

**No. 676,844.**

Patented June 18, 1901.

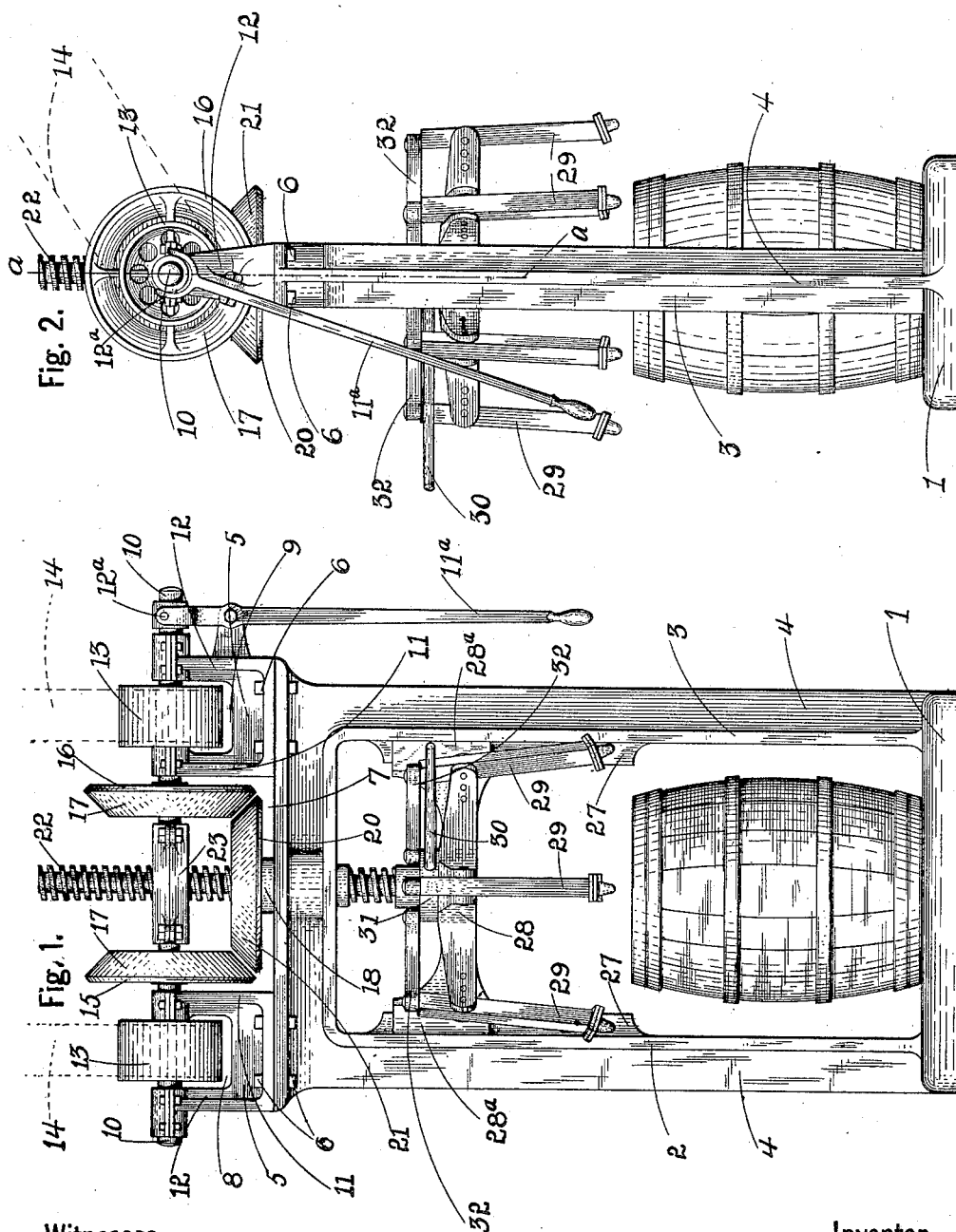
**B. HOLMES.**

**MACHINE FOR DRIVING BARREL HOOPS.**

(Application filed Sept. 17, 1900.)

(No Model.)

**2 Sheets—Sheet 1.**



**Witnesses.**

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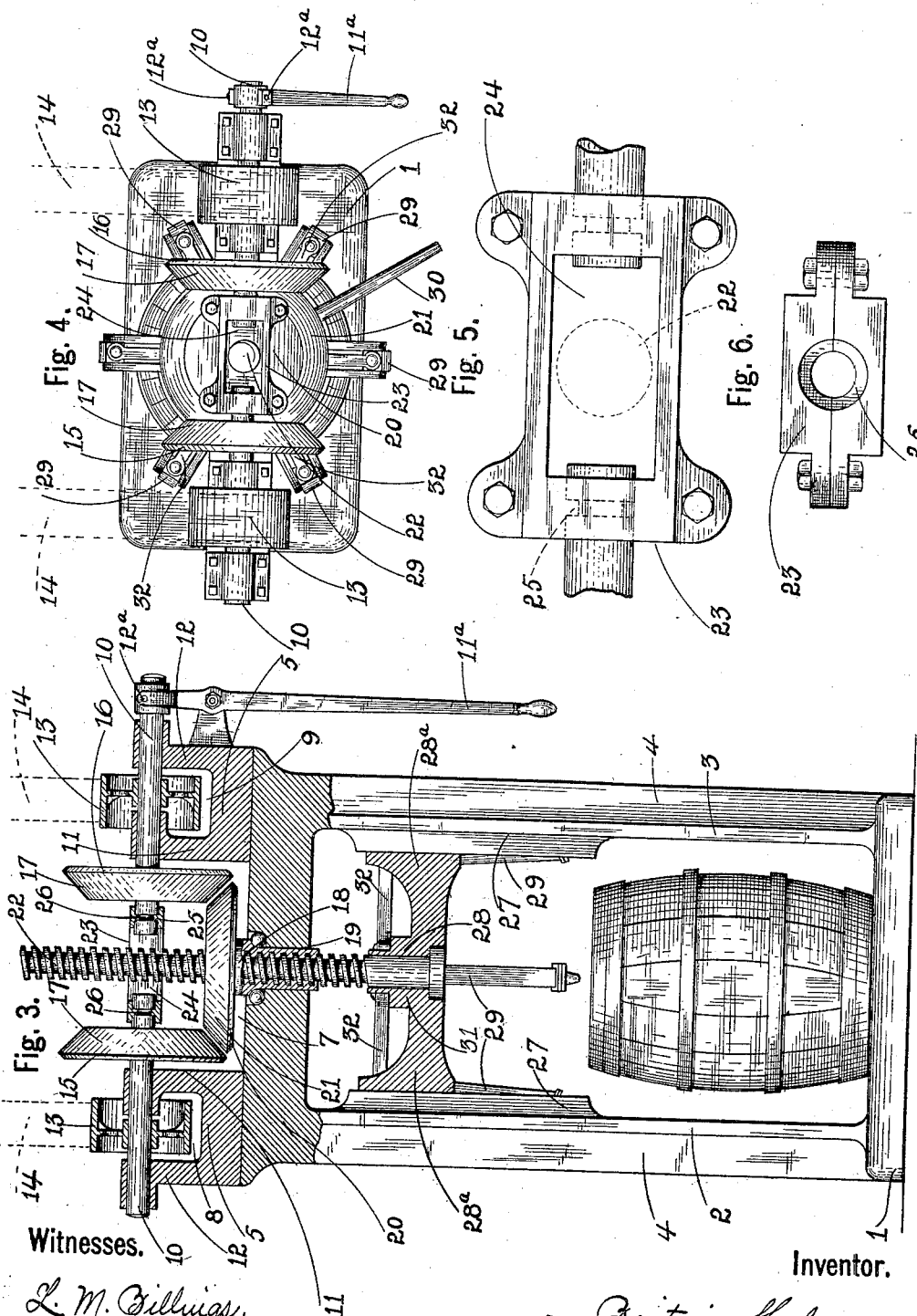
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(No Model.)

2 Sheets—Sheet 2.



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G. A. Hubbard.

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# UNITED STATES PATENT OFFICE.

BRITAIN HOLMES, OF BUFFALO, NEW YORK.

## MACHINE FOR DRIVING BARREL-HOOPS.

SPECIFICATION forming part of Letters Patent No. 676,844, dated June 18, 1901.

Application filed September 17, 1900. Serial No. 30,265. (No model.)

*To all whom it may concern:*

Be it known that I, BRITAIN HOLMES, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Machines for Driving Barrel-Hoops, of which the following is a specification.

My invention relates to an improved machine for driving light wooden hoops upon barrels or the like. With the machine now in use it is impossible to drive light hoops of this character without breaking a large percentage, as they are too heavy and powerful and cannot yield to lessen the pressure upon the hoop when it becomes too great.

I have found that it is necessary to dispense with all toothed gearing in order to make the machine as light as possible and operate the driving mechanism by friction-wheels which are controlled by the operator and can be moved from operating contact or so that the direction of movement of the driving mechanism can be instantly reversed and which will slip slightly to relieve the pressure upon the hoop when great, and thereby prevent breakage.

It also relates to certain details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of my improved machine. Fig. 2 is a side elevation of the same. Fig. 3 is a central vertical section on line *a a*, Fig. 2. Fig. 4 is a top plan view of the machine. Fig. 5 is an enlarged fragmentary view of the two-part shaft, showing the yoke for uniting the ends of the parts. Fig. 6 is a detached end view of the connecting-yoke.

In referring to the drawings in detail like numerals designate like parts.

The frame of the machine as preferably constructed consists of a base 1 and two vertical standards 2 and 3, which extend upwardly from the ends of said base, said standards having longitudinal strengthening-ribs 4 and a top 5, which is bolted to the top of the standards 2 and 3 by the bolts 6.

The base 1 is of sufficient width to support a barrel, (see Fig. 2,) and the standards 2 and

3 are separated sufficiently to allow a barrel to be placed between them, as shown in Fig. 1.

The top 5 is formed with three top depressions or recesses, which are respectively a central recess 7 and two side recesses 8 and 9, and the shaft 10 is journaled in upwardly-extending metal walls separating these depressions or recesses, the main central depression being between the two inner walls 11 and the side recesses being each between one of the inner walls 11 and one of the two outer walls 12. The shaft 10 is journaled in bearings in these walls, so as to have a certain range of longitudinal movement therein, and this movement is controlled by a lever-arm 11<sup>a</sup>, which is pivotally connected at its inner end to the horizontal lugs 12<sup>a</sup>, projecting from the shaft 10 and pivotally supported at an intermediate point from the frame. A pulley 13, rigidly mounted on the shaft, is arranged in each of the side recesses 8 and 9, and belts 14 connect these pulleys to a suitable source of power. Two bevel or miter friction-wheels 15 and 16, mounted upon the shaft 10, are arranged in the central recess 7, with their beveled friction edges 17 opposite each other. A tubular hub 18 is journaled in a vertical opening 19 in the central portion of the top, and a beveled friction-wheel 20 is rigidly mounted upon the top end of this hub and with its beveled friction edge 21 slightly separated from the beveled friction edges 17 of these two wheels. The hub is interiorly screw-threaded, and a vertical screw-bar 22, to the lower end of which the driving mechanism is hung, passes through said hub. As the friction-wheel 20 has to be centrally arranged with respect to the two wheels 15 and 16, thereby bringing the shaft 10 vertically above the screw-bar 22, it is necessary to make some provision to permit the end of the screw-bar to be moved above the shaft in order to permit a sufficient range of movement to the driving mechanism.

In my present construction I divide the shaft 10 into two sections, the separated inner ends of which are connected by a yoke 23, which has a vertical rectangular opening 24, (see Fig. 4,) through which the screw-bar passes. This yoke is provided with a collar 25 at each end, which encircles the inner end of one of the shaft-sections, the collar fitting

in a groove 26 in the shaft to prevent longitudinal movement.

The standards 2 and 3 are each provided with a vertical slide portion 27 on its inner side, and the driver-head 28, which is hung from the lower end of the screw-bar 22, has two oppositely-extending side portions 28<sup>a</sup>, which are provided with grooves in which these slide portions 27 fit.

A series of radially-arranged driving-arms 29 are pivoted to the head and are moved toward or from each other by a lever 30, which has a collar 31 operatively connected to the upper ends of the arms by connecting-rods 32.

To operate with this machine, a barrel is placed in proper position on the base, a hoop is placed in position, and the driving mechanism is lowered, forcing the hoop firmly upon the barrel.

This invention is principally designed for driving thin flat wood hoops or half-round hoops used in the manufacture of slack barrels containing flour, sugar, salt, cement, or like material and which are easily broken by driving them onto a barrel. They require a very sensitive machine having light driving power and very rapid motion and must always be under the instant control of the operator.

The ordinary hoop-driving machines which transmit motion to the hoop-driving mechanism by means of a screw and encircling hub driven by bevel or spur gear-wheels are not at all suitable for driving the thin wood hoops, as they are much too powerful and cannot be controlled quickly enough to prevent breakage.

To obtain a light machine having the above necessary characteristics, I do away with all toothed gearing and give the desired movement to the screw which moves the driving mechanism by means of very rapid revolving beveled friction-wheels, which act directly upon the driving mechanism, the end movement of the shaft bringing either one or the other of the friction-wheels mounted thereon in contact with a friction-wheel mounted on the screw-bar controlling the driving mechanism, and thereby driving the screw-bar in either direction while the friction-wheels are running in the same direction. When the friction-wheel or the screw-bar is centrally arranged, so that neither of the friction-wheels on the shaft is brought in contact with the hub, the hoop-driving mechanism instantly stops, while the friction-wheels remain in constant and rapid motion. The hub itself is made as light as possible, so that it will not have enough centrifugal power to move or turn the screw-bar any farther than it is actually driven.

It will be seen from the foregoing that in action the hoop-driving mechanism can be instantly stayed or regulated at the will of the operator and that the friction-wheels can slip when the pressure upon the hoop becomes sufficiently great to strain the hoop, thus pre-

venting breaking the hoops, something impossible with bevel-gear-driven machines.

I claim as my invention—

1. A machine for driving light hoops upon a barrel comprising hoop-driving mechanism having a vertically-movable screw-bar and a friction-wheel and a shaft above the hoop-driving mechanism crossing the vertical path of movement of the screw-bar, having friction-wheels operatively arranged with respect to the friction-wheel of the hoop-driving mechanism and an opening for the passage of the screw-bar.

2. A machine for driving light hoops upon a barrel comprising hoop-driving mechanism having a screw-bar, a beveled friction-wheel mounted thereon, a horizontal shaft arranged above the screw-bar and crossing the vertical path of the screw-bar; said shaft having means for the passage of the screw-bar and two beveled friction-wheels mounted on said shaft and operatively arranged on opposite sides of the friction-wheel mounted on the driving-shaft.

3. A machine for driving light hoops upon a barrel comprising a frame, an upper horizontal shaft journaled in the frame, two friction-wheels mounted in opposed separated arrangement on said shaft, a tubular hub journaled in the frame vertically beneath the shaft, hoop-driving mechanism and a vertical screw-bar connected to said hoop-driving mechanism and passing through the hub and a friction-wheel operatively mounted on the screw-bar and arranged between the two separated friction-wheels on the shaft, substantially as set forth.

4. A machine for driving light hoops upon a barrel comprising a frame, an upper horizontal shaft journaled in the frame, two friction-wheels mounted in opposed separated arrangement on said shaft, a tubular hub journaled in the frame vertically beneath the shaft, hoop-driving mechanism, a screw-bar connected to said hoop-driving mechanism and passing through the hub and means whereby the end of the screw-bar may extend through the shaft, substantially as set forth.

5. In a machine for driving light hoops upon a barrel, a frame, hoop-driving mechanism mounted in said frame, and having a vertical screw-bar, a shaft journaled in said frame and having a certain range of longitudinal movement, two separated opposed friction-wheels mounted on said shaft, a friction-wheel mounted on the screw-bar of the hoop-driving mechanism and arranged between the opposed friction-wheels on the shaft, and a lever for moving said shaft, longitudinally to bring either of the opposed friction-wheels on the shaft into operative contact with the friction-wheel on the hoop-driving mechanism or move both out of contact, substantially as set forth; said shaft having means for the passage of the screw-bar.

6. A machine for driving light hoops upon a barrel comprising hoop-driving mechanism,

a vertical screw connected to said hoop-driving mechanism, a two-part shaft arranged above and crossing the vertical path of the screw-bar operating connections between the screw-bar and the shaft and a yoke connecting said shaft parts and having an opening for the passage of the screw-bar.

7. A machine for driving light hoops upon a barrel comprising hoop-driving mechanism, a vertical screw-bar connected to said hoop-driving mechanism, a two-part shaft arranged above and crossing the vertical path of the screw-bar, operating connections between the screw-bar and the shaft and a yoke having collars fitted on the shaft ends and an opening for the passage of the screw-bar, substantially as set forth.

8. A machine for driving light hoops upon a barrel comprising hoop-driving mechanism, a screw-bar connected to said hoop-driving mechanism, a shaft having means for the passage of the screw-bar and mechanism operatively connecting the shaft to the screw-bar.

9. A machine for driving light hoops upon a barrel comprising hoop-driving mechanism, a screw-bar connected to said hoop-driving mechanism, a two-part shaft having a connection provided with an opening for the passage of the screw-bar, and mechanism operatively connecting the shaft to the screw-bar.

10. In a machine for driving light hoops upon a barrel, in combination, a frame comprising a base or support for the barrels, side standards having slideways and a top, a vertically-movable screw-bar passing through the top, hoop-driving mechanism mounted in the slideways in the side standards of said frame and suspended from the vertical screw-bar, a shaft journaled in the top of said frame crossing the vertical path of and having means for the passage of the screw-bar, and power-transmitting mechanism connecting the shaft to the screw-bar, as set forth.

11. A machine for driving light hoops upon a barrel comprising driving mechanism, a bar

connected to said hoop-driving mechanism and means for longitudinally moving the screw-bar to operate the hoop-driving mechanism including a shaft crossing the path of the bar and having means for the passage of the bar.

12. A machine for driving light hoops upon a barrel comprising hoop-driving mechanism, a longitudinally-movable screw-bar connected to said hoop-driving mechanism, friction mechanism for longitudinally moving the screw-bar to operate the hoop-driving mechanism, and a driving-shaft crossing the path of movement of said screw-bar, and having means for the passage of said bar.

13. In combination, in a machine for driving hoops upon a barrel, hoop-driving mechanism having a longitudinally-movable bar, and a shaft crossing the longitudinal path of said bar, and having means for the passage of said bar.

14. In combination, in a machine for driving hoops upon a barrel, a vertically-movable screw-bar, hoop-driving mechanism connected to said screw-bar, a rotatable shaft crossing the path of movement of the screw-bar, a friction-disk operatively mounted on the screw-bar and means carried by the shaft for rotating said disk; said shaft having means for permitting the passage of the screw-bar without interfering with its rotation.

15. In combination, in a machine for driving hoops upon a barrel, a vertically-movable screw-bar, hoop-driving mechanism connected to said screw-bar, a friction-disk operatively mounted on the screw-bar, and means for rotating said disk in either direction including a shaft crossing the path of movement of the screw-bar and arranged to permit the movement of said screw-bar.

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Witnesses:

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