(No Model.) 3 Sheets—Sheet 1.

H. PARKER.

MACHINE FOR FORMING HOLLOW WARE FROM PULP.

No. 348,292. Patented Aug. 31, 1886.

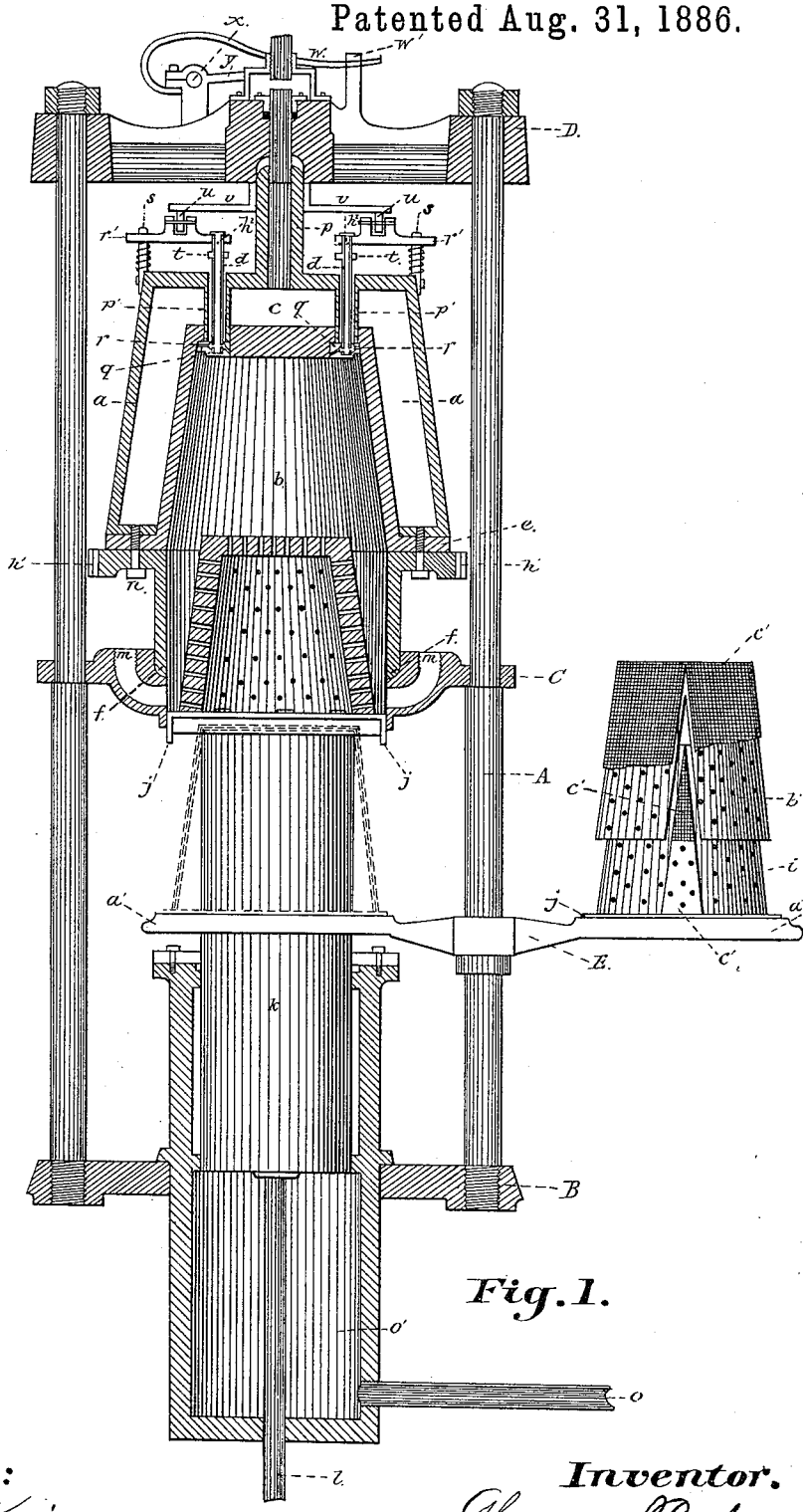

Fig. 1.

Witnesses:
John P. Kenigan
F. D. Ilsley.

Inventor.
Howard Parker

(No Model.) 3 Sheets—Sheet 2.

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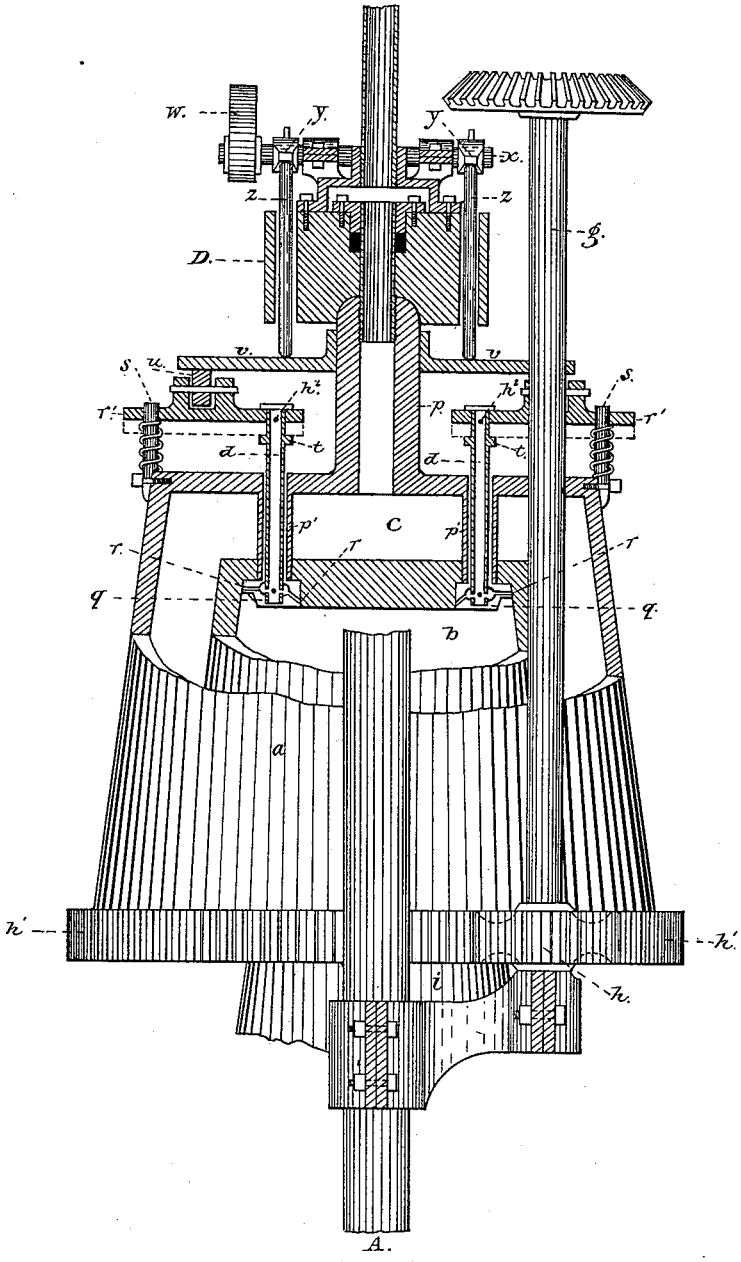

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

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MACHINE FOR FORMING HOLLOW WARE FROM PULP.

No. 348,292. Patented Aug. 31, 1886.

Fig. 3.

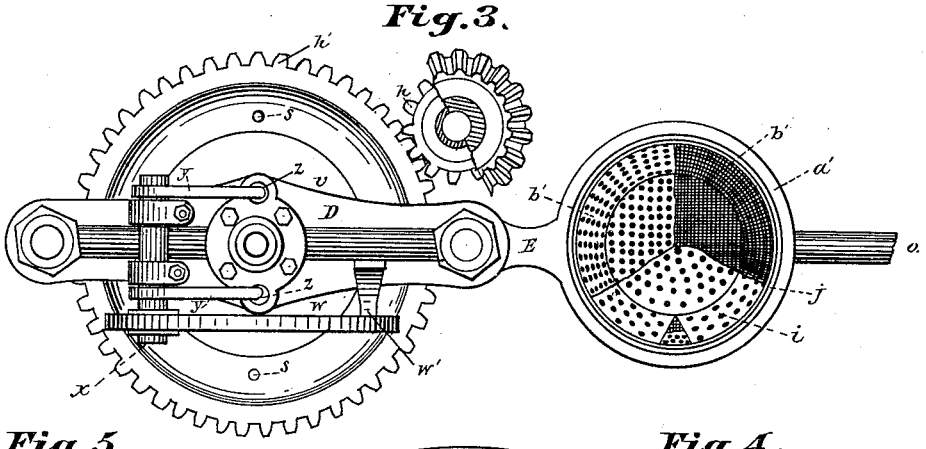


Fig. 5.

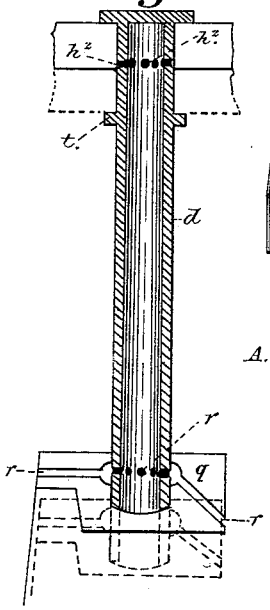


Fig. 4.

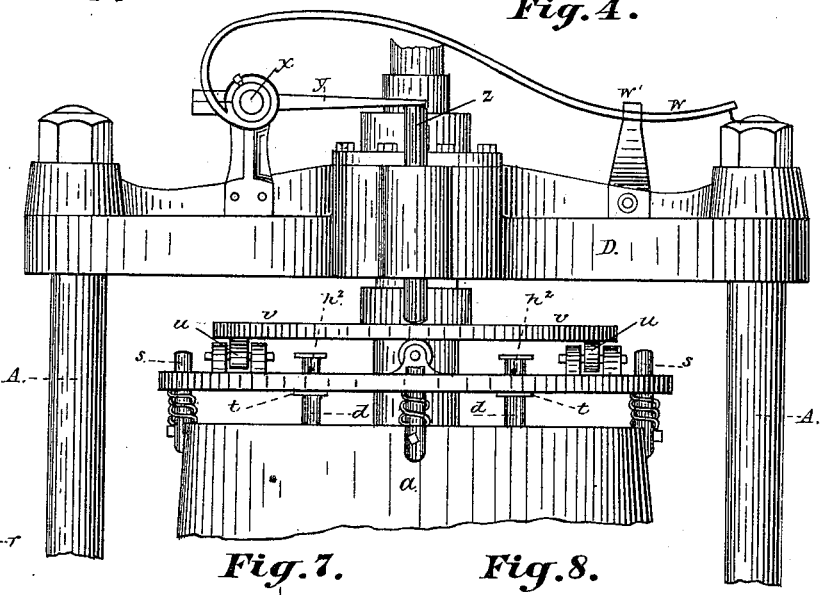


Fig. 7.

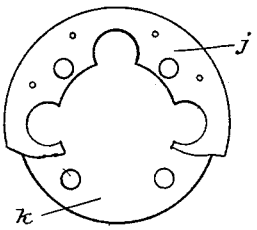


Fig. 6.

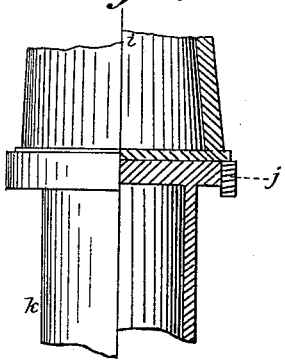
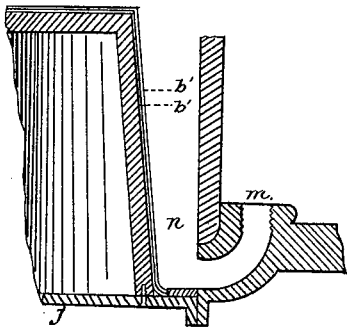


Fig. 8.



Witnesses:

John P. Finnigan.

F. J. Ilsley.

Inventor.

Howard Parker

UNITED STATES PATENT OFFICE.

HOWARD PARKER, OF SACCARAPPA, MAINE, ASSIGNOR OF ONE-HALF TO HENRY FAIRBANKS, OF ST. JOHNSBURY, VERMONT.

MACHINE FOR FORMING HOLLOW WARE FROM PULP.

SPECIFICATION forming part of Letters Patent No. 348,292, dated August 31, 1886.

Application filed March 18, 1886. Serial No. 195,688. (No model.)

To all whom it may concern:

Be it known that I, HOWARD PARKER, of Saccarappa, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Machines for Forming Hollow Ware 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 which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation in part section of my invention. Fig. 2 is a side view, with parts broken out, of the inner and outer domes, the steam-space, and the means of imparting revolution to the outer dome. Fig. 3 is a top plan of Fig. 1, with the driving-gear added. Fig. 4 is a side view of the top part of the frame of my machine, exhibiting the means of admitting air into the forming-chamber and of getting a pressure on the top of the formed article, so as to begin its removal from the forming-chamber. Fig. 5 is a side sectional view of one of the air-tubes for admitting air into the forming-chamber. Fig. 6 is a bottom view of the former, showing the means of attaching it to the plate on which it rests. Fig. 7 is a side sectional partial view showing the plunger pressed up against the lower end of the former. Fig. 8 is a detail showing the means of introducing the pulp or stock in around the former.

Same letters show like parts.

My invention relates to machines for forming vessels and other articles from pulp made from wood and other substances.

Fig. 1 shows a side view in which are exhibited several of the leading features of my invention. Two upright rods or posts, A, support three horizontal plates, B C D, and a rotary platform, E. Near the top is seen the outer dome, *a*, circular in cross-section and tapering in form longitudinally. Between it and the inner dome, *b*, is a steam space, *c*, into which steam is admitted. The steam gives the requisite heat to the dome *b* and its contents. These outer and inner domes are united at *e*, and extend as far downwardly as to *f*. They are caused to rotate by the vertical shaft *g*, with gear *h* meshing with the gear *h'*, on the outer dome, *a*. *i* shows the former, on whose outer periphery is formed the article manufactured. It rests on a base-plate, *j*, and is perforated and open at bottom, so as to allow the water of the stock or pulp thrown around it to drain off within it or into its hollow interior, and then run off through the hollow plunger *k* and hollow stem *l*. When the former is in the position in the machine seen in Fig. 1, it is ready to receive the stock or pulp mixed with water preparatory to forming an article. The stock is admitted or injected through the pipes *m*, and so up into the spaces *n*. When the requisite amount of pulp is supplied, the flow is cut off and then hydraulic pressure applied through the pipe *o* into the chamber *o'*, to force up the plunger *k*, and thus thrust the former *i* into the inner dome, *b*, with the supply of pulp around the said former. Thus, with proper pressure and drainage, before described, the article is formed. While this is being done rotation is given to the domes *a* and *b* by the shaft *g*, as before described. The lower edge of the rotating domes is at *f*, and the shaft *p* fits into and rotates in a socket in the plate D at the top of the machine.

In order to get the formed article or vessel out of the dome *b* when said article or vessel is formed, I have invented the following contrivance: *d* shows air-inlets leading into the interior of the dome *b* and sliding up and down in sleeves *p'*. These inlets have on their lower ends and within the dome *b* a ring, *q*. Through this ring are ducts *r*, leading from the inlets *d*, so as to admit air from without in between the inner face of the dome *b* and the article formed of pulp in it. This facilitates the detachment of the newly-pressed pulp from the inside of the dome *b*. Near the tops of the inlets *d* are air-holes *h²*. When the plates *r'* are pushed down sufficiently far, they uncover these holes, and so let air into the inlets *d*, and thus into the dome *b*, between its interior periphery and the formed article. Furthermore, these inlets on the outside of the dome *a*, at the top, are connected with rising and falling plates *r'*. These plates *r'* have holes in them, which pass down over the uprights *s* and over the inlets *d*. When the plates *r'* are pressed

down and after the force is removed, they are restored to place by spirals around the uprights *s*. The inlets *d* have shoulders *t*, against which the plates *r'* press as they are pushed downwardly, as hereinafter described, and thus press the inlets *d* (or pipes forming the same) into the interior of the dome *b*. This presses the ring *q* against the formed pulp, and thus aids to detach it from the inside of the dome *b*. This ring is also so shaped as to form the chine of the pail. The plates *r'* have trucks *u*, to receive the flange *v* and prevent friction when the dome *a* is rotating. These flanges have a hole through which passes the shaft *p*, and are made to press down onto the trucks *u* of the plates *r'*. It now remains to describe how the plate *v* is forced down. On the plate D is fixed a tongue-spring, *w*, having a hook, *w'*, to hold it when pressed down. This is attached to a rotary shaft, *x*, carrying arms *y*. When the spring *w* is pressed down and hooked under the hook *w'*, the arms *y* press onto the vertical rods *z*, and so press the flanges *v* down onto the trucks of the plates *r'*, and thus force the inlet-pipes *d* and the ring at their lower ends into the interior of the dome *b*, and so accomplish the purpose set forth.

The downward movement of the former *i* is produced after an article has been formed in the dome *b* by cutting off the hydraulic pressure through the pipe *o*. Then the plunger *k* tends to drop with its own weight and begins so to do. When it has dropped sufficiently low, the former *i* is deposited on the ring *a'* on the rotary platform E. There are two of these rings, *a'*, so that as one is swung into the machine, so that the plunger *k* will rise up through it, another is in the position seen in Fig. 1, outside the machine. This is to facilitate the working of the machine.

There are two formers, *i*, for each machine. When one is turned in under the dome *b*, the other is outside, as illustrated in Fig. 1. The object is this: Suppose an article has been formed in the machine and the former dropped down to remove such article, the other ring, *a'*, is already provided with a former and the table E is swung so as to bring the newly-formed article out from under the dome *b* and to bring the former ready for making the next article under the dome *b*. Thus one can be removed and another supplied in its place with great rapidity. When the former is ready in place, like *i* in Fig. 1, the plunger *k* is made to rise and thrust it up into the dome *b*. It then descends after the article is formed in the dome *b*, and so the operation goes on. The former is not only perforated itself, but is covered with coverings of perforated sheet metal and finally with a covering of gauze. These allow the water of the pulp to run off freely into and through the perforated former *i* and facilitates the getting of the formed article off the former. When a formed article on the former has been swung out from under the dome *b*, as illustrated in Fig. 1, the metal and gauze envelopes of the former *i* are slipped up off from the former with the formed pulp article on them. Thus the former *i* is relieved. These metal and gauze covers are seen at *b'*, and are made with gores *c'*, so as to admit of their being collapsed. They are also jointed on the top or made in two parts, so that bringing the lower under ends nearer together will detach the ends from the inside of the bottom of the formed article. Thus when the metal and gauze envelopes of the former *i* are removed from it with the formed article on them, they are then collapsed at the under ends and so separated from the pulp of the newly-formed article.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The rotating domes *a b*, in combination with the pipes *m* and the former *i*, operated by the plunger *k*, as herein described.

2. The rotating domes *a b*, having the sliding inlet-tubes *d* and ring *q*, operated by the plates *r'*, as herein set forth.

3. The rotating table E, with its rings *a'*, in combination with the plunger *k* and former *i*, as herein set forth.

4. The spring *w*, hook *w'*, shaft *x*, and arm *y*, in combination with the rod *z*, flange *v*, to press down the table *r'*, and inlet-pipes *d*, as herein set forth.

5. The chamber *o'*, pipe *o*, plunger *k*, stem *l*, and former *i*, as herein set forth.

6. The perforated former *i*, with its coverings *b'*, of perforated sheet metal and gauze, made as described and operated as set forth, for the purposes specified.

7. The hollow perforated former *i*, the hollow plunger *k*, and the hollow stem *l*, as and for the purposes specified.

8. The shaft *g*, gear *h*, gear *h'*, and domes *a* and *b*, arranged to operate as herein set forth, and for the purposes specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HOWARD PARKER.

Witnesses:
FREEMAN HANSON,
JOHN P. KERRIGAN.