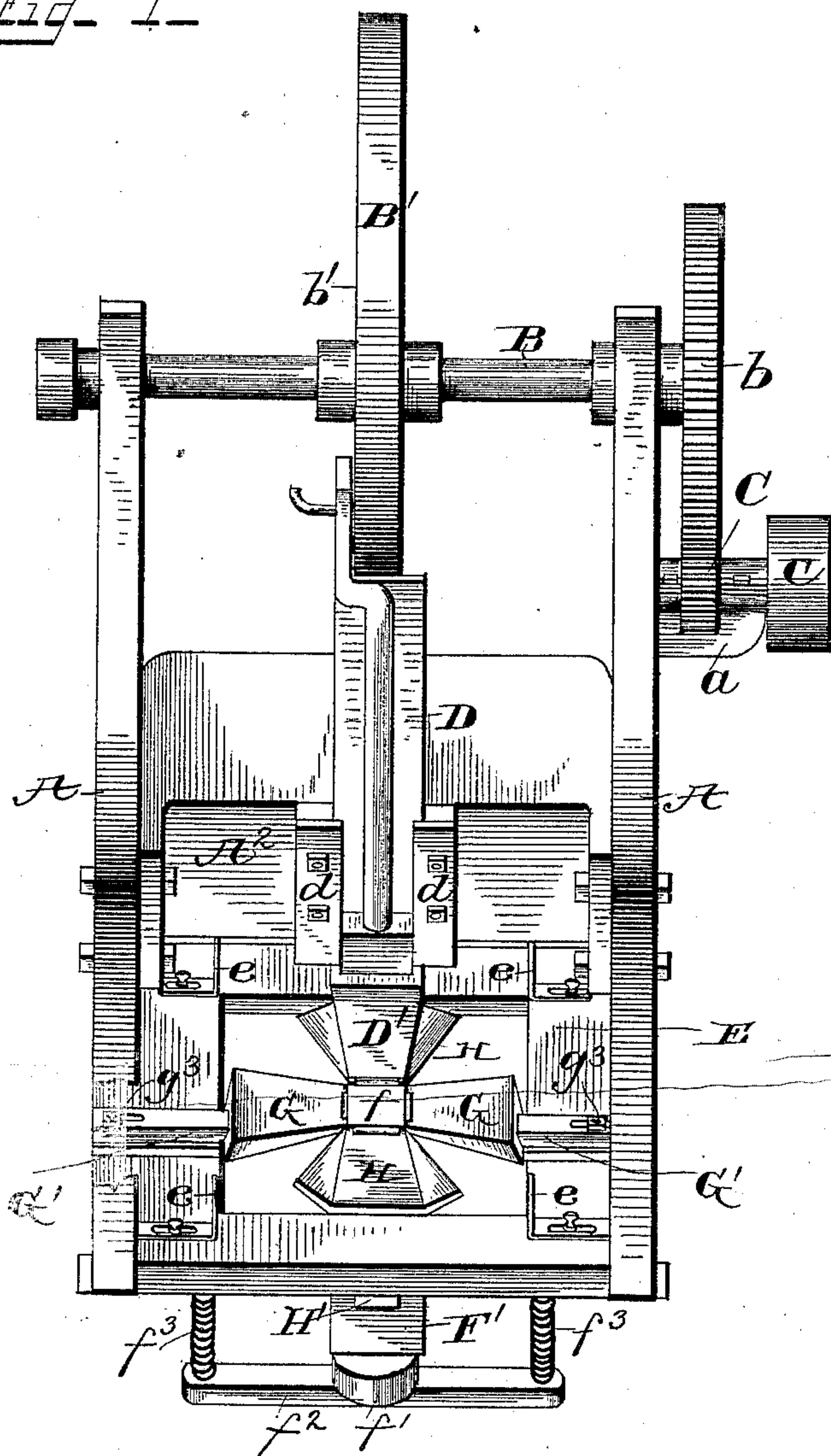


(No Model.)

4 Sheets—Sheet 1.

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MACHINE FOR FORMING PAPER VESSELS.
No. 432,028. Patented July 15, 1890.

Fig. 1.



Witnesses

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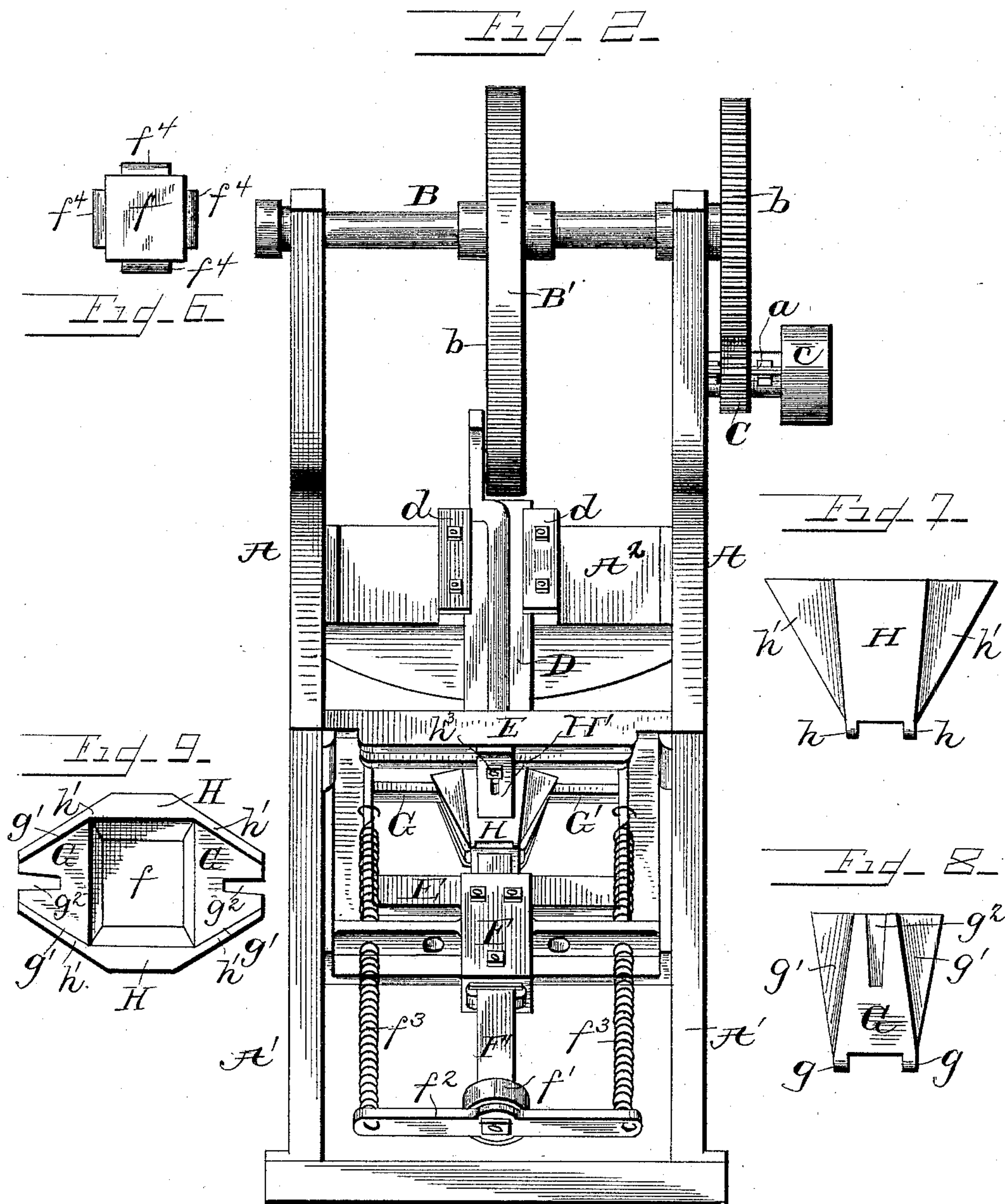
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Patented July 15, 1890.



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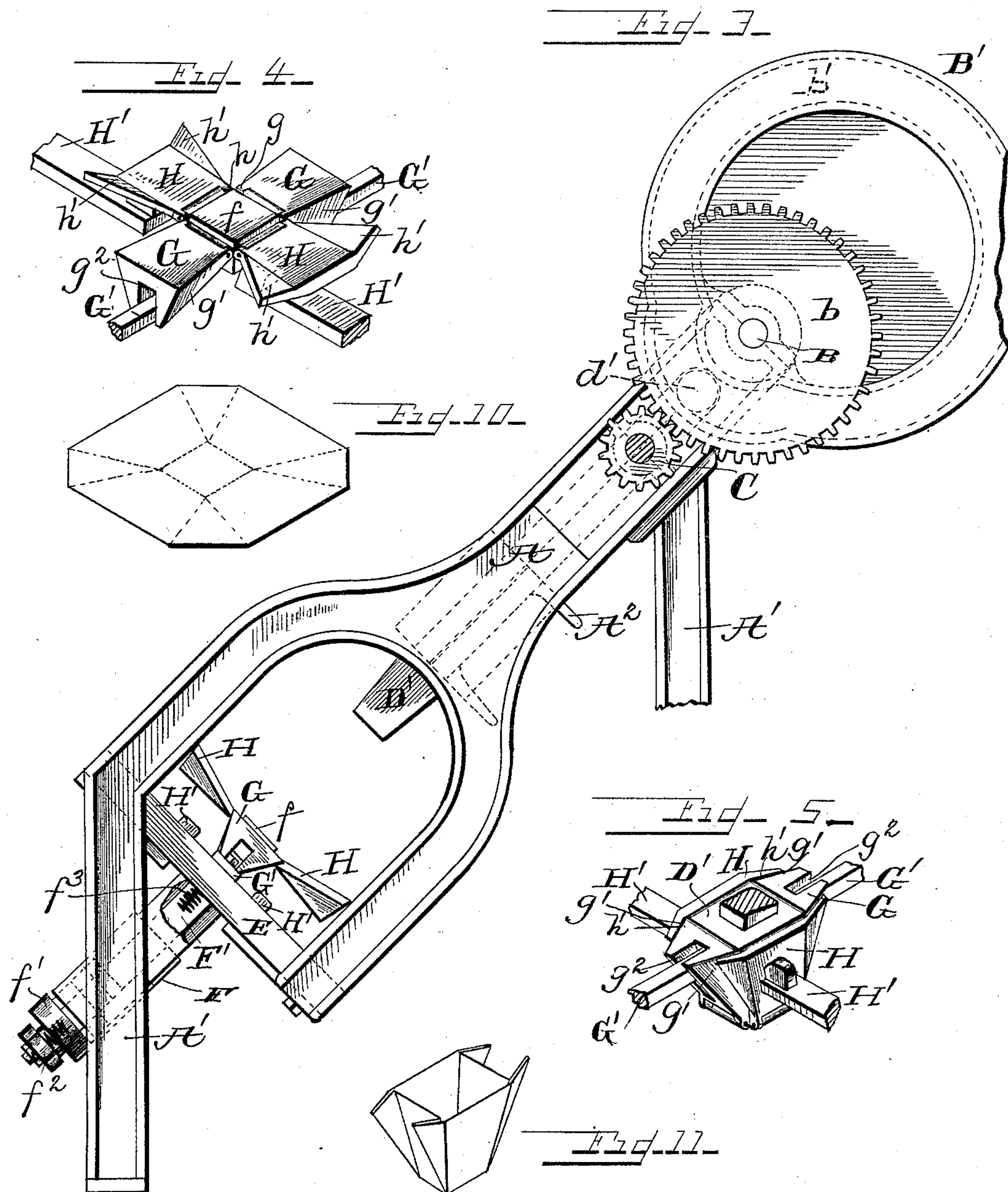
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No. 432,028.

Patented July 15, 1890.



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(No Model.)

4 Sheets—Sheet 4.

W. FOGLESONG.
MACHINE FOR FORMING PAPER VESSELS.

No. 432,028.

Patented July 15, 1890.

Fig. 12

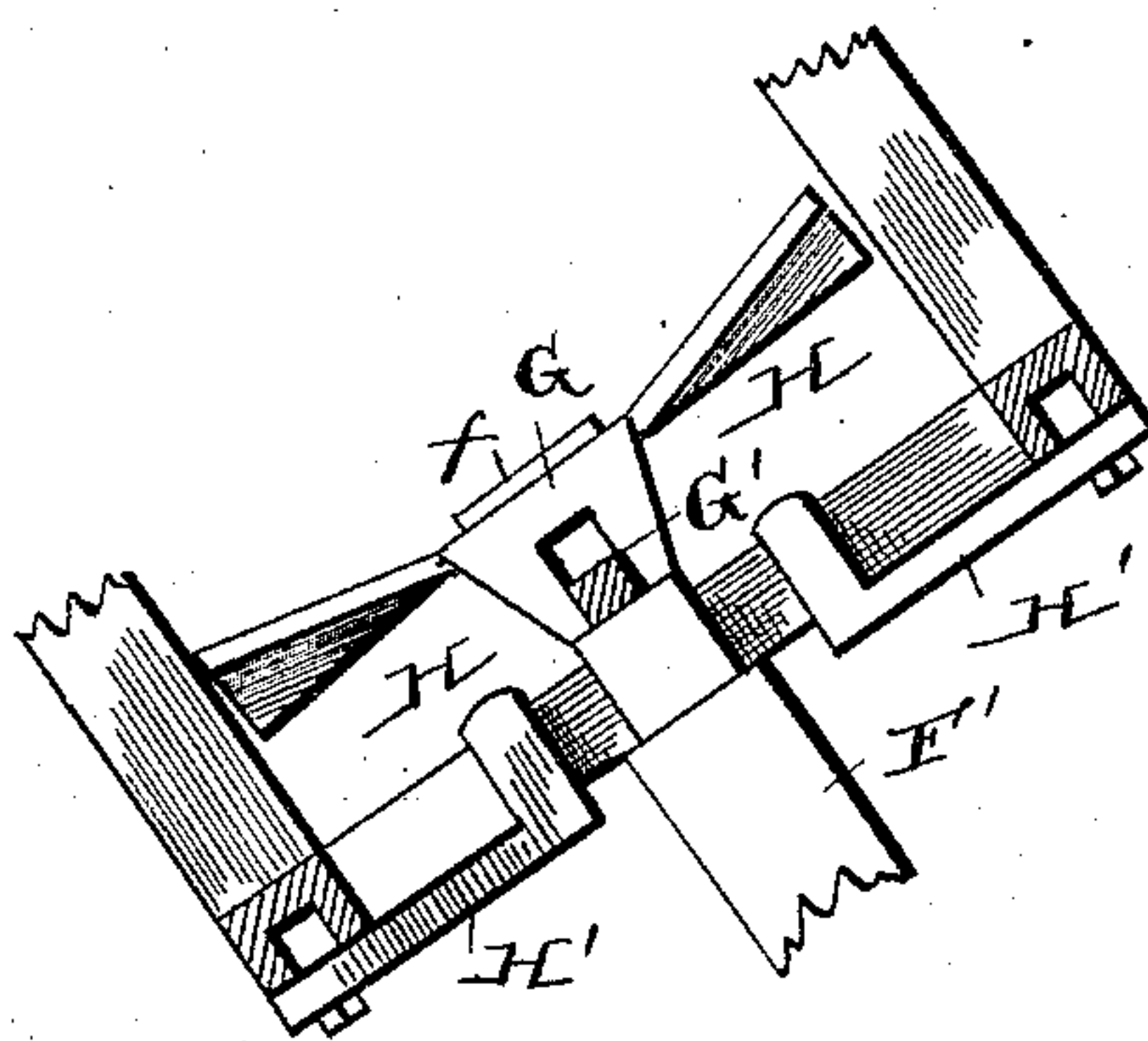
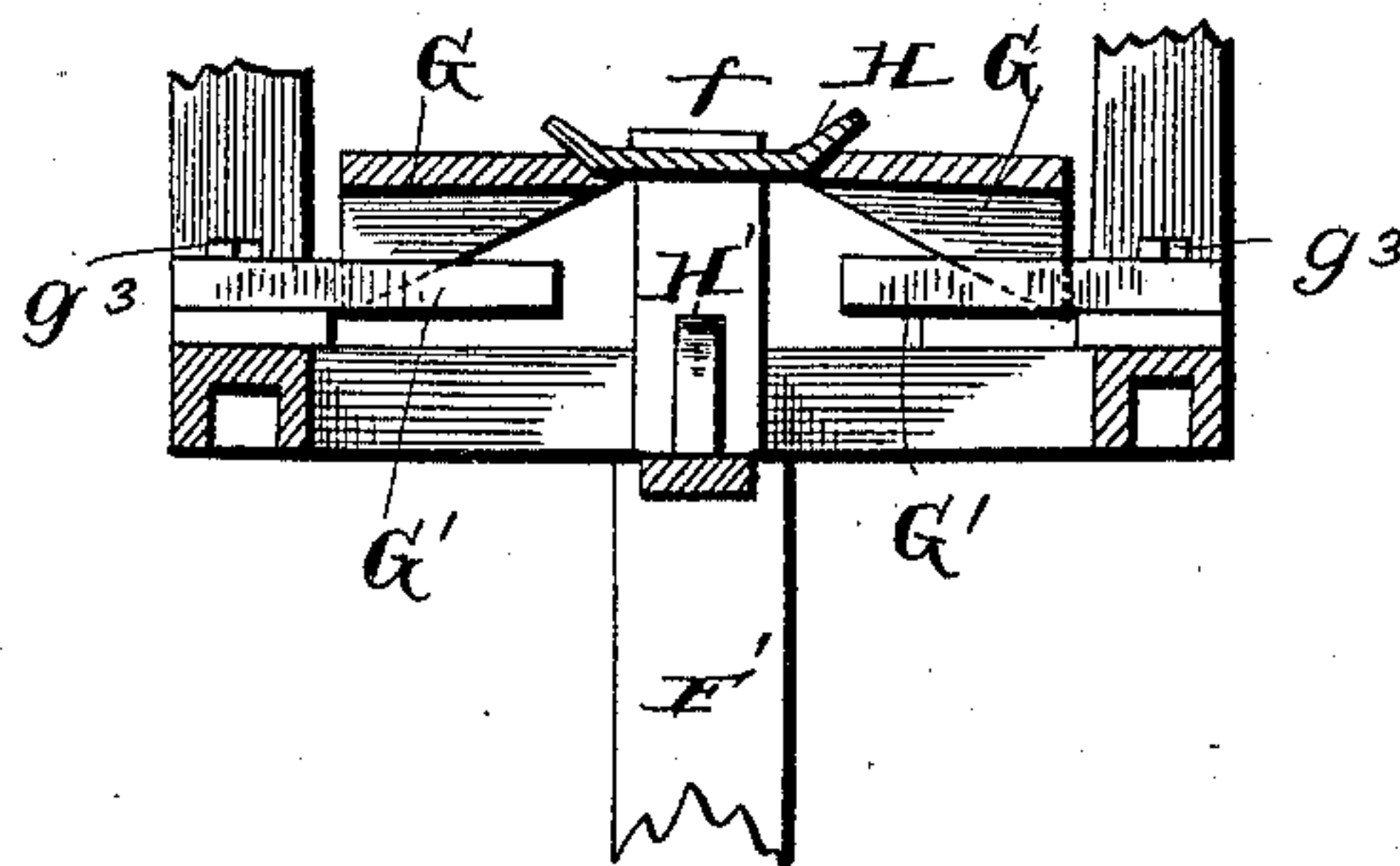


Fig. 13



Witnesses

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UNITED STATES PATENT OFFICE.

WASHINGTON FOGLESONG, OF DAYTON, OHIO.

MACHINE FOR FORMING PAPER VESSELS.

SPECIFICATION forming part of Letters Patent No. 432,028, dated July 15, 1890.

Application filed June 24, 1889. Serial No. 315,357. (No model.)

To all whom it may concern:

Be it known that I, WASHINGTON FOGLESONG, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Machines for Forming Paper Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for forming paper vessels; and it consists in certain novel features of construction and combination, which will be hereinafter fully described and claimed.

I have illustrated one form in which I have contemplated embodying my invention in the accompanying drawings and have fully disclosed the same in the following description and claims.

Referring to the accompanying drawings, Figure 1 represents a top plan view of a machine embodying my invention. Fig. 2 is a front elevation of the same. Fig. 3 is a side view of said machine. Fig. 4 is a perspective view in detail of the folding wings in open position. Fig. 5 is a similar view representing the parts folded upon the forming-block. Figs. 6, 7, and 8 are detail views of parts of the folding devices. Fig. 9 is a top plan view of the parts in their folded position. Fig. 10 is a view of one form of blank which may be employed in this machine, and Fig. 11 is a perspective view of the completed vessel. Fig. 12 is a partial section of the middle portion of the machine, showing the table, folding wings, and their operating-arms. Fig. 13 is a similar section on a line at right angles to the line of section of Fig. 12.

A is the frame of the machine, constructed of suitable material and arranged and supported, preferably, in an inclined position, as shown, by the supporting legs or standards A'.

In the upper ends of the side portions of the frame A is journaled the driving-shaft B, which is provided with a gear *b* at one end of the same. A short shaft mounted in an extension *a* of the frame A carries a pinion C, engaging the gear *b*, and is provided at its outer end with a band-pulley *c*, to which a belt is applied for driving the machine. Upon the shaft B is rigidly mounted a cam B', shown in this instance as consisting of a cam

or eccentric ring B', having a groove *b'* in one face. I may, however, employ a disk having a cam-groove in one of its faces, as shown in Fig. 3.

Upon a cross-head A², secured between the side portions of the frame A, are guides *d d*, in which is fitted the sliding plunger D. One end of the plunger D is provided with a friction-roll *d'*, engaging the cam-groove *b'*, and the opposite end is provided with the forming-block or former D', which is of exactly the shape of the interior of the vessel which it is desired to form.

A frame or platen E is secured to the side portions of the frame, and is provided with a central aperture, preferably square. Beneath the frame E is a guide-block F, in which is movably mounted the square or polygonal bar F'. To the upper end of this bar F' is secured the table *f*, which corresponds in shape to the bottom of the vessel to be formed, and the lower end of said bar is provided with a head *f'* and a cross-bar *f*². Springs *f*³, secured to the cross-bar *f*² and to the under side of the frame E, hold the bar F' and table *f* normally in their highest position, with the head *f'* in contact with the guide-block F, thus forming a stop to limit the upward movement of said parts. The length of bar F' is such that when the table *f* is in its highest position it will be slightly above the frame or platen E. The table *f* is provided at each side with a projecting portion *f*⁴, to which portions are pivoted the folding wings G G H H by means of ears *g* and *h*, formed on the lower portions of said wings. The wings G G are pivoted to the table *f* on opposite sides of the same and are constructed as shown in the drawings, each having a straight face to engage the forming-block D' and converging faces *g' g'*, extending rearwardly in inclined directions. Each wing G is provided adjacent to its rear portion with a groove or recess *g*². The wings H are pivoted to the remaining sides of the table *f*, and consist of central portions adapted to engage the forming-block D' and side portions *h' h'*, extending on each side of said central portions and adapted when the hinges are all folded to engage the inclined faces *g' g'* of the wings G, one wing H engaging one face *g'* of each wing G, as best seen in Figs. 5 and 9. In order that this result may be accomplished, the wings G must be partially closed

or folded before the wings H are raised, in order that there may be no straining of parts and in order that the wings G may be moved inward to avoid the outer edges of the side portions of wings H. I accomplish this in the following manner: Upon the platen or frame E are rigidly secured arms or projections G' G', one beneath each of the wings G and adapted to engage the recesses g^2 in the same, which serve to hold said wings from lateral movement. These arms are provided with slots to receive shouldered screws or bolts g^3 , which secure them adjustably to the frame E. Similar arms or projections H' are secured, preferably, to the under side of the frame E by means of screws or bolts h^3 , passing through slots in the said arms, whereby they may be adjusted. These arms H' are provided at their extremities with upwardly-extending portions adapted to engage the wings H and raise them so as to engage the block D'. The relative arrangement of the arms G' G' and H' H' is such that the arms G' will engage the slots g^2 of the wings G and raise them into engagement with the block D' before the arms H' raise the wings H, for the purpose hereinbefore explained.

The frame or platen E is provided with suitable guides or brackets e , which consist in this instance of portions of suitable material bent in the form of a right angle and secured to the said platen for the purpose of holding the material or blank from which the vessel is to be formed in position to be operated upon. These brackets are provided with slots and thumb-nuts, which render them adjustable.

The operation of my improved machine is as follows: A suitable blank, which is in this instance in the form of a square with the corners cut off, as shown in Fig. 10, of the required size, is placed upon the table f , the wings being in their unfolded position, and is held by the brackets e . The driving-shaft B is rotated by means of the mechanism before described, and the cam-groove acting upon the friction-roll of the plunger will depress the plunger D. As soon as the block D' strikes the table f it will depress said table and grip the material upon the same firmly. As the table is depressed, the wings G G will be raised by the arms G' G' and will press the material upon them up against the block or former D'. The inner walls of the grooves or recesses g^2 are parallel when the wings G are pressed against the block D'; hence there is no further lateral movement of the wings G while the projections or arms G' are passing farther along the grooves or recesses. As soon as the wings G G have been raised far enough, as the table g descends farther, the arms H' H' will raise the supplemental wings H and clamp the material upon the same against the former D' and the faces $g' g'$ of the wings G, thus securing the proper creasing of the same to form a vessel of the desired shape. When the plunger and forming-block D' reach their low-

est position, the parts will be firmly clamped together, as shown in Figs. 2 and 5. As the plunger again ascends, the springs f^3 will cause the table to return to its normal position, and the wings G G and H H will fall away from the forming-block D' as soon as permitted by the arms G' and H'. The creased and formed vessel shown in Fig. 11 is then removed, a fresh blank inserted, and the operation repeated.

While this apparatus is especially adapted for use in forming paper vessels, it may also be employed to form vessels of tin or other thin metallic sheets, if desired.

It is obvious that by altering the shape or size of the forming-block and wings the shape and size of the vessel may be altered at will. By altering the size of the blank employed also a larger or smaller vessel may be formed. After the formed vessels are removed from the machine they may be riveted or the portions otherwise secured together, as found most convenient.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine for forming paper vessels, the combination, with the reciprocating former, of a table adapted to be engaged by said former, wings pivoted to said table on two opposite sides of the same and provided with grooves, supplemental wings pivoted to said table between said grooved wings, rigid arms adapted to engage the grooves of said wings to raise the same, and arms for engaging the supplemental wings, substantially as described.

2. In a machine for forming paper vessels, the combination, with the former, of a table provided with wings adapted to fold upon said former, said table being also provided with supplemental wings adapted to fold upon said former and the outer surface of said wings, substantially as described.

3. In a machine for making paper vessels, the combination, with the former, of a table provided with wings adapted to fold upon said former, said table being also provided with supplemental wings adapted to engage said former and having side portions adapted to engage the outer surfaces of said wings and adapted to clamp material between the same, substantially as described.

4. In a machine for forming paper vessels, the combination, with the former, of a table provided with wings having faces adapted to engage said former and converging faces extending rearwardly therefrom, said table being also provided with supplemental wings having faces to engage the former and faces to engage the converging faces of said wings, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WASHINGTON FOGLESONG.

Witnesses:

SUMNER T. SMITH,
JOHN G. DOREN.