

(No Model.)

E. THOMSON.

PRODUCING STEREOSCOPIC PICTURES BY ROENTGEN RAYS.

No. 583,956.

Patented June 8, 1897.

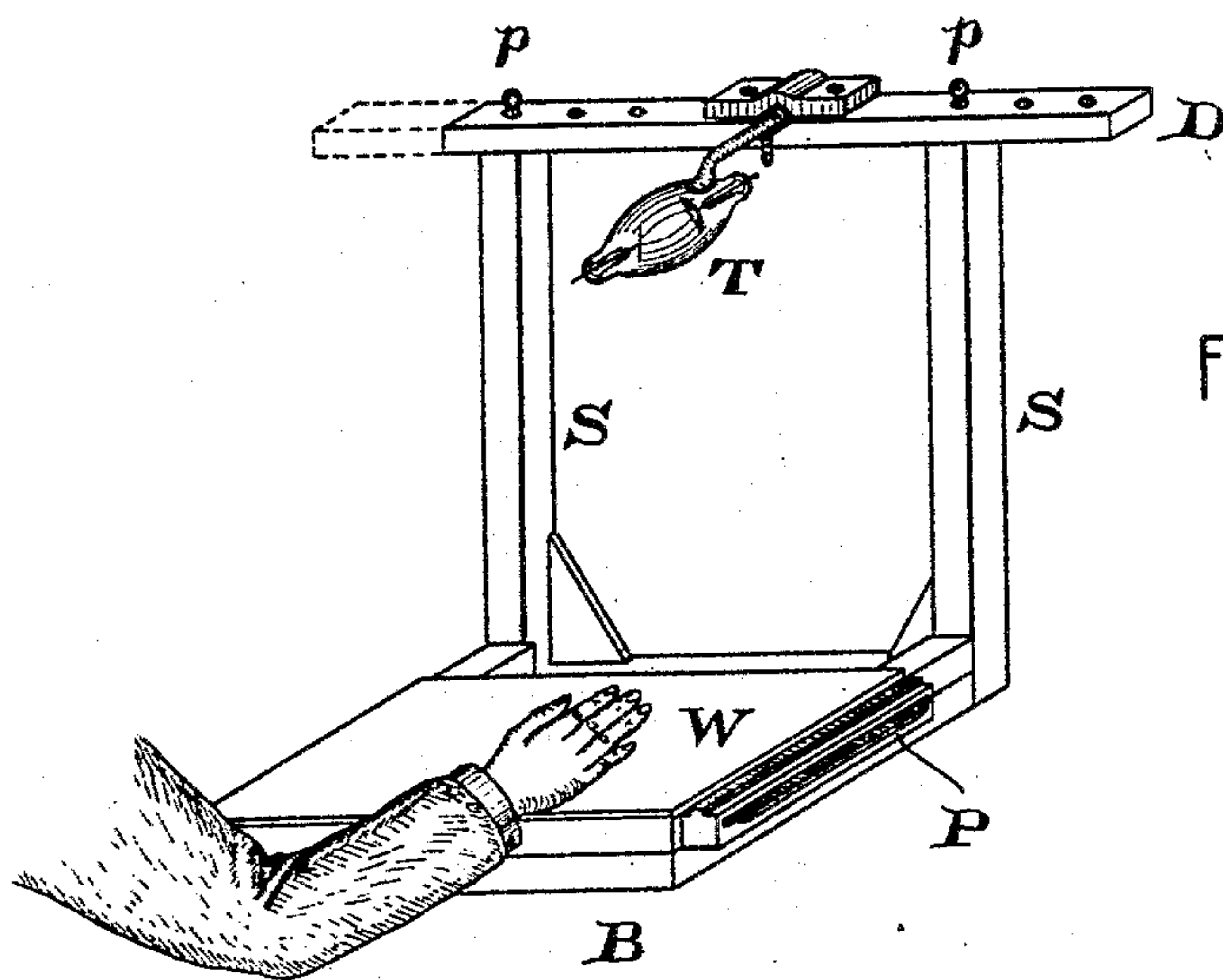


FIG. 1.

FIG. 2.



FIG. 3.



WITNESSES.
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UNITED STATES PATENT OFFICE.

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PRODUCING STEREOSCOPIC PICTURES BY ROENTGEN RAYS.

SPECIFICATION forming part of Letters Patent No. 583,956, dated June 8, 1897.

Application filed January 5, 1897. Serial No. 618,029. (No model.)

To all whom it may concern:

Be it known that I, ELIHU THOMSON, a citizen of the United States, residing at Swampscott, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Producing Stereoscopic Pictures by Roentgen Rays, (Case No. 501,) of which the following is a specification.

My invention relates to the art of producing "shadowgraphs," as they are often called, by the use of Roentgen rays, and has for its object to produce by this process pictures like those used in the stereoscope, giving an appearance of solidity. By this means surgical examinations are facilitated, the objects being seen as if solid, so that the location of foreign objects in the human body may be readily ascertained with a precision not approached by any other process.

The mechanical details of my invention may be much varied.

I have illustrated in the accompanying drawings a means of applying the method which I have devised; but any convenient apparatus may be utilized.

In the drawings, Figure 1 is a perspective of a simple appliance by which stereoscopic pictures may be produced, and Figs. 2 and 3 are diagrams showing the positions of the object on the plate.

In Fig. 1, B is a suitable base provided with uprights S S and a cross-piece D. Upon the cross-piece is a clamp or other suitable device for holding a Crookes tube T, which is to be made the source of Roentgen rays in any suitable manner. The cross-piece D is secured to the uprights by pins *p p* and is provided with a number of holes, so that it may be shifted laterally. Upon the base B is fixed a support W of any suitable nature, so arranged that a plate-holder P may be placed beneath it.

The manner of using the device is as follows: The object to be radiographed is placed upon the support W, which may be a piece of wood or cardboard or any other substance which the Roentgen rays will readily penetrate. The plate-holder is then placed beneath it and the tube T is adjusted above at a suitable angle. An exposure is made upon the plate, which may then be removed to the

dark room and another one substituted. The plate-holder is then returned to its place and the cross-piece D is shifted to one side or the other, in the particular case illustrated to the position shown in dotted lines. The rays from the tube thus strike the object to be radiographed at a different angle, so that it is slightly displaced on the plate beneath, and the relation of the shadows is such that when the two negatives, as shown in Figs. 2 and 3, are properly developed they may be placed in the stereoscope and thus examined or may be photographically reduced, so as to be examined more conveniently when mounted upon a single card in the way customary with photographic representations.

It is impossible to produce stereoscopic pictures of the class which I have described in the ordinary ways of making photographic exposures, Roentgen rays being incapable of focalization by refraction, so that relatively-displaced lenses cannot be used.

So far as I am aware I am the first to produce pictures of the class described by shifting the relative positions of the tube and object so that the shadows are differently outlined upon the plate to produce a stereoscopic effect.

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

1. The art of producing stereoscopic pictures by the use of Roentgen rays, which consists in exposing the object to be photographed to a source of Roentgen rays in one position, and then shifting the relative positions of the source of rays and the object, while making a second exposure.

2. The art of producing stereoscopic pictures by the use of Roentgen rays, which consists in exposing a photographic plate to the action of the rays with the object to be photographed and the source of Roentgen rays in a certain definite relation to the plate, and then removing the plate and exposing a second one with the source of Roentgen rays and the object to be photographed in a different position relative to the second plate, thus displacing the shadows upon the two plates by an amount sufficient to give a stereoscopic or solid effect when viewed through suitable lenses.

3. A device for making stereoscopic pictures by Roentgen rays, comprising a support for the object beneath which a suitable photographic-plate holder may be placed, a
5 source of Roentgen rays, and means for shifting the relative positions of the source of rays and the object.

In witness whereof I have hereunto set my hand this 31st day of December, 1896.

ELIHU THOMSON.

Witnesses:

JOHN W. GIBBONEY,

HENRY O. WESTENDARP.