

(No Model.)

J. F. SULLIVAN.

WATER MOTOR.

No. 313,030.

Patented Feb. 24, 1885.

Fig. 5.

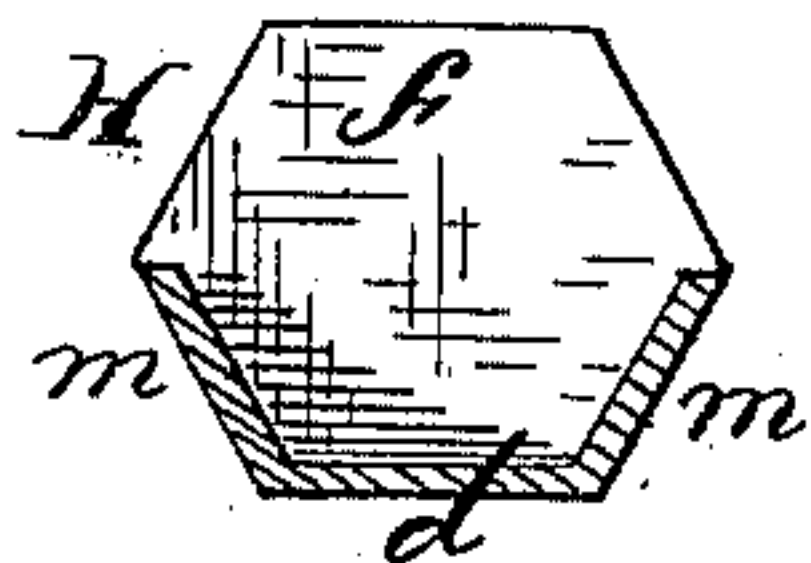


Fig. 1.

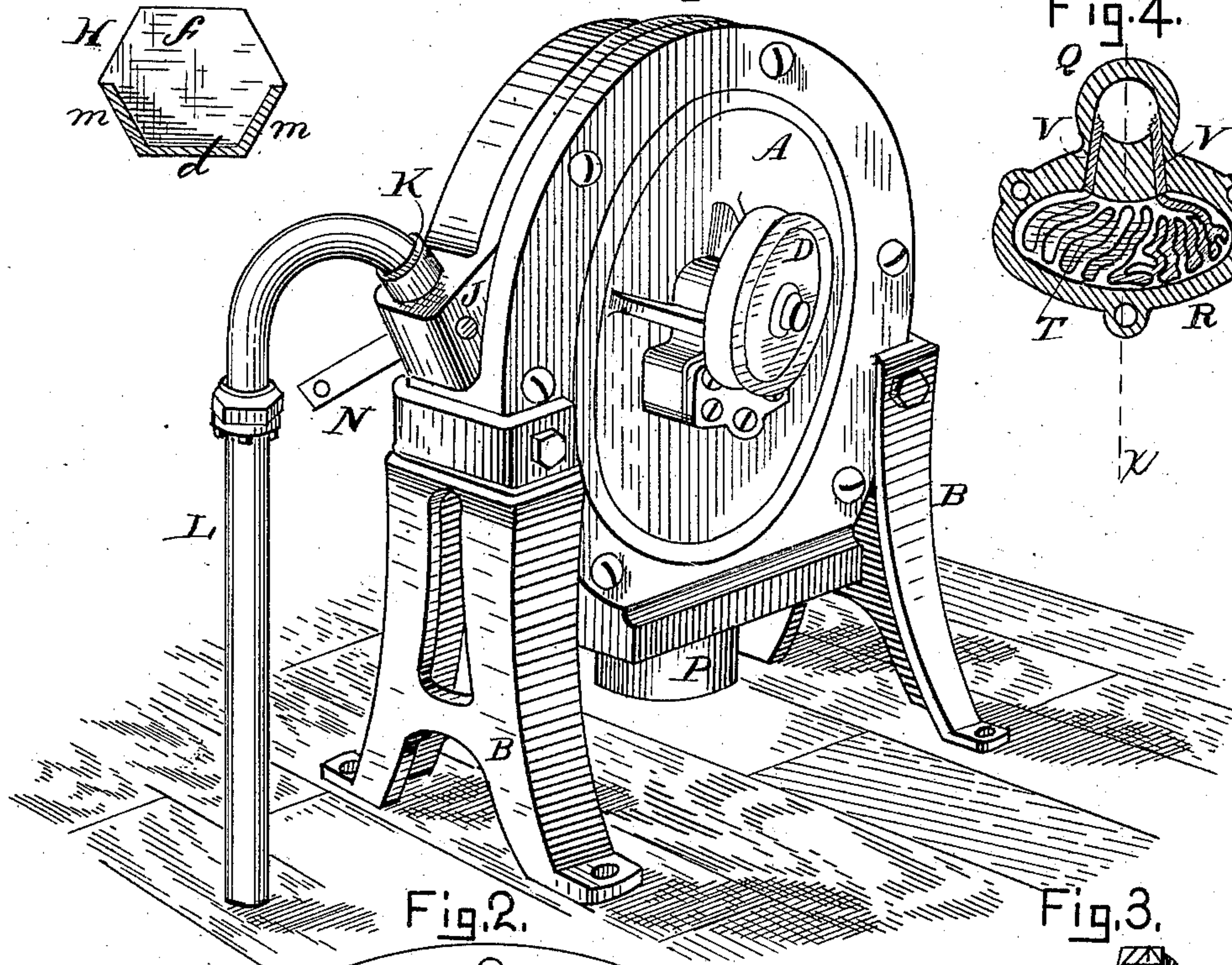


Fig. 4.

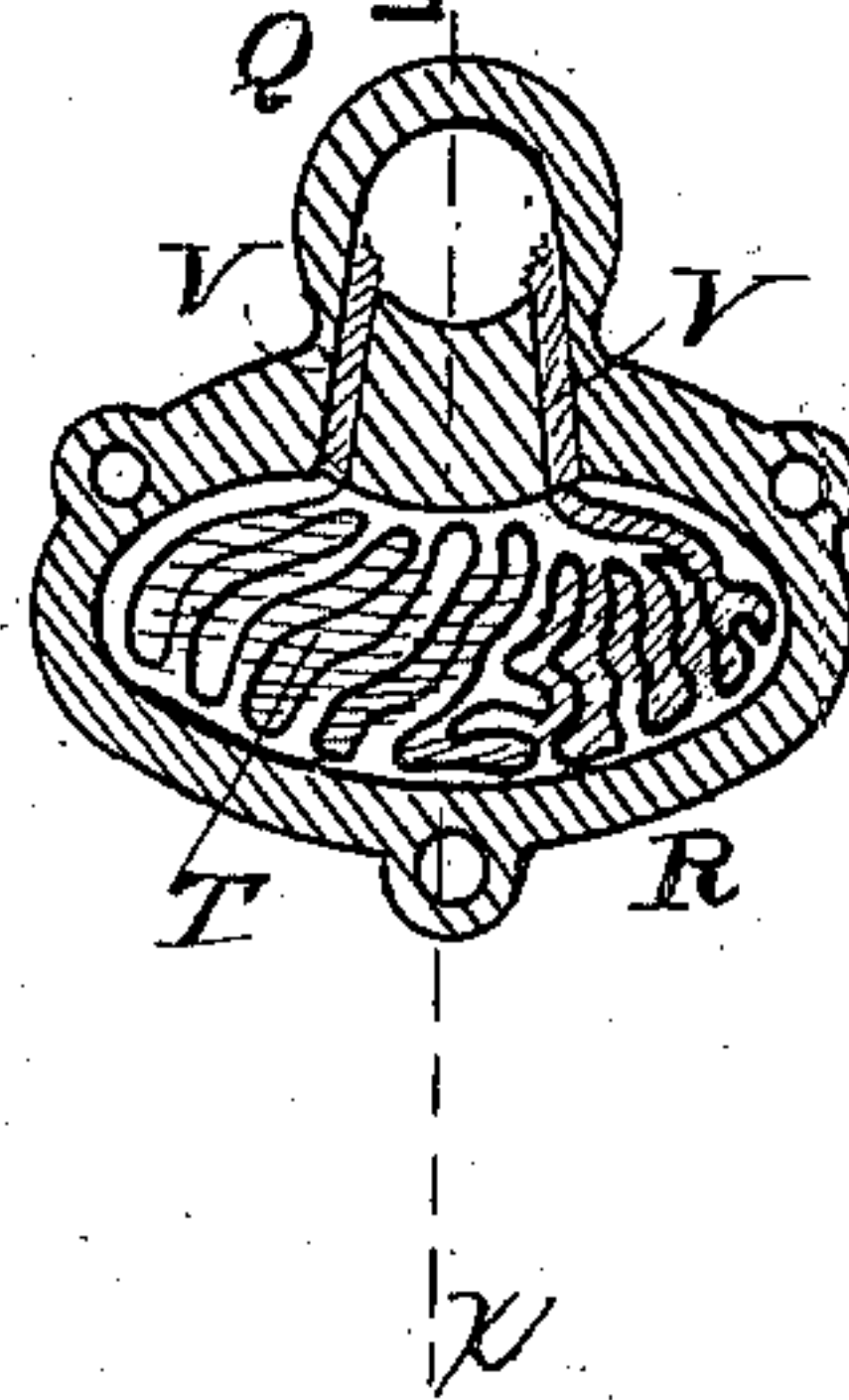


Fig. 2.

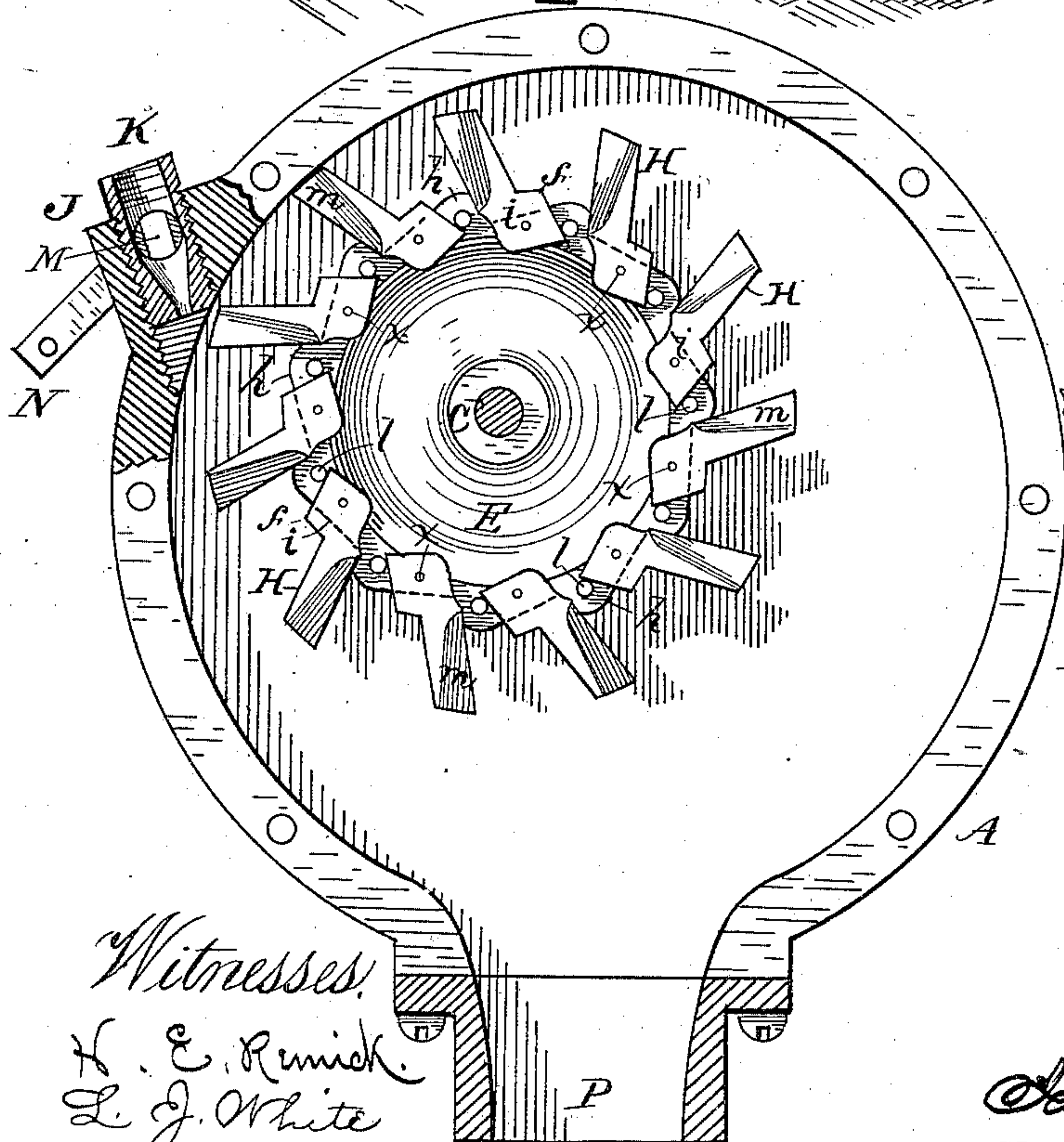
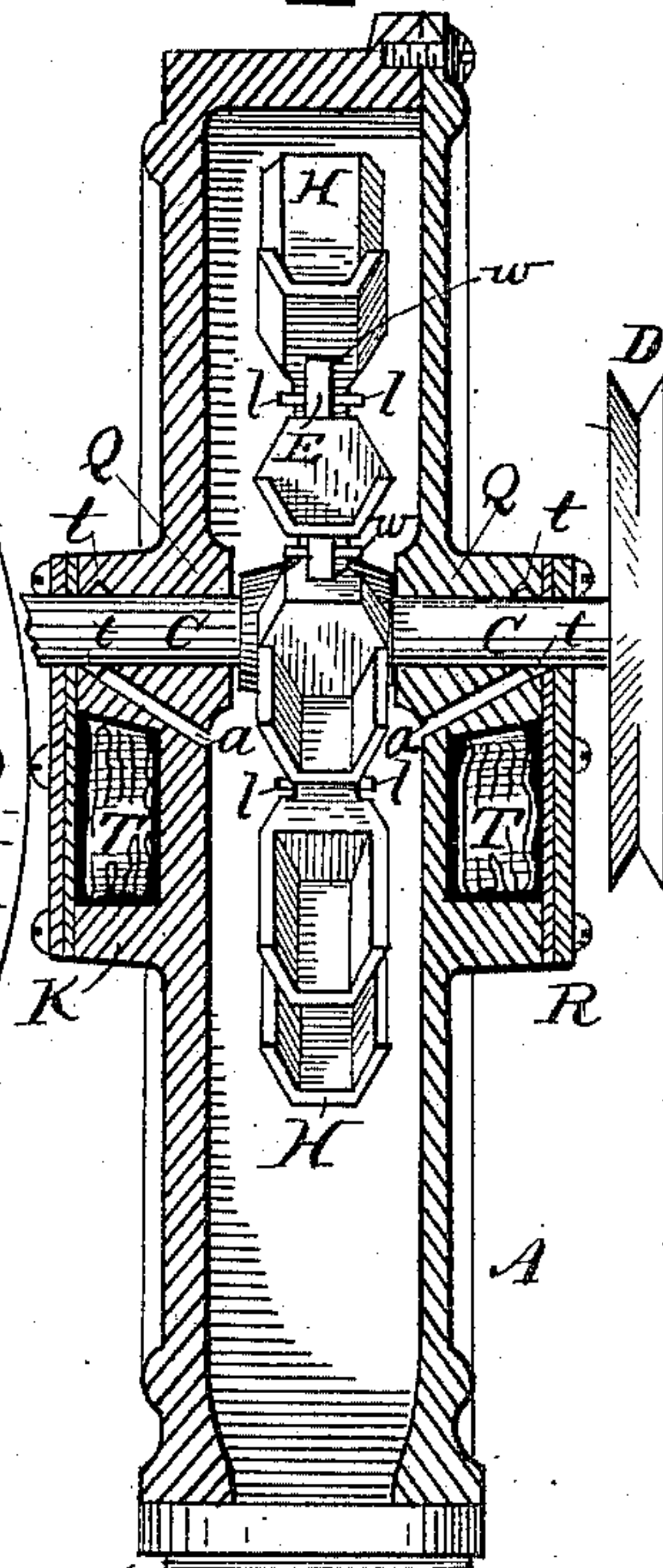


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

JAMES F. SULLIVAN, OF FITCHBURG, MASSACHUSETTS.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 313,030, dated February 24, 1885.

Application filed June 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. SULLIVAN, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented a certain new and useful Improvement in Water-Motors, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an isometrical perspective view of my improved motor in position for use; Fig. 2, a vertical longitudinal section of the same; Fig. 3, a vertical transverse section; Fig. 4, a view of one of the lubricating-boxes with its cap removed, and Fig. 5 a vertical transverse section of one of the floats or buckets.

Like letters of reference indicate corresponding parts in different figures of the drawings.

My invention relates to that class of water-motors which are designed more especially for light work, where but little power is required, such as running sewing-machines, coffee-mills, small lathes, &c.; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the case or body of the motor, and B the legs or supports in which the body is mounted.

Journalled horizontally in the body A there is a shaft, C, carrying on its outer end the pulley D, and within the case a thin metallic disk or annular plate, E.

Disposed at regular intervals around the periphery of the disk E, and attached thereto by rivets *x*, there are a series of buckets, H. These buckets have narrow bottoms *d*, inclined sides *m*, and an inclined rear partition-wall, *f*, being open at their outer ends to discharge the water, and are provided at their inner ends, behind the partition *f*, with a longitudinal slot, *w*, into which the edge of the disk E is inserted, as shown in Fig. 3. The periphery of the disk is cut out at regular intervals, as shown by the dotted lines *i* in Fig. 2, to receive the buckets and form the shoulders

h, on which they rest, the upper side of each of the buckets at its inner end bearing against studs *l*, which project laterally from the disk E. A chamber, J, is formed on one side or edge of the case A, into which the nozzle K of the induction-pipe L is screwed.

Passing laterally through the chamber J and nozzle K there is a stop-cock or plug-valve, M, provided at its outer end with a lever, N, adapted to be connected with a treadle or any other suitable device by which it may be actuated to open and close the nozzle. The shaft C is not disposed at the center of the case or body A, but stands at one side, and preferably above the central axial line, thereof, as best seen in Fig. 2, the object of eccentrically journaling the disk E being to prevent the reaction of the water on the interior of the case opposite the mouth of the induction pipe or nozzle from interfering with the free revolution of the disk. The buckets are so arranged on the disk and the disk so journaled in the case, that as the disk revolves the buckets will be presented at right angles, or nearly so, to the stream entering through the nozzle, thereby utilizing the force of the water to the best advantage. The diameter of the case is nearly or quite twice as great as that of the disk, and hence the water, after acting on the buckets, will pass almost directly out of the case through the induction-pipe P, instead of being carried around by the buckets and forming counter-currents, which tend to retard the free revolutions of the disk, as in some other motors of this character.

Disposed beneath either of the hubs or boxes Q in which the shaft C is journaled, there is a lubricating-chamber, R, filled with wicking, T, or some other good absorbent for the oil or lubricating compound; and leading upwardly from each of these chambers there are two ducts, *v*, communicating with the boxes Q in which the shaft or axle C is journaled, these ducts being each provided with a strand of wicking adapted to carry the oil by capillary action from the chamber R to the box, and thereby keep the shaft constantly and properly lubricated. An annular groove, *t*, is cut in either box Q near its outer end, and leading downwardly from each of these grooves between the ducts *v* into the interior of the case A there is a duct or drip-pipe, *a*, the

grooves acting to catch the water, which tends to pass outwardly on the shaft C as the motor operates, and the ducts or pipes to conduct it back into the interior of the case. The formation of the buckets with narrow bottoms *d* and inclined sides *m*, as shown, reduces the "lift," or adapts them to pass through the water as they rise opposite the mouth of the nozzle with less resistance than would be afforded were the sides straight and the bottoms corresponding in width with the diameter of the bodies.

Having thus explained my invention, what I claim is—

In a water-motor, the combination, with the case A and shaft C, of a bucket-wheel composed of a disk provided with shoulders *h* and studs *l*, and buckets pivoted between said shoulders and studs, substantially as described.

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Witnesses:

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