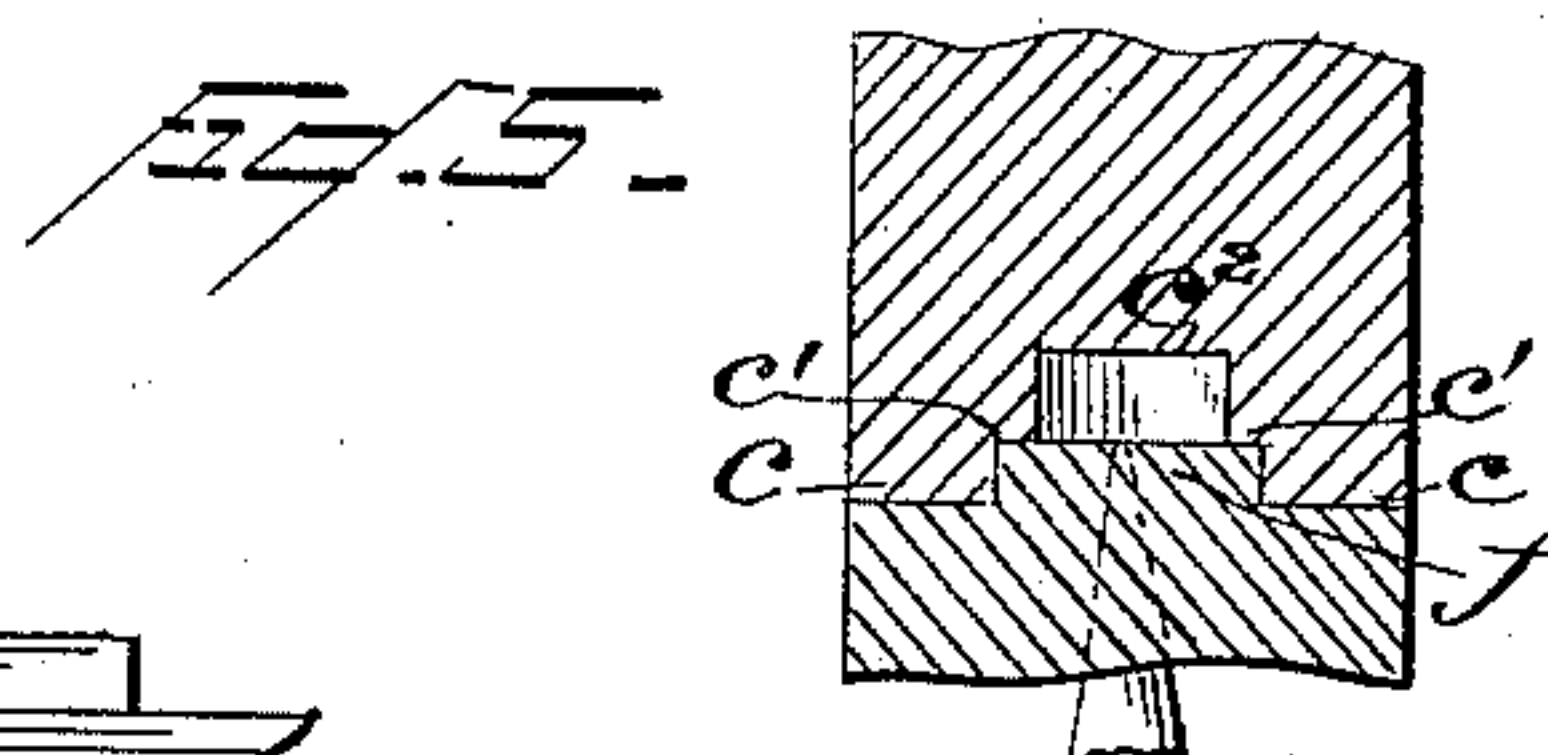
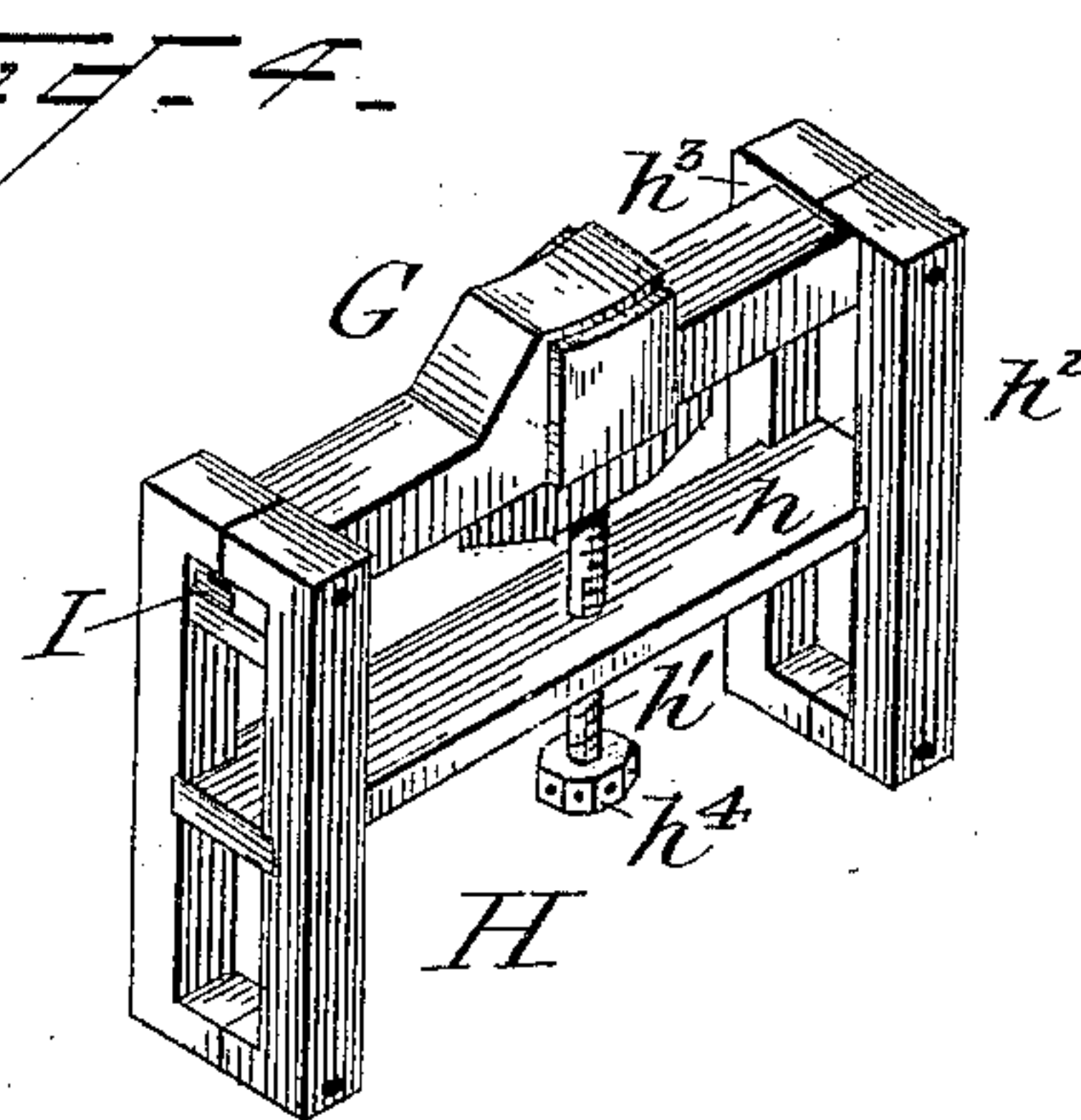
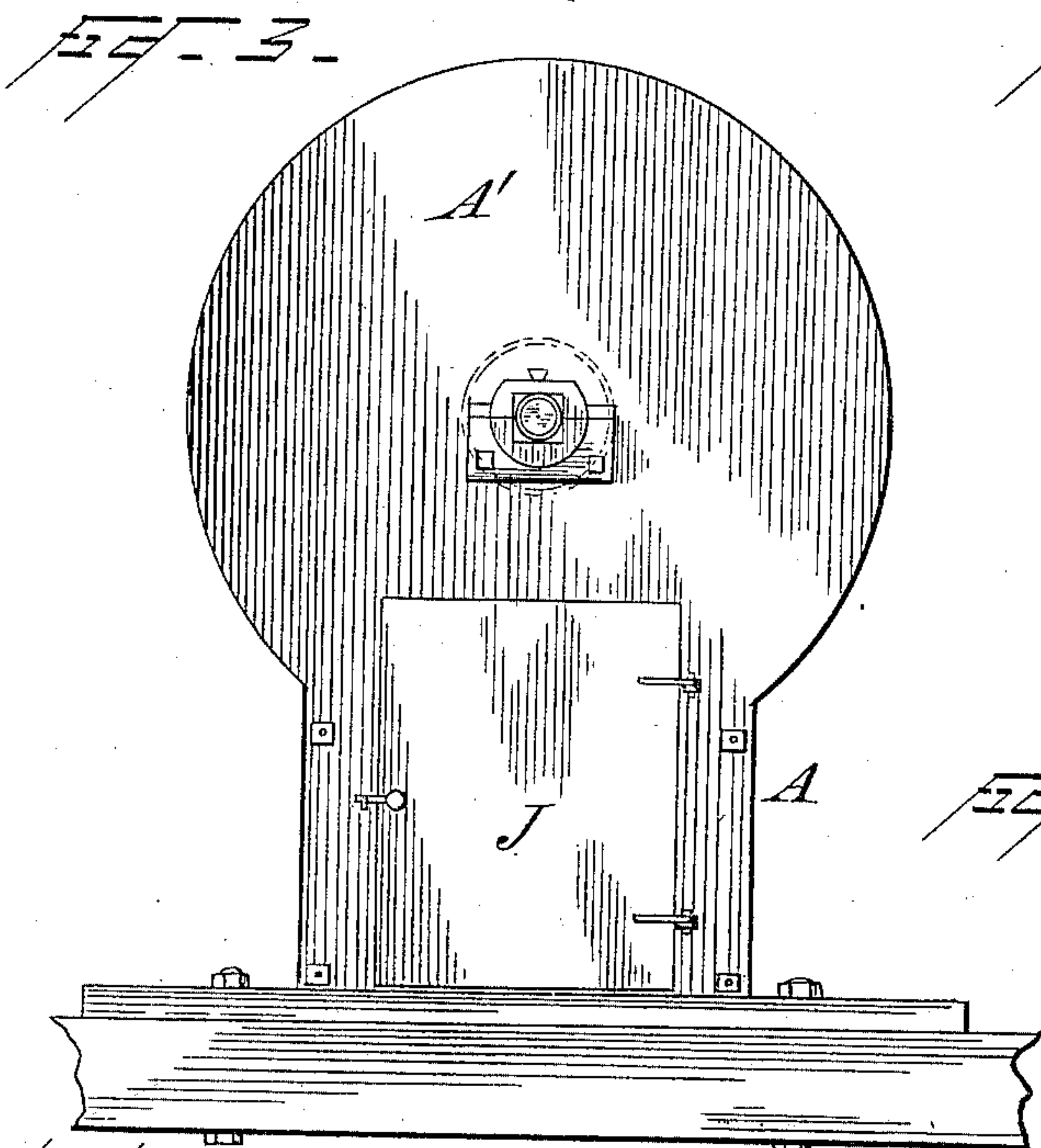
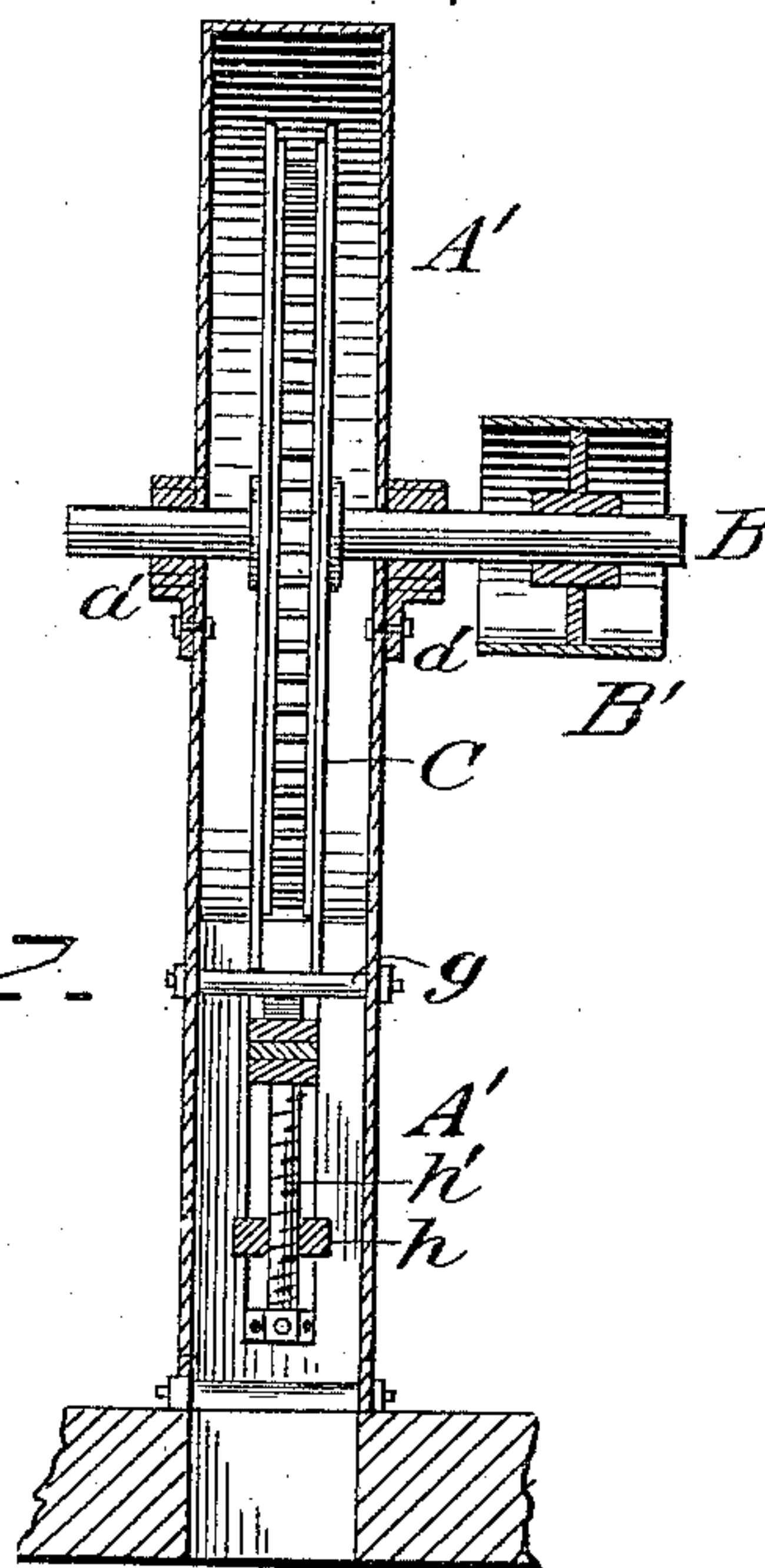
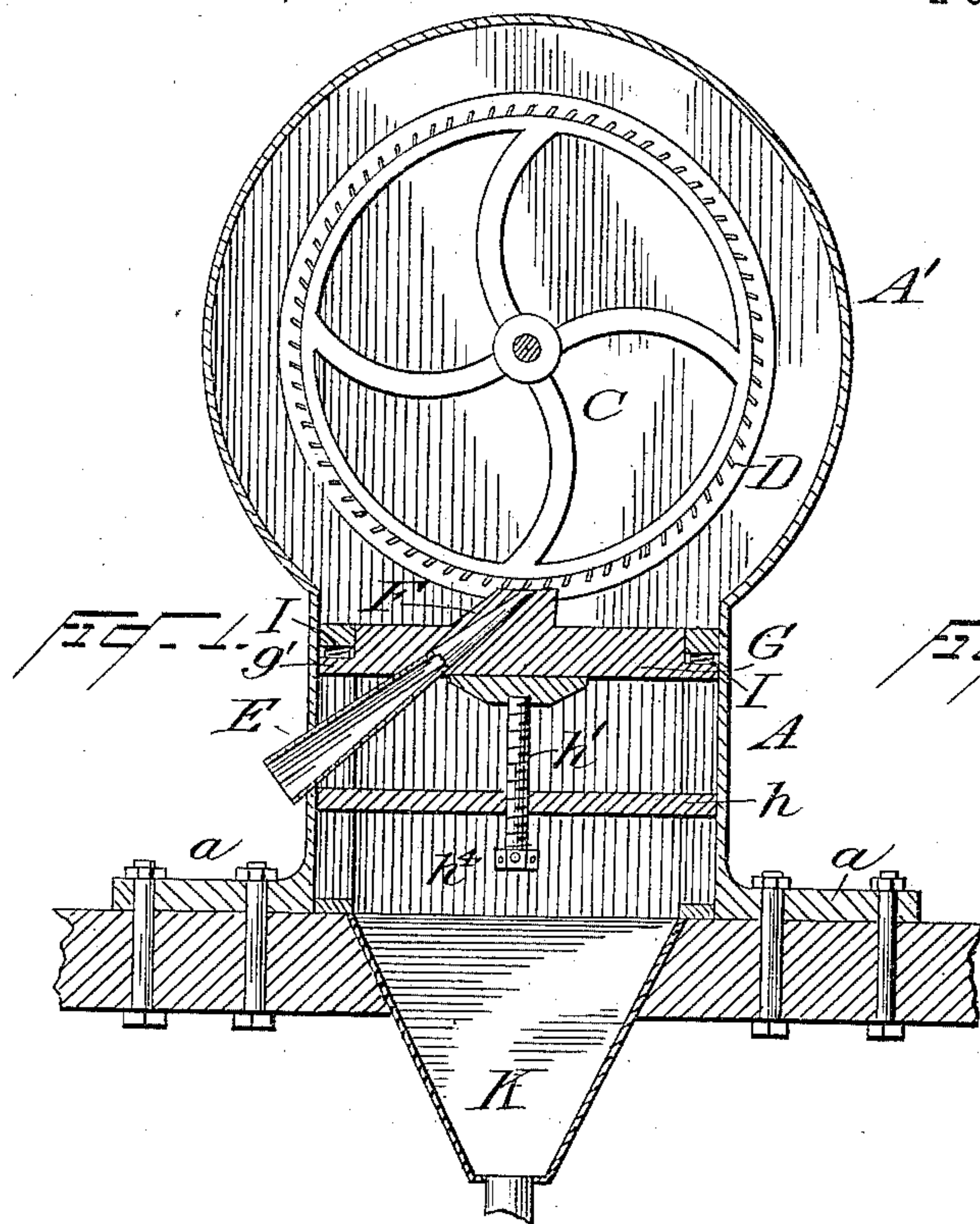


(No Model.)

G. W. MASON.
HYDRAULIC MOTOR.

No. 378,701.

Patented Feb. 28, 1888.



WITNESSES

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GEORGE W. MASON, OF SHARON, PENNSYLVANIA.

HYDRAULIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 378,701, dated February 28, 1888.

Application filed June 23, 1887. Serial No. 242,248. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MASON, a citizen of the United States, residing at Sharon, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Hydraulic Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to water-motors of a kind adapted for driving light machinery, such as small printing-presses, sewing-machines, and the like, for which purposes it is intended to be connected with the house-pipes of an ordinary water-supply under pressure.

The object of the invention is, first, to provide a more perfect means of supplying water to the wheel, so as to avoid waste and insure the utilization of the entire stream of water so supplied, and, further, to provide a wheel itself of simple construction, which, in connection with the supplying devices, shall form a cheap and efficient motor for the purposes set forth.

The apparatus may be generally described as a wheel, the axle of which is extended to form a power-shaft, which is provided with peripheral buckets, and is inclosed in a water-tight case, in connection with a close-fitting but adjustable shoe and a chute for supplying water to the buckets at the point of contact between said shoe and the periphery of the wheel.

The invention is, however, fully hereinafter described and claimed in detail, and is illustrated in the accompanying drawings, in which the same letters refer to the same parts throughout, and wherein—

Figure 1 is a longitudinal section through the wheel and case. Fig. 2 is a side elevation. Fig. 3 is a transverse section. Fig. 4 is a perspective view of the shoe and its supporting-frame. Fig. 5 is an enlarged section of the rim of the wheel.

A represents a sheet-metal case, having a base, *a*, by which it is bolted to some suitable support, such as a floor or a cellar beam, or other point in proximity to the water-pipe which affords the supply of water. The case A has a circular upper portion, *A'*, and is pro-

vided upon each side, Fig. 3, with boxes *a' a'*, bolted to it, in which boxes revolves the water-wheel shaft B, which is extended to give space for the power-pulley B', which is keyed to it. The motor-wheel C is fixed to the shaft B within the circular portion of the casing. It is composed of a light central hub, spokes, and a true circular rim, all constructed of cast-iron or steel, as may be preferred. The rim of the wheel is formed, as shown in Fig. 5, with edge flanges, *c c*, within which are offsets *c' c'*, forming a central channel, *c''*, in which are placed the transverse inclined buckets D. These buckets are placed at an angle of about forty-five degrees to a radius of the wheel, as shown in Fig. 1, and, in proportion to the size of the wheel, are very diminutive. I prefer to construct the rim and buckets as shown; but the buckets may be made to extend out so as to be flush with the flanges *c c*.

The stream of water to actuate the wheel is delivered thereto by a nozzle or chute, E, connected with a supply-pipe and opening into an inclined tapering passage in a shoe, F, Figs. 1 and 4. The purpose of this shoe is to direct the stream and to confine the water so that its full force may be brought to bear upon the wheel at one point. The upper surface of the shoe is curved to fit the wheel, while, as shown in the cross-sectional view, Fig. 5, it is provided with a central projection or rib, *f*, so that it fits accurately the side flanges and offsets of the rim of the wheel. If carefully fitted, a practically water-tight joint may be made at this point, so that the force of the water is brought directly upon the buckets at one point on the periphery. The shoe may, however, be adjusted relatively to the wheel by the means shown in Figs. 1 and 4, where said shoe forms a part of or is attached to a vertically-sliding beam, G, mounted in a frame, H. This frame is secured within the case by bolts *g*, Fig. 2, and supports a center piece, *h*, having a vertically-movable screw, *h'*.

The beam G has an extension, *G'*, at each end, which fits between the side pieces, *h² h³*, of the frame H, and are thus free to move up and down without any longitudinal movement. At each end of beam G, and situated between the extensions *G'* and the frame H, is a coiled spring, I, which allows the beam to yield

slightly in case of an obstruction passing into the wheel. By means of the head or fixed nut h^4 on the lower end of screw h' , the screw may be caused to force the beam and shoe up, and thus cause a closer contact between the shoe and wheel; or it may allow the beam to be lowered slightly in case a looser fit is desired. The relative positions of the shoe and wheel may always be accurately adjusted by means of this screw.

The case is provided at its lower portion with an opening to permit access to the interior, which may be closed by the hinged door J. (Shown in Fig. 3.)

While this apparatus is particularly intended for driving light machinery, as before stated, its size may be proportionately increased, so as to obtain sufficient power for all purposes for which hydraulic motors may be used, and it should also be stated that steam may be employed as the motive power instead of water.

I do not limit myself to the exact shape of the buckets shown and heretofore described,

nor to any exact proportions for such buckets. They may be curved or set at different angles and in other ways vary without departing from the principle of the invention.

The waste water escapes from the casing and wheel through the chamber K and a suitable escape-pipe.

Having thus described my invention, I claim—

In a water-motor, the combination of a casing, A, a water-wheel within said casing, a frame below said water-wheel, a sliding shoe carried by said frame, an adjusting-screw for regulating the position of said shoe, and springs interposed between said shoe and frame, substantially as described.

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

GEORGE W. MASON.

Witnesses:

ABNER APPLGATE,
HENRY E. STEPHENS.