

No. 867,389.

PATENTED OCT. 1, 1907.

W. A. LORENZ.
PROCESS OF MAKING FORMED PULP VESSELS.
APPLICATION FILED FEB. 25, 1907.

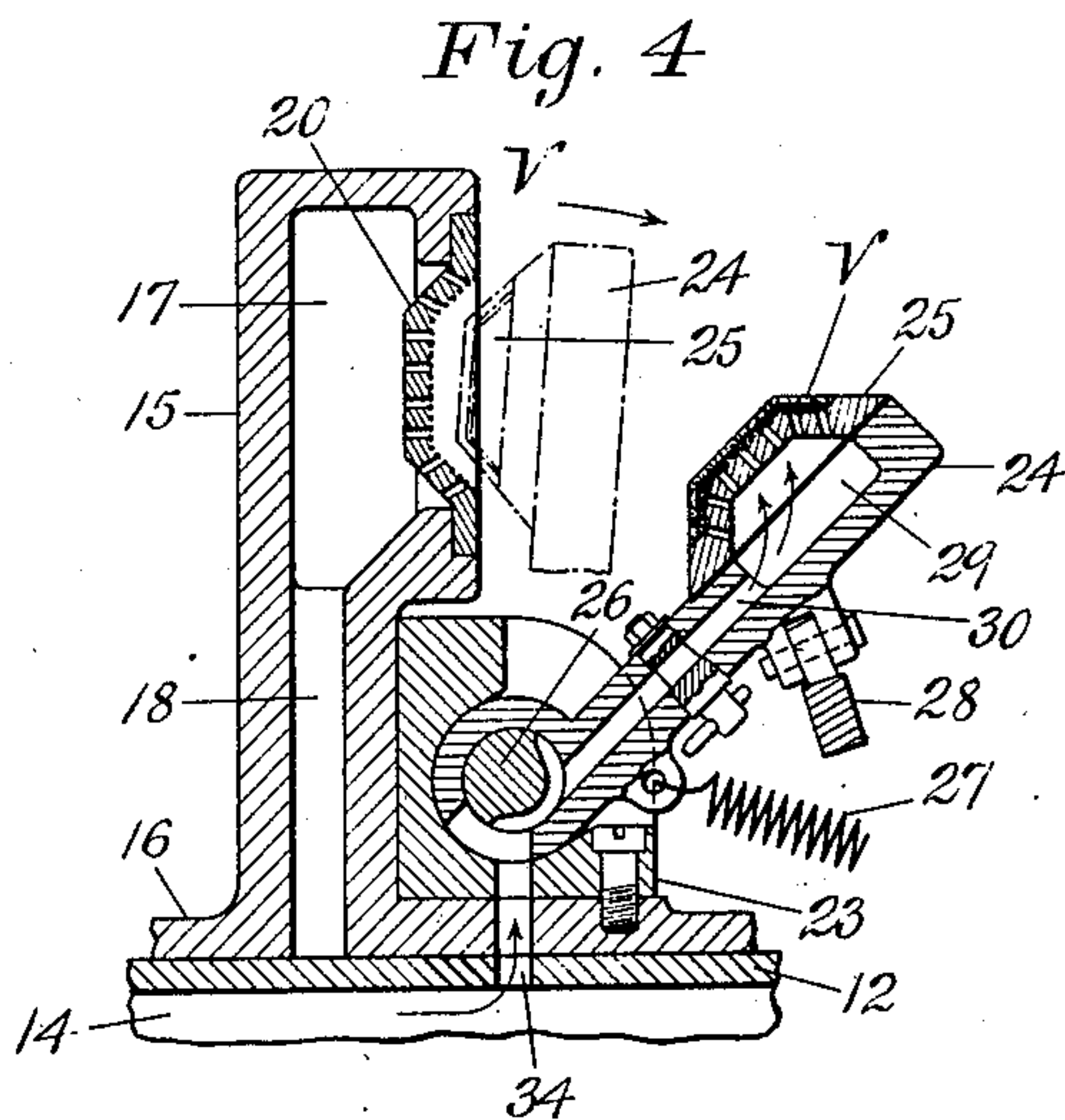
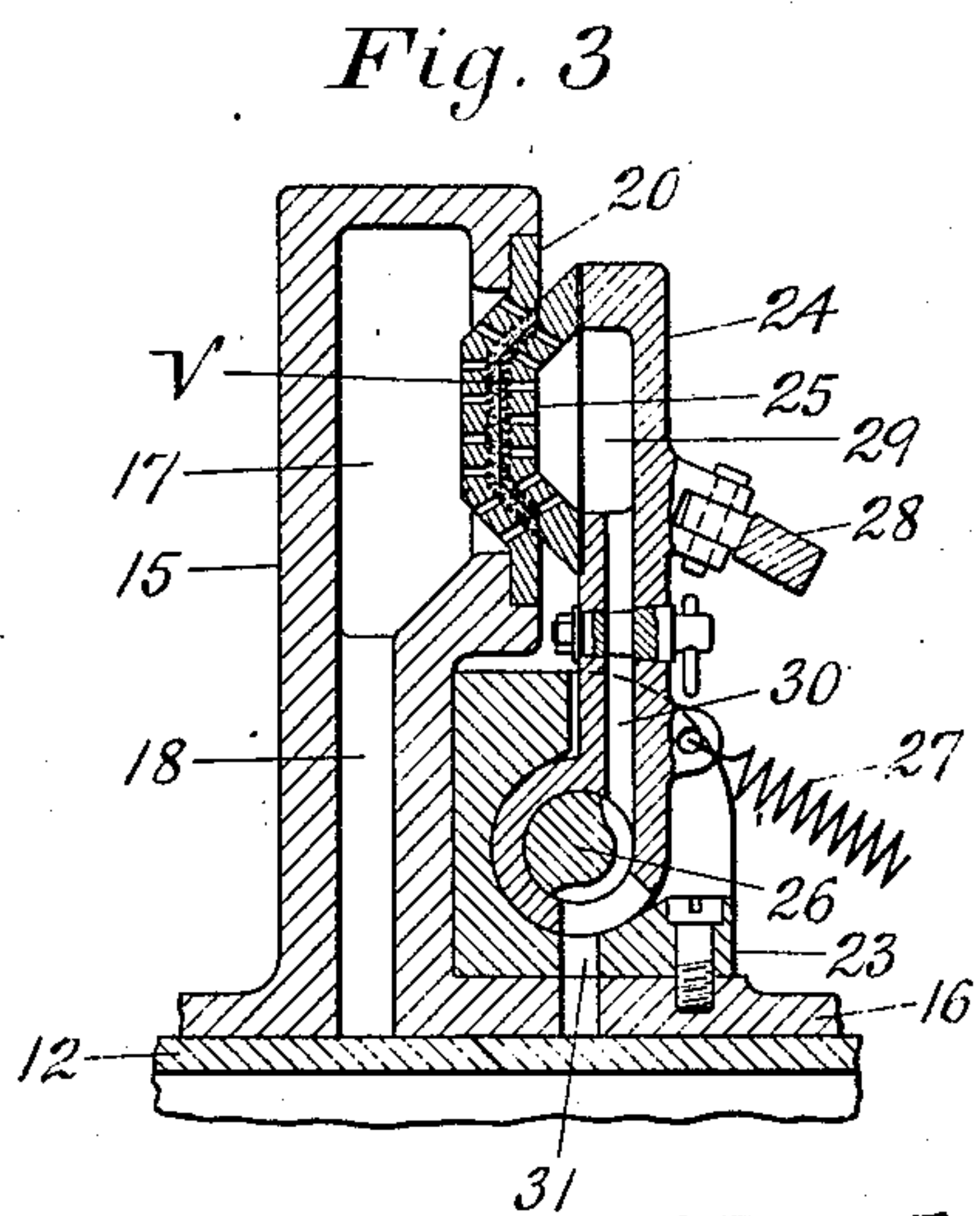
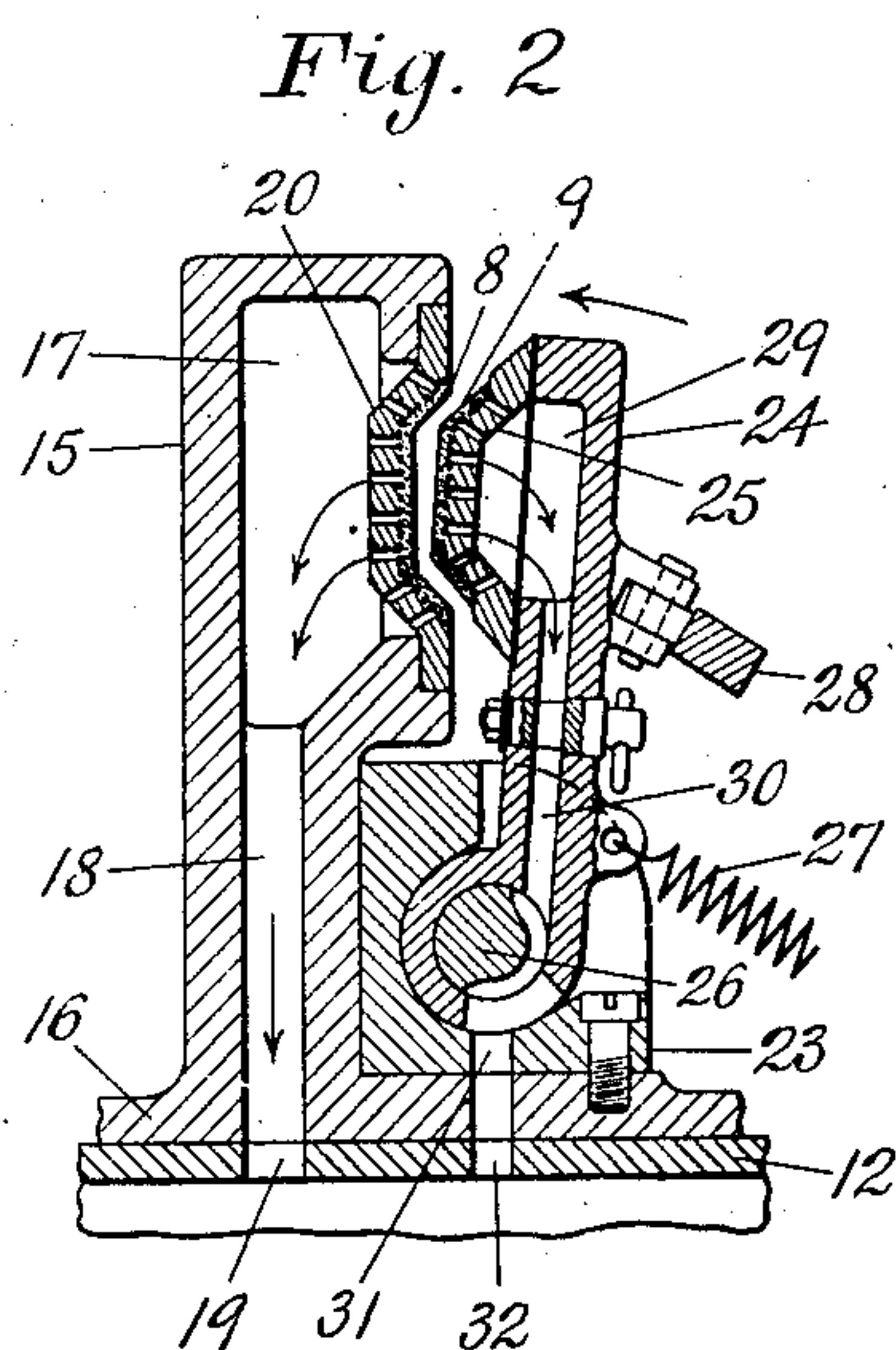
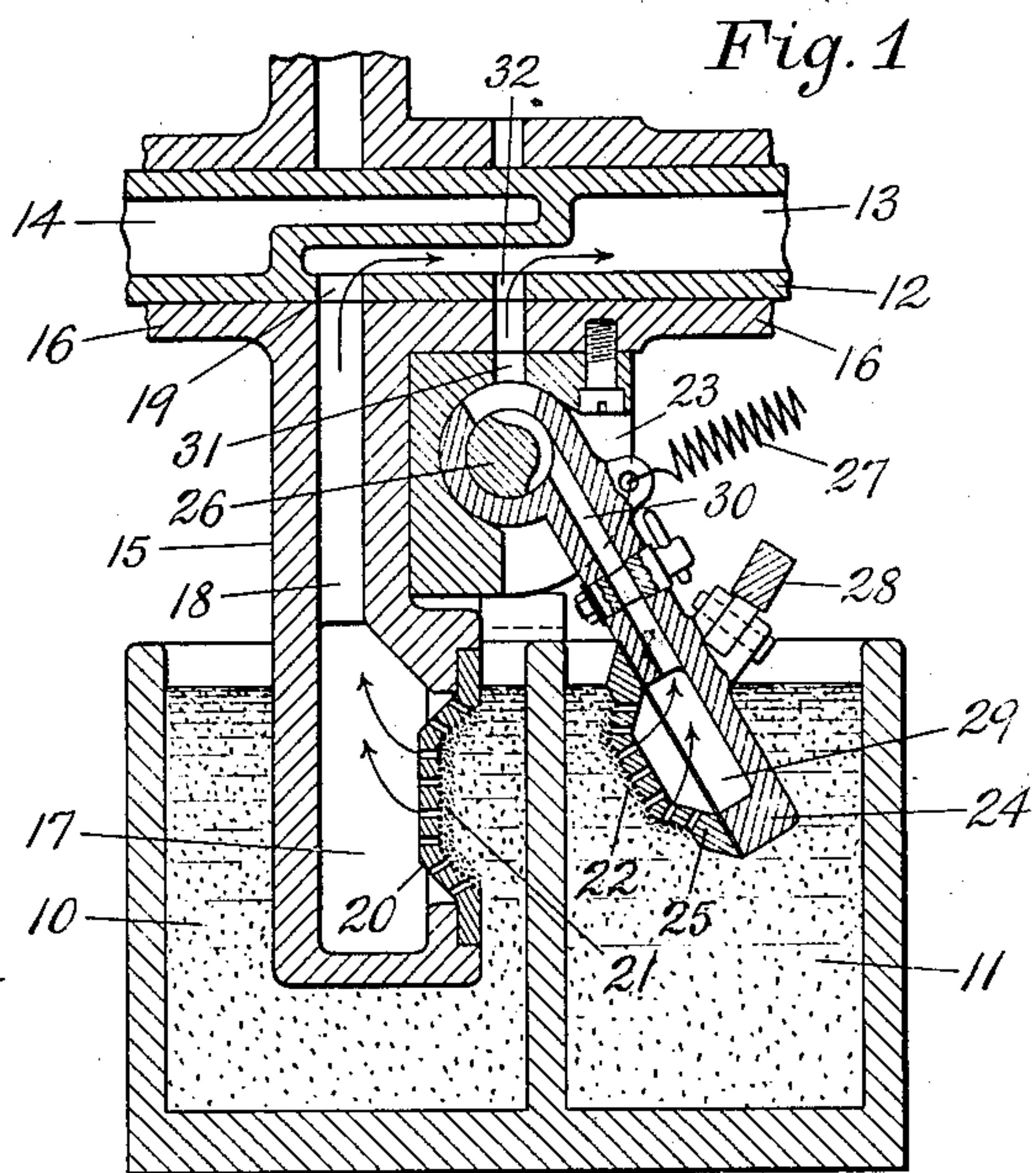


Fig. 5

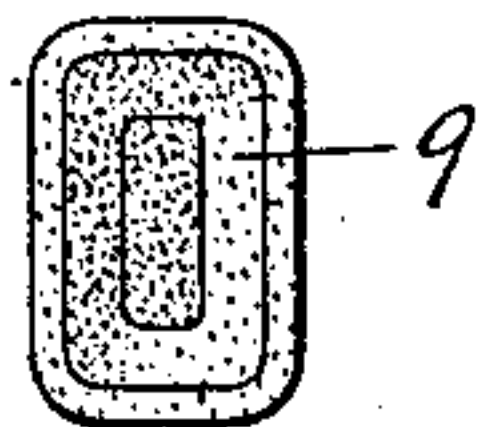
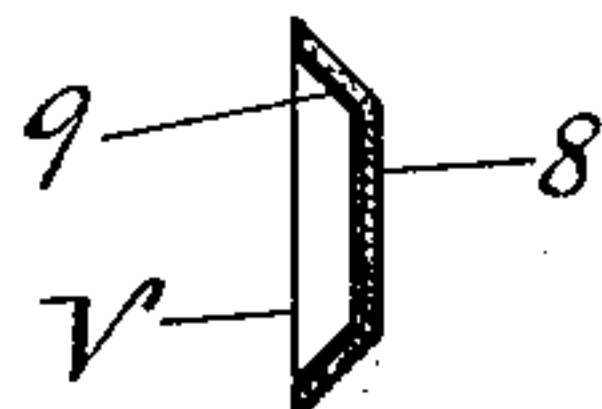


Fig. 6



Witnesses:
H. Mallner
Janette S. Ellsworth

Inventor
William A. Lorenz

UNITED STATES PATENT OFFICE.

WILLIAM A. LORENZ, OF HARTFORD, CONNECTICUT, ASSIGNOR OF ONE-HALF TO JOSEPH MERRITT, OF HARTFORD, CONNECTICUT.

PROCESS OF MAKING FORMED PULP VESSELS.

No. 867,389.

Specification of Letters Patent.

Patented Oct. 1, 1907.

Application filed February 25, 1907. Serial No. 359,071.

To all whom it may concern:

Be it known that I, WILLIAM A. LORENZ, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in the Process of Making Formed Pulp Vessels, of which the following is a full, clear, and exact specification.

My invention relates to the formation of pulp vessels formed from pulp-stuff into the desired shape. This stuff, being composed of fibers suspended in water, is designated as "pulp-stuff".

My process comprises the making of a formed double layer pulp vessel from two grades of pulp-stuff. The process consists in dipping a primary or depressed pervious mold form into a primary vat containing one grade pulp-stuff and depositing a layer of pulp thereon; and dipping a secondary or correspondingly raised pervious mold-form into a secondary vat containing another grade of pulp-stuff, and depositing a layer of pulp thereon; then removing both mold forms from the vats, and bringing the two mold-forms with the deposited layers together, thereby nesting the layers and uniting them into a single vessel composed of two grades of pulp. This double layer pulp vessel may be compressed if desired, and then dried.

In carrying out this process I employ a depressed and a correspondingly raised mold-form of the desired shape, and carry both of these mold-forms upon a suitable rotating device, by which the two mold-forms are carried into and out from two different vats, each mold-form entering and passing from its own vat, each vat containing the desired grade of pulp. When dipping into the pulp, exhausting apparatus in the interior of the molds draws the water through the mold forms and out of the machine, whereby the desired layer of pulp is deposited upon each mold-form. Then both mold-forms are rotated from the vats, and when the desired amount of water has been drained, by means of the exhaust apparatus from both layers of pulp upon the molds, both of the mold-forms are brought together, whereby the two layers are nested, one layer being transferred upon the other layer. The two mold forms may be pressed together, so as to more firmly unite the two layers. Then the two mold-forms are separated, and the two-layer vessel is detached from one of the forms by means of a blast of air, the vessel remaining upon the other form. Then the vessel is removed from the other mold-form, preferably by a blast of air, and delivered to suitable taking-off apparatus. In the drawings I have shown apparatus embodying the features just described. I may however, employ other means to form the two-layer vessel, comprising a primary and a secondary mold-form, each carried upon separate rotating devices, instead of upon one rotating device; in such apparatus each mold-form dips into its

own vat containing the desired grade of pulp, and a layer of pulp is deposited upon each form. Then by rotating each separate device or mold-carrier from each vat, the two mold-forms are then rotated opposite to one another and brought together, when one layer from one mold-form is deposited upon the other layer in the other mold-form. An air blast may be employed to effect this transferring and uniting, or pressure may be employed by nesting the two mold forms closely together. Then the vessel composed of the two layers may be removed by a blast or other suitable means.

In the drawings, Figure 1 represents a sectional view of an apparatus for carrying out my improved process, comprising a fixed shaft, upon which is placed the rotating carrier, carrying two mold-forms dipping into two separate vats. Fig. 2 represents a sectional view of the two mold-forms removed from the vats, and about to be brought together. Fig. 3 represents a sectional view, showing the two mold-forms brought fully together. Fig. 4 shows the two mold-forms separated, with the two-layer pulp vessel united, transferred and held upon one of the mold-forms. Figs. 5 and 6 represent, respectively, an inside view, and a sectional view of the two-layer pulp vessel V, in which 8 represents the outer layer, and 9 the inner layer of the vessel.

In the drawings, 10 represents a pulp vat containing one grade of pulp, which may be coarse, and which may form the outer layer of the vessel.

11 represents a separate pulp vat containing another grade of pulp, which may be of a finer grade, and which may form the inner layer of the vessel.

12 represents a fixed shaft having a hollow portion or opening 13 communicating with an exhaust pump not shown, and also having a hollow portion or opening 14 communicating with air compressing apparatus, not shown. Upon the shaft 12 is placed the rotating mold carrier 15 having a hub 16. This carrier is provided with a hollow portion or chamber 17, communicating with the duct 18. This duct 18 during the exhausting position communicates with an aperture 19 in the shaft 12.

The mold carrier 15 carries the primary or depressed mold-form 20, which is provided with apertures communicating with the chamber 17 of the carrier. This mold-form is also covered with suitable wire gauze, shown in dotted lines upon the mold-form 20. The carrier 15 and the mold-form 20 in its rotation, dip into the primary vat 10, and out therefrom. During this dipping operation, a suitable pump exhausts the air from the interior 13 of the shaft 12, through the aperture 19, duct 18 and chamber 17, by which water is pumped through the pervious mold, and pulp-stuff from the vat 10 is deposited upon the mold-form, shown in thickened dots at 21.

To the hub 16 is attached a bracket 23 carrying an

oscillating secondary mold carrier 24, having a raised pervious mold-form 25. This oscillating mold carrier 24 is pivoted at 26 in the bracket 23, and is provided with a spring 27 for holding the carrier 24 against a fixed track 28. This track is so shaped as to close and open the secondary mold carrier during its rotation, the spring holding the carrier against the track. The carrier 24 is also provided with a chamber 29, a duct 30 communicating with an aperture 31, which during the dipping operation communicates with the aperture 32 and the hollow portion 13 of the shaft 12.

The raised mold-form 25 is provided with suitable apertures and wire gauze, in order to permit the passage of water through the secondary mold carrier, and through its various apertures out through the shaft 12. During the dipping operation a layer of pulp will be deposited upon the mold form 25 as shown in thickened dots at 22.

By rotating the two mold carriers out of the vats from a lower position to an upper position, each mold-form will carry the desired amount of pulp-stuff upon its face, according to the strength of the exhaust, and the thickness of the pulp-stuff during the dipping operation. During its passage upwardly, more water will be extracted from both layers of pulp during the operation of bringing the two mold-forms together. Fig. 2 represents these two mold-forms brought nearly together, the exhaust still being connected to both forms. Fig. 3 represents both mold-forms brought entirely together, the exhaust being cut off from both mold-forms. These two forms may be held together for a short while, during which time both layers will be united by compression, forming the two-layer vessel V.

In Fig. 4 I have shown the secondary mold carrier 24 and raised mold-form 25 in dot and dash lines, and removed a little from the depressed mold-form 20. In this position the two-layer vessel V is shown carried by the mold-form 25, having been detached from the mold form 20 by a blast of air from the interior of the carrier 15 at the required time. Then the mold carrier 24 is moved to its outward position, shown in full lines in Fig. 4; from this position the vessel V may be removed by a blast of air from the interior of the mold carrier through the aperture 34 on the shaft 12. When removed by the blast it may be taken by any suitable transferring means not shown, and carried to drying apparatus.

In the manufacture of a two-layer pulp vessel by the process described, I am enabled to employ two grades of pulp. A coarser or cheaper grade may be used for the outer layer of the vessel, which may present a variegated appearance, and a finer grade of pulp presenting a better appearance may be used for the in-

ner layer of the vessel, the latter being but a fraction of the thickness of the whole vessel. In this manner I produce a vessel having a fine appearance upon that side which is used, and at the same time I produce an article which is cheaper in cost than one made entirely of a fine grade of pulp. I may also add to one or the other of the pulp vats, as desired, a binder or size, which will make one of the layers waterproof, so as to resist the absorption of moisture when moist substances are placed in the vessel.

What I claim:—

1. The process of making a formed double layer pulp vessel from two grades of pulp-stuff, consisting of dipping a depressed pervious mold-form into a primary vat containing one grade of pulp-stuff, and depositing a layer of pulp thereon; dipping a correspondingly raised pervious mold-form into a secondary vat containing another grade of pulp-stuff and depositing a layer of pulp thereon; removing both mold-forms from the vats, and bringing the two mold-forms with the deposited layers together, thereby nesting the layers, and uniting them into a single vessel composed of two grades of pulp.

2. The process of making a formed double layer pulp vessel from two grades of pulp-stuff, consisting of dipping a depressed pervious mold-form into a primary vat containing one grade of pulp-stuff, and depositing a layer of pulp thereon; dipping a correspondingly raised pervious mold-form into a secondary vat containing another grade of pulp-stuff and depositing a layer of pulp thereon; removing both mold-forms from the vats, and bringing the two mold-forms with the deposited layers together, thereby nesting the layers, and uniting them by transferring one layer upon the other and thus forming a single vessel composed of two grades of pulp.

3. The process of making a formed double layer pulp vessel from two grades of pulp-stuff, consisting of dipping a depressed pervious mold-form into a primary vat containing one grade of pulp-stuff, and depositing a layer of pulp thereon; dipping a correspondingly raised pervious mold-form into a secondary vat containing another grade of pulp-stuff and depositing a layer of pulp thereon; removing both mold-forms from the vats, and bringing the two mold-forms with the deposited layers together, thereby nesting the layers, and uniting them by pressure into a single vessel composed of two grades of pulp.

4. The process of making a formed double layer pulp vessel from two grades of pulp-stuff, consisting of dipping a depressed pervious mold-form into a primary vat containing one grade of pulp-stuff, and depositing a layer of pulp thereon; dipping a correspondingly raised pervious mold-form into a secondary vat containing another grade of pulp-stuff and depositing a layer of pulp thereon; removing both mold-forms from the vats, and bringing the two mold-forms with the deposited layers together, thereby nesting the layers, and uniting them into a single vessel, and drying the completed article.

Signed at Hartford, Conn., this 21st day of February, 1907.

WILLIAM A. LORENZ.

Witnesses:

EDWARD H. LORENZ,
NELLIE PHOENIX.