(No Model.) 2 Sheets—Sheet 1.

S. WRIGHT.

BARREL MAKING MACHINE.

No. 292,728. Patented Jan. 29, 1884.

FIG. 1.

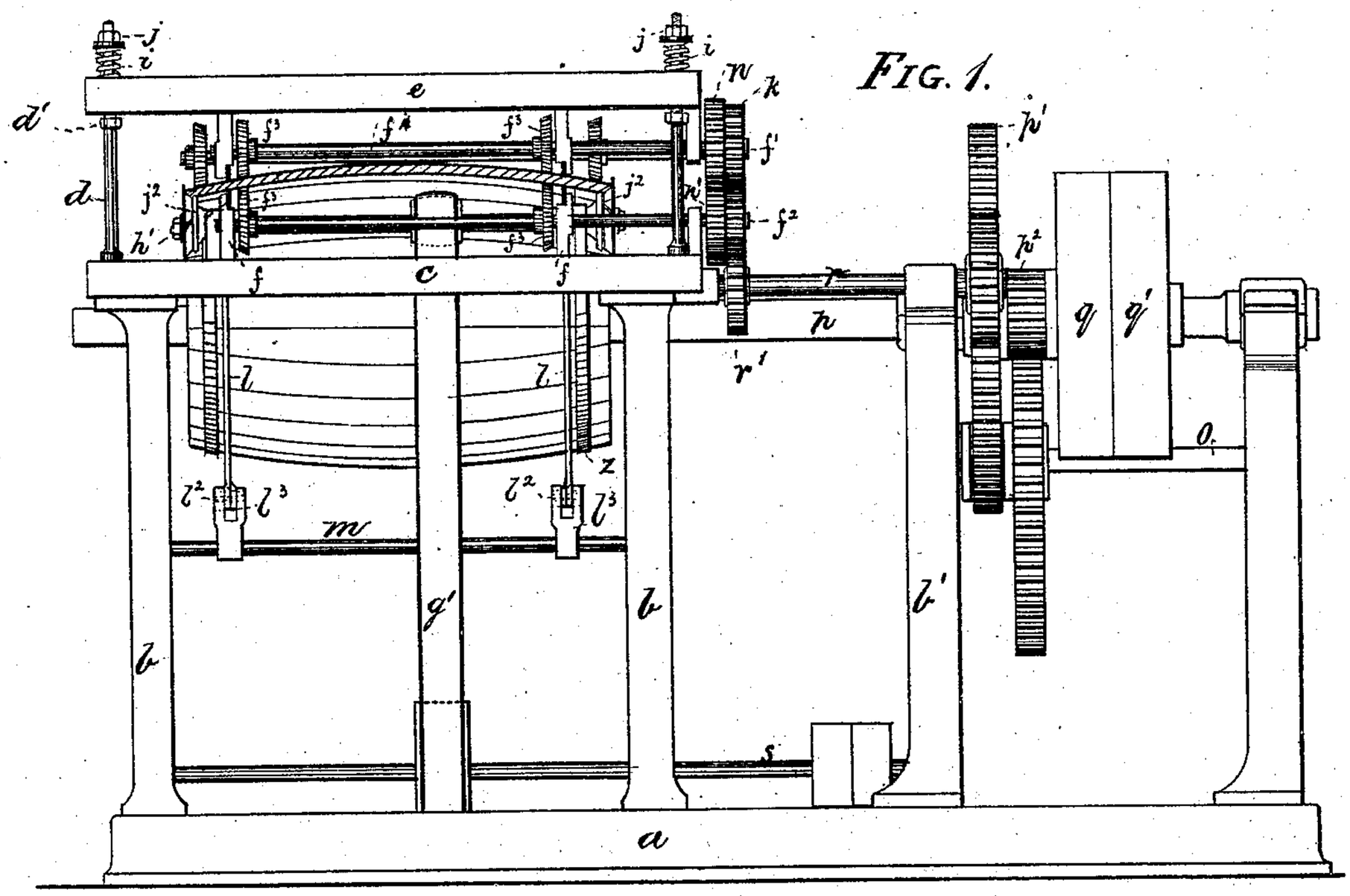
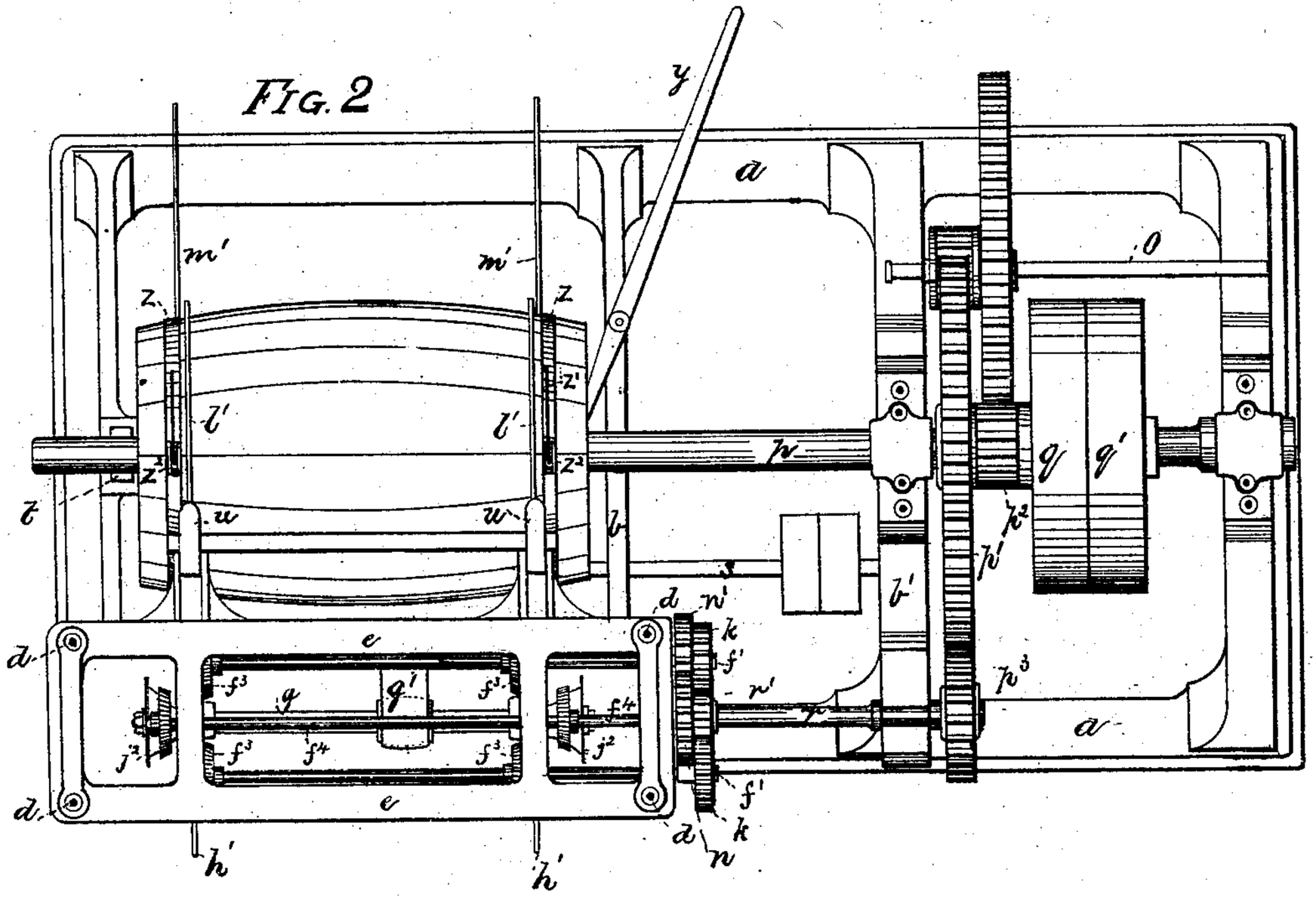


FIG. 2



Attest.
J. McBlackwood
Li. C. Gray

Inventor—
Samuel Wright
by W. H. Goodrich
Attorney

(No Model.) 2 Sheets—Sheet 2.

S. WRIGHT.

BARREL MAKING MACHINE.

No. 292,728. Patented Jan. 29, 1884.

FIG. 3.

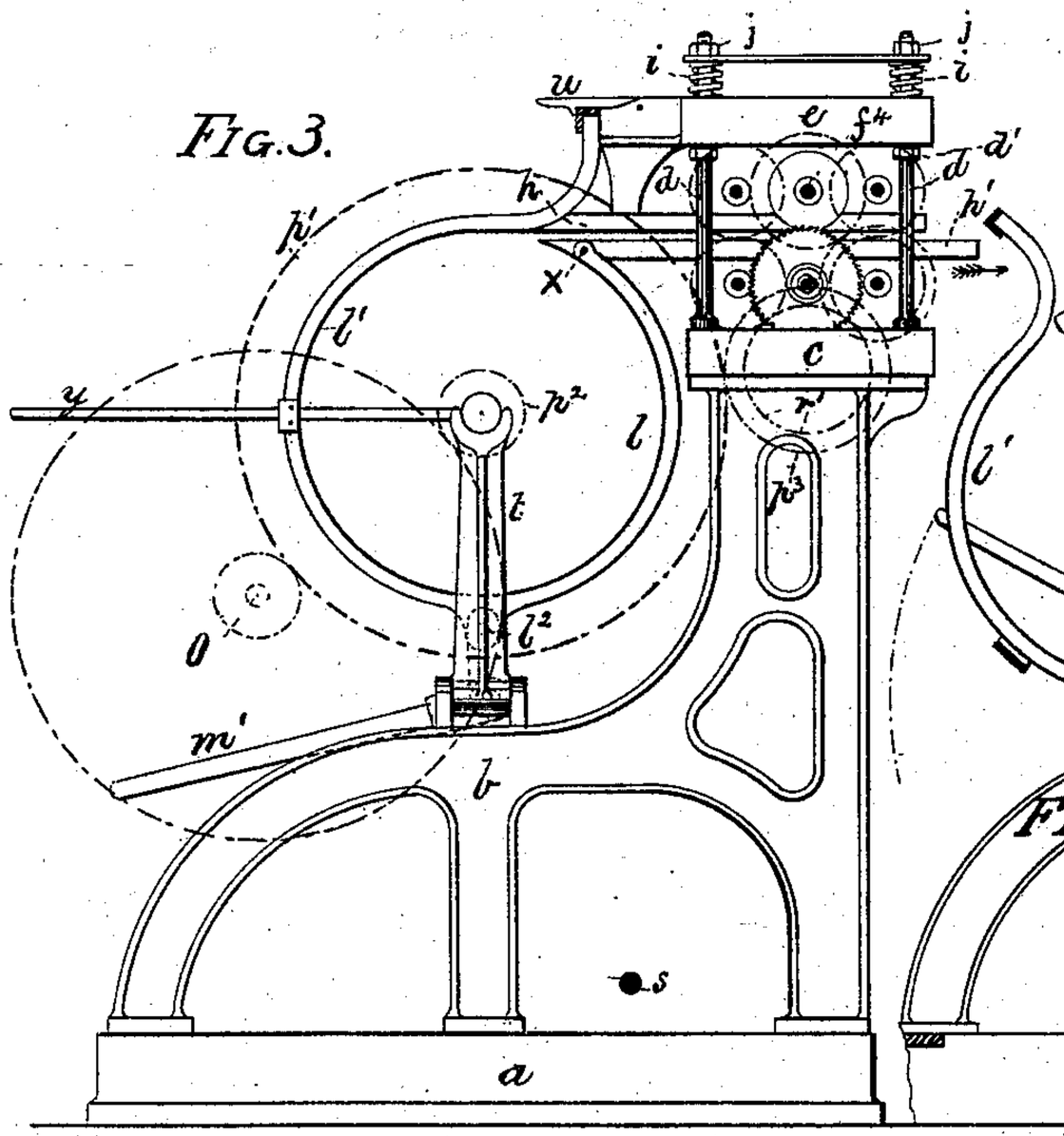


FIG. 4.

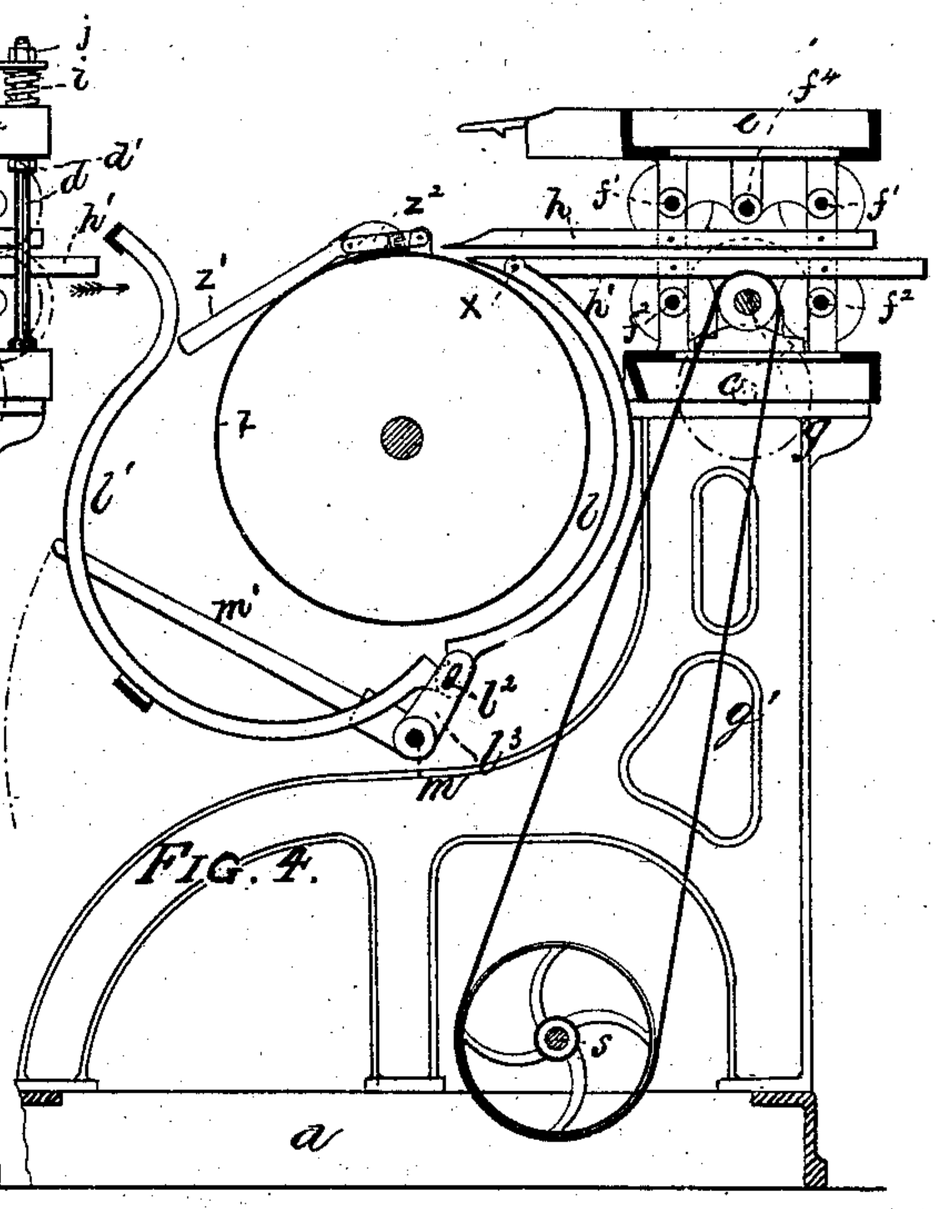


FIG. 6.

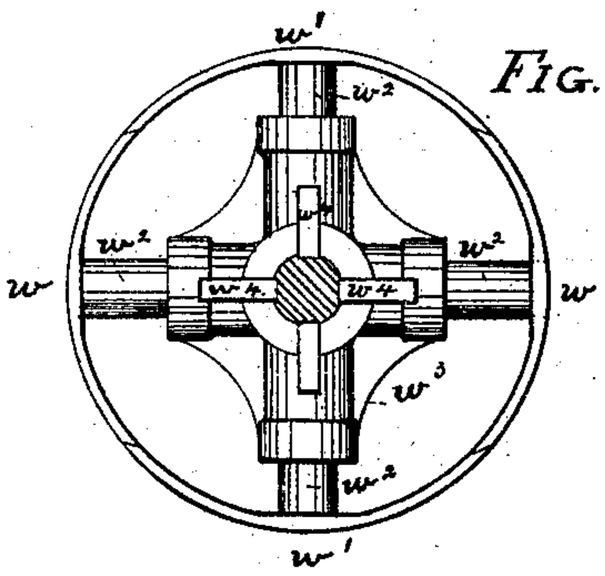


FIG. 5.

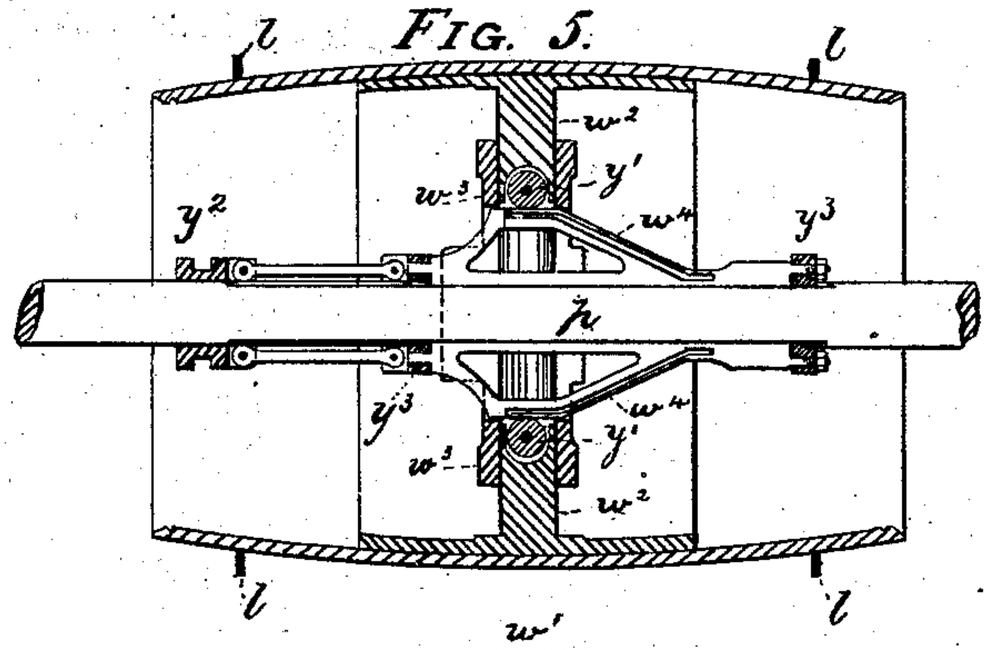


FIG. 7.

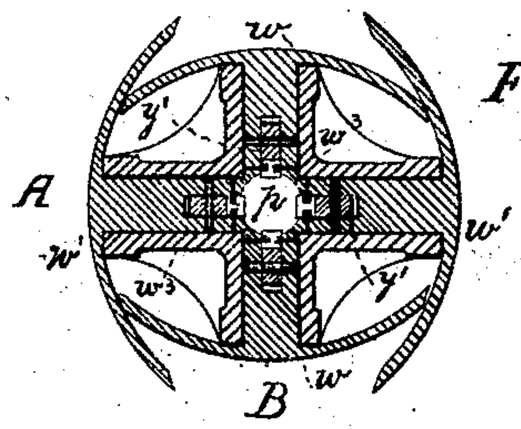
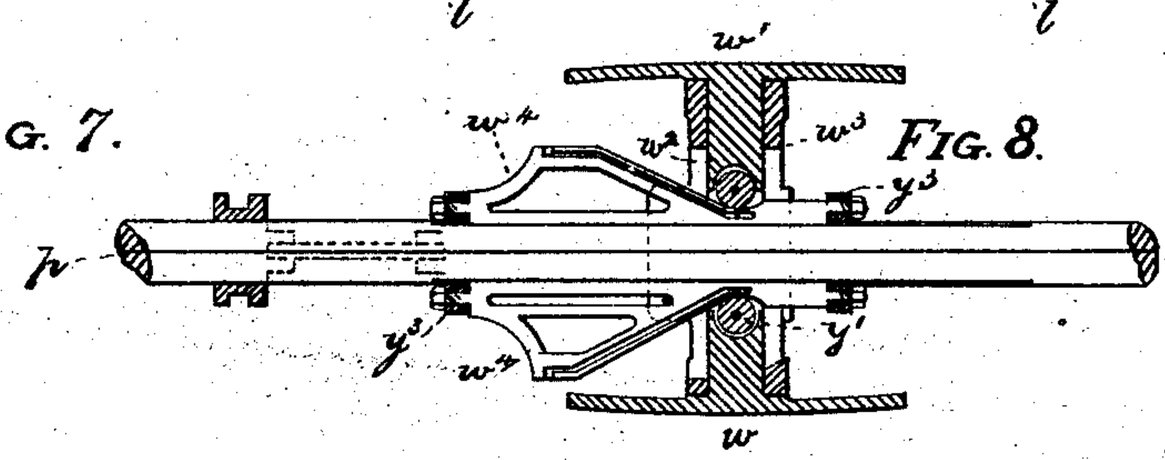


FIG. 8.



Attest;
Jos. H. Blackwood
L. C. Gray

Inventor;
Samuel Wright
by W. A. Woolcock
Atty

UNITED STATES PATENT OFFICE.

SAMUEL WRIGHT, OF EGREMONT, COUNTY OF CHESTER, ENGLAND.

BARREL-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 292,728, dated January 29, 1884.

Application filed February 24, 1883. (No model.) Patented in England May 12, 1882, No. 2,250, and July 28, 1882, No. 3,589; in France November 10, 1882, No. 152,028, and in Canada March 1, 1883, No. 16,421.

To all whom it may concern:

Be it known that I, SAMUEL WRIGHT, a subject of the Queen of Great Britain and Ireland, residing at Egremont, in the county of Chester, Kingdom of Great Britain and Ireland, have invented a new and useful Improved Barrel-Making Machine, (for which I have obtained a patent in Great Britain, No. 2,250, bearing date May 12, 1882,) of which the following is a specification.

In a machine according to my invention staves to form a barrel rim or shell are fed by and between rollers and guides, as hereinafter explained, past suitable revolving saws and cutters (whereby said staves are cut to the required length, and also beveled and grooved) onto a barrel form or drum encircled by jointed guide-hoops, such as hereinafter described, and the barrel rim or shell thus formed is then trussed by trussing-hoops, and afterward withdrawn from the barrel form or drum, which, for that purpose, is made in segments, and is provided with means whereby it can be collapsed, as explained hereinafter.

My invention is illustrated in the accompanying two sheets of drawings, wherein Figure 1 is a front view of the machine. Fig. 2 is a plan. Fig. 3 is an end elevation. Fig. 4 is a view showing clearly parts of my invention, as hereinafter explained. Fig. 5 is a central longitudinal section, showing the collapsible barrel form or drum, (with a barrel rim or shell upon it,) also the encircling hoops and the means I employ to effect the collapsing and expanding of the same, the parts being in the position they occupy when the barrel form or drum is expanded. Fig. 6 is an end elevation thereof. Fig. 7 is an end elevation, showing the barrel form or drum collapsed; and Fig. 8 is a section on the line A B of Fig. 7.

The foundation or bed-plate *a* of the machine carries two standards, *b b*, upon which is bolted a table, *c*. The table *c* has secured to it four vertical stay-bolts, *d*, which form guide-rods for a frame, *e*. The table *c* also supports pedestals *f*, which carry the roller-shafts f^2 f^2 and the saw-spindle *g*. The stay-bolts *d* are of sufficient length to accommodate distance-plates, and also spiral or other springs *i i* between the frame *e* and the screw-nuts *j*. The frame *e* carries hanging brackets with bearings, wherein run the spindles of the upper feeding-rollers. The staves are fed between iron guides *h h'*, fixed to the pedestals *f*, and are by such guides prevented from passing one over the other, and are guided evenly onto the barrel form or drum. The lower guides, *h'*, may be lengthened in the direction indicated by the arrow, Fig. 3, to serve as a table for holding a reserve of staves. During their passage between the guides *h h'* the staves are by the circular saws and grooving and beveling cutters j^2 j^2 (one arranged at each side, as shown) cut to the required length, and are also beveled and grooved. The staves are moved between the guides *h h'* in a continuous and regular manner by the action of the upper and lower rollers, f^3, (rotated by the gear-wheels *k*, as shown,) which, by springs *i*, are caused to exercise sufficient pressure on the staves to insure the proper feeding of the staves. The springs *i* also allow the passage of any staves that may somewhat exceed the normal thickness. The lower nuts, *d'*, prevent the wheels slipping too deeply in gear when the last stave has passed the rollers. The rollers f^3 are milled or provided with small teeth, to enable them to take a firm grip of the staves and obviate slipping. A central lower guide-bar is provided, but is not shown. It rises rather higher than the other two, and is employed to bend the staves into the required shape, and to assist in guiding them onto the collapsible barrel form or drum. This central guide-bar increases in height slightly between the rollers and the barrel form or drum.

Directly over the saw-spindle is a roller-shaft, f^4, the rollers of which are so situated as to be near the ends of the staves, but when very light staves are used a flat bar may be substituted for the central roller, for the purpose of holding them against the revolving cutters, thus insuring a uniform depth of groove. The upper and lower spur-wheels, which drive the roller-shafts f' f' f^2 f^2, gear

into each other, as shown. The central shaft f^4, has a spur-wheel, n, of rather larger diameter than the others, which gears into another wheel, n', of the same size, keyed onto one of the lower roller-shafts. Thus the several shafts are caused to revolve in the required direction for feeding the staves onto the barrel form or drum.

In order to obtain a medium speed of driving-pulleys and saw-shaft without using very large or small driving-pulleys, I provide a back-gear shaft, as shown at O, the spur-wheel and pinion on this shaft O being cast or otherwise secured to each other. The large wheel p' on the main shaft p is keyed thereon, while the pinion p^2 on the same shaft is provided with a long boss, to which the main driving-pulley q is fixed. q' is a loose pulley. With the large wheel p' a pinion, p^3, is geared, driving a short counter-shaft, r, placed between the standards b and b'. This shaft r carries another spur-wheel, r', which gears with the before-mentioned wheels keyed to the two lower roller-shafts, f^2 f^2. The teeth in the train of wheels are so arranged that the surface-speed of the feed-rollers shall equal the speed of the largest diameter of the barrel form or drum. A counter-shaft, s, provided with fast and loose pulleys, is employed for driving the saw-spindle g by belt g'. The main-shaft support or steady-bar t, Figs. 2 and 3, is pivoted to the frame b, and can be lowered to allow of the removal of the barrel-rim when finished. The barrel form or drum, as shown in Figs. 5, 6, 7, and 8, comprises four segments, w w w' w', of which the two opposite ones, w w, extend through somewhat shorter arcs than the others, to allow of their being drawn closer to the main shaft. To expand and collapse these segments, I use tapered dies or wedges working against pins or guide-pieces on the collapsible segments. These pins or guide-pieces are made to slide in bosses secured to the central or barrel shaft. The tapered dies or wedges are each formed with a groove or equivalent device to draw the segments w w w' w' toward the shaft when the dies are moved endwise along said shaft, which they do in grooves or sunk keyways. The wedges or dies may be coupled together at one or both ends by means of sliding collars. They are connected to a sliding sleeve operated by the collapsing-lever y, which draws or forces the taper-dies in or out. Each segment w w w' w' is provided with a round shank or stem, w^2, turned to fit in a socket or boss in a four-armed bracket, w^3, on the central or main shaft, p.

w^4 w^4 are dies or wedges, connected to a sliding collar, y^2, and moving in guides or grooves on the shaft p.

To reduce the friction, a roller, y', is provided to each shank or stem w^2, to run upon the corresponding die or wedge. These wedges or dies are in pairs, each pair being so formed as to cause two opposite segments to travel in advance of the others. This result is attained by proportioning the height and length of the inclines, so that one pair comes into action before the other, or performs its work more quickly. The length of the shanks or stems is proportioned to suit the height of the inclines. The wedges are coupled together at their ends, as shown in Figs. 5 and 8, by the sliding sleeve y^2 and circular retaining-hoops y^3.

Fig. 8 is a section on the bent line A B of Fig. 7, and shows one of the larger and one of the smaller segments as they would appear when collapsed. The segments are considerably shorter than the length of the barrel-rim to be built thereon, so that the staves may have a firm bearing without excessive friction in the encircling hoops. u u are catches pivoted to the frame e, their use being to retain the circular hoops or guides in position. The circular guide-hoops encircle the barrel form or drum. As shown clearly opened out in Fig. 4, each hoop is made in two pieces, l l', jointed together at l^2 and held in proper position by cranks l^3, keyed onto the rock-shaft m, Fig. 1. Each crank l^3 is forked, as shown in Fig. 1, embracing between its forked arms the two segments l l' of the encircling hoops. The pivot l^3, which connects the segments l l', projects on each side of said segments and plays in slots (shown in Fig. 4) cut in the arms of the crank l^3. The upper end of the shorter segment of each guide-hoop is pivoted at x to one of the lower angle-iron guides, h'. The shaft m is provided with a handle, m', by operating which the guide-hoops l l' can be opened out when required. The handle m', being lifted up in the direction indicated by the dotted line in Fig. 4, moves the crank l^3 backward, thus moving the pivoted connections of the parts l l' of the guide-hoops backward, and the latch u being lifted, the part l' will fall down and out of the way by its own weight.

To tighten the cask or barrel rims or shells, to enable them to be trussed, I employ at each end of the barrel rim or shell an expanding trussing-hoop, which is clearly shown in Figs. 2 and 4. Each is formed, as shown, of a pliable hoop or strap, z. A hand-lever, z', pivoted at the end, fits into a joint formed at one extremity of the hoop-iron band or strap z. Between this and the other end of the lever is a pin with two short links, z^2, coupled thereon. The links are coupled to the other end of the truss-hoop, so that when the lever is laid close against the truss-hoop it draws the two ends of the hoop together. The links are so arranged that when they have attained the extreme position they have slightly passed the center line, and will remain in position when the full tension is acting on the hoop.

For heavy barrels there may be substituted for the lever and links a rack and pinion; or a ratchet-wheel or screw may be applied.

What I claim is—

1. The frame e, provided with hanging brackets for supporting the upper feed-rollers, f^3 f^3, and upper guide-bars, h h, in combination with the standards d d, provided with springs

i i, adjusting-bolts *j j*, and regulating-nuts *d' d'*, substantially as and for the purpose set forth.

2. The upper feed-rolls and guide-bars supported by brackets depending from the frame *e*, which has a free vertical movement on the standards *d d*, in combination with the lower feed-rolls and guide-bars, substantially as and for the purpose set forth.

3. In a barrel-making machine, the combination, with a collapsible barrel form or drum, of guide-hoops, each made in two parts, one jointed to the other and to the horizontal guide or table, along which the staves are fed to the barrel form or drum, said hoops being operated by cranks and levers to open them, as and when required, substantially as described.

4. In a barrel-making machine, the combination of guides, adjustable feed-rollers, means for cutting the staves to length, grooving, and beveling, a collapsible barrel-form and jointed guide-hoops encircling same, the whole constructed, arranged, and operating substantially as described.

5. In a barrel-making machine, a collapsible form or drum composed of segments, mounted on suitable brackets and friction-rollers, in combination with a sleeve or collar, having a sliding horizontal movement on the barrel-drum shaft, and formed with inclined and horizontal sides, upon which the segments comprising the collapsible drum rest when the drum is expanded, adjacent horizontal sides being of different lengths, all arranged and operated so that the segments resting on the shorter horizontal sides may travel in advance of the segments resting on the longer horizontal sides, and the drum thereby be collapsed without interference of adjacent segments, substantially as described.

SAMUEL WRIGHT.

Witnesses:
H. J. TROTTER,
46 *Lincoln's Inn Fields, London, W. C., Clerk to W. Lloyd Wise, of same place, Patent Agent.*
J. EDW. BEESLEY,
2 *Pope's Head Alley, Cornhill, London, Justice.*