

No. 815,696.

PATENTED MAR. 20, 1906.

W. J. HAGMAN.
COUNTERBALANCE DEVICE.
APPLICATION FILED MAY 26, 1905.

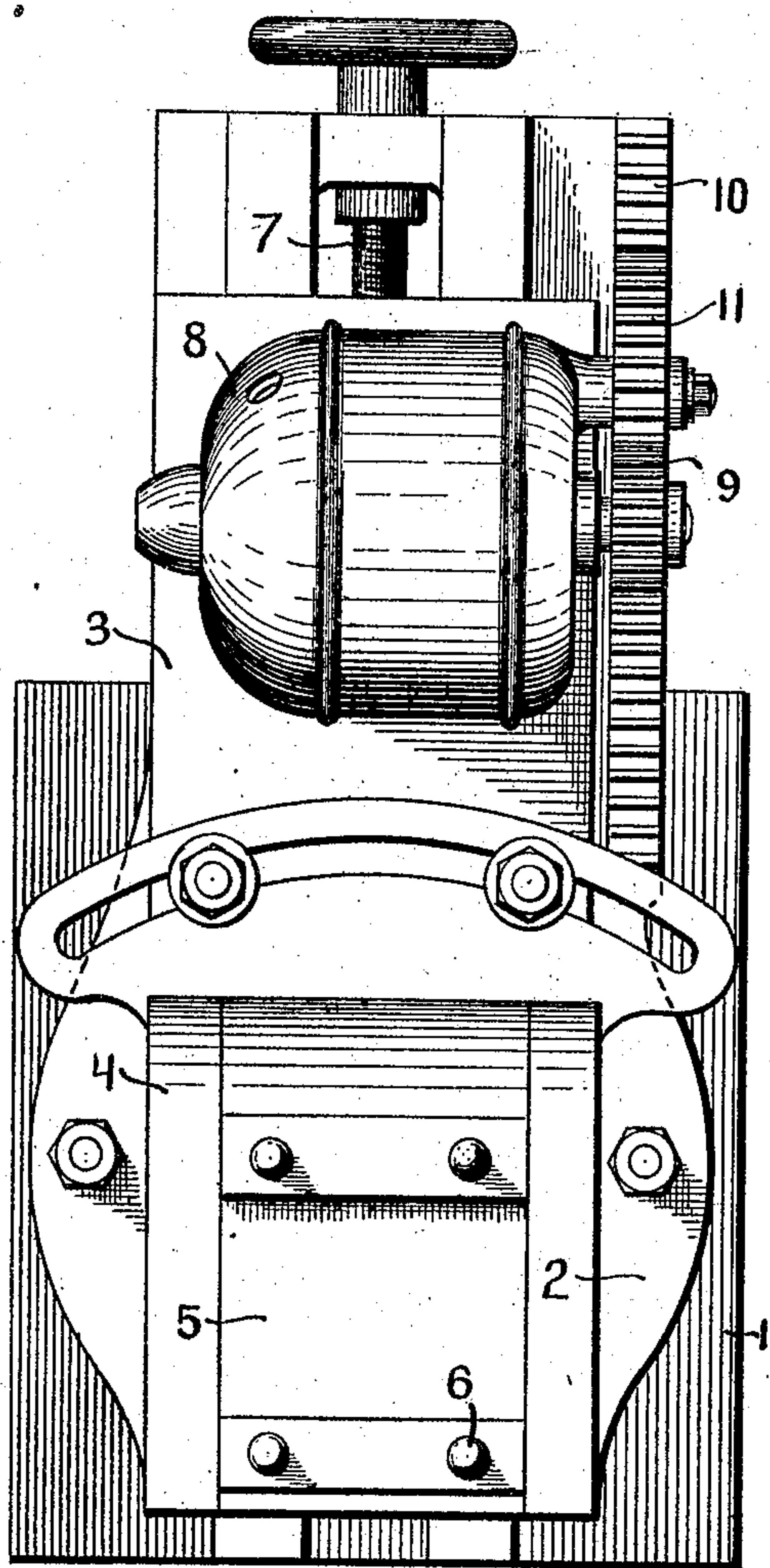


Fig. 1.

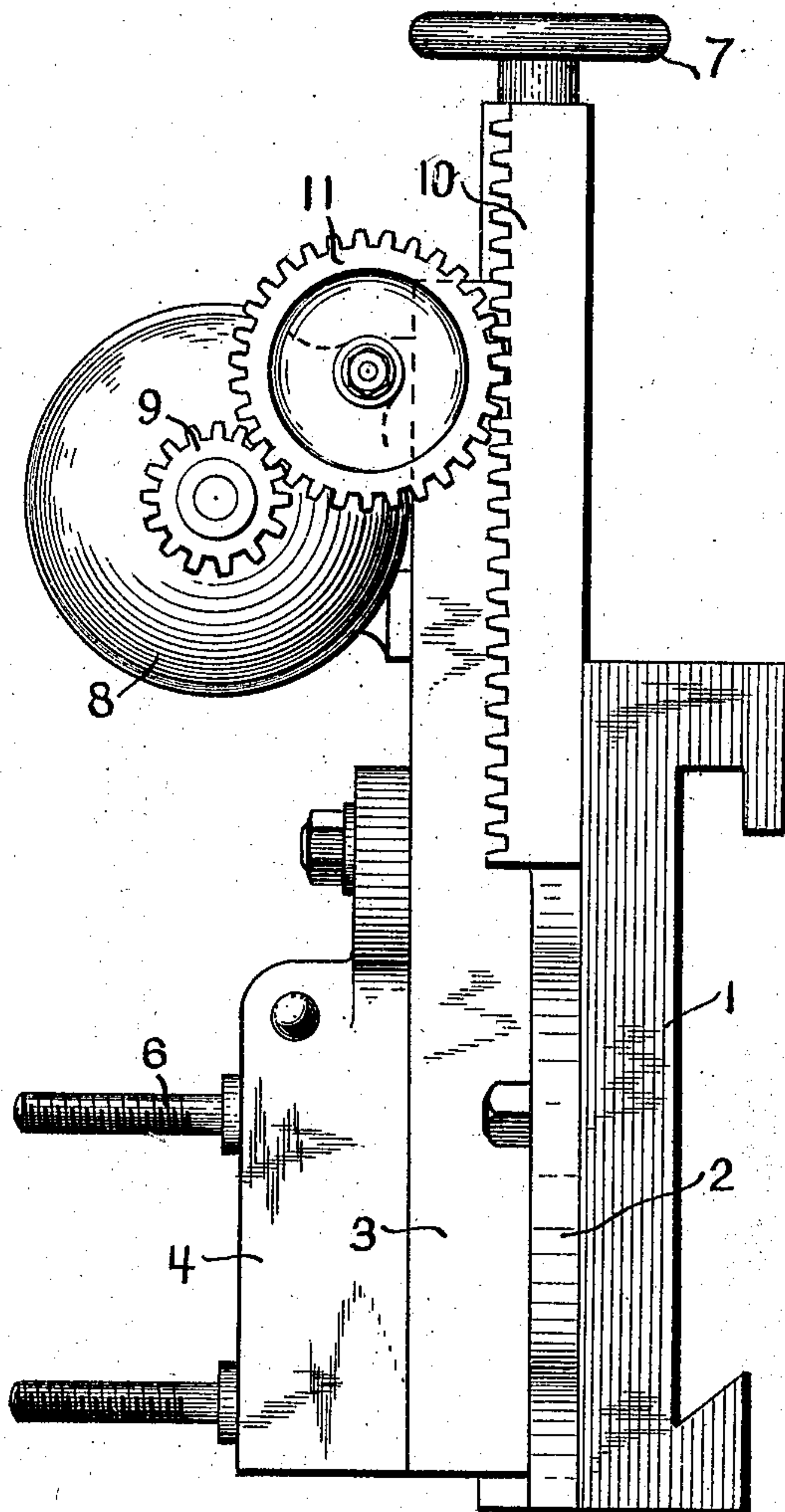


Fig. 2

Witnesses:
Ehmer R. Shipley.
M. S. Belden.

William J. Hagman
Inventor
by James W. See.
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM J. HAGMAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
NILES-BEMENT-POND COMPANY, OF JERSEY CITY, NEW JERSEY.

COUNTERBALANCE DEVICE.

No. 815,696.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed May 26, 1905. Serial No. 262,442.

To all whom it may concern:

Be it known that I, WILLIAM J. HAGMAN, a citizen of the United States, residing at Philadelphia, Philadelphia county, Pennsylvania, (post-office address, care Bement, Miles & Company, Philadelphia, Pennsylvania,) have invented certain new and useful Improvements in Counterbalance Devices, of which the following is a specification.

10 This invention, pertaining to counterbalancing devices, will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

15 Figure 1 is a front elevation of the saddle and adjuncts of an ordinary metal-planing machine, its vertically-moving parts being counterbalanced by means of my invention; and Fig. 2, a side elevation of the same.

20 My improved counterbalance is applicable to a great variety of situations, and in illustrating the invention in connection with the parts of a metal-planing machine I desire it to be understood that such use of my invention is merely exemplifying.

25 In the drawings, 1 indicates the saddle of a metal-planing machine; 2, the swing; 3, the slide; 4, the tool-box; 5, the apron; 6, the tool-clamping screws; 7, the vertical feed-screw, all the parts thus far referred to being of ordinary construction; 8, an electric motor fixed to the slide; 9, a pinion on the armature-shaft of the motor; 10, a vertical rack formed upon or secured to the swing, and 11 an intermediate gear carried by the slide and engaging the pinion and the rack.

35 Current being properly applied to the motor, it is manifest that the tendency of the motor is to elevate the slide and the parts attached to it and that if there was sufficient

power in the motor the motor would raise the slide if the vertical feed-screw did not interfere. The power of the motor is to be such as to support all or the major portion of the weight of the slide and the parts carried by it, including the motor, the result being that the motor, while potent for work, is normally without motor motion, its effect being merely to counterbalance the weight of the vertically-moving parts, the armature advancing when the slide is raised by the action of the screw and turning backward when the slide is lowered by the action of the screw, the motor standing at all times under conditions such that its torque sustains all or a major portion of the weight of the vertically-moving parts. The motor is shown as being on the vertically-moving part and the rack as being on the fixed part. If these positions were transposed, the effect would be the same, or, stated otherwise, if the slide were fixed against vertical motion and the swing and saddle were intended to be the vertically-moving parts to be counterbalanced then the motor would manifestly fulfil the counterbalancing office.

I claim as my invention—

A substantially vertical guideway, a heavy machine part mounted for vertical adjustment therein, hand-operable mechanism for vertically adjusting said machine part and holding it in adjusted position, an electric motor, and a connection between said motor and machine part whereby the energy of the motor tends to assist the hand-operable mechanism in elevating said machine part.

WILLIAM J. HAGMAN.

Witnesses:

W. T. SEARS,
SAMUEL C. KANE.