

No. 684,973.

Patented Oct. 22, 1901.

M. BARR.

THREE DIMENSION PANTOGRAPH ENGRAVING MACHINE.

(Application filed Aug. 9, 1900.)

(No Model.)

2 Sheets—Sheet 1.

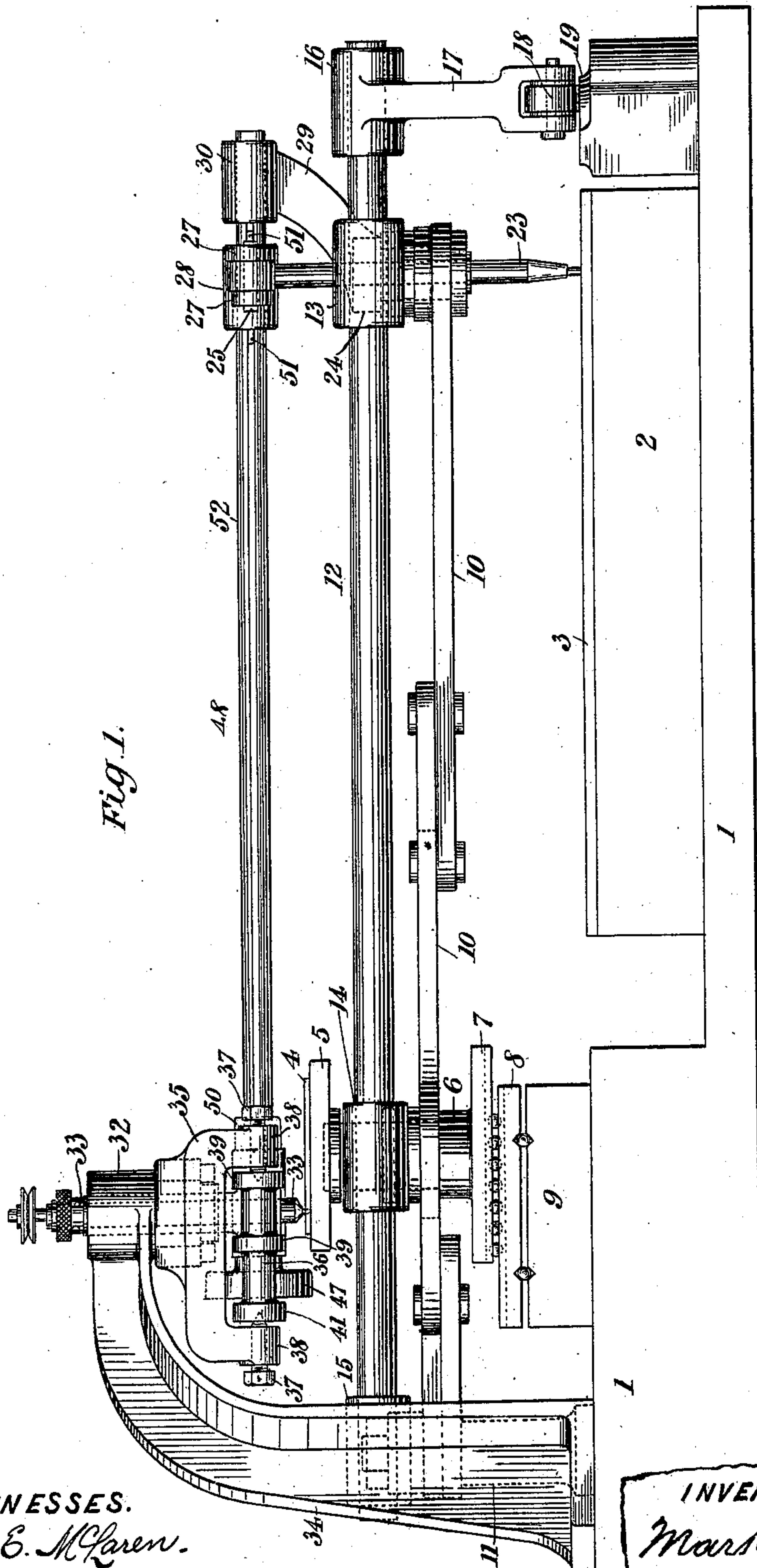


Fig. 1.

WITNESSES.
Robert E. McLaren.
H. L. Coit

INVENTOR.
Mark Barr
By his Attorney.
Chas. S. Woodroffe

No. 684,973.

Patented Oct. 22, 1901.

M. BARR.

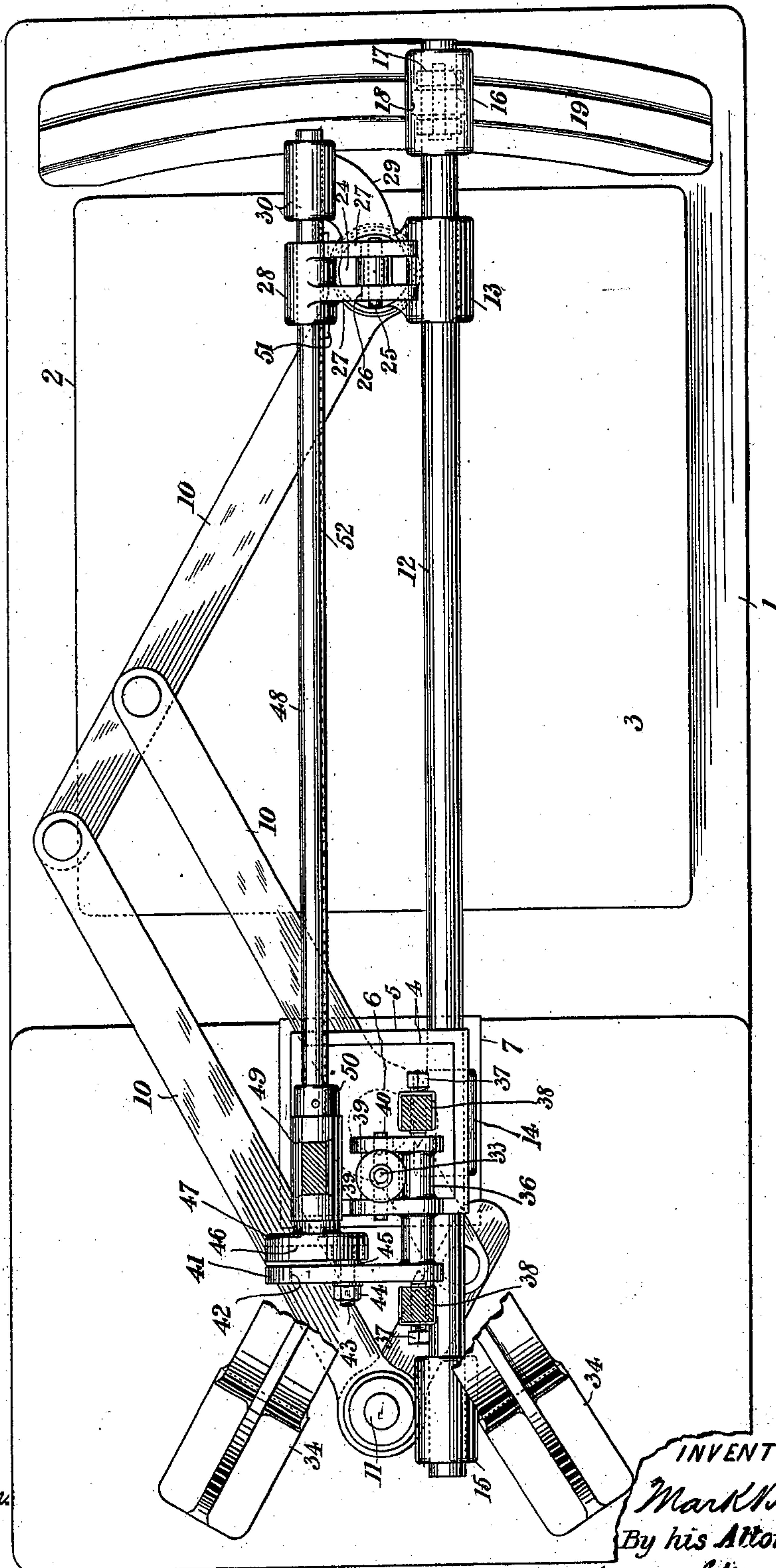
THREE DIMENSION PANTOGRAPH ENGRAVING MACHINE.

(Application filed Aug. 9, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.



WITNESSES.
Robert E. McLaren
H. S. Lot

INVENTOR.
Mark Barr
By his Attorney
Chas. S. Woodroffe.

UNITED STATES PATENT OFFICE.

MARK BARR, OF BROADHEATH, ENGLAND, ASSIGNOR TO THE LINOTYPE COMPANY, LIMITED, OF LONDON, ENGLAND.

THREE-DIMENSION PANTOGRAPH ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,973, dated October 22, 1901.

Application filed August 9, 1900. Serial No. 26,412. (No model.)

To all whom it may concern:

Be it known that I, MARK BARR, of Broadheath, in the county of Chester, England, have invented certain new and useful Improvements in Three-Dimension Pantograph Engraving-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to improvements in three-dimension pantograph engraving-machines. An engraving-machine that can deal only with a plane surface in both pattern and work has a two-dimension capacity—that is, it can deal with length and breadth only, but an engraving-machine whose tracer-rod and tool have each a capacity for vertical motion or for motion that has a vertical component such as would be required in engraving the intaglio or the cameo contours of a medal has a third-dimension capacity; hence the term “three-dimension” engraving-machine. The present invention relates to improvements in pantograph engraving-machines of the latter class.

Referring to the accompanying drawings, which are to be taken as part of this specification and read therewith, Figure 1 is a side elevation, and Fig. 2 a plan.

1 is the base of the machine; 2, the pattern-table; 3, the pattern; 4, the work; 5, the work-table, carried by a column 6, standing upon the top one 7 of a pair of plates 7 8, fitted to work freely at right angles with each other, the plate 7 upon the plate 8, and the latter upon the table 9.

10 10 10 represent a pantograph-linkage having its center upon a post 11, standing up from the base 1. The column 6 is connected to it in order that its motion may be communicated to the work 4.

12 is a straight and rigid bar connected to the pantograph-linkage 10 10 10 by being passed through three sockets 13 14 15, fast to the said linkage, and through which sockets it can slide freely as the linkage shortens and lengthens. The end of this rod projects beyond the pattern-table 2 for a short distance and is supported in a socket 16, carried by a pillar 17, fitted with a roller 18, adapted to

run to and fro upon the arcual track 19 as the linkage 10 10 10 is swung on its center 11. It may sometimes be desirable to provide against the end of the rod 12 in the socket 16 being lifted. Such provision would consist of a second roller above the socket running on an inverted arcual way suitably supported by the base 1.

23 is the tracer-rod. It has a capacity for vertical movement in a straight line through a sleeve 24, carried by the respective end of the linkage 10 10 10. The top end of the tracer-rod 23 carries a cross-head 25, which engages in slots 26 26 in arms 27 27, springing to the front from a boss 28 and at right angles therewith, as shown in Fig. 1.

29 is an arm fast to and standing up from the respective end of the linkage 10 10 10 to carry a socket 30, which is alined with the boss 28, already mentioned.

32 is a vertical bearing for the quill 33 of the engraving-tool. It is supported rigidly by strong standards 34 34, fast on the base 1 and overhanging the plane of the work for a sufficient distance.

35 is a bearing-block carried by and capable of turning about the bearing 32.

36 is a rod pivoted on center screws 37 37, adjustable in screw-threaded sockets 38 38, depending from the block 35.

39 39 are a pair of arms fast to the rod 36 and projecting from it at right angles, as shown in Fig. 2. The outer ends of these arms are slotted to receive the respective ends of a cross-head 40, fast to the tube that carries the quill 33.

41 is a lever fast on one end of the rod 36, from which it projects, standing parallel with the arms 39 39.

42 is a longitudinal slot in it to receive one end of a pin 43, the outer end of which is screw-threaded to receive a tightening-nut 44, which is capable of pinching the said lever between itself and a collar 45 on the other side of the lever to hold the pin 42 in the desired position lengthwise of the slot 42 for a purpose which is described farther on. The opposite end of the pin 42 engages in a diametrical slot 46 in a crank-disk 47, fast on the end of a rod 48, turning in a bearing 49, carried by the bearing-block 35. This rod 48

is prevented from moving longitudinally through the bearing 49 by the crank-disk on one side of it and a collar 50, fast to the said rod, on the other. The bearing 49 is alined
 5 with the boss 28 and bearing 30, already described. As the pantograph-linkage 10 10 10 lengthens and shortens the bearing 30 and the boss 28 slide upon the rod 48. The boss 28 is connected to the said rod 48 by a spline
 10 51, fast to the said boss, engaging in a longitudinal slot 52 in the rod.

The action of the invention constructed as above described in respect of its three-dimension capacity is as follows: Each rise and drop
 15 of the tracer-rod 23 as the tracing-point passes up and down the intaglio and down and up the cameo contours of the pattern rocks the rod 48 in the bearings 30 49 accordingly. The rocking motion of the said rod is communi-
 20 cated to the lever 41 by the pin 43 and by the rod 36 and its arms 39 to the quill 33, so that the rise and drop of the latter in the work 4 corresponds exactly in time and proportionally with the above-described rise and drop
 25 of the tracer-point. The ratio of reduction of the third dimension is adjusted as may be

desired by adjusting the position of the pin 43 along the slotted lever 41.

I claim—

The combination of pantograph-linkage; 30
 tracer capable of a sliding motion through one end of it; rod adapted to rock in bearings carried by the said linkage and by an over-
 hanging standard at the respective ends of the machine; cross-head and slotted-arm con- 35
 nection between the tracer-rod and the respective end of the rocking rod; a connection adjustable for ratio of reduction between the quill-tube and the respective end of the rock-
 ing rod adapted to transfer the rocking mo- 40
 tion of the said rod to the said quill-tube; a straight rigid rod adapted to slide in sockets on the pantographic linkage; a roller carried
 by the outer end of the said linkage and an arcual track for that roller to run on. 45

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

MARK BARR.

Witnesses:

THOMAS TAYLOR,
 ARCHIE LOWE.