(No Model.)

C. L. WRIGHT.

APPARATUS FOR INSULATING DELICATE MECHANISM FROM VIBRATION.

No. 466,818. Patented Jan. 12, 1892.

Fig. 1.

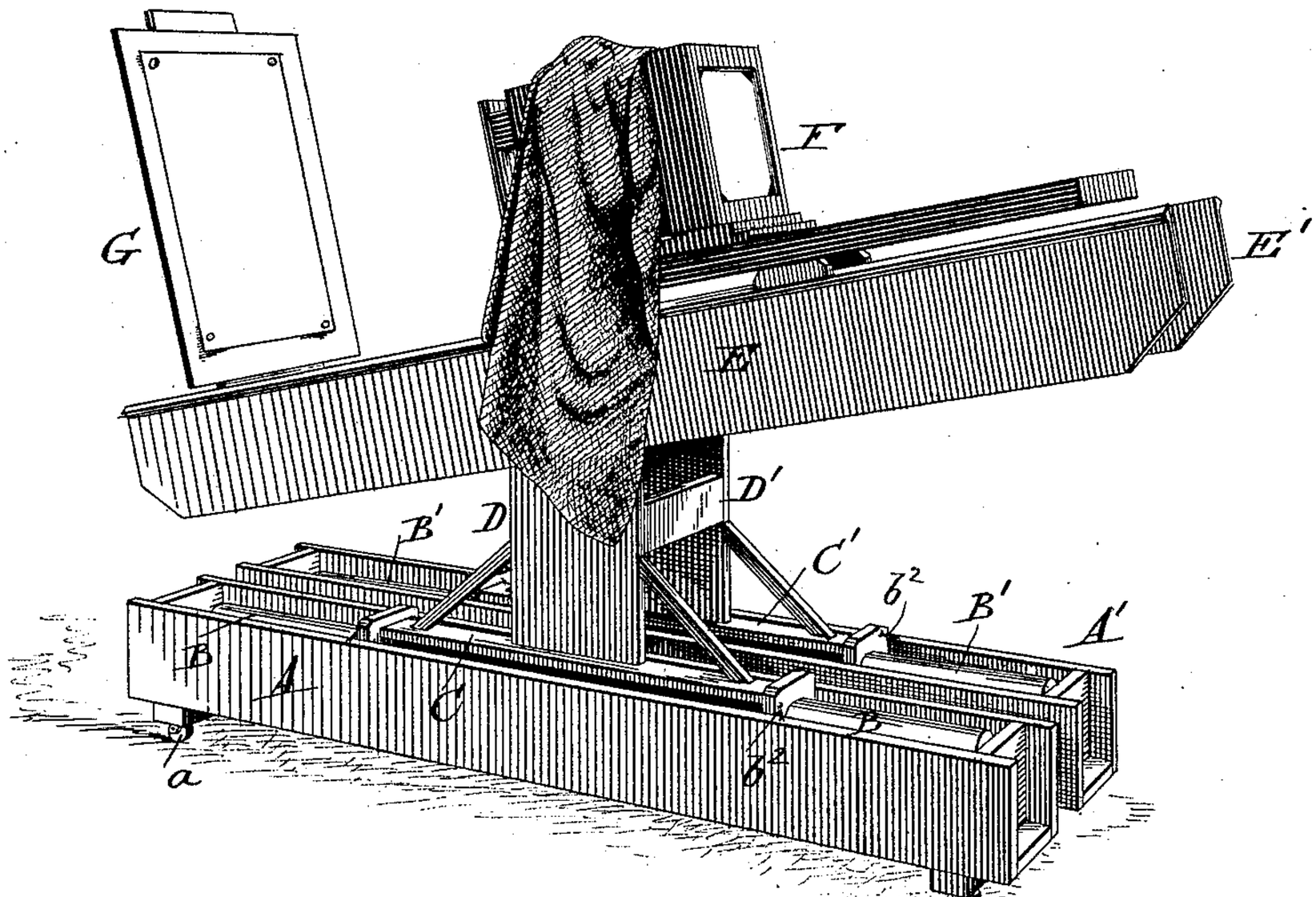


Fig. 2.

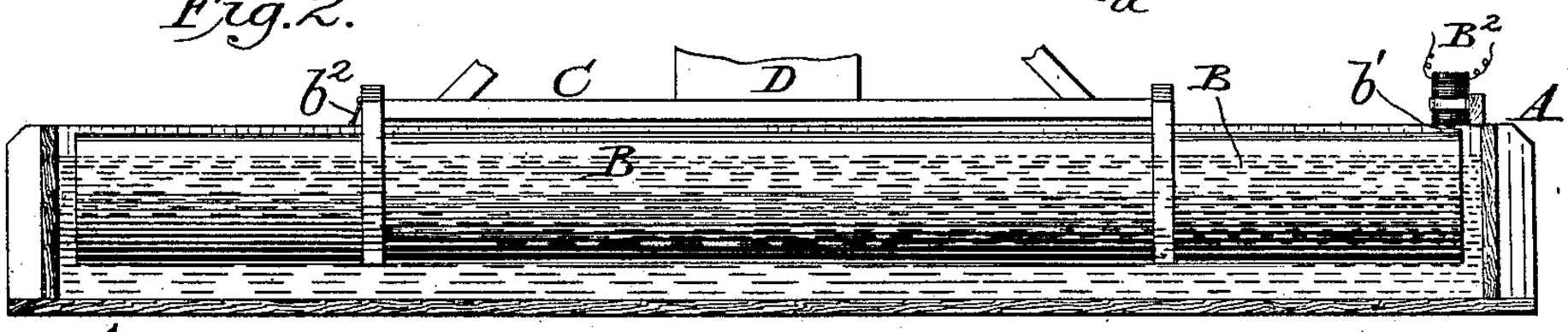


Fig. 3.

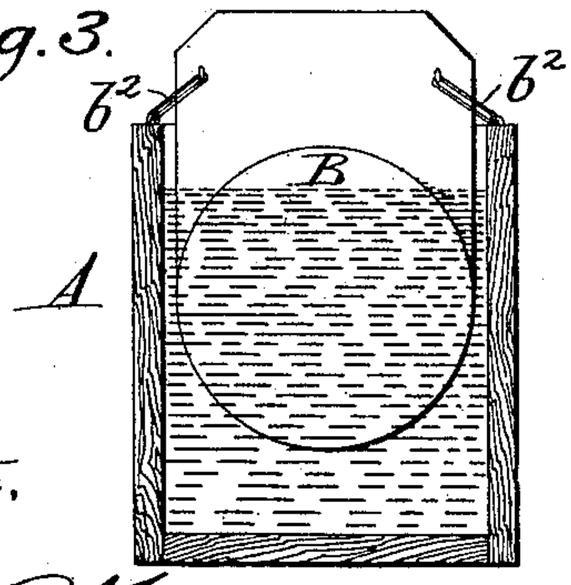
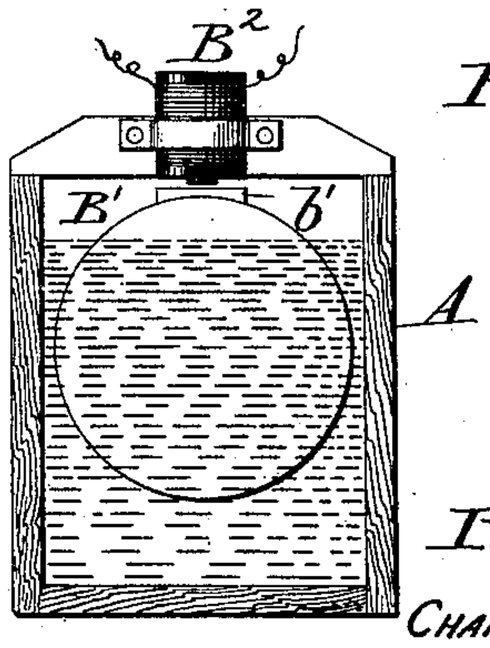


Fig. 4.



Attest.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR INSULATING DELICATE MECHANISM FROM VIBRATION.

SPECIFICATION forming part of Letters Patent No. 466,818, dated January 12, 1892.

Application filed February 24, 1891. Serial No. 382,540. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. WRIGHT, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful improvements in apparatus for insulating delicate mechanisms from vibrations that would otherwise interfere with their true working, such as photo-copying apparatus, ruling-machines, spectroscopes, microscopes, &c., of which the following is a specification.

The object of my invention is to obviate difficulties incident to the jarring of the instrument by vibrations communicated to it. This end I attain by mounting the apparatus, and in some cases the operator also, upon a float in a liquid, by which means the apparatus is protected from vibrations. The subject-matter is hereinafter specified.

The accompanying drawings show one form of apparatus for carrying out the invention in the best way now known to me. The details of construction of the apparatus may, however, be varied in well-known ways without departing from the principle of the invention.

Figure 1 is a perspective view of the apparatus; Fig. 2, a vertical longitudinal section through the lower part thereof; and Figs. 3 and 4 are respectively vertical transverse sections therethrough, showing the mode of retaining the float in position therein.

A tank or water-box is shown as mounted on casters *a* for convenience of movement. This water-box is also shown as divided longitudinally into two parallel troughs A A′, which construction is deemed preferable to using a single box. The troughs are filled to a suitable depth with some liquid, preferably water, in which are immersed floats of suitable material, such as wood or hollow metal. The drawings show these floats as consisting of cylinders B B′, carrying a platform C C′, and an upright frame D D′, supporting a rigid stand E E′, upon which a camera F and the object or positive G rest. The floats bearing the stand are retained in their central position in the troughs by yielding connections, such as very light elastic bands b^2, connecting the sides of the trough with the floats. I prefer, however, to attain this end by holding the cylinders B B′ clear of the sides of the trough by mounting magnets B^2, either permanent or electro-magnets, upon the box close enough to an armature *b′*, mounted on the respective ends of each float to exert their proper influence thereon. This organization holds the apparatus in position without danger of vibrations interfering with clear delineations of the photographic image.

I have found this apparatus very efficient in practice, as vibrations do not disturb the relations of the object and camera in the slightest degree. I am thus enabled to produce sharp, well-defined images or impressions close to heavy machinery in motion, notwithstanding the vibrations consequent upon such proximity.

My apparatus obviously differs materially in principle and mode of operation from that heretofore employed, in which the camera-stand carrying the object and camera have been mounted upon or suspended by elastic cushions or bands, as such apparatus must necessarily communicate the vibrations to the camera and its supporting-stand. This has been proven in practice.

I have described my apparatus as especially adapted for photographic purposes; but my invention is also readily adaptable to other apparatus, such as microscopes, spectroscopes, machines for ruling fine lines, &c. In the last class of apparatus the operator usually supplies the power, in which case he might stand or be mounted upon the float. The power might also be derived from an electric motor mounted on the float connected with a suitable generator by small loose wires, which would not transmit vibrations to the machine.

What I claim as new and as of my own invention is—

1. The combination, substantially as hereinbefore set forth, of a liquid-containing vessel, a float therein, a support for the object operated upon mounted upon said float, and an apparatus operating upon said object and also mounted on the float.

2. The combination, substantially as heretofore set forth, of a liquid-containing vessel, a float therein carrying an armature, the apparatus carried by the float, and a magnet

or magnets to retain the float clear of the sides of the vessel.

3. The combination, substantially as heretofore set forth, of water boxes or troughs, a float in each trough, and the apparatus mounted thereon and supported wholly thereby.

4. The combination, substantially as heretofore set forth, of water-boxes, floats therein, means for maintaining said floats free from contact with the water-boxes, a stand mounted on said floats, and an instrument and a support for the object to be operated upon, both mounted on said stand.

5. The combination, substantially as hereinbefore set forth, of a liquid-containing vessel, a float therein, and photo-copying apparatus mounted on the float.

In testimony whereof I have hereunto subscribed my name.

CHARLES L. WRIGHT.

Witnesses:

LLOYD B. WIGHT,

HARRY STARRETT.