

(No Model.)

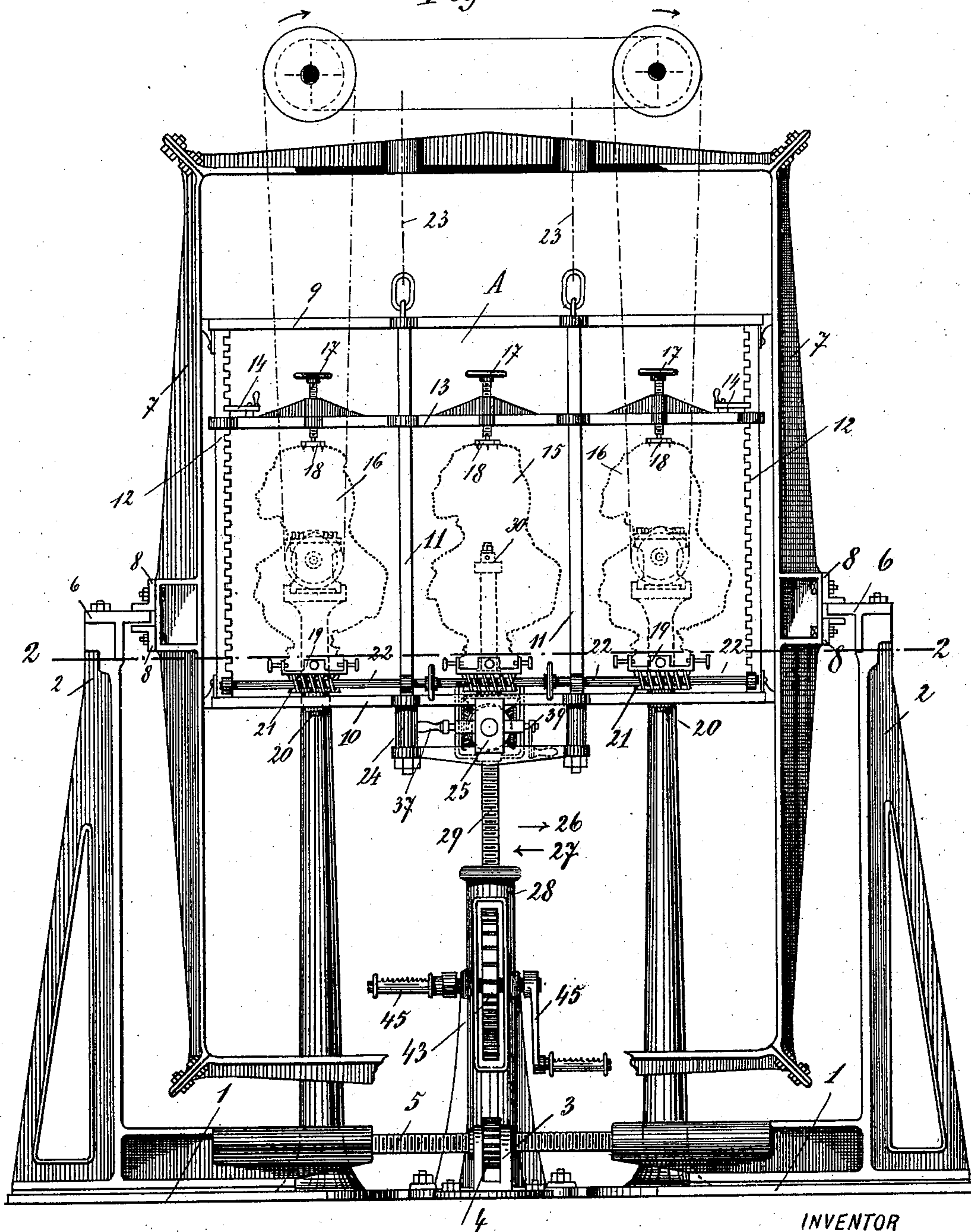
3 Sheets—Sheet 1.

A. BONTEMPI.
SCULPTURING MACHINE.

No. 599,160.

Patented Feb. 15, 1898.

Fig: 1.



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(No Model.)

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Fig. 2.

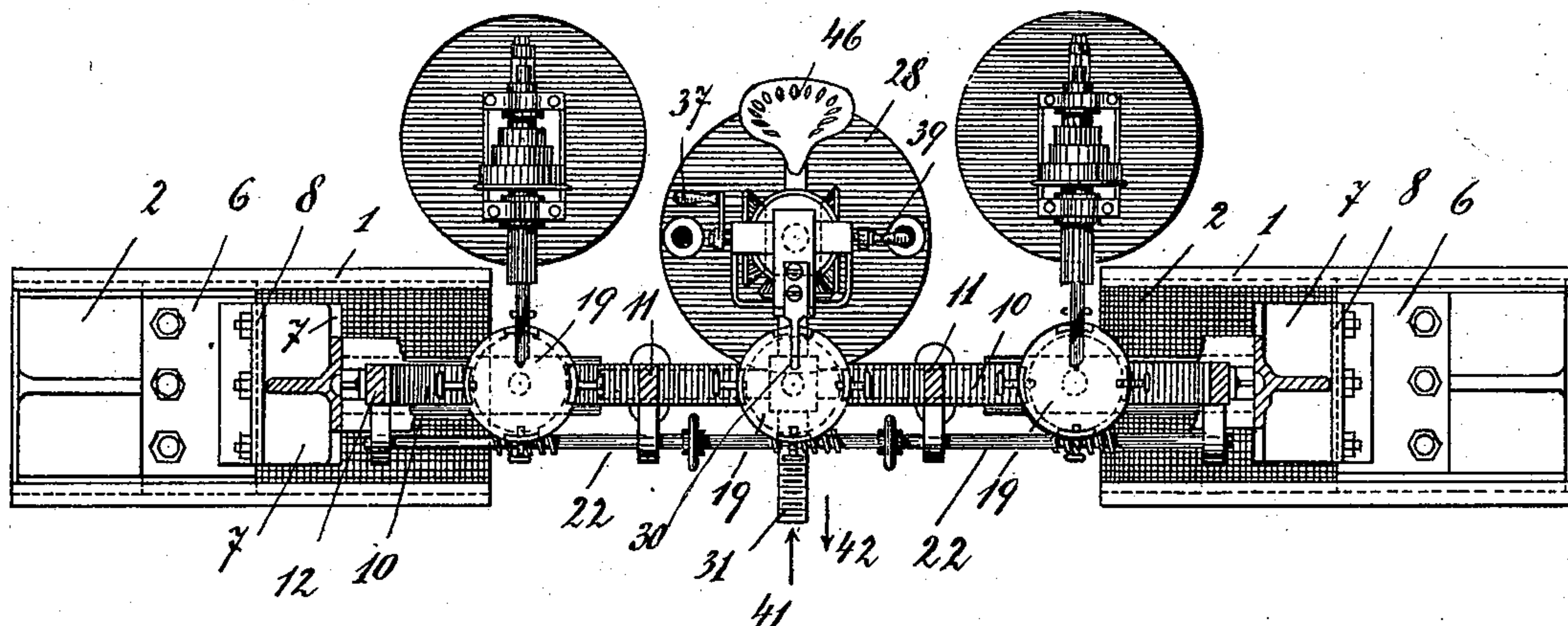
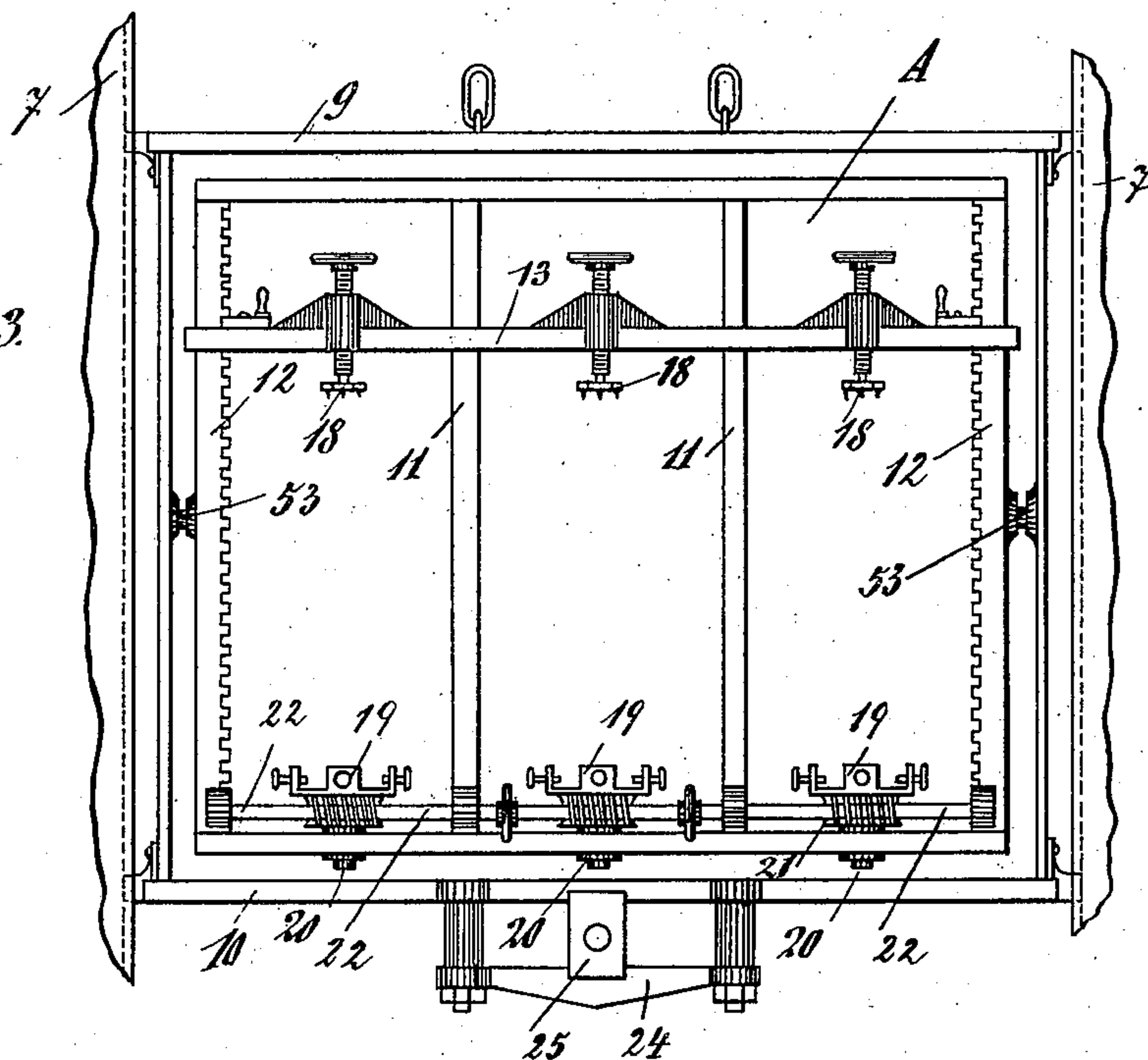


Fig. 3.



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Fig: 4.

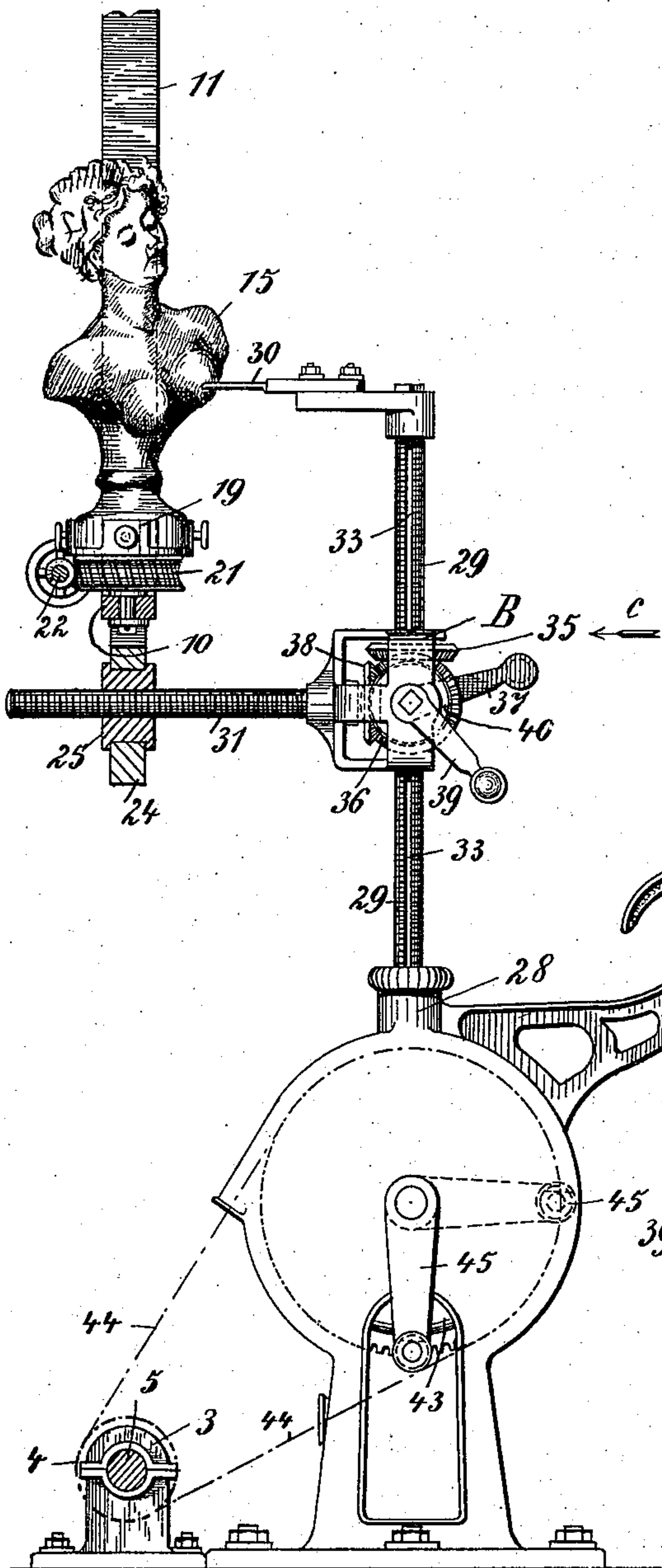


Fig: 5.

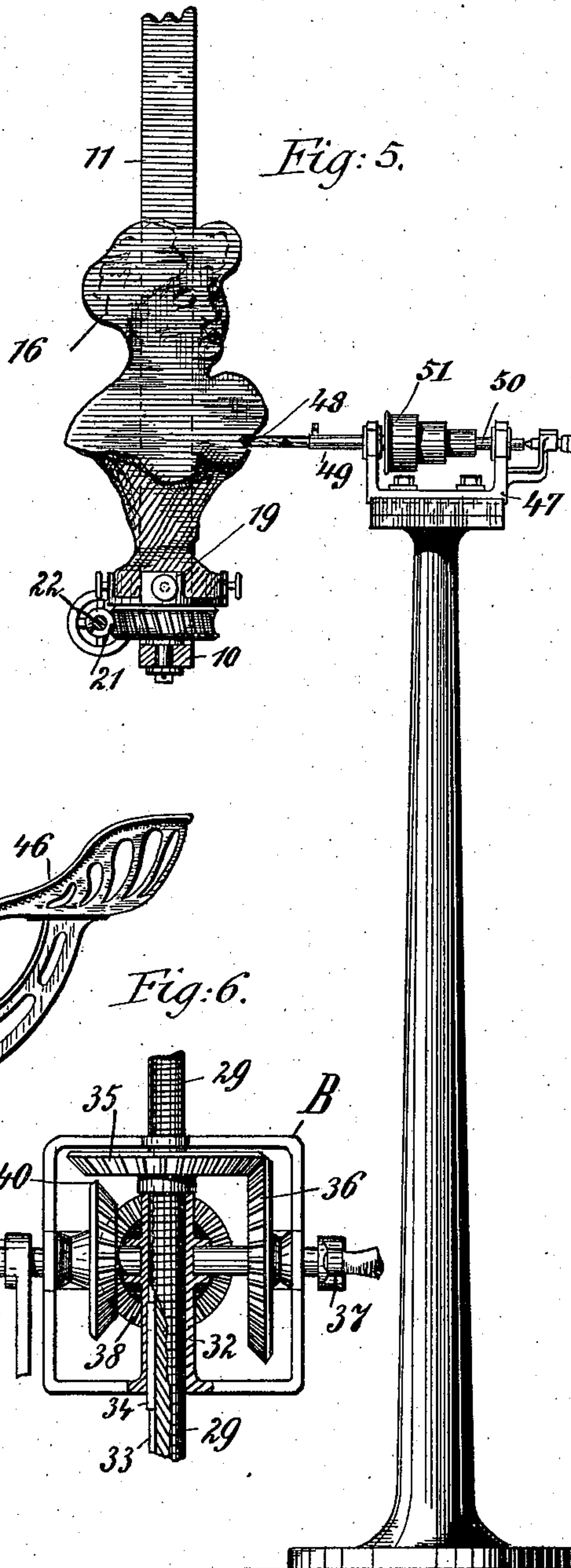
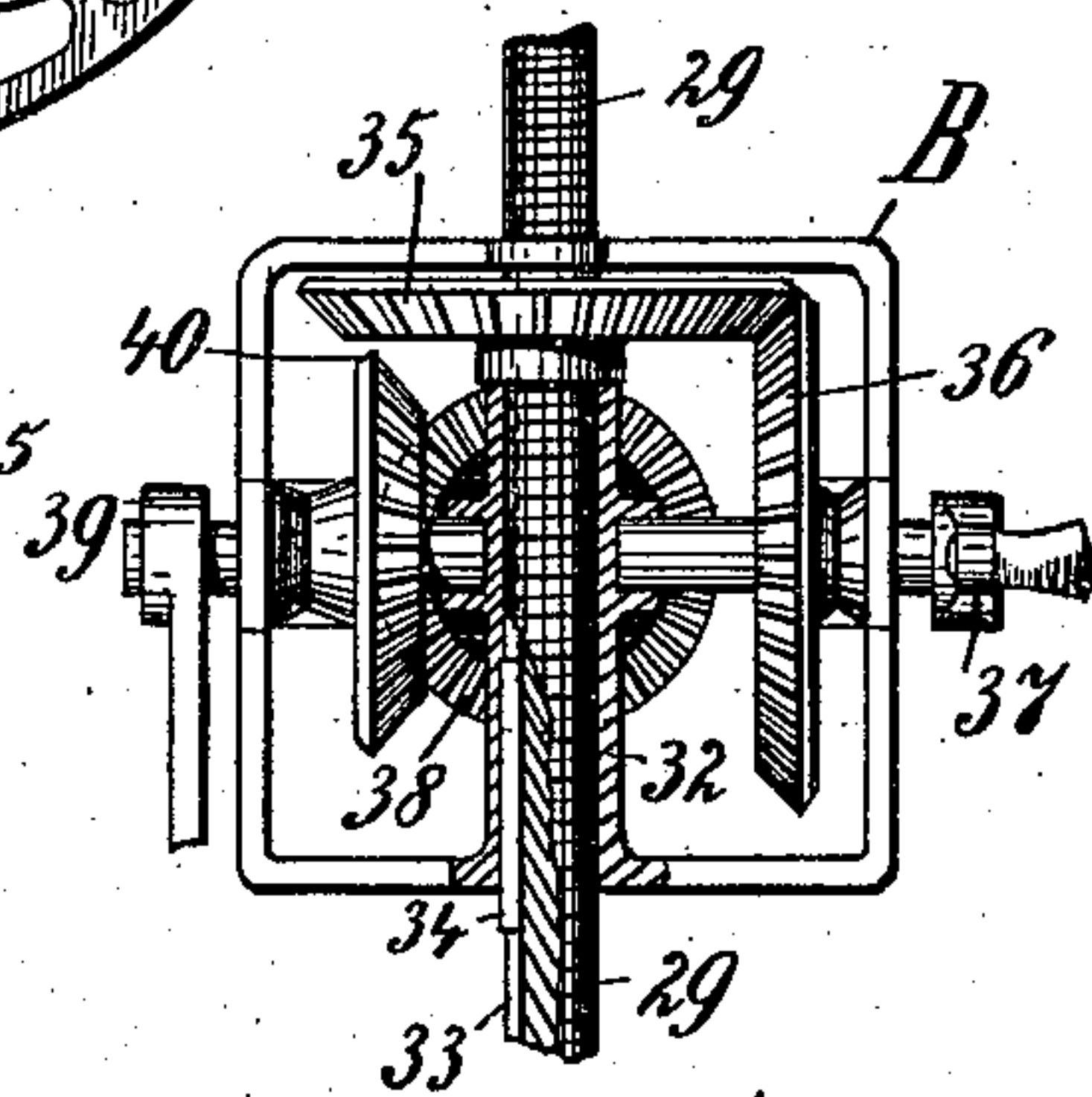


Fig: 6.



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UNITED STATES PATENT OFFICE.

AUGUSTO BONTEMPI, OF FLORENCE, ITALY.

SCULPTURING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 599,160, dated February 15, 1898.

Application filed October 28, 1896. Serial No. 610,287. (No model.) Patented in Italy April 4, 1896, XXXI, 41,269; in Germany May 15, 1896, No. 91,013; in Austria May 21, 1896, No. 46/2,526; in Hungary May 28, 1896, No. 6,214; in England September 21, 1896, No. 20,813; in Switzerland September 21, 1896, No. 13,051; in Norway September 25, 1896, No. 5,331, and in Belgium October 13, 1896, No. 123,831.

To all whom it may concern:

Be it known that I, AUGUSTO BONTEMPI, of Florence, in the Kingdom of Italy, have invented a new and useful Sculpturing-Machine, (for which Letters Patent were granted to me in Italy, No. 41,269, XXXI, dated April 4, 1896; in Germany, No. 91,013, dated May 15, 1896; in Austria, No. 46/2,526, dated May 21, 1896; in Hungary, No. 6,214, dated May 28, 1896; in England, No. 20,813, dated September 21, 1896; in Switzerland, No. 13,051, dated September 21, 1896; in Norway, No. 5,331, dated September 25, 1896, and in Belgium, No. 123,831, dated October 13, 1896,) of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has for its object an apparatus by which sculptured images or works of art may be made from a model. This apparatus is characterized, essentially, by the various devices being concentrated at one place and being capable of being operated by one person.

The object of the invention is shown in the accompanying drawings, in which—

Figure 1 is a front elevation of the apparatus. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a front elevation of the adjustable frame and showing a modification. Fig. 4 is a side elevation of the operating mechanism. Fig. 5 is a similar view of the cutting mechanism. Fig. 6 is a detail of the operating mechanism.

The constructive arrangement is as follows: Two supports or standards 2 are adjustably arranged on two slideways 1, standing opposite one another, and these two frames or supports are connected with one another by means of a screwed spindle 5, mounted in a support 3 and provided with a chain-wheel 4, so that by revolving said screwed spindle in one direction or the other the two supports or frames 2 may be moved mutually to left or right. The upper end of each support carries a guide-bar 6, intended to support the main frame 7. For this purpose the latter is provided with angle-bars 8, which serve as guides and partly inclose the guide-bars 6. A vertically-adjustable frame A is mounted

in the framework 7, and consists of two cross bars or beams 9 and 10, inner vertical guide-bars 11, and side racks 12. A second horizontal beam 13 is mounted on the bars 11 and racks 12 and may have its height varied by means of pawls 14, arranged on it so as to engage in the racks 12. The frame A is thus divided into three vertical divisions or compartments, which serve for holding the model 15 and the works of art or images 16, which are to be made.

In order to be able to fix in the frame the model and the rough blocks for the images which are to be made, the cross-bar 13 is provided with set-screws 17, which have at their lower ends a spiked holder 18, while the lower cross-bar 10 is provided with supports 19. These supports 19 consist of a crown-holder connected to a worm-wheel 21, revoluble on studs 20. A worm-shaft 22 is also mounted in the frame A, so that the worm-wheels 21 may be thereby operated and the model 15 and the blocks 16 thus rotated evenly on their vertical axes.

The frame A may be counterbalanced by counterweights connected with chains 23, traveling over pulleys in order to facilitate the vertical movement of the said frame. Owing to the cross-bars 13 being vertically adjustable, models and images of various heights may be fastened in the frame. As, however, both the copying-point and also the working steel or tool do not alter their position, it is necessary that the model and also the images may be able to be rotated in the frame on their axes, and this is rendered possible by the arrangement of the aforesaid supports 19 and worm-shaft 22, and it is also necessary that the frame A should be vertically adjustable in the framework 7 and the framework 7 horizontally on the supports 2 and the whole in another horizontal direction on the slideway 1. In order to effect all this, the following arrangement is adopted: The lower cross-bar 10 of the frame A is provided with a slide-guide 24, in which a screw-nut 25 may be adjusted in the direction of the arrows 26 and 27. As shown in Figs. 2 and 4, a stand 28 is arranged behind the whole framework, which stand carries a fixed vertical screwed spindle

29. On this screwed spindle, the upper end of which carries the adjustable copying-point 30, a support or frame B slides, which carries a horizontally-arranged screwed spindle 31, which engages in the screw-nut 25, Figs. 1 and 3. In order to render possible a vertical adjustment of the support B and therewith of the frame A with the model 15 and the images 16, the support-frame B is provided with a sleeve or socket 32, Fig. 6, which loosely surrounds the spindle 29 and carries a spline 34, corresponding with a groove 33 in the screwed spindle 29. A bevel-wheel 35 is inserted between the sleeve 32 and the upper part of the support-frame B, and the nave of said bevel-wheel is formed as a screw-nut and engages the screwed spindle 29. By turning this bevel-wheel a vertical adjustment of the whole support B is obtained. In order, however, to render possible an even rotation of the bevel-wheel, a second bevel-wheel 36, to engage the former, is mounted in the support-frame B and may be operated by means of a crank-handle 37. The screwed spindle 31 is revolvably mounted in the support-frame B, and the inner end of the same carries a bevel-wheel 38, standing in engagement with a bevel-wheel 40, Fig. 6, which is also mounted in the support-frame B and provided with a crank-handle 39, so that by moving the crank 39 a rotation of the screwed spindle 31, and thereby the adjustment of the frame 7 in the supports 2 in the directions of arrows 41 or 42, respectively, may be effected. (See Figs. 2 and 4.) Thus by operating the crank 37 a vertical adjustment of the frame A, and by operating the crank 39 a horizontal adjustment of the frame 7, is effected.

In order, however, to be able to operate the screwed spindle 5, Figs. 1 and 4, for adjusting the whole system from the standard or support 28, a chain-wheel 43 is mounted in the latter, which is connected with the chain-wheel 4 by means of a chain 44. The axle of the chain-wheel 43 is provided with pedals 45 to be operated by the person using the apparatus in the same way as bicycle-pedals. The stand 28 is also provided with a seat 46, on which the person using the apparatus can place himself.

The necessary borers or tools for making the image are mounted behind the frame in the plane of the copying-point 30 and in a frame 47, composed of two movable parallelograms. (See Fig. 5.) The front of this frame is intended to receive a revoluble sleeve or socket 49, provided with a borer 48, while in the rear spindles 50, carrying pulleys 51, are mounted, corresponding with the sockets 49 and carrying the same with them when rotated.

The parallel-shaped frame has for its object to allow of the various borers 48 being simultaneously and equally adjusted on their axes, while preventing any sidewise adjustment of the same, and this is effected by the said frame being pressed together or collapsed.

In the form of construction shown in Fig. 5 the rear of this parallelogram is presumed to be fixed and all the other parts to be movable; but the case may be reversed, so that the front may be fixed and all the other parts remain movable. As, however, it may happen with certain images that they have recessed parts or hollows widening inward, for the making of which the vertical and horizontal movement does not suffice, it is necessary that the frame A must be capable of being oscillated on its horizontal axis. Fig. 3 shows such an extended form of construction.

A frame 52 is arranged so as to be vertically adjustable in the framework 7 and receives the frame A, oscillating on trunnions 53. A slide-guide 24 is mounted on the frame 52. Otherwise the frame A, is arranged exactly like that described in Figs. 1 and 1^a.

The mode of operation of this apparatus is as follows: The blocks 16, which are to be treated, and the model 15 are gripped in the frame A, and the borer 48 is set in rotation. The person using the apparatus then sits on the seat 46 and effects the adjustment of the frame A or the said frame, together with the frame 7, in such a way that the copying-point 30 comes in contact with the model. The borers 48 work up to this depth on the blocks 16 and reproduce in this way the plastic characteristics of the model 15. If an adjustment or shifting of the entire device becomes necessary, the person using the apparatus operates the pedals 45, so that the screw-spindle 5 comes into action. If the models have recesses widening inward, the frame shown in Fig. 6 is inserted in the framework 7, so that it is possible to allow the model and the images to also oscillate on a horizontal axis and thereby to reach or have access to all the inner spaces of the model.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a sculpturing-machine, the combination with suitable supports of a horizontally-adjustable frame, a vertically-adjustable frame carried thereby and provided with a vertically-adjustable cross-bar, suitable work-holders carried thereby, work-supports carried by said vertically-adjustable frame and provided with a worm-wheel and a worm-shaft also carried by said frame, whereby the work-supports may be properly adjusted and evenly rotated on their vertical axes, substantially as set forth.

2. In a sculpturing-machine, the combination with a base of a threaded spindle fixedly secured in said base and carrying at its upper extremity a copying-point, a support-frame splined on said spindle and adapted to be vertically adjusted thereon, a threaded spindle revolvably mounted in said frame and adapted to engage a guide-nut mounted in a slide-guide on the vertically-adjustable frame, means carried by said support-frame for rotating said spindle whereby the work-holding frames may be vertically and hori-

zontally adjusted with respect to the copying-point, substantially as set forth.

3. In a sculpturing-machine, a vertical spindle provided with screw-threads, a support-frame sleeved thereon, a horizontal spindle carried by said frame and provided with screw-threads, a bevel-wheel threaded on said vertical spindle, a crank-operated bevel-wheel geared thereto, a bevel-wheel secured to the end of the horizontal spindle and a crank-operated bevel-wheel geared thereto, substantially as set forth.

4. In a sculpturing-machine, two horizontally-adjustable standards, guide-bars carried thereby, a threaded spindle operating in a nut carried by each standard, a chain-wheel secured to said spindle and located between two uprights, a base carrying a seat, a pedal-operated chain-wheel housed within said base and a chain connecting the two wheels whereby a lateral adjustment of the entire system from one and the same central point may be effected, substantially as set forth.

5. In a sculpturing-machine, the combination with laterally-adjustable standards of a horizontally-adjustable frame carried by said standards, a vertically-adjustable frame car-

ried by said frame, suitable work-holders carried by the said vertically-adjustable frame, and provided with a worm-wheel, a worm-shaft carried by said vertical frame, a threaded spindle operating in a nut carried by each standard, a chain-wheel secured to said spindle and located between two uprights, a base carrying a seat, a pedal-operated chain-wheel housed within said base, and a chain connecting the two wheels, a threaded spindle fixedly secured in said base and carrying at its upper extremity a copying-point, a support-frame splined on said spindle and adapted to be vertically adjusted thereon, a threaded spindle revolubly mounted in said frame and adapted to engage a guide-nut mounted in a slide-guide on the said vertically-adjustable frame, means carried by said support-frame for rotating said spindle whereby the work-holding frames may be vertically and horizontally adjusted with respect to the copying-point, substantially as set forth.

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