

(No Model.)

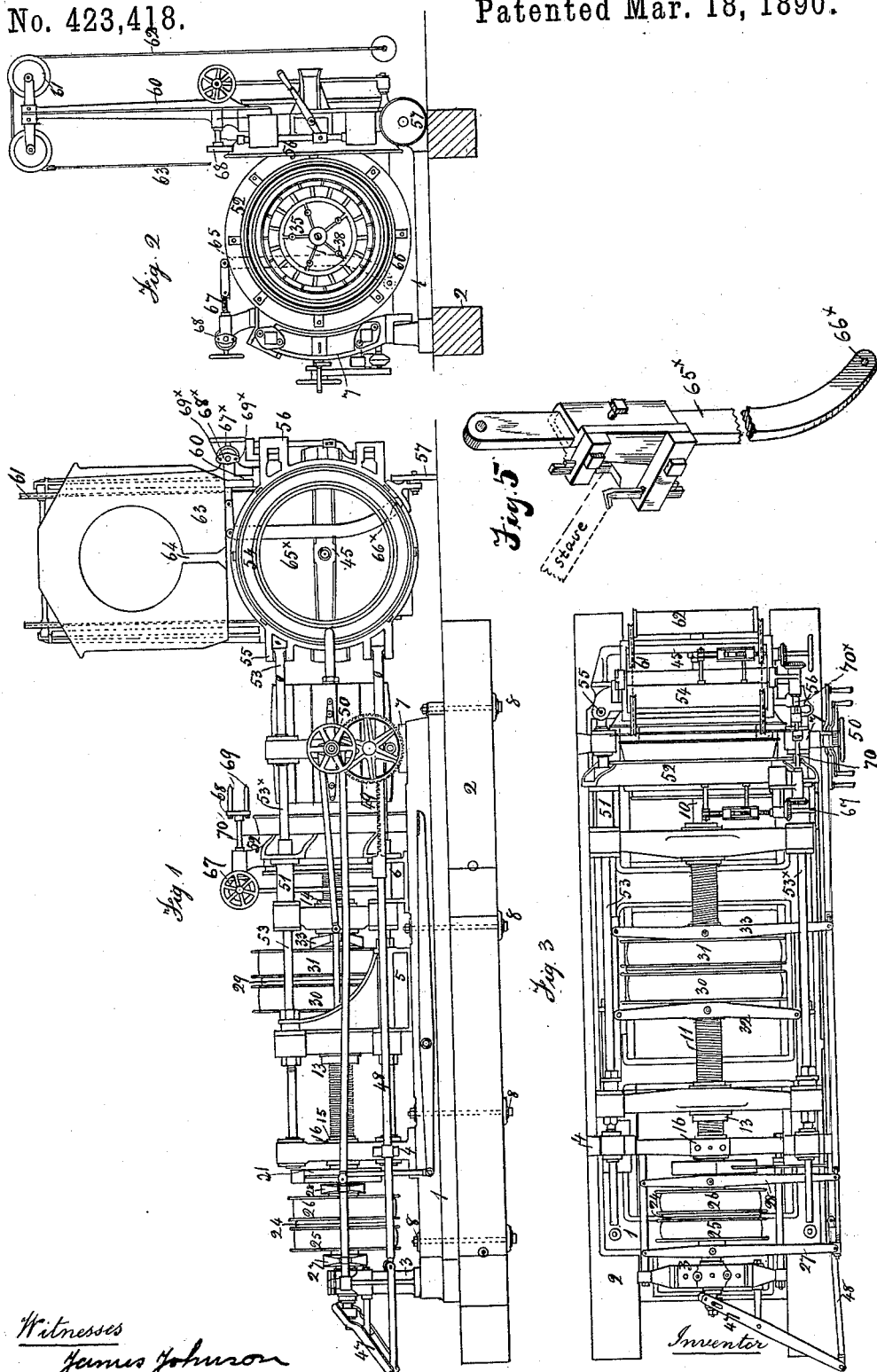
2 Sheets—Sheet 1.

A. DUNBAR.

MACHINE FOR MAKING CASKS OR BARRELS.

No. 423,418.

Patented Mar. 18, 1890.



Witnesses

James Johnson  
H. Hadden

Inventor

Alexander Dunbar

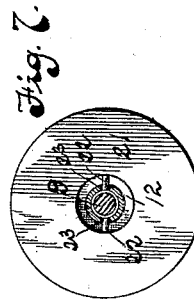
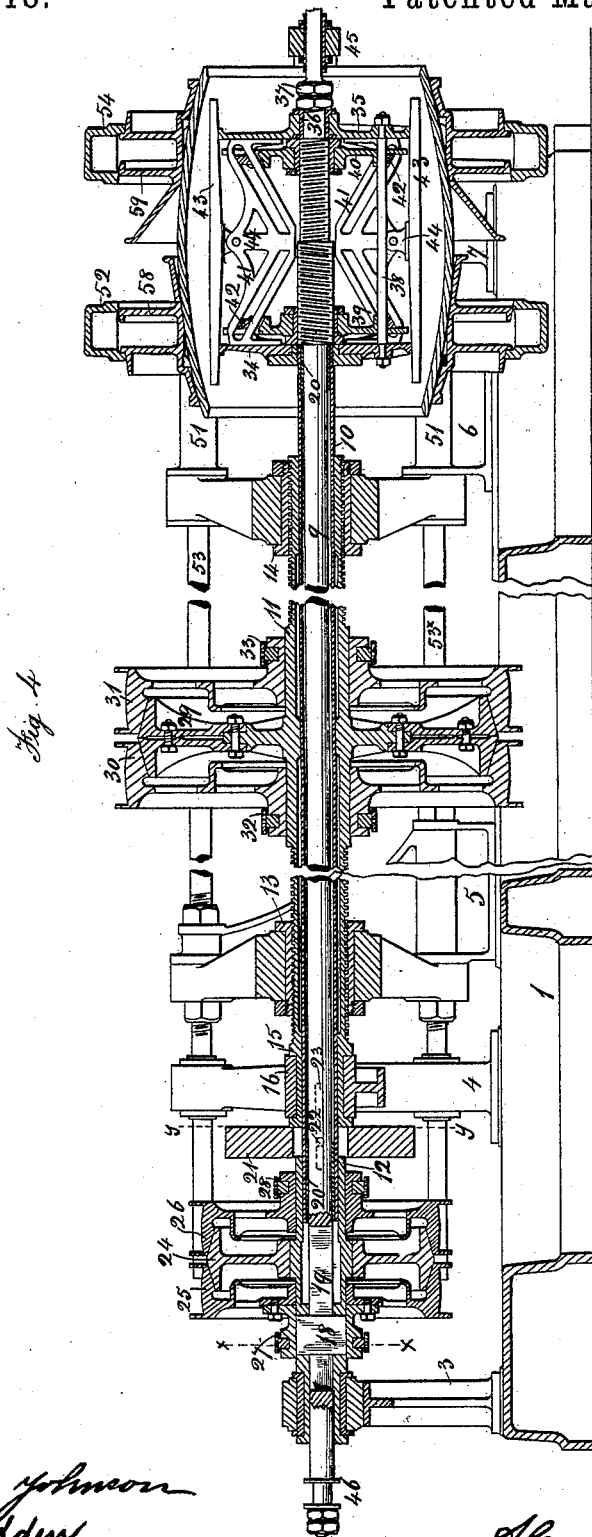
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WITNESSES

*James Johnson*  
*W. S. Sudden*

INVENTOR

*Alexander Dunbar*

# UNITED STATES PATENT OFFICE.

ALEXANDER DUNBAR, OF LIVERPOOL, COUNTY OF LANCASTER, ENGLAND.

## MACHINE FOR MAKING CASKS OR BARRELS.

SPECIFICATION forming part of Letters Patent No. 423,418, dated March 18, 1890.

Application filed August 19, 1889. Serial No. 321,188. (No model.) Patented in England January 21, 1888, No. 1,171.

*To all whom it may concern:*

Be it known that I, ALEXANDER DUNBAR, of Liverpool, in the county of Lancaster, England, have invented a new and useful  
5 Improvement in Machines for Making Casks and Barrels, (for which I have obtained a patent in Great Britain, No. 1,171, dated January 21, 1888, and nowhere else;) and I hereby declare the following to be a full, clear, and  
10 exact description thereof.

The said invention relates to improvements in the machine for making casks, barrels, kegs, and like articles, for which I obtained Letters Patent of the United States No. 385,850, dated  
15 July 10, 1888.

In making casks or the like on the machine patented as above set forth the requisite quantity of staves to form a cask or the like was first gaged, and then each stave was fed  
20 separately onto a slowly-revolving collapsible drum; further, after the cask or like had been shaped and trussed in the machine it was caused to revolve slowly and the ends were finished by rotating cutters. Now these  
25 operations took up a considerable percentage of the time occupied in making a cask or the like on the machine. Again, in the said machine no provision was made for leveling the ends of the staves while being trussed, nor  
30 for insuring that the staves trussed on the collapsible drum were evenly disposed between the cutters. Consequently it was necessary to use staves considerably longer than the cask or the like to be made, thereby en-  
35 tailing much loss of material when the trussed staves were afterward cut to the required length to finish the ends.

The main objects of my invention are to provide a machine on which the separate  
40 feeding of each stave is dispensed with, in which the cask or the like is caused to rotate rapidly while the ends are finished, and in which the trussed staves are disposed with level ends evenly between the cutters, thus  
45 reducing the time during which the staves are operated on by the machine, thereby enabling a much greater number of casks or the like to be trussed by one machine and permitting staves of the required length only  
50 to be used, so as to avoid waste.

Further objects of my invention are to improve and simplify the construction of the

machine generally, so as to increase its durability and efficiency and facilitate working.

Figure 1 is an elevation, Fig. 2 an end view, 55 Fig. 3 a plan, and Fig. 4 a longitudinal vertical section, of my improved machine for making casks or like articles. Fig. 5 is a detached perspective of the cutters. Fig. 6 is a vertical cross-section on the line *xx* of Fig. 4. Fig. 7 60 is a similar section on the line *yy* of Fig. 4.

The same figures refer to like parts in each of the views.

1 is a bed-plate bolted or otherwise attached to beams or other suitable bearers 2. 65

3, 4, 5, 6, and 7 are standards provided with bearings for various shafts forming part of the machine. The standards 3, 4, and 7 are rigidly secured to the bed-plate 1, while the standards 5 and 6 are free to slide to and fro 70 thereon.

8 are tie-bolts.

9 is a central shaft carried within a sleeve 10, which fits within hollow shafts 11 and 12. The shaft 11 is formed with screw-threads 75 which fit within nuts 13 and 14, carried by the movable standards 5 and 6, and is provided with collars 15, which fit at each side of a bearing 16 on the fixed standard 4, so that while the said shaft is free to rotate it is 80 prevented from moving endwise. The hollow shaft 12, which fits freely both over the sleeve 10 and central shaft 9, is recessed so as to be carried at one end in a bearing on the standard 3, and such bearing, fitting in the recessed 85 portion, allows the said shaft to revolve freely, but prevents movement endwise. A cotter 18 passes through the said shaft 12, to which it is secured, and the said cotter passes freely 90 through a slot 19 in the central shaft 9, so that the said central shaft is caused to rotate with the shaft 12, but may be moved endwise independently thereof.

20 are packing-pieces between the central shaft 9 and the sleeve 10. These pieces may 95 be renewed when worn, or the said sleeve may be cored and made with solid ends.

21 is a brake-wheel carried by pins 22 in slots 23 in the sleeve 10, so that the said sleeve may be prevented from rotating when de- 100 sired, but will be free to move endwise. Any ordinary frictional brake-strap or its equivalent, actuated by hand or foot, is used to arrest the motion of the wheel 21.

24 is a friction-piece secured to the hollow shaft 12.

25 and 26 are loose pulleys carried by bosses on the shaft 12, and they are free to engage with the friction-piece 24.

27 and 28 are levers for forcing the pulleys 25 and 26 in contact with the said friction-piece 24.

29 is a friction-piece secured on the hollow shaft 11.

30 and 31 are loose pulleys.

32 and 33 are levers for forcing the pulleys 30 and 31 in contact with the friction-piece 29. The pulleys 25 and 30 are driven by straight-lead belts, and the pulleys 26 and 31 by crossed belts. The shafts 11 and 12 are caused to rotate in one or other direction, according to the pulley in contact with the friction-piece. Any suitable reversing-gear may be used instead of the parts 24 to 33.

34 is a disk secured to the sleeve 10.

35 is a disk free to rotate on a bearing 36 on the shaft 9 and held in position by nuts 37.

38 represents stay-bolts securing the disk 34 to the disk 35.

39 and 40 are disks furnished with nuts which engage with right and left hand screw-threads on the shaft 9.

41 are diagonal arms which pass through slots in the disks 39 and 40 and are held in position by ring-pieces 42. Each of these arms is composed of two parallel bars produced by diagonal or converging slots, which construction results in a double bearing for the collapsing and expanding devices and insures steadiness of motion and increases the strength of the apparatus.

43 are elastic bearers pivoted to the arms 41 at 44.

The parts 34 to 43 are substantially similar in construction and action to the parts forming the collapsing drum in the aforesaid Patent No. 385,850, the main feature of novelty consisting in pivoting the elastic bearers 43 and in providing the arms 41 with double instead of single bearings. One end of the shaft 9 is free to slide and rotate in a bearing 45, carried by the trussing-head 54, hereinafter described. The other end is provided with collars 46, which are coupled to a lever 47. The lever 47 receives motion by means of the coupling-rod 48, provided with rack-and-pinion gear 49 and hand-wheel 50.

The gear 47 to 50 is for the purpose of giving endwise motion to the shaft 9, and with it the sleeve 10 and collapsible drum. Any suitable gear may be used for the above purpose. The novelty of this part of my inventions consists in so combining the parts that the drum may be caused to expand, collapse, and move endwise.

51 are sleeves coupling the trussing-head 52 to the movable standard 6.

53 53<sup>x</sup> are rods passing freely through the sleeves 51, so as to couple the trussing-head 54 to the standard 5. The trussing-head 54

is hinged to the rod 53 at 55, and is secured to the rods 53<sup>x</sup> by a catch 56.

The action of the trussing-heads and the method of hinging and securing one of them to the actuating-rods is similar to that described in the above-mentioned Patent No. 385,850, the essential difference being that the trussing-heads are actuated by means of a central shaft 12 instead of by means of two side shafts.

It will be noticed that by arranging the movable standards 5 and 6 back of the trussing-heads I dispense with the parallel side shafts and projecting gearing for operating the trussing-heads shown in my former patent, and I am enabled to operate the trussing-heads by means of a single central shaft 11 through the medium of the sleeve-connection 51 and rod 53, which construction insures a more steady and uniform movement to the trussing-head than where side shafts are used.

57 is a roller for supporting the trussing-head 54 when it is turned on its hinges.

58 and 59 are lining-pieces which fit within the trussing-heads and are of greater or less internal diameter, according to the size of the cask to be made, and carry trussing-hoops within them, substantially as set forth in the before-mentioned specification. The liner 59, which fits within the hinged head, is made bell-mouthed for the purpose of gathering the ends of the staves, as hereinafter set forth. The head 54 has secured to it standards 60, which carry pulleys 61, from which is suspended by means of cords and balance-weights 62 a leveling-plate 63. The plate 63 is made with a slot 64 to permit it to pass over the end of the central shaft 9.

65 65<sup>x</sup> are arms hinged one to each trussing-head 52 54 at 66 66<sup>x</sup>.

67 is a hand-wheel and screw-gear for moving the arms 65 and 65<sup>x</sup> on their centers.

68 is a coupling for connecting and disconnecting the gear 67 67<sup>x</sup> when the heads are caused to approach and recede from each other.

Cutters are affixed to the arms 65 and 65<sup>x</sup> in any convenient position to act on the staves.

The apparatus for holding the cutters may be of any ordinary construction—such as slide-rests—the novel feature being the use of a coupling 68 to gear together the separable shaft-sections 70 and 70<sup>x</sup> for adjusting the cutters at each end when the hinged trussing-heads are caused to approach each other. The coupling I have shown consists of a disk 68, secured to shaft 70 on the trussing-head 52, and provided with pins or projections 69 for engaging openings or depressions 69<sup>x</sup> in a similar disk 68<sup>x</sup>, secured to shaft 70 on the hinged trussing-head 54.

When about to truss a cask, the trussing-heads are separated to their full extent, the hinged head is opened, suitable-sized liners are placed in the heads, a trussing-hoop is

placed in the liner of the hinged head, the leveling-plate is lowered, and the drum is collapsed. The required number of staves set on any suitable apparatus in the form of a frustum of a cone, and held in position, preferably, by three hoops, are then taken. One of the hoops is of large diameter, called a "pass" hoop, and fits near the larger end of the conically-set-up staves. A second hoop is of sufficient diameter to fit the bilge of the trussed cask, and a third hoop fits over the small end and is similar in size and shape to the hoop placed in the hinged trussing-head liner. The said staves are then placed over the drum with the small end within the liner of the trussing-head 52. The hinged head is then closed and the drum expanded, so as to hold the form central and press out the staves at the center. The shaft 12 is caused to revolve, so as to draw the trussing-heads toward each other until the small end of the stave form is pushed home in the liner 58 and the ends of the staves all rest level against the plate 63. The truss-heads are then slightly separated, the plate 63 is raised, and the heads are again caused to approach each other until the wide-spread ends of the staves are gathered by the bell-mouthed trussing-head and brought together within the liner of the head 54. The bilge-hoop is pressed forward until over the bilge by the force of the liner 58. The heads are then separated to the length the barrel is to be cut, the lines remaining in position on the cask, care being taken before this is done that the drum is fully expanded, so as to firmly grip the cask. The cask is then brought in central position between the cutters and the trussing-heads by means of the hand-wheel gear 50. The barrel is then caused to rotate rapidly by means of the pulley, which causes the drum to expand, and the cutters are moved forward into contact with the staves, so as to finish the ends of the cask. The trussing-heads and liners are then separated, the hinged head is opened, the drum is collapsed, and the cask removed with three hoops thereon, the bilge-hoop being permanent. The brake-wheel is used when the drum is being raised or collapsed if there is so much friction that the parts rotate instead of expanding or collapsing.

I claim—

1. In a cask-making machine, the combination of two trussing-heads, an expansible drum arranged concentrically therewith, two movable standards arranged in rear of the trussing-heads and connected therewith, and two concentric shafts, one of said shafts having a right and left hand thread adapted to operate both the standards, and one the collapsible drum, substantially as and for the purposes described.

2. In a cask-making machine, the combination, with two trussing-heads, one of which

is pivoted or hinged, of two movable standards connected with said trussing-heads, both of said standards arranged on the same side of the trussing-heads, and mechanism for moving the standards to and from each other, substantially as and for the purposes described.

3. The combination, with a collapsible and expansible drum, rotating disks connected with the drum, trussing-heads, and two movable standards arranged in rear of the trussing-heads, one of said standards connected with each trussing-head, of three concentrically-arranged shafts, one of which is connected with the drum to expand and collapse the same, one connected with the disk to rotate the drum, and the third connected by right and left hand screw-threads with the standards to cause the trussing-heads to approach or recede from each other, substantially as and for the purposes described.

4. In a cask-making machine, the combination, with two trussing-heads, of a movable standard connected with one of the trussing-heads by a sleeved connection, a second movable standard connected with the other trussing-head by a rod-connection, and a rotary shaft having right and left hand screw-threads on its opposite ends which engage screw-threaded sleeves in the movable standards, whereby on the rotation of said shaft the trussing-heads will be caused to approach or recede from each other, substantially as and for the purposes described.

5. In a cask-making machine, the combination, with two trussing-heads and an expanding drum arranged concentrically therewith, of two movable standards located at the rear of the trussing-heads, one of said standards connected with the adjacent head and one with the distant head, substantially as and for the purposes described.

6. In a cask-making machine, the combination, with a series of bearers, of slotted arms pivoted thereto and expanding disks adapted to move toward and from each other on said slotted arms, whereby a double bearing is obtained, substantially as and for the purposes described.

7. In a cask-making machine, a movable leveling-plate, in combination with a bell-mouth trussing-head, substantially as and for the purposes described.

8. In a cask-making machine, the combination of a rotating drum, movable trussing-heads, and cutters with an automatic coupling for connecting the cutters, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 27th day of June, 1889.

ALEXANDER DUNBAR.

Witnesses:

JAMES JOHNSON,  
F. C. SUDDEN.