

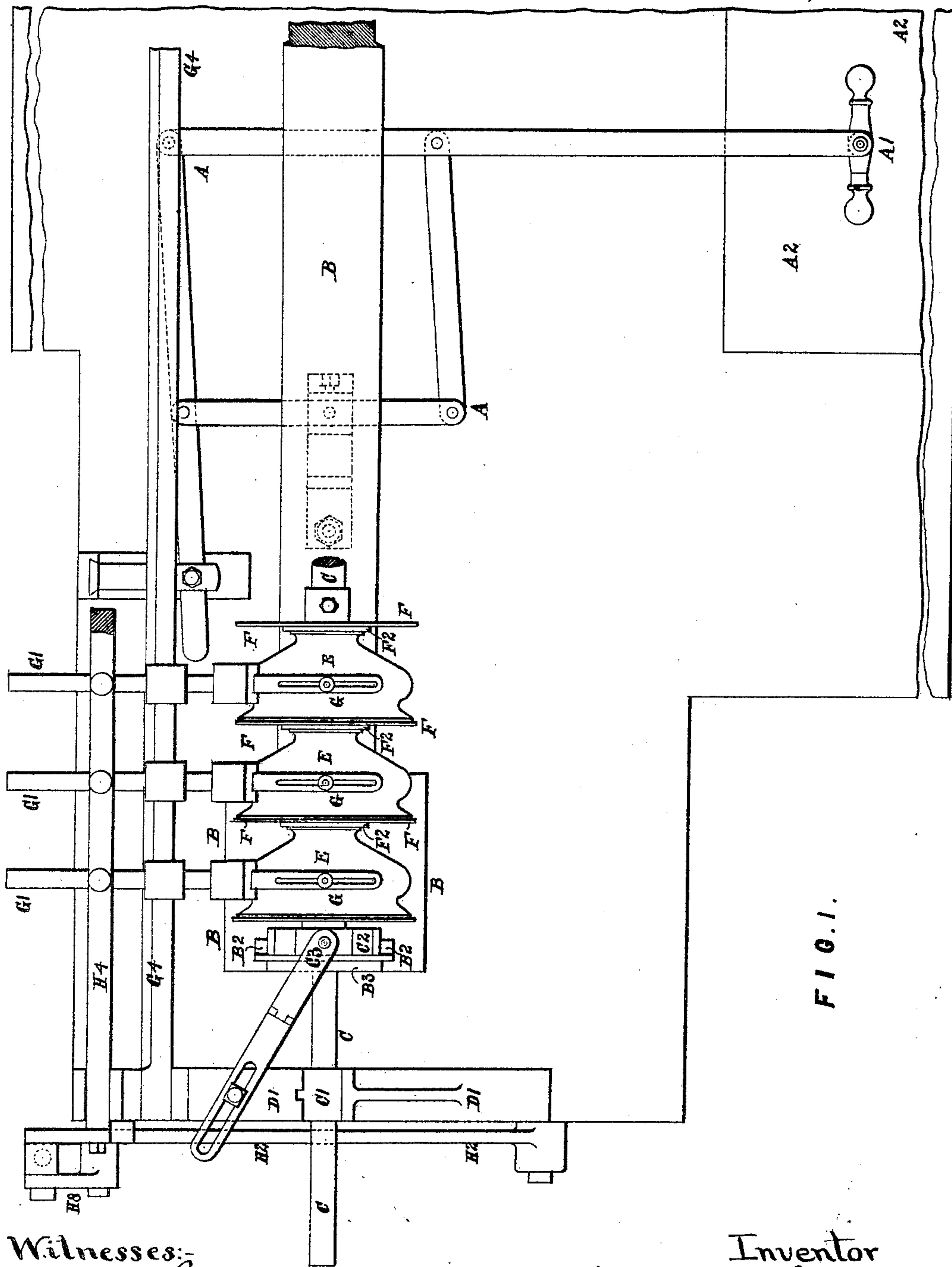
(No Model.)

3 Sheets—Sheet 1.

W. GOUDIE.
PANTOGRAPHIC ENGRAVING MACHINE.

No. 460,931.

Patented Oct. 6, 1891.



Witnesses:

John Revell

Albert Pophins

Inventor

William Goudie

By his Attys

Howson and Howson

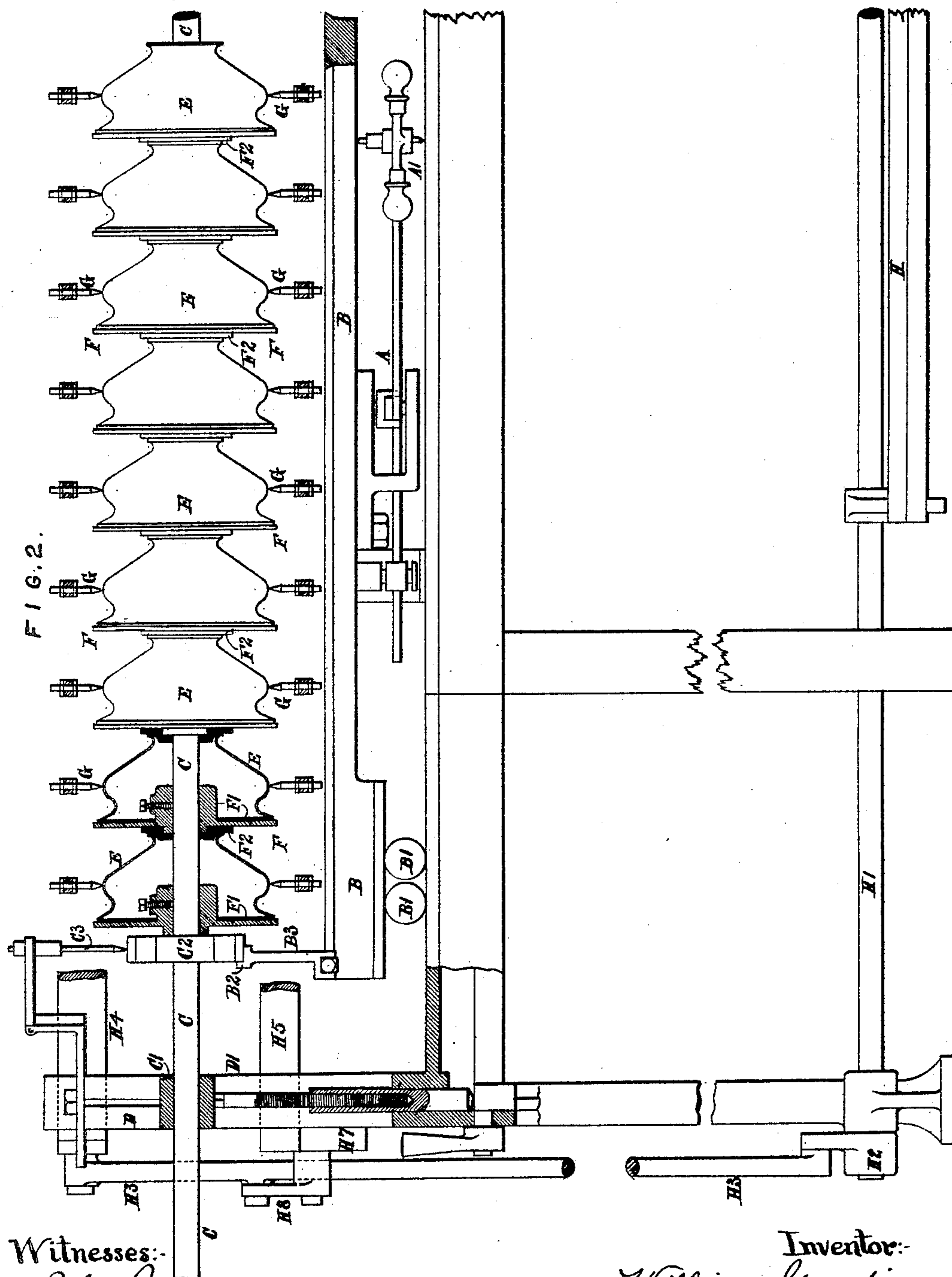
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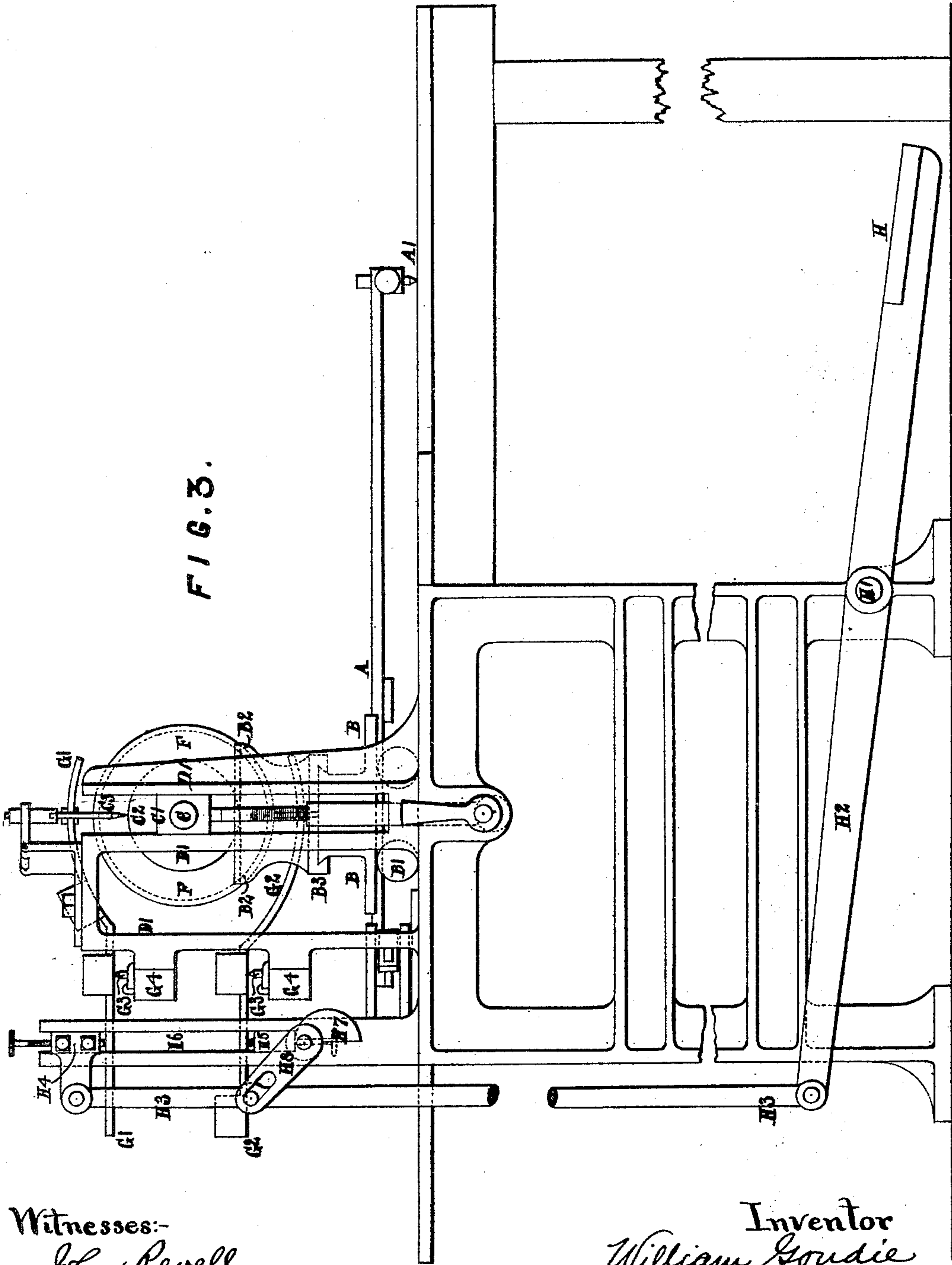
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UNITED STATES PATENT OFFICE.

WILLIAM GOUDIE, OF GLASGOW, SCOTLAND.

PANTOGRAPHIC ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 460,931, dated October 6, 1891.

Application filed June 10, 1891. Serial No. 395,744. (No model.) Patented in England April 30, 1889, No. 7,157, and in Belgium January 26, 1891, No. 93,541.

To all whom it may concern:

Be it known that I, WILLIAM GOUDIE, a subject of the Queen of Great Britain and Ireland, and a resident of Glasgow, in the county of Lanark, North Britain, have invented certain Improvements in Pantographic Engraving-Machines, (for which I have obtained a British patent, No. 7,157, dated April 30, 1889, and a Belgian patent, No. 93,541, dated January 26, 1891,) of which the following is a specification.

My said invention has for its object, by means of improved appliances, to adapt pantographic engraving-machines for engraving upon glass globes and other similar articles of glass or other material having surfaces varying more or less from simple globular or cylindrical forms.

My improvements can be applied to various kinds of pantographic engraving-machines, but I prefer such as are of simple construction and which have appliances or can be easily fitted with appliances for varying the proportion between the guide-pattern and what is to be produced by the engraving-points.

In one machine to which my improvements are very conveniently applicable the tracer is attached to a pair of jointed pantograph parallelograms, the fixed and acting centers of which are adjustable for varying the proportion between the guide-pattern and the work, the acting centers being attached to a long beam which rests on steel balls. For some purposes a single pantograph parallelogram is sufficient. The beam, in moving in correspondence with the pattern, imparts combined longitudinal and rotary movements to a horizontal shaft on which a large number of glass globes or other articles are strung for the purpose of being engraved simultaneously, special appliances being provided for holding them securely and in a manner to obtain accurate work. The engraving-points, of which there are diametrically-opposite sets, are carried by weighted levers on stationary centers, as in some existing machines, but the bars carrying the centers are adjustable, so that the levers holding the engraving-points may be disposed in the best manner to suit the particular form of globe or article on which they

have to operate. There may be three or more sets of engraving-points, arranged to act on three or more equidistant parts of the globes or articles.

In order that my said invention and the manner of performing the same may be properly understood I hereunto append three sheets of explanatory drawings, to be hereinafter referred to, and representing pantographic engraving-machinery as provided with my improved appliances.

Figure 1, Sheet 1, of the drawings is a plan showing parts of a machine as adapted for engraving glass globes. Fig. 2, Sheet 2, is a sectional front elevation; and Fig. 3, Sheet 3, is an end elevation. In these drawings the same reference-letters are used to mark the same or like parts wherever they are repeated.

In the construction shown in the drawings a well-known single pantograph parallelogram A is employed to reduce and transfer the movements of the tracer A', carried by hand over the lines of the guide-pattern A² to a beam B, which rests on steel balls B'. Above the beam B there is a horizontal shaft C, the ends of which pass through blocks C', which are placed in vertical guide-slots D in end frames D', the shaft C being fitted to move freely endwise through the blocks C'. Near its ends the shaft C has fixed on it cylindrical pulleys C², which rest on transverse horizontal rails B², formed on brackets B³, fixed on the beam B, and as the beam B is moved by the pantograph A in any direction any endwise motion is imparted as such to the shaft by ribs or flanges on the rails B², acting on the edges of the pulley C², while any backward or forward motion causes a corresponding rotation of the shaft C through the action of the rails B² on the cylindrical surfaces of the pulleys C². One of these pulleys C² (or each of them) has lines marked on its periphery, dividing it into aliquot parts, and an adjustable pointer C³, fixed to the end frame D', is provided to facilitate the setting of the pulley and the shaft C and articles thereon, so that repeats of a pattern may be commenced at points accurately dividing the circumference of a globe or other article into equal segments.

The globes or articles E to be engraved are strung upon the shaft C and are centered and

fixed thereon by means of metal disks F, which are made with bosses accurately fitted on the shaft, on which they are fixed by pinching-screws, when adjusted with the globes E between them. Each disk F has on one side of it a cover F', of rubber or other suitable soft material, for the larger end of a globe E to bear against, and on the other side there is a slightly-projecting boss to enter the smaller opening of the next globe, a rubber ring F² of suitable shape being placed round the boss and rubber rings of different sizes being provided to suit different globes.

The engraving-points G, of which there are two diametrically-opposite sets in the modification shown in the drawings, acting, respectively, on the highest and lowest parts of the globes E, are carried by weighted levers G' G² on stationary centers G³, adjustable on longitudinal frame-bars G⁴. The engraving-points G are not in contact with the globes E, excepting when the operator depresses a treadle H, which is fixed to a rocking shaft H', having fixed on its ends levers H², connected by rods H³ to a longitudinal bar H⁴, provided with adjustable screw-pins to act on the upper engraving-levers G'. A similar bar H⁵ acts reversely on the lower engraving-levers G², the two bars H⁴ H⁵ moving in vertical guides H⁶ and the lower one H⁵ being acted on by cams H⁷, turned by levers H⁸, moved by pins on the rods H³. The weights of the parts are so arranged that when the operator takes his foot off the treadle H the longitudinal bars H⁴

H⁵ move so as to turn the levers G' G² with the engraving-points G out of contact from the globes E.

What I claim as my invention is—

1. In engraving-machines for globular or similar articles, the combination of pantographic mechanism with a horizontal shaft carried in blocks in vertical guides in the end frames of the machine, pulleys on the shaft resting on and turned by rails on the pantograph-beam, a series of metal disks adjustably fixed on the shaft, having interposed rubber or like material to grip the articles to be engraved, a series of said articles held on the shaft by and alternately between said disks, and one or more sets of engraving-points carried by weighted levers on adjustable stationary centers, the parts being arranged and operating substantially as and for the purposes herein set forth.

2. The means for holding a series of globes or other articles in a pantograph engraving-machine, said means consisting of a shaft and a series of metal disks adjustably fixed on the shaft with interposed rubber or like material, so as to grip the articles between the disks, substantially as set forth.

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

WILLIAM GOUDIE.

Witnesses.

EDMUND HUNT,
DAVID FERGUSON.