

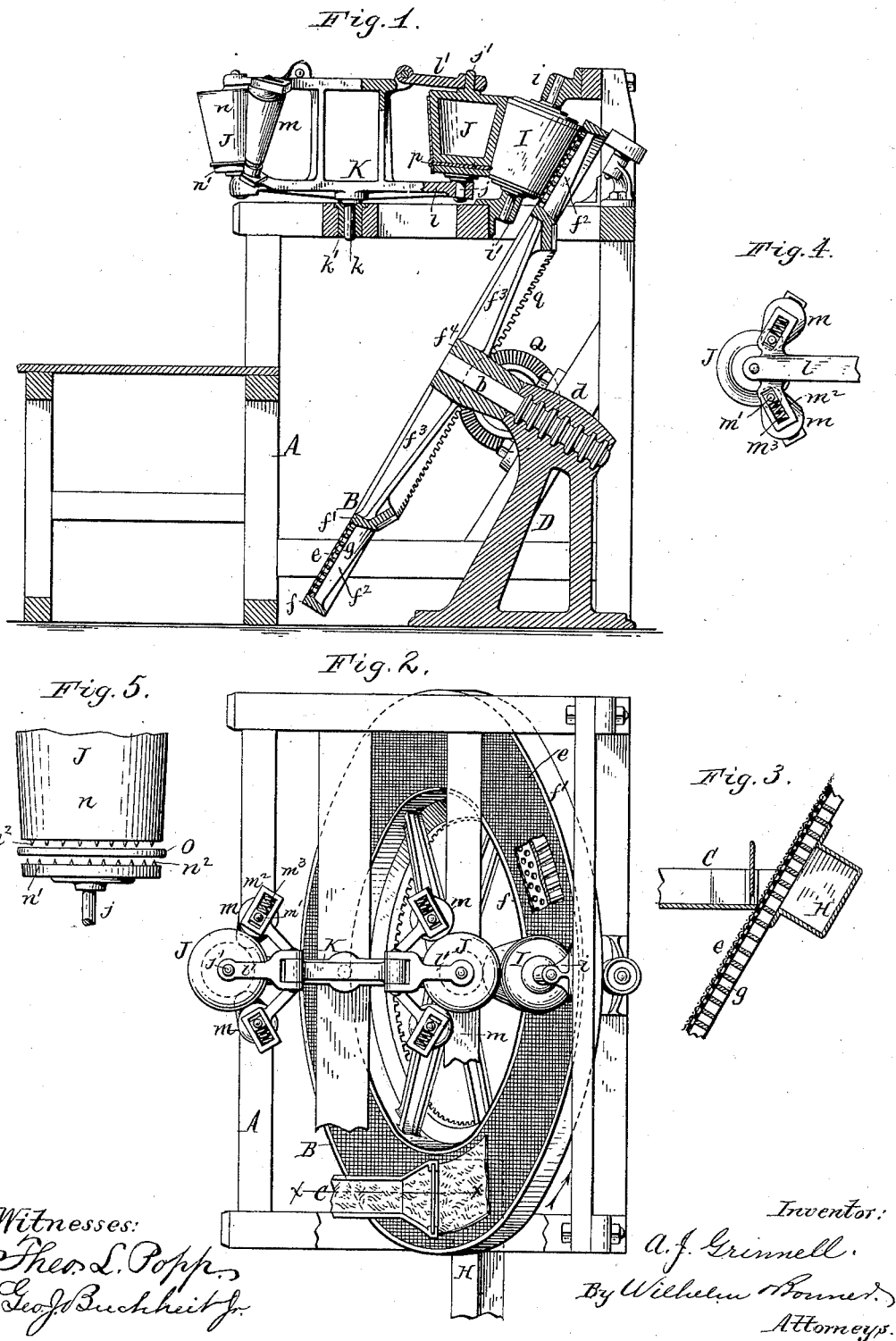
(No Model.)

A. J. GRINNELL.

MACHINE FOR FORMING PAPER VESSELS.

No. 385,553.

Patented July 3, 1888.



UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 385,553, dated July 3, 1888.

Application filed September 1, 1887. Serial No. 243,443. (No model.)

To all whom it may concern:

Be it known that I, ADELBERT J. GRINNELL, of Oswego, in the county of Oswego and State of New York, have invented new and useful
5 Improvements in Machines for Forming Paper Vessels, of which the following is a specification.

This invention relates to a machine for forming vessels from paper or wood pulp, and more
10 particularly to a machine in which the pulp is deposited upon a rotating disk which delivers the pulp to the coucher.

The object of my invention is to construct a simple and efficient machine for forming the
15 body of the vessel, and also to construct the machine in such manner that the bottom can be secured to the vessel during the operation of forming the body.

The invention consists of the improvements
20 which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a sectional elevation of my improved machine. Fig. 2 is a top plan view thereof.
25 Fig. 3 is a cross-section in line *x x*, Fig. 2, on an enlarged scale. Fig. 4 represents a bottom plan view of a portion of the swinging frame in which the pressure-rollers are mounted, on an enlarged scale. Fig. 5 represents a frag-
30 mentary side elevation of one of the forming-rollers, on an enlarged scale.

Like letters of reference refer to like parts in the several figures.

A represents the stationary supporting-frame
35 of the machine.

B represents the rotating annular carrier, upon which the pulp is delivered from a feed-spout, C.

The annular carrier B is preferably arranged
40 in an inclined position and provided with a spindle, *b*, which is journaled in a bearing, *d*, formed at the upper end of a standard, D.

The annular carrier B is covered with wire-gauze, *e*, which is attached to an annular frame
45 composed of two concentric rings, *f f'*, and radial connecting-bars *f²*, the wire-gauze *e* being secured to the rings *f f'* in any suitable manner.

g represents a perforated annular plate arranged underneath the wire-gauze *e*, and resting
50 upon the radial bars *f²* between the rings *f*

and *f'*. The plate *g* supports the wire-gauze and prevents the same from sagging, and at the same time permits the water of the pulp to pass through its perforations.

The annular frame *f'* is connected by arms
55 *f³* with a hub, *f⁴*, which is mounted upon the spindle *b*.

H represents a suction spout or trunk arranged with its mouth on the under side of the carrier B, opposite the feed-spout C, where-
60 by a suction is created through the wire-gauze of the carrier B, which causes the pulp to adhere to the gauze. The trunk H is connected with a fan or other suitable suction device.

I represents the tapering coucher running in
65 contact with the upper portion of the pulp-carrier B and receiving the pulp therefrom. This coucher is provided with a face or covering of felt in the usual manner, and is mounted in bearings *i i'*, secured to the stationary frame A.
70

J J represent the forming-rollers, which are alternately placed in contact with the coucher I and take the web of pulp from the same. The forming-rollers J J are mounted in a swinging
75 frame, K, having a vertical stud or pivot, *k*, which is arranged in a bearing, *k'*, in the main frame A, so that by swinging the frame K on its pivot either forming-roller can be presented to the coucher. The lower journals, *j*, of the
80 forming-rollers are supported in bearings formed in laterally-projecting arms *l* of the swinging frame K, while the upper journals, *j'*, of said rollers are arranged in bearings formed in arms *l'*, hinged to the frame K.

As represented in Fig. 5, each forming-roller
85 J is composed of a body part, *n*, upon which that part of the vessel is formed which extends above the bottom, and a bottom disk, *n'*, upon which that part of the vessel is formed which extends below the bottom. The body part *n*
90 carries the upper journal, *j'*, and the bottom disk, *n'*, the lower journal, *j*. The latter is secured in the bearing *l* by upsetting its lower end, or otherwise, so that the bottom disk, *n'*, is permanently attached to the frame K and at
95 the same time capable of turning therein. The bottom O of the vessel is placed between the body part *n* and the disk *n'* before the web of pulp is wound upon the forming-roller. The two portions *n n'* of the forming-roller are pro-
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vided with pointed teeth or pins n^2 , which embed themselves in the bottom O, and whereby the two parts of the forming-roller are connected together. The bottom O consists of a
 5 circular piece of paper or straw-board, and is made somewhat larger in diameter than the forming-roller, so as to project slightly beyond the face thereof.

As the web of pulp is deposited upon the
 10 forming-roller a groove or depression, p , is formed in the web by the projecting edge of the bottom, in which the latter is confined. In this manner the bottom is secured to the vessel during the operation of forming the body,
 15 thereby dispensing with the usual operations of forming a bead in the vessel after the body has been formed and springing the bottom into the same. When the forming-roller running in contact with the coucher has received a web of
 20 pulp of the desired thickness, the roller is swung away from the coucher and the hinged arm l' is raised, and the body portion n , with the vessel, is removed from the frame K.

m represents two yielding pressure-rollers,
 25 which bear against each forming-roller J and assist in squeezing out any moisture which may still be contained in the pulp. The bearings m' of the pressure-rollers m are arranged in rectangular frames m^2 , formed on the swinging
 30 frame K, and are made yielding by means of spiral springs m^3 , interposed between the bearings m' and the frames m^2 .

The annular pulp-carrier B is driven by means of a gear-wheel, Q, which meshes with
 35 a gear-rim, q , formed on the under side of the disk, or by any other suitable means.

I claim as my invention—

1. The combination, with the feed-spout C, of a perforated annular pulp-carrier, B, a
 coucher, I, bearing against the carrier B, and
 40 a forming-roller, J, running in contact with the coucher, substantially as set forth.

2. In a machine for forming paper vessels from pulp, a pulp-carrier composed of a circular frame provided with an annular series of
 45 supporting-bars, a perforated annular plate resting on said bars, and a wire-gauze covering resting on the perforated plate, substantially as set forth.

3. In a machine for forming vessels from
 50 pulp, a forming-roller, J, made in two sections, n n' , between which the bottom of the vessel is arranged, substantially as set forth.

4. In a machine for forming vessels from pulp, the combination, with the pulp-carrier
 55 and coucher, of a forming-roller provided with a clamping device, whereby the bottom of the vessel to be formed is attached to the forming-roller preparatory to winding the pulp upon the same, substantially as set forth.
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5. In a machine for forming vessels from pulp, the combination, with the annular pulp-carrier, the coucher, and the forming-roller, of
 a frame in which the forming-roller is jour-
 65 naled, arms projecting from said frame on opposite sides of the forming-roller, bearings and springs mounted on said arms, and pressure-rollers journaled in said bearings, substantially as set forth.

Witness my hand this 28th day of July, 1887. 70

ADELBERT J. GRINNELL.

Witnesses:

JOHN HANDLEY,
 ED. H. FULTON.