(No Model.)

J. MOWAT.

PANTOGRAPH ENGRAVING MACHINE.

No. 301,066. Patented June 24, 1884.

FIG. 1.

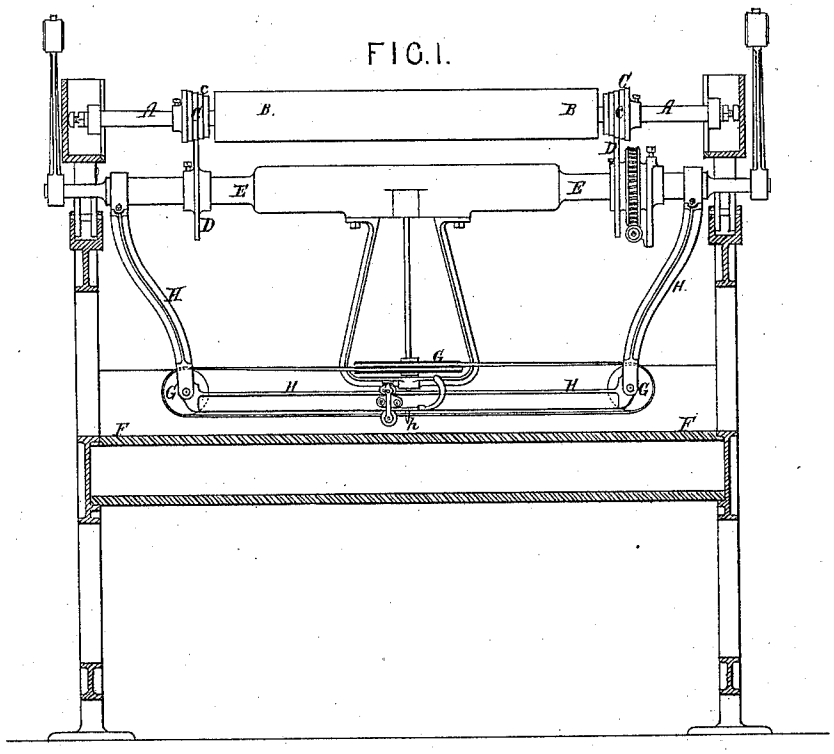
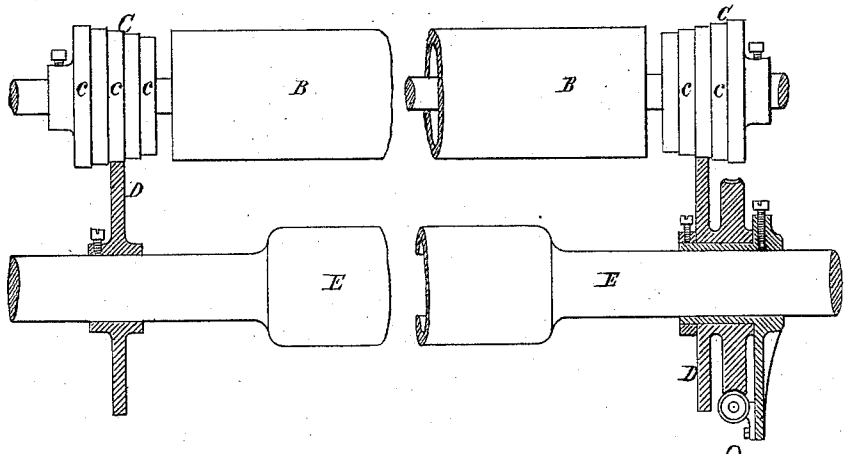


FIG. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN MOWAT, OF BARRHEAD, COUNTY OF RENFREW, SCOTLAND.

PANTOGRAPH ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 301,066, dated June 24, 1884.

Application filed January 10, 1884. (No model.) Patented in England September 14, 1883, No. 4,399.

To all whom it may concern:

Be it known that I, JOHN MOWAT, residing at Barrhead, in the county of Renfrew, Scotland, and a subject of the Queen of Great Britain and Ireland, have invented certain Improvements in Pantograph Engraving-Machines, (for which I have obtained a patent in Great Britain dated September, 14, 1883, No. 4,399,) of which the following is a specification.

My invention relates to pantograph engraving-machines of the "cradle" or Rigby type.

It is essential in engraving the copper or steel cylinders used in calico-printing and for similar purposes that the "repeat" of the pattern engraved should fit within the circumference of the cylinder, and in this class of pantograph engraving-machines in which the engraving-diamonds only traverse in one direction, while the formation of the pattern is completed by the rocking motion or partial rotation of the cylinder, it has been hitherto only possible to adjust the cradle or the levers of the pantograph to a slight extent for this purpose, and that without securing precision in fitting in the pattern to suit different diameters of cylinders.

The main object of the present invention is to overcome this difficulty by providing means of compensating for variations of the diameter of the cylinders on which patterns are engraved in relation to the pattern on the zinc plate. The improvements also permit of the pattern being reduced in any proportion by the use of a single machine, and of the zinc plate being of any scale.

Instead of supporting the roller to be engraved directly upon the usual disks on the rocking shaft of the machine and actuating the roller thereby, stepped disks or adjustable disks of different diameters are fitted on the mandrel carrying the roller, and these disks rest on and are actuated by the plain disks on the rocking shaft, the peripheries of the disks being roughened to insure a grip.

The invention is illustrated in the accompanying drawings, in which Figure 1 is a sectional elevation of a pantograph engraving-machine to which my improvements are adapted, and Fig. 2 is an enlarged view of the roller and rock-shaft.

The mandrel A, which carries the roller B to be engraved, is fitted with a movable disk, or with a set of disks of different diameters, or with a stepped disk, C, on each side of the roller B, which disks rest or bear upon the ordinary plain or roughened disks, D, on the actuating rocking shaft E below. The disks C are formed by a series of steps, *c*, of different diameters, which are each suited for certain sizes of rollers for any one pattern. The stepped disks C are so fitted and secured on the mandrels A as to be capable of lateral adjustment to bring any one size of the disk-steps *c* of each disk C onto the actuating-disk D below; or the actuating-disk D may be made capable of lateral adjustment for the same purpose. This arrangement of stepped disks C provides for the adjustment by small increments of the position of the roller or cylinder B in relation to the actuating-disks D on the rock-shaft E, and consequently for the diminution in varying degrees of the pattern to be engraved on the cylinder. When the size of cylinder to be engraved is not such that the repeat of the pattern used can be made to fit exactly on the periphery of the cylinder B by the use of the stepped disks C, the necessary additional adjustment is obtained by slightly raising or lowering the cradle of the machine in the usual way.

Instead of the stepped disks described, a single broad conical or beveled disk may be fitted on the mandrel A on each side of the printing-roller B to be engraved, in which case the actuating-disks D on the rock-shaft E may be correspondingly beveled or formed with a milled bearing-edge. By adopting this arrangement of beveled disks the printing-roller B may be adjusted in relation to the rock-shaft E with great nicety, and the usual mode of adjustment by raising or lowering the cradle F may be dispensed with.

The stepped disks C or beveled disks on the mandrel A may be made in sets adapted to give any degree of diminution. For example, one pair of disks C may be used to reduce the pattern being engraved on the printing-cylinder B to one-fifth of the size of that on the zinc plate (on the cradle) from which it is copied, another pair may be used to give three diminutions, and other pairs may give

other degrees of dimunition, the disks C being fitted on the mandrel B, so that they may be readily removed and replaced. The pulleys G, which are fitted on the oscillating frame H, carrying the tracer or style *h*, and which actuate the carriage fitted with the diamonds or gravers, should be made and fitted in sizes to give the corresponding degrees of diminution on the printing-cylinder in the lateral direction.

In lieu of using the stepped disks described, single disks may be fitted on each end of the mandrel A, corresponding in size to each of the steps, and be made movable and interchangeable, a number of spare disks being kept to replace those on the mandrel when required.

What I claim is—

1. The combination of the mandrel A of a pantograph engraving-machine with stepped or beveled disks C thereon, and actuating devices whereby varying degrees of diminution in the designs may be obtained, substantially as set forth.

2. The combination of the mandrel A of a pantograph engraving-machine with stepped or beveled disks C, secured adjustably on said mandrel, as and for the purpose described.

3. In pantograph engraving-machines of the cradle class, the combination of a stepped or beveled disk, C, on each end of the roller-shaft or mandrel, with the ordinary actuating-disks on the rocking shaft of the machine, as and for the purpose set forth.

4. In pantograph engraving-machines of the cradle class, the combination, with the roller-shaft or mandrel, of movable and interchangeable disks fitted thereon, and actuated by the usual disks on the rocking shaft of the machine, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN MOWAT.

Witnesses:
JOHN SIME,
W. GIBSON.