

(No Model.)

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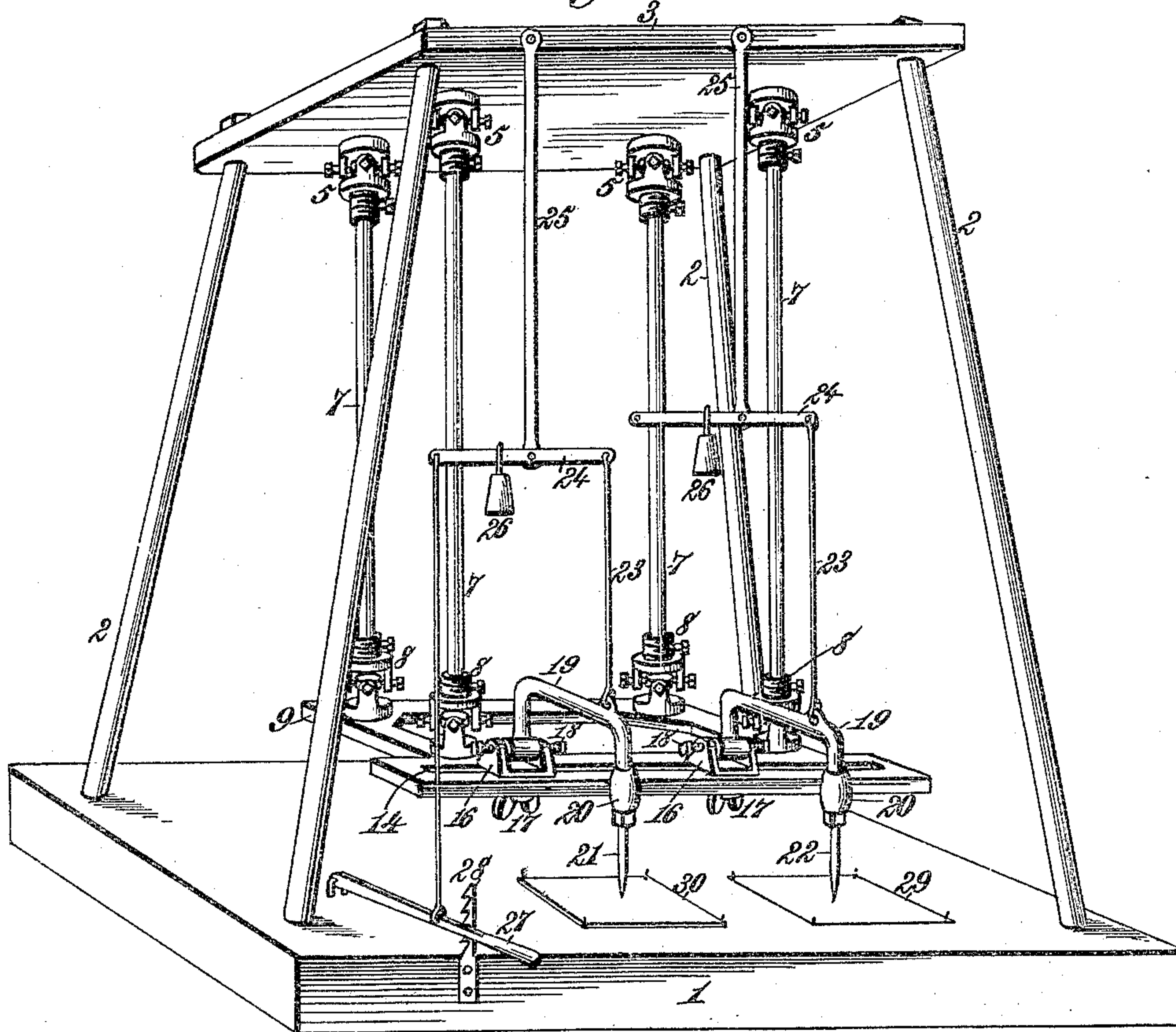
J. C. PARMERLEE.

ENGRAVING MACHINE.

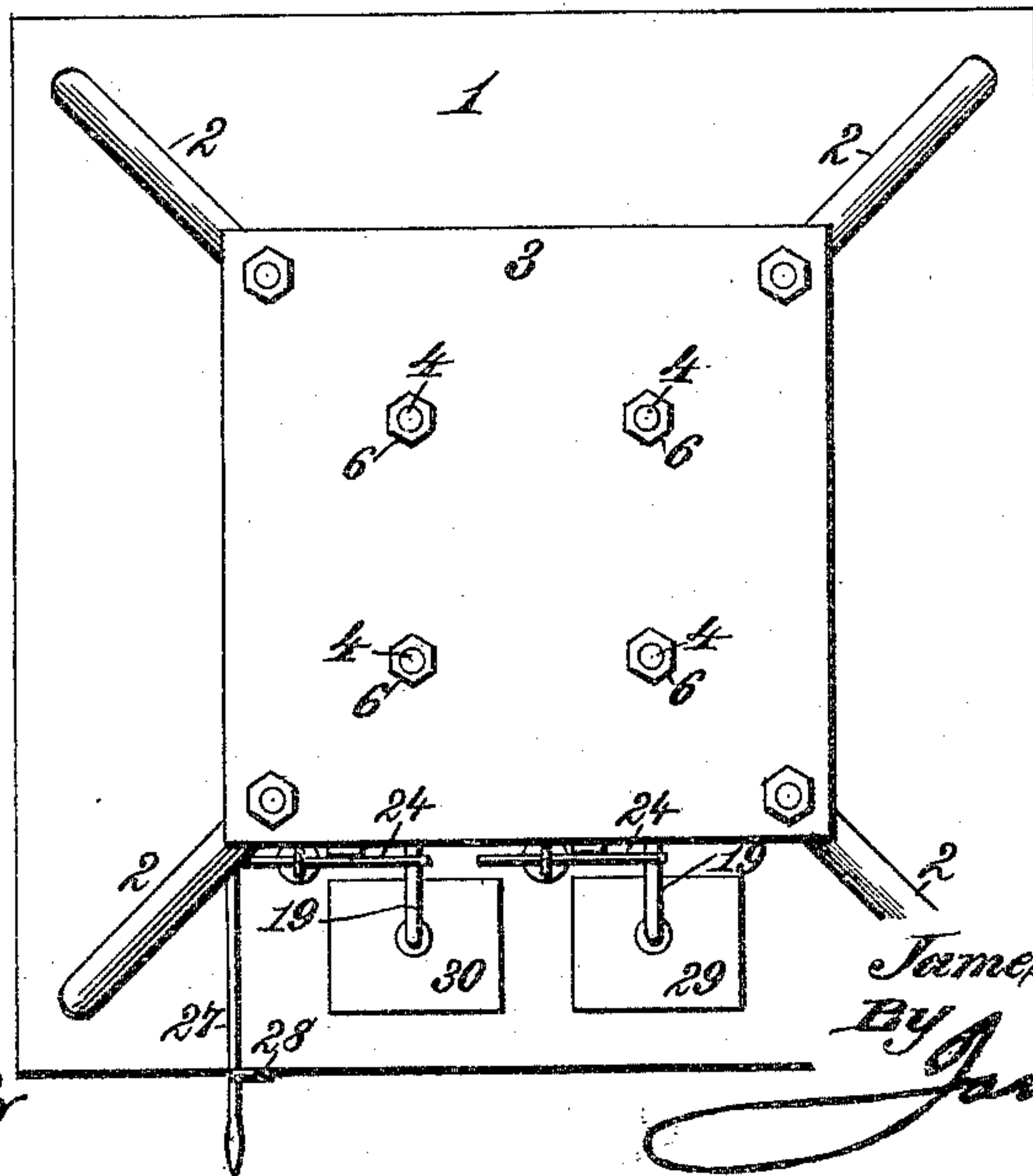
No. 430,542.

Patented June 17, 1890.

*Fig. 1.*



*Fig. 2.*



Witnesses:  
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*J. H. Myers*

Inventor  
*James C. Parmelee,*  
By *James L. Norris,*  
*Atty.*

(No Model.)

2 Sheets—Sheet 2.

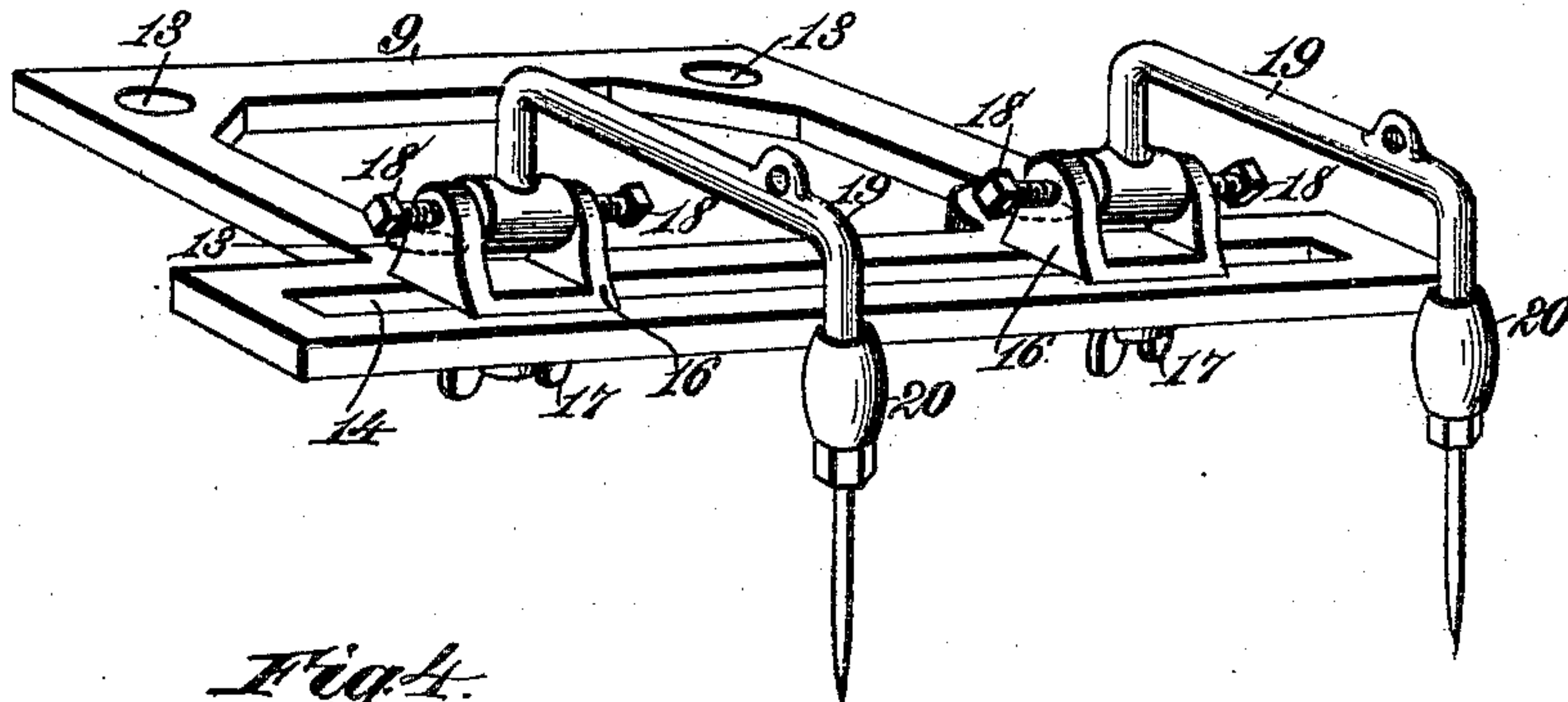
J. C. PARMERLEE.

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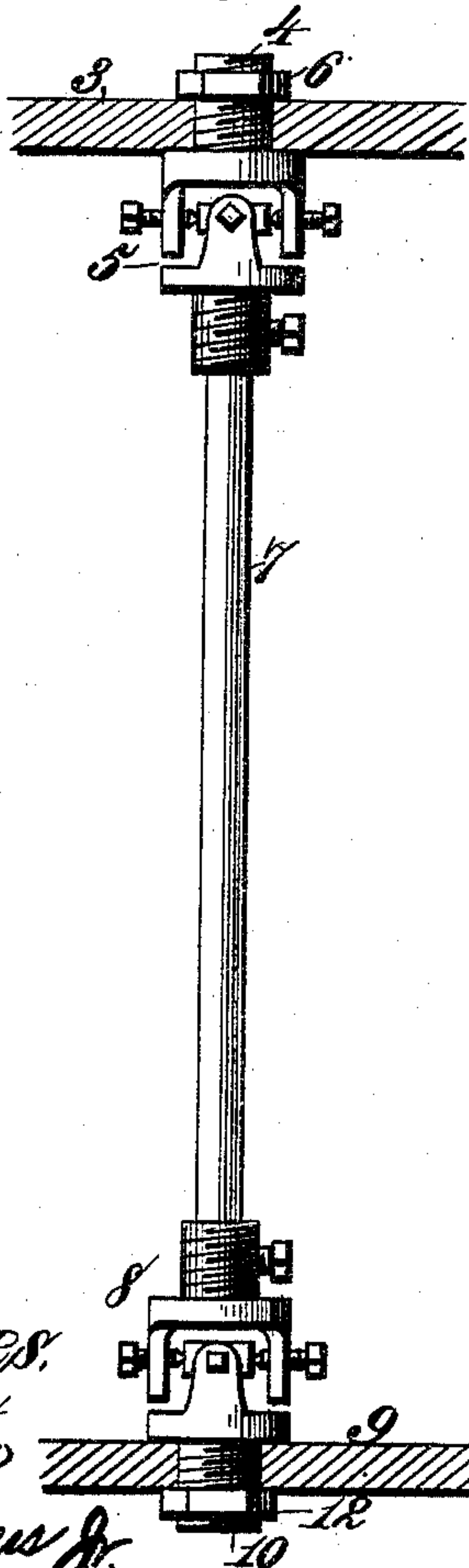
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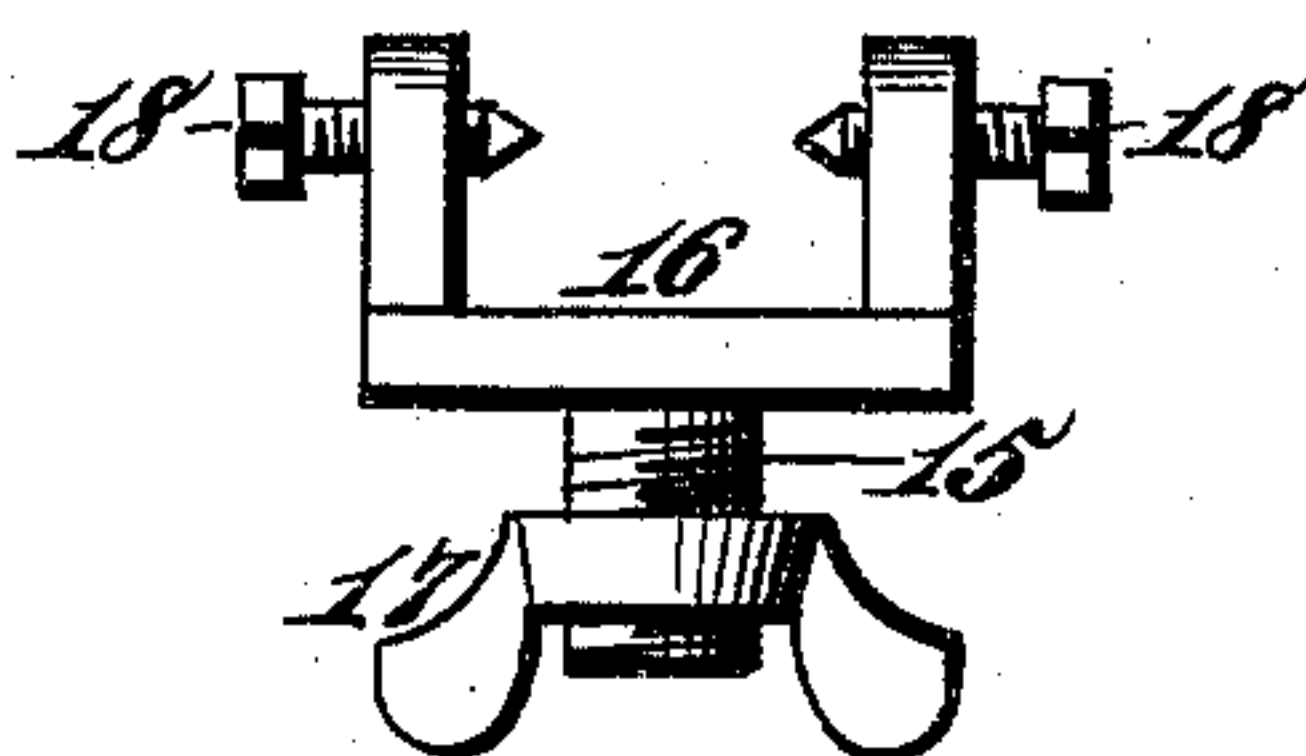
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



*Witnesses:*

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*Inventor:*

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# UNITED STATES PATENT OFFICE.

JAMES C. PARMERLEE, OF SEDALIA, MISSOURI.

## ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 430,542, dated June 17, 1890.

Application filed September 11, 1889. Serial No. 323,590. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES C. PARMERLEE, a citizen of the United States, residing at Sedalia, in the county of Pettis and State of Missouri, have invented new and useful Improvements in Engraving-Machines, of which the following is a specification.

In printing reproductions of pictures and similar objects in newspapers, where stereotyping types are desired, it is usual to make a free-hand drawing on a plate coated with a wax-like or other soft composition which can be easily penetrated through to the plate by a style or graver to make clean lines, which drawings become, in fact, matrices, since the parts not removed or scratched by the style serve as walls between the lines, and when a cast is made by the stereotyper these walls produce those parts in the stereotype which represent light or white portions of the picture. The wax-like or other soft composition coating on the plate must necessarily have sufficient thickness to give proper depth to the engraved portions and prevent crocking in printing from the stereotype, and when the coat is one-sixteenth part of an inch thick (more or less) the artist, making the free-hand drawing with a style, must contend with the thickness of coating on the plate in producing an accurate drawing, and accordingly must calculate the result to be obtained from the steel or other plate, and not from the external or exposed surface of the composition coating. The difficulties attending, the skill required, and the obvious objections incident to this prior method render it desirable to simplify the operation, avoid the necessity of employing skilled persons, simplify the work, and reduce the cost of production.

The present invention therefore relates to engraving-machines, and has for its objects to provide novel, simple, and efficient mechanical contrivances for reproducing pictures on printing-plates of steel or other material and for attaining matrices to produce stereotype-plates.

To accomplish these objects my invention embraces certain novel and useful peculiarities of construction, relative arrangement or combination of devices, and principles of operation, which are hereinafter described in detail, and specified in the claims, reference

being made to the accompanying drawings, in which—

Figure 1 is a perspective view of an engraving-machine embodying my invention; Fig. 2, a top plan view of the same; Fig. 3, a detail perspective view of the horizontally-swinging plate and its pivoted style or tool carrying arms; Fig. 4, a detail sectional view showing one of the pendent universally-jointed rods or portions of the swinging plate and top of the machine-frame, and Fig. 5 is a detail view of one of the carriers or clamps for adjustably connecting a style or graver carrying arm to the swinging plate.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates a stationary work-supporting table or bed-plate, from which rise, as here shown, four standards 2 to support the top piece 3, which parts constitute a stationary main frame. The standards are preferably inclined toward each other for the purpose of permitting the use of a top piece of comparatively small size, and this top piece is furnished with holes or mortises for the standards and with a series of orifices, each receiving the screw-threaded shank 4 of one section of a universal joint or coupling 5, which is secured by a nut 6. The other section of each universal joint or coupling is secured to the upper end of a vertical rod 7, having at its lower end a section of a corresponding universal joint or coupling 8, which is attached to a horizontal plate 9 by a screw-shank 10 and nut 12, the shank of each joint or coupling passing through an orifice 13, Fig. 3, in the plate. The object of the upper and lower sets of universal joints is to permit the plate 9 to be freely swung or moved in a horizontal plane in circular lines and in lines at right angles to each other; or, in other words, to enable the said plate to move horizontally in every direction of the compass.

The construction of universal joints shown for the pendent swinging plate will satisfactorily effect the object mentioned; but I do not confine myself to any particular construction, as the joints may be otherwise made than as shown to permit the plate to swing in all directions. The set-screws shown,



which pivotally connect the two sections of each universal joint, can be adjusted to compensate for wear, and in this respect the form of joint shown is desirable and useful.

5 The swinging plate is provided along its front edge with a longitudinal guideway, formed as a slot 14, through which pass the screw-threaded shanks 15 of the two carriers or clamps 16, that can be fixed in any position  
10 to which they may be adjusted by means of screw-nuts 17, or equivalent devices. The carriers each comprise two cheek-pieces having set-screws 18, provided with conical ends that set into conical recesses in the opposite  
15 ends of a hub forming part of a style or graver or similar tool-carrying arm 19, which is furnished at its outer extremity with a tool-chuck 20, of suitable construction for receiving and rigidly holding the tool. These arms  
20 can swing on the pivot-bearings in a vertical plane, and one serves to carry the style or graver 21 and the other the tracer 22 for following the lines of the picture to be reproduced on a steel or other plate coated  
25 with wax-like material or other soft composition ordinarily used to form a matrix from which to make a cast to produce a stereotype-plate of the drawing made on the coated plate. The set-screw pivots of the vertically-  
30 swinging tool-carrying arms can be adjusted to compensate for wear of the pivot-bearings, and to properly manipulate the arms with the swinging plate, each arm is balanced through the medium of a link 23, connecting the arm  
35 with a lever 24, pivoted to a support 25, and having a balance-weight 26. The levers 24 can be swung to raise and lower the tool-carrying arms by connecting the weighted ends of the levers with handles 27, adapted to be  
40 engaged in any adjusted position by retaining-catches, such as tooth-bars 28.

I have only exhibited one of the weighted levers connected with a handle, as described; but in practice both will be provided with  
45 handles for the independent adjustment of the two tool-carrying arms.

In Fig. 1 the model, or, rather, the picture, to be reproduced is indicated by the numeral 29, and 30 indicates the plate to be engraved,  
50 such plate being coated, as usual, with a soft composition that can be easily penetrated by the style or graver 21. The tool-carrying arms are properly adjusted on the swinging plate, so that the tracer can be caused to follow the  
55 lines of the photographic or other picture or outline represented by the model, and the style or graver acting in a perpendicular position is caused to scratch through the coat to the plate, and thus accurately reproduce  
60 on the plate and in the coating thereof whatever subject the model contains. This operation can be efficiently and correctly performed with ease and facility even by an unskilled person, for it is only required to set the tools  
65 and move the horizontally-swinging plate to cause the tracer to accurately follow the lines of the model or original picture, whatever it

may be. The style or graver scratches every line in exact harmony with the tracer, and an accurate portrait can thus be engraved simultaneously with the formation of a matrix for the stereotyper as rapidly as a person can trace the lines. The style or graver and tracer are independently adjustable through the medium of separate tool-carrying arms; but in  
70 the act of tracing the tools move in unison.

Having thus described my invention, what I claim is—

1. In an engraving-machine, the combination, with a stationary work-table, of a plate  
80 suspended above and adapted to swing in all directions over said table, a graver-carrying arm and a tracer-carrying arm, both mounted on said plate and both movable vertically toward and from the table independently of the  
85 movement of the plate, substantially as described.

2. In an engraving-machine, the combination, with a work-table, of a plate suspended to move horizontally in all directions, and two  
90 vertically-swinging tool-carrying arms having pivotal connection with the plate, substantially as described.

3. In an engraving-machine, the combination, with a work-table, of a pendent plate  
95 movable in a horizontal plane in all directions, two carriers adjustable to and from each other on the plate, and two vertically-swinging tool-carrying arms pivoted, respectively, to the adjustable carriers, substantially  
100 as described.

4. In an engraving-machine, the combination, with a work-table, of a pendent plate movable in a horizontal plane in all directions, a vertically-swinging style or graver  
105 carrying arm having a pivotal connection with the plate, and an independently-swinging tracer-carrying arm, also having a pivotal connection with the plate, whereby the two arms move horizontally in unison with the plate,  
110 but can swing vertically independent of each other and of the plate, substantially as described.

5. In an engraving-machine, the combination, with a work-table, of a suspended plate  
115 movable horizontally in all directions, a swinging style or graver carrying arm and a swinging tracer-carrying arm, both having a pivotal connection with the plate, and an independent balancing mechanism for each swing-  
120 ing arm, substantially as described.

6. In an engraving-machine, the combination, with a work-table, of a suspended plate movable horizontally in all directions, a swing-  
125 ing style or graver carrying arm and a swinging tracer-carrying arm, both having a pivotal connection with the plate, and a balancing mechanism for each arm comprising a pivoted weighted lever linked to the arm and a handle connected with the lever, substan-  
130 tially as described.

7. In an engraving-machine, the combination, with a work-table, of a plate movable horizontally in all directions and provided



with a longitudinal guideway at its front edge, two carriers adjustable along the guideway, and two vertically-swinging arms having set-screw pivots on the carriers and one provided  
5 with a style or graver and the other with a tracer, substantially as described.

8. In an engraving-machine, the combination of the main frame, a series of vertical rods hung at their upper ends by universal joints, a horizontally-movable plate suspended from the lower ends of the rods by universal joints, and a style or graver carrying arm and a tracer-carrying arm, both connected with the plate, substantially as described.  
15

9. In an engraving-machine, the combination of a main frame, a series of vertical rods hung at their upper ends by universal joints, a horizontally-movable plate hung from the  
20 lower ends of the rods by universal joints,

and two vertically-swinging arms having pivotal connections with the plate and one carrying a style or graver and the other a tracer, substantially as described.

10. In an engraving-machine, the combination, with a work-table, of a plate movable horizontally in all directions and having a longitudinal slot at its front edge, two carriers, each having a shank passing through the slot, a nut on each shank for clamping  
30 the carriers in position, and a style or graver carrying arm and a tracer-carrying arm respectively pivoted to the carriers, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.  
35

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Witnesses:

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WM. PARMERLEE.