This stylus-carriage is of the ordinary construction and is provided with the central traverse-groove 16. At each corner of the traverse-carriage 11 is secured a curved arm 17, having at its upper end the diagonally-slotted extension 18, the angle of the slot corresponding to the pitch of the step-pulleys 19 19. These pulleys are carried on shafts 20 20, supported at their outer ends in bearings in the brackets 21 21, secured to the ends of the bed-plate 5 and at their inner ends to extensions of the brackets 8. At the outer ends these shafts 20 20 are provided with downwardly-extending arms 22 22, each carrying a sliding weight secured at any point on the arm by a set-screw. On the upper outer surface of the step-pulleys 19 19 are secured the brackets 23 23, carrying the supporting-disks 24 24, secured to a shaft working on suitable bearings in said bracket, while the guide-disks 25 25 are carried above said supporting-disks by the shafts 26 26, working on suitable bearings in the arms 27 27, also secured to the outer surface of the step-pulleys.

The curved guide-bar 28 is free to move in the traverse-groove 16 of the stylus-carriage, and is firmly secured at its upper end to the center of the shaft 29, to which are clamped the tracing-points 30, the number of these points being equal to the number of designs which are to be traced in the length of the roll. This shaft 29 has grooves or tracks formed lengthwise and extending from the ends of the shaft a distance exceeding the length of any probable pattern, and into these grooves the edges of the disks 24 and 25 engage, thus allowing the shaft 29 to be easily moved in a longitudinal direction by means of the curved guide-bar 28, working in the traverse-groove of the stylus-carriage and moving a distance equal to that of the carriage. The movement of the tracing-points around the surface of the roll is accomplished by the movement of the traverse-carriage 11, each belt or wire 31 being wound around a step of each of the pulleys 19 19 and the ends secured by screw-clamps in the slotted extensions of the arms 17, secured to the corresponding side of the traverse-carriage. As

the traverse-carriage is advanced or retired, the step-pulleys will be revolved by the belts 31 against the leverage of the weighted arms 22 22 in an equal degree to the distance traveled by the carriage.

By the use of the step-pulleys the engraving-machine is adapted to engrave rolls of various sizes.

It will be readily understood from the foregoing description that the designs traced on the surface of the roll will be of equal size with the pattern over which the stylus is moved.

The guide-bar 28 may be provided with ratchet-teeth engaging in a similar ratchet in the traverse-groove 16 of the stylus carriage, thus making the movement of the shaft carrying the tracing-points around the copper roll more certain, even if the belts 31 should become loose or displaced entirely from the steps of the pulleys 19.

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

1. In a pantograph engraving-machine, a curved guide-bar movable in the traverse-groove of the stylus-carriage and secured to mechanism carrying the tracing-points, as described.

2. In a pantograph engraving-machine, the combination, with the stylus-carriage 15, having a traverse-groove, and a curved guide-bar movable in said groove and secured to a longitudinally-movable rod or shaft carrying the tracing-points, of means for revolving said rod or shaft around the surface of the roll, as described.

3. The combination, with the shaft 29, carrying tracing-points and movable longitudinally on the disks 24 and 25, secured to a shaft working on suitable bearings in the brackets 23 and arms 27, and the curved guide-bar 28, secured to said shaft and movable in the traverse-groove 16 of the stylus-carriage 15, of the step-pulleys 19, carrying said brackets 23 and arms 27 and supported on counterweighted shafts working in suitable bearings, and the bands or belts 31, wound around steps of said pulleys and having their ends secured to slotted extensions 18 of the arms 17, secured to the traverse-carriage 11, as and for the purpose described.

In witness whereof I have hereunto set my hand.

CHARLES H. HOPE.

Witnesses:
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