

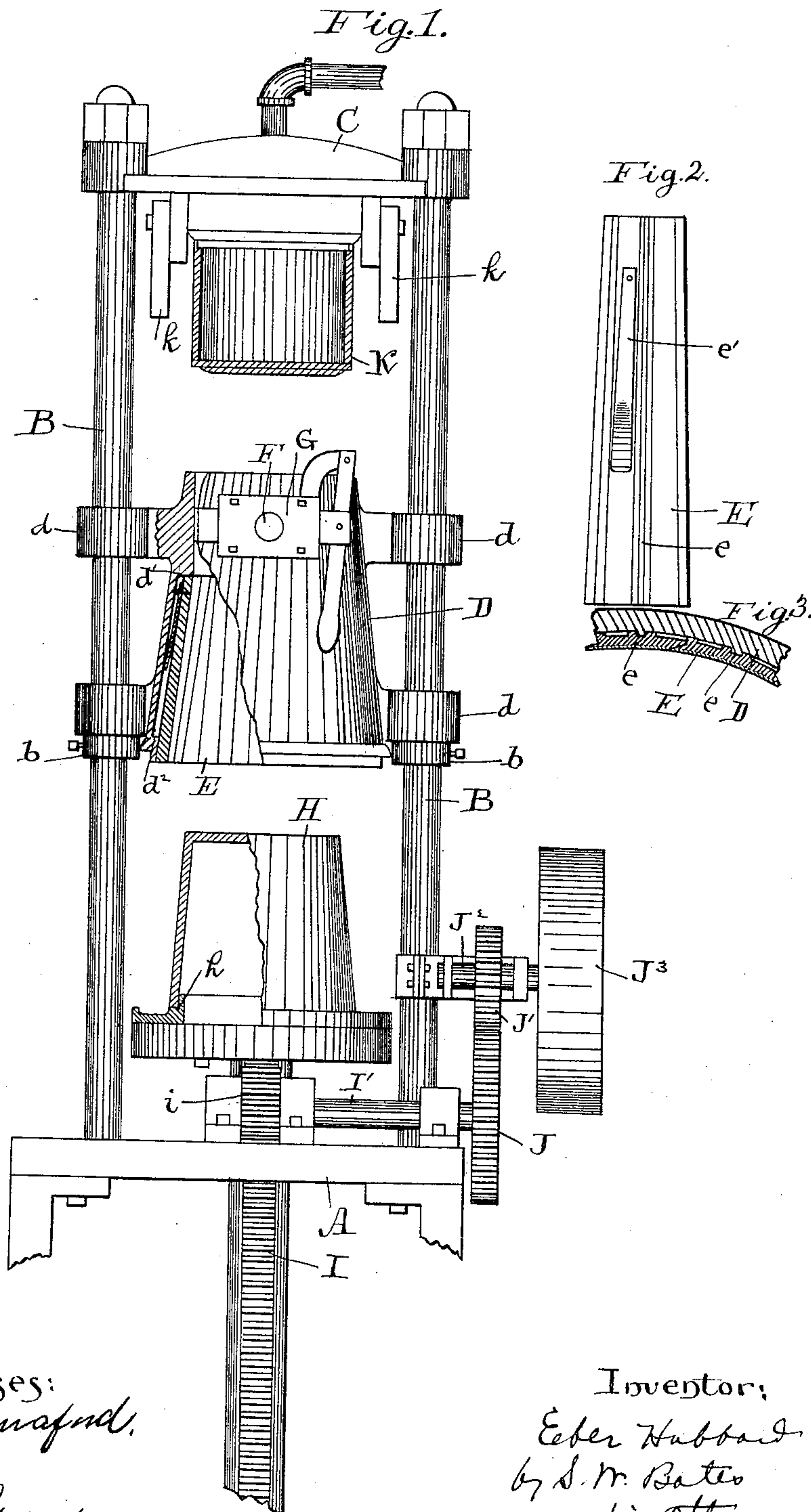
(No Model.)

E. HUBBARD.

PRESS FOR FORMING HOLLOW ARTICLES FROM PULP.

No. 480,466.

Patented Aug. 9, 1892.



Witnesses:  
*H. S. Hanaford.*  
*Am. H. Gray*

Inventor:  
*Eber Hubbard*  
by *S. M. Bates*  
his atty.

# UNITED STATES PATENT OFFICE.

EBER. HUBBARD, OF CHICAGO, ILLINOIS.

## PRESS FOR FORMING HOLLOW ARTICLES FROM PULP.

SPECIFICATION forming part of Letters Patent No. 480,466, dated August 9, 1892.

Application filed July 15, 1891. Serial No. 399,575. (No model.)

*To all whom it may concern:*

Be it known that I, EBER. HUBBARD, a citizen of the United States, residing at Chicago, in the State of Illinois, have invented certain  
5 new and useful Improvements in Presses for Forming Hollow Articles from Pulp; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to  
10 which it appertains to make and use the same.

My invention relates to a machine for pressing pails and other like hollow articles made from pulp. In the process of forming pails (to carry out which my invention is particularly designed) the body of the pail is wound  
15 upon a form from pulp or paper stock layer upon layer. This may be done either with little or much pressure on the couch-roll, forming the pulp either into a soft uncom-  
20 pressed mass or a firm mass from which the water has mostly been pressed out.

The principal object of my invention is to press the pail-body and at the same time to put in or form a bottom for the pail, so that  
25 the body and the bottom will be perfectly united and the pail when completed will be integral throughout.

The press which I here show as embodying my invention consists of a casing the upper  
30 portion of which is cylindrical and the lower portion flaring or conical. The flaring portion of the casing is lined with overlapping pervious sections, each of which is connected with the casing by suitable guides, so that it may have  
35 a limited longitudinal motion, whereby the inner diameter of the casing is expanded or contracted. A pervious former is made to enter the flaring end of the cylinder, this former being provided with means for raising  
40 and lowering. Fitting the cylindrical upper portion of the casing is a plunger adapted to be forced down upon the head of the former when the latter is in position within the casing. The unpressed body of the pail is placed  
45 on the former and raised up into the casing, the staves or sections being lifted simultaneously as they come in contact with the lower portion of the former. The staves or sections are thus brought together around the surface  
50 of the former as the latter is forced into the flaring portion of the casing. Pulp is intro-

duced into the upper portion of the casing and molded by the plunger to form the bottom of the pail, the upper edge of the wound body uniting in this operation with the molded  
55 bottom.

The novel features of my invention I have set forth in the accompanying claims.

In the accompanying drawings I illustrate a press constructed according to my inven-  
60 tion.

In the drawings, Figure 1 represents a front view of my press, showing certain parts in section, the sections which line the casing being represented in their upper position. 65 Fig. 2 is an elevation of one of the sections, and Fig. 3 is a cross-section of the same in position in the casing.

A represents a base or bed-piece on which the press sets.  
70

B B are two uprights or rods united at their upper ends by cross-heads C, the lower ends being secured to the bed-piece A.

D is the casing, which is secured to the rods B by means of lugs *d*, adapted to slide on  
75 said rods. The casing thus has a longitudinal motion on the rods B, and it is supported by means of the stops *b*. The upper portion of the casing is cylindrical in form and the lower portion is flaring or conical. The lower  
80 portion of the casing is provided with a lining made up of pervious sections E. When in position in the casing, these sections fit together to form a true conical surface, the inner portion of which is flush with the cy-  
85 lindrical portion of the casing, the upper ends of the sections resting against a shoulder *d'*. The lower ends of the sections are substantially on a level with the lower end of the casing. The sections E are held in position  
90 by guides or ribs on the inner surface of the casing, each of which ribs fits a groove *e* in the section E. Each section thus has a longitudinal motion within the casing, and when expanded the lower portion is allowed to drop  
95 to a position below the lower end of the casing. This motion is limited and the sections prevented from sliding completely from the lower end of the casing by means of a stop-spring *e'*, which is fixed to a groove in the  
100 back side of the section in such a position that its lower end impinges against a shoul-



der  $d^2$  in the lower end of the casing when the section has dropped the desired distance downward. It is evident that the sections will remain in place within the casing. Each section is prevented from sliding downward by the end of the spring  $e'$  striking against the shoulder  $d^2$ . The upper ends are prevented from falling inward by the fact that their edges overlap. The inlet-pipe F, controlled by a valve G, is provided for admitting pulp into the upper end of the casing. A tapering former H is fixed to a base  $h$  and is adapted to enter the flaring end of the casing. The base  $h$ , to which the former is secured, is of larger diameter than the former, so that a flange or ledge is formed upon which the lower ends of the sections E rest when the former is raised. Means are provided for raising and lowering the former, as herein shown. These means consist of a rack I, operated by a pinion  $i$  on the end of a shaft  $I'$ . A gear J is fixed to the said shaft, and this gear J is in turn operated by a pinion  $J'$ , attached to a shaft  $J^2$ , on which is also a driving-pulley  $J^3$ . A plunger K is provided for entering a cylindrical portion of the casing. This plunger, as herein shown, is stationary and fixed to the cross-head C above the casing D. Stops  $k$  are provided, which limit the distance to which the plunger can enter the casing by striking against the lugs  $d$ .

The operation of my press is as follows: The wound pulp body is slipped on over the former H. When the latter is at its lowest position, the sections E are expanded, the lower ends projecting to a considerable distance below the ends of the casing. The former is raised and the base enters the space between the sections or staves, the lower ends of the sections impinging on the flange which surrounds the lower end of the former. As the former is lifted to its position within the casing the staves are contracted about it, and thus press the pulp which forms the sides of the pail. When the staves have come together and the lower end of the casing comes to a bearing on the base of the former, the casing itself is lifted bodily, pulp being admitted into the cylindrical portion of the casing above the former. As the casing is lifted the plunger K enters it, pressing the wet pulp down against the head of the former and forming the bottom of the pail. The upper end of the pail-body, which is allowed to project somewhat above the top of the former, unites with the pulp introduced above and is compressed by

the plunger, so that the body and bottom of the pail are made integral.

It is evident that the device herein shown may be modified in many details without departing from the spirit of my invention. For instance, a casing may be held stationary and a plunger brought down from above and the former up from below. I prefer to use, however, the construction here shown on account of its simplicity, and from the fact that it is only necessary to provide for the movement of the former.

I claim—

1. The combination of a casing having a lower flaring portion and an upper cylindrical portion, overlapping staves or sections lining the inside of said flaring portion and having a longitudinal motion whereby they are expanded and contracted, a former adapted to enter the flaring end of said casing and to move said sections longitudinally as it enters said casing, and a plunger working in the cylindrical portion of said casing, substantially as described.

2. A casing having an upper cylindrical portion, a plunger moving therein, and a lower flaring portion, overlapping staves or sections lining said flaring portion in such a manner as to have a longitudinal movement, the upper ends of said staves or sections forming when in their highest position a continuation of said cylindrical portion, combined with a former adapted to be inserted into the flaring end of said casing, and a shoulder on said former, adapted to impinge against the lower ends of said staves and to force them upward and contract them about said former, substantially as described.

3. The combination of a casing having a cylindrical upper and a conical lower portion, vertical guides in which said casing is adapted to slide, a plunger fixed above said casing and adapted to enter its upper portion, a sectional lining for the lower portion of said casing, said lining having a longitudinal motion within the casing, whereby it is expanded and contracted, a former below said casing and adapted to enter its lower end, and means for raising and lowering said former, substantially as described.

In witness whereof I hereunto set my hand in the presence of two witnesses.

EBER. HUBBARD.

Witnesses:

L. J. IVES,  
G. A. HURD.