

No. 780,286.

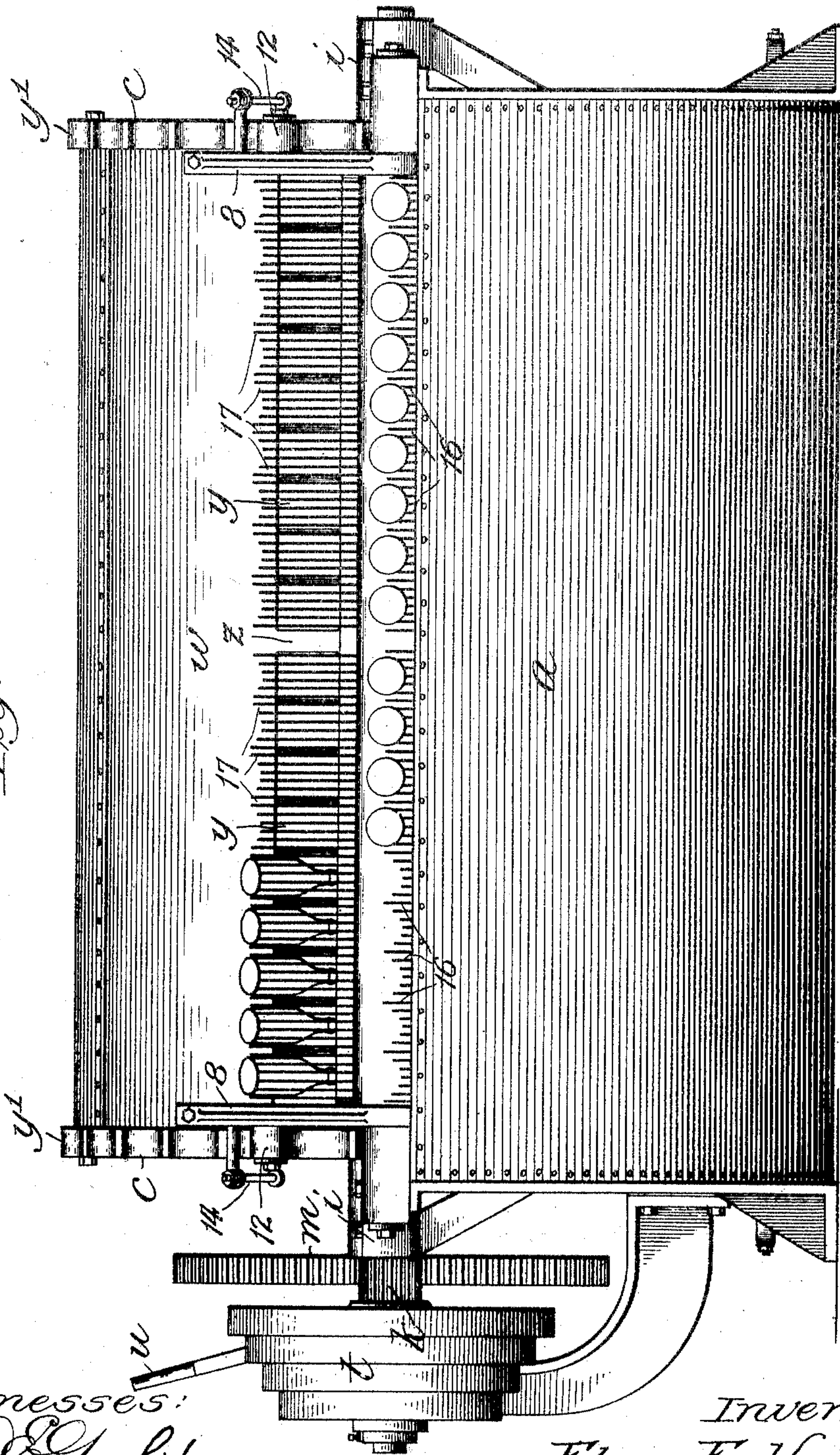
PATENTED JAN. 17, 1905.

E. E. HANNA.
BOTTLE WASHING MACHINE.

APPLICATION FILED NOV. 4, 1904.

5 SHEETS—SHEET 1.

Fig. 1.



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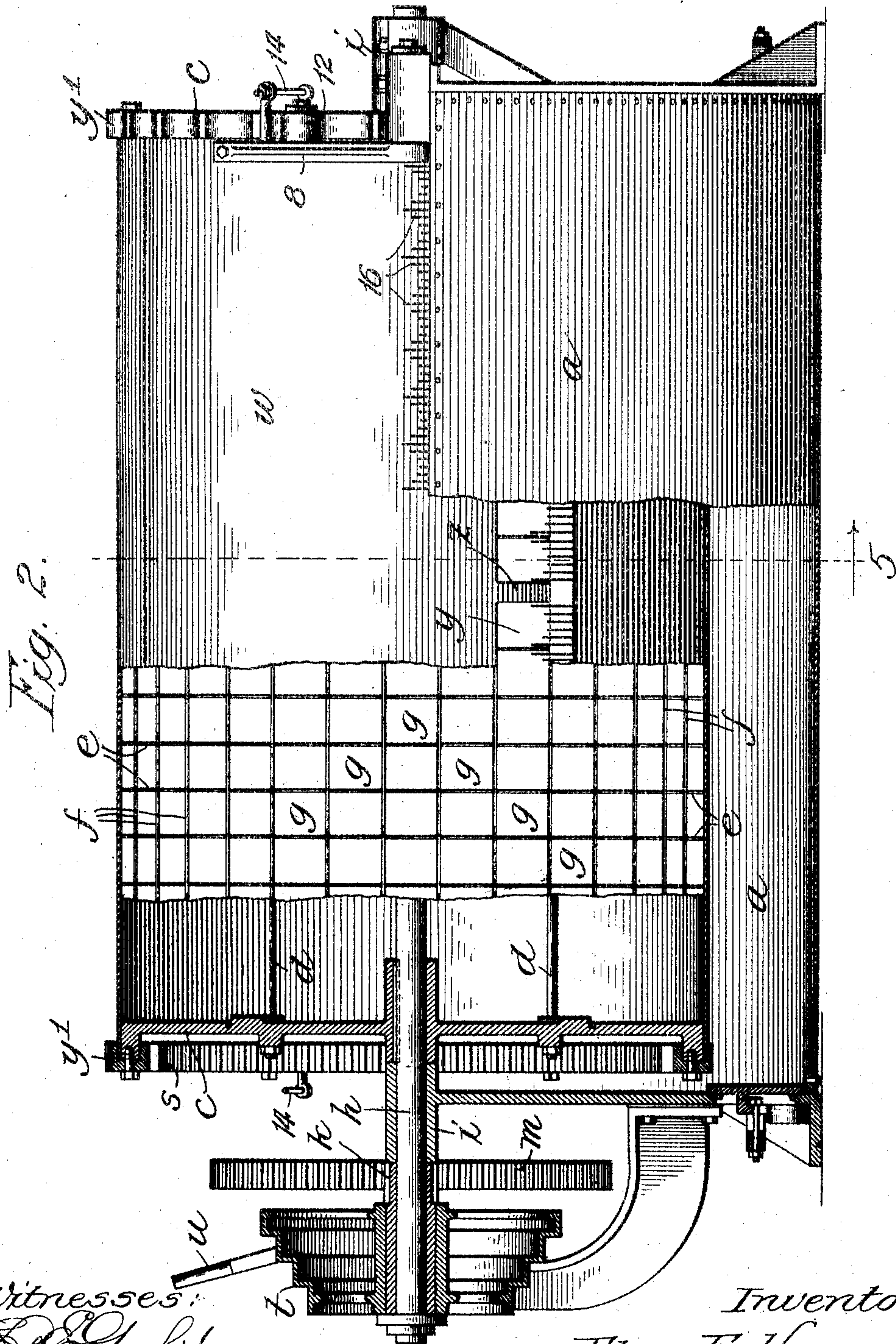
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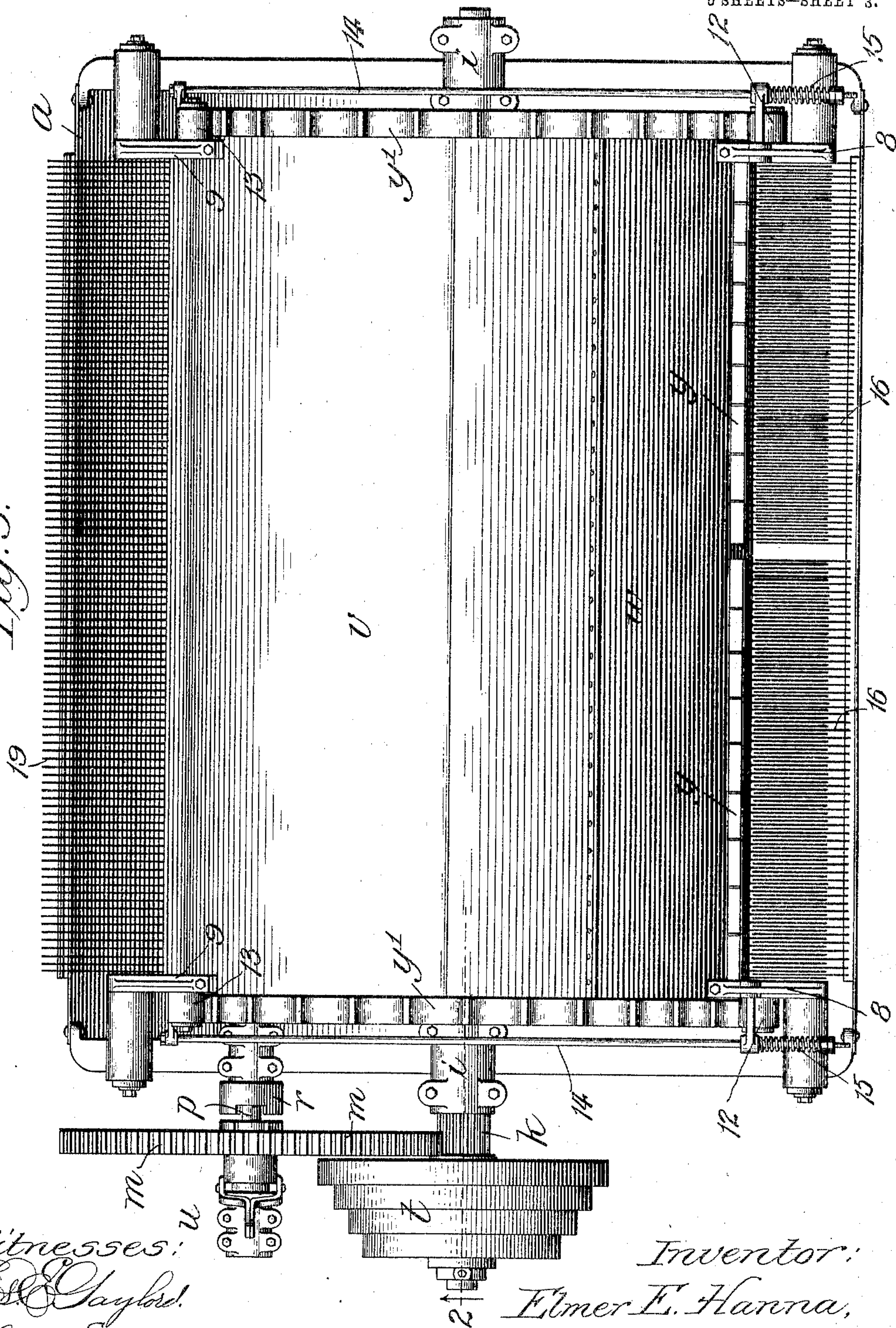
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5 SHEETS—SHEET 3.

Fig. 3.



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5 SHEETS—SHEET 4.

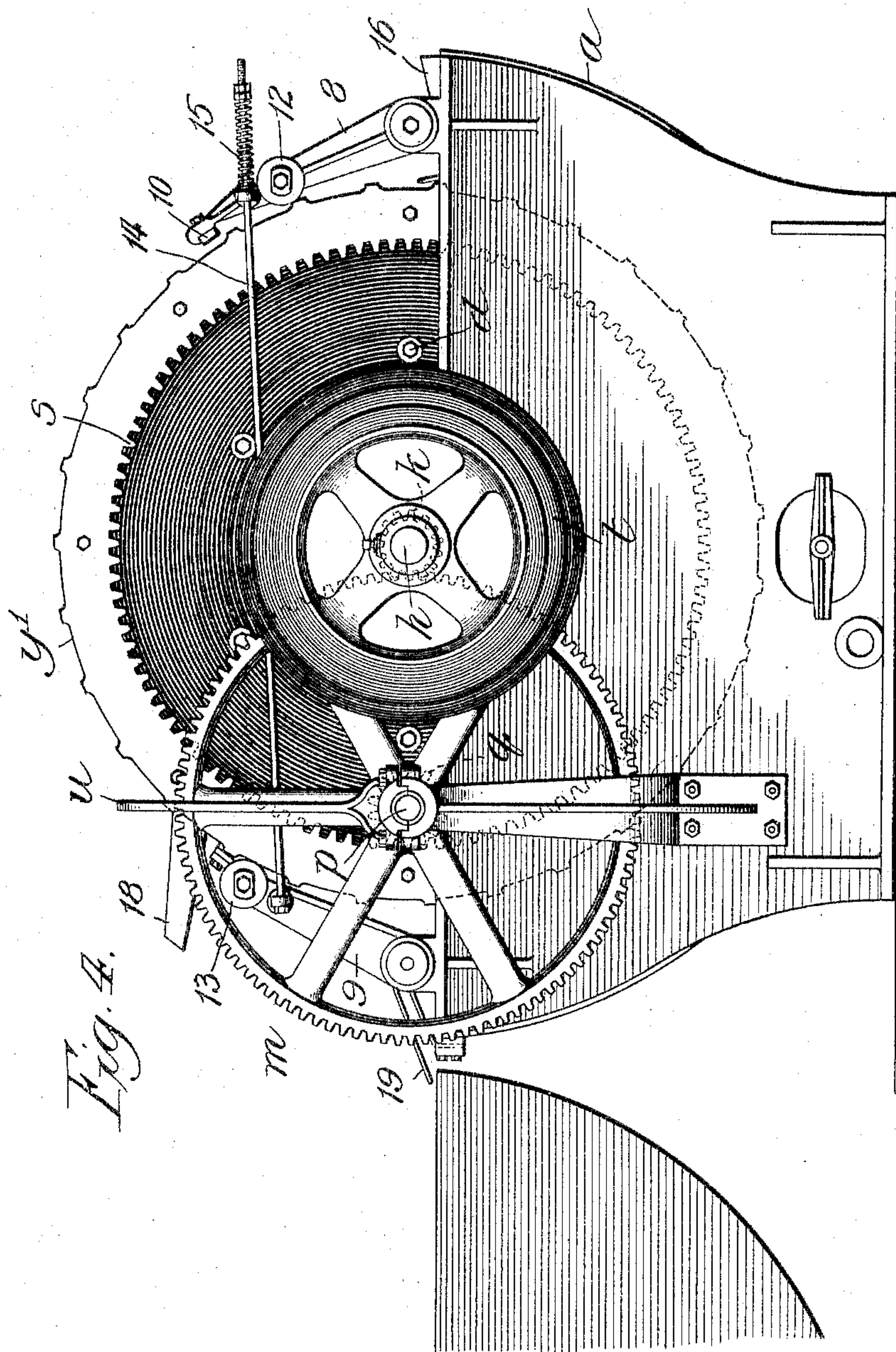


Fig. 4.

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5 SHEETS—SHEET 5.

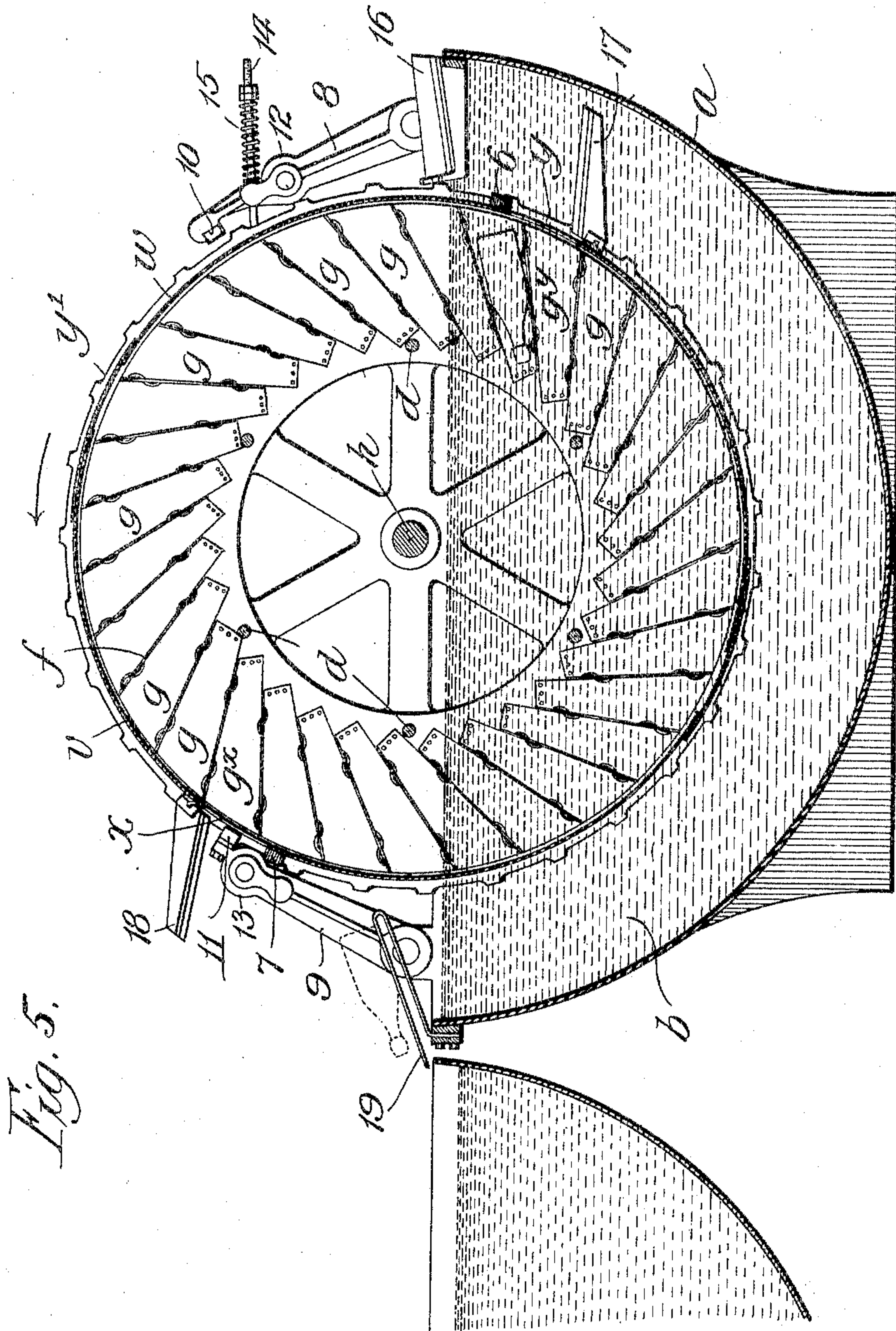


Fig. 5.

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UNITED STATES PATENT OFFICE.

ELMER E. HANNA, OF CHICAGO, ILLINOIS, ASSIGNOR TO HANNA
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BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 780,286, dated January 17, 1905.

Application filed November 4, 1904. Serial No. 231,429.

To all whom it may concern:

Be it known that I, ELMER E. HANNA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Washing Machines, of which the following is a specification.

This invention relates to that class of bottle washing or soaking machines provided with rotatable parts for receiving and carrying the bottles around to be soaked and washed, and particularly to the means for automatically loading and unloading such machines without disturbing the continuity of the operations, all of which will more fully hereinafter appear.

The principal object of the invention is to provide a rotatable bottle-washing machine with simple, economical, and efficient mechanism for automatically loading and unloading the same.

Other and further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists principally in a bottle washing or soaking machine in which there are combined a rotatable frame provided with a plurality of peripherally-arranged pockets to receive and hold the bottles, an outer shell surrounding the frame and arranged to be moved simultaneously therewith and independently thereof and provided with one or more openings through which the bottles may be loaded and unloaded, and means for changing the position of the outer shell with relation to the rotatable frame during the rotations of such frame to control the loading and unloading of the bottles from all of the pockets.

The invention consists, further and finally, in the features, combinations, and details of construction and arrangement hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of one type of machine as it appears when constructed in accordance with these improvements; Fig. 2, a similar elevation, partly in section; Fig. 3, a plan

view looking at it from above; Fig. 4, an end view of the machine looking at it from the left hand of Figs. 1, 2, and 3; and Fig. 5, a vertical cross-sectional elevation taken on line 5 of Fig. 2 looking in the direction of the arrow.

In the art to which this invention relates it is well known that it is very desirable to provide a simple, economical, and efficient rotatable bottle-washing machine in which the operations may be carried on continuously—in other words, without the stopping of the machine for the purpose of automatically loading and unloading the same—all of which will be more fully hereinafter set forth.

In constructing a machine in accordance with these improvements I provide a supporting mechanism or base portion *a*, which when viewed in cross-sectional elevation is semicylindrical in contour, so that its interior portion forms a cleansing-tank or a tank for holding cleansing fluid *b*. Rotatably mounted in this cleansing-tank is a rotatable frame portion formed of two head portions *c c*, joined together by a plurality of brace or stay rods *d* and also by a plurality of transverse and longitudinally-arranged partitions *e* and *f*, which form a plurality of bottle-holding pockets *g*. These pockets, as will be observed from an examination of Fig. 5, are arranged at an inclination to the axis of the rotatable frame in such manner that as the mechanisms rotate in the direction of the arrow indicated in Fig. 5 the bottles will be received and discharged above the water-line, or substantially above the horizontal diametrical line, by means of mechanisms which will more fully hereinafter appear. This rotatable supporting-frame is mounted upon a main shaft *h*, journaled in bearing-boxes *i*, as already suggested, which are secured to the supporting-tank portion. A train of compound driving-gear mechanism is provided, formed of a main driving-pinion *k* and an intermediate driving-gear *m*, an intermediate pinion *q*, and an internal gear *s*, secured to one of the rotatable frame-heads *c*. The driving-gear is loosely mounted upon an intermediate shaft

p , to which the intermediate pinion is rigidly secured, and it is arranged to be thrown into and out of engagement with such intermediate pinion by means of clutch mechanism r , so as to operate the same. This intermediate pinion in turn meshes with the internal gear, which, as already stated, is secured to one of the heads of the rotatable frame, thereby rotating said frame. The main driving-pinion is provided with a cone-pulley t and in connection therewith is loosely mounted upon the main shaft. This cone-pulley may be connected in any desired way by belt or otherwise with any desired prime mover. A clutch-lever u is also provided for connecting and disconnecting the rotatable frame with this train of operating-gears to operate or stop the operation of the same.

To hold the bottles in position and at the same time permit the loading and unloading of the rotatable frame therewith without disturbing the continuity of the operations, a divided shell portion is provided and made, preferably, in two semicylindrical parts v and w , which shell, or parts thereof, is removably mounted upon said rotatable frame portion. Examining Fig. 2 it will be seen that the ends of the shell (see the left-hand portion of the figure) enter an annular groove between the head of the frame and the annular toothed flanged portion y' , so that it is held in position and may be carried around during the rotations of said rotatable frame portion. At the same time it will be understood that the outer shell parts are fitted in these annular grooves loosely, so as to permit independent movements thereof at the desired time or times. These portions of the divided outer shell are provided with longitudinal openings x and y , which extend substantially the entire length thereof, but which may be spanned or bridged at desired intervals, as shown at z in Fig. 2, to prevent complete separation of such portions.

Examining Figs. 2 and 5 it will be seen that each of these longitudinal openings comes opposite one set of the bottle-pockets on opposite sides of the frame and that if no other arrangements were provided these two sets of pockets would be the only ones that could be loaded or unloaded. It is desirable, therefore, to give this shell portion a step-by-step movement independent of the continuing rotations of the frame portion—that is, to permit it to be moved from one set of pockets to an adjacent set—and thereby permit all of such sets of pockets to be loaded successively. In order to accomplish this result, one portion of the divided shell is provided with a stop-lug 6 and the other with a stop-lug 7, arranged to be contacted by the stopping-levers 8 and 9. These stopping-levers are pivotally mounted upon the supporting-tank of the machine and have hooked portions 10 and 11, respectively, arranged to engage with the stops and

retard for a short period of time the progress of the outer divided shell portions, or, relatively speaking, to give such divided portions of the shell a short movement independent of the movement of the rotatable frame portion. These stop-lever portions are provided with rolls 12 and 13, respectively, riding upon the teeth of the toothed flange portions y' , which act to throw such stop-levers in an alternate manner into and out of the path of rotation of the stops 6 and 7. The rolls of the stopping-levers are held normally in contact with the toothed flanges by means of a connecting-rod 14, which yielding connects both of the levers together through the instrumentality of an interposed helical coiled spring 15, as shown particularly in Fig. 4.

To hold the bottles in place, a holding-apron portion 16 is provided at the front side of the machine, formed of a plurality of vertically-arranged plates, so that grasping-lugs 17 and 18, which are likewise formed of a plurality of vertically-arranged plates extending out diametrically from each portion of the shell portion, respectively, may pass between the plates forming the holding-apron in a comb-like manner and grasp the bottles for the purpose of loading the machine, as will more fully hereinafter appear.

In operation the mechanisms are started and a plurality of bottles are laid in the concaves in the face of the holding-apron. The rotations of the machine carry the plates of the grasping-lug 17 around through such apron so as to lift the bottles out of engagement therewith, and as the set of pockets, which for convenience in this instance are marked g , passes above the water-line of the machine the bottles will by force of gravity fall through opening y into such set of pockets. The rotations continuing, the stop-levers 8 and 9 are thrown successively and alternately into or away from the machine by the roll and toothed flange portions already set forth, so that the hook 10 contacts stop 6 and arrests the movement of that portion of the divided shell to move the longitudinal opening y one-half the distance toward the next set of pockets—that is, until the pockets in which the bottles have been first received is half closed—when the next tooth on the flange throws the hook out of engagement with the stop and permits the frame to carry the shell around. When that outer shell portion, with its stop 6, comes opposite the hook 11 of the stopping-lever 9, it is engaged thereby so as to arrest the same operation of the divided shell until the opening y is completely opposite the next set of pockets and the set of pockets which have received the first charge of bottles are entirely closed. This action brings the opening y in that portion of the divided shell opposite the next series of pockets, so that if there be any bottles in such pockets they are discharged onto the dis-

charging-apron 19, as shown in Fig. 5. The continued operation of the parts carries them around in such manner that the plates of the grasping-lug 18 receive a second set of bottles to be cleansed and carry the loading and unloading opening of the other portion of the shell above the horizontal diametrical line, when the bottles will fall into the pockets *g x*. The operations already described, as already stated, have moved the portion *v* of the divided shell, with its loading and unloading opening *y*, to the next succeeding set of pockets for the purpose of loading and unloading the same. These operations are carried on continuously in such manner that every succeeding set of pockets is loaded and unloaded in a step-by-step manner without stopping or disturbing the operations of the machine and all in an automatic manner, dispensing with the usual hand-labor required for inserting the bottles and removing them from position, all of which will be understood and appreciated by those skilled in the art.

I claim—

25 1. In mechanisms of the class described, the combination of a rotatable frame provided with a plurality of peripherally-arranged pockets to receive and hold the bottles, an outer shell surrounding the frame and arranged to

be moved simultaneously therewith and independently thereof and provided with one or more openings through which the bottles may be received and discharged, and means for changing the position of the outer shell with relation to the rotatable frame during the rotations of such frame to control the loading and unloading of the bottles, substantially as described. 30 35

2. In mechanisms of the class described, the combination of a supporting-tank and rotatable frame mounted therein and provided with a plurality of peripherally-arranged pockets to receive and hold the bottles, an outer shell portion mounted upon and surrounding such frame and arranged to be moved simultaneously therewith and independently thereof and provided with one or more longitudinally-disposed loading and unloading openings, and mechanism for moving said shell and thereby the loading and unloading opening from one set of pockets to another by and during the rotations of the rotatable frame, substantially as described. 40 45 50

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Witnesses:

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