

H. SCHMIDT.  
HOOP DRIVING MACHINE.

No. 549,158.

Patented Nov. 5, 1895.

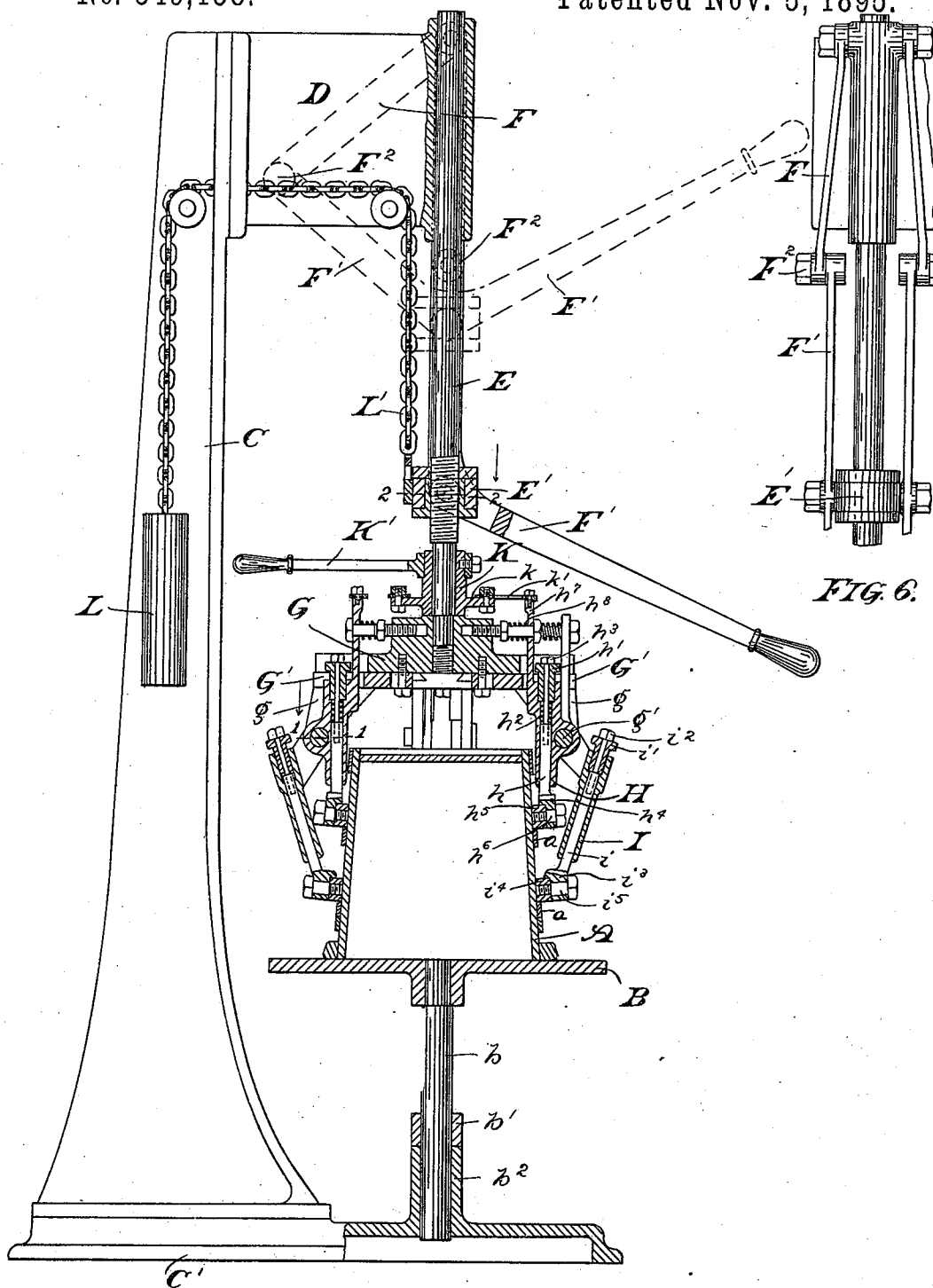


FIG. 6.

FIG. 1.

WITNESSES

Estella Akin.  
Emma Paepel.

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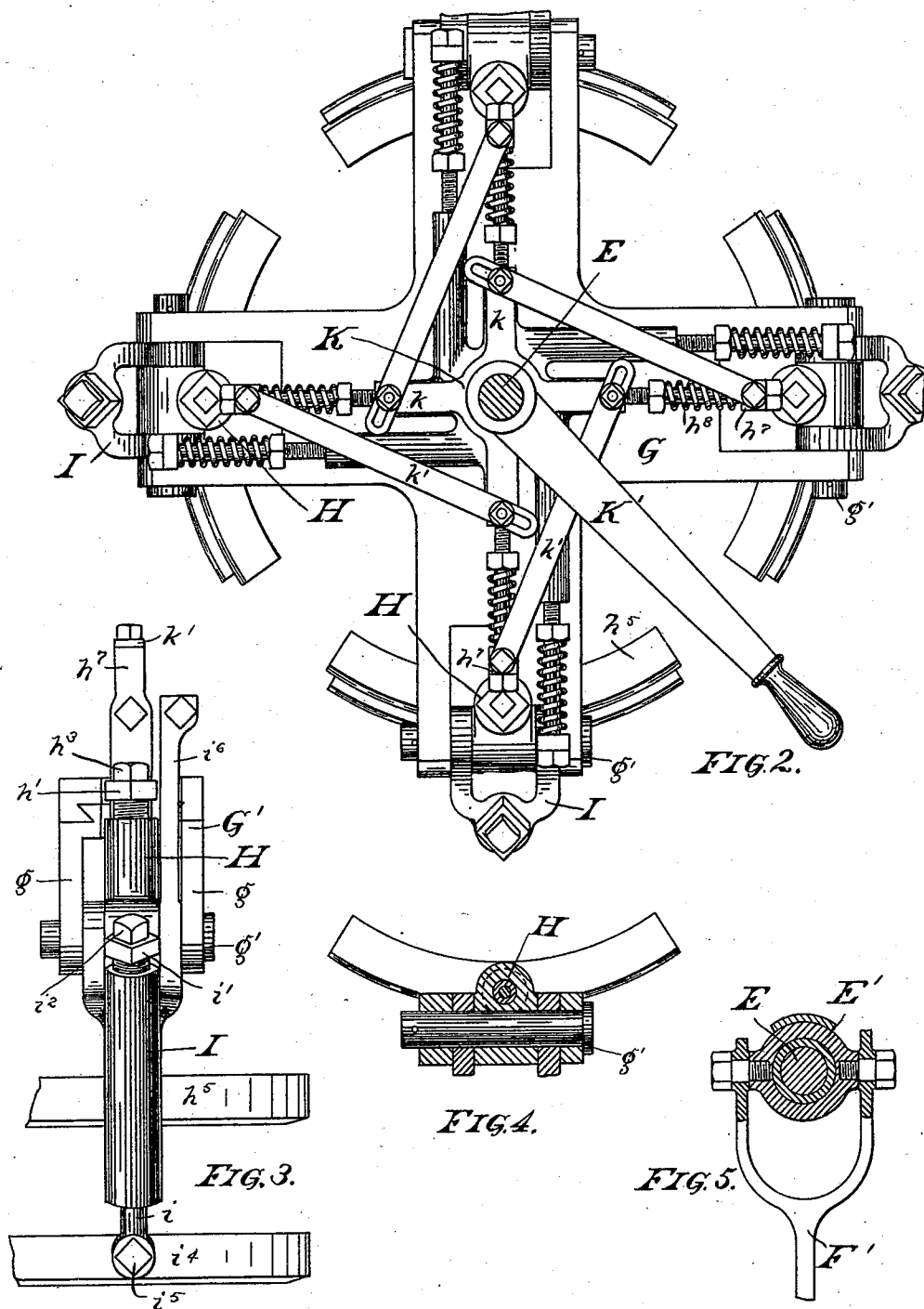
(No Model.)

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Estelle Hill,  
Emma Parker.

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# UNITED STATES PATENT OFFICE.

HENRY SCHMIDT, OF ELGIN, ILLINOIS.

## HOOP-DRIVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 549,158, dated November 5, 1895.

Application filed February 18, 1895. Serial No. 538,877. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY SCHMIDT, of Elgin, Kane county, Illinois, have invented certain new and useful Improvements in Hoop-Driving Machines for Tubs or Casks, of which the following is a specification.

My invention relates to machines for driving hoops on barrels or tubs by pressure, and while it is capable of being used upon any tubs or barrels, more particularly where it is desired to drive two separate hoops at once, it is especially adapted for that class known as "butter-tubs." This class presents obstacles to the use of machinery in driving hoops which the machines heretofore invented have not been able to overcome. Some of these difficulties are that in the process of manufacturing these tubs it is necessary that they should be handled and that the operations should be completed with great rapidity, while at the same time the pressure required to make the hoops tight is very great; again, in driving two separate hoops at once it often happens that one becomes tight before the other, and unless some allowance is made for this the one so becoming tight gives way, and as the pressure requisite to drive these hoops varies as the stock is more or less green it is necessary that such pressure should be applied by hand in order to distinguish the precise point at which the hoops become tight. To meet these and other difficulties is the object of my invention.

In the drawings, Figure 1 is a vertical sectional elevation showing a tub in position. The remaining views, except Fig. 6, are on a larger scale. Fig. 2 is a plan of the head for holding the drivers; Fig. 3, a side view of the adjustable knee, arms, and driver-shoes; Fig. 4, a sectional plan on line I I of Fig. 1, showing the upper driving-arm and its shoe; Fig. 5, a sectional plan on line 2 2, showing the method of connecting the lever to the vertical shaft; and Fig. 6, a front view of the bracket for guiding the vertical shaft and the method of connecting to the forked lever.

Referring to the drawings, A is a tub in position just after the hoops *a a* have been driven tight. The tub is supported by a table B, means being provided to adjust the

table to suit the height of the operator. The pedestal C is firmly bolted to the base C' and is provided with the bracket D. This bracket has a long neck to form a guide for the vertical shaft E, and near the upper part of this neck are pivoted by suitable connections the arms F. The forked lever F' straddles the vertical shaft and is pivoted by suitable connections to the collar E', this collar being provided with suitable adjustment on the shaft in order to raise or lower the head G, as is desired. The forks to this lever are also connected to the arms F at F<sup>2</sup>, forming a toggle-joint operated by the lever F'.

The vertical shaft carries and has firmly fixed at its lower end the cross-shaped head G. The arms of the cross are provided with sliding knees G', capable of adjustment in or out to suit the diameter of the tubs. The lower end of each knee is forked to form arms *g*, provided with a pin or shaft *g'* to receive two sleeves, one straddling the other by means of projecting ears and so arranged that each can oscillate on the shaft independently of the other.

The sleeve H contains the arm or rod *h*, capable of vertical adjustment by the tubular bolt *h'* and cushioned against the spring *h*<sup>2</sup>, and the tension of this spring can be varied by the bolt *h*<sup>3</sup>. The end *h*<sup>4</sup> of this arm is enlarged to carry the stud *h*<sup>6</sup>, and this stud carries the shoe *h*<sup>5</sup>, allowing it to oscillate slightly to conform to the irregularities of the hoop, the shoes being curved to conform to the periphery of the tub. In the same manner the sleeve I carries the arm *i*, &c., and shoe *i*<sup>4</sup>, except that no cushion is required in this case. Above the head and rotating on the shaft E is the collar K, provided with projecting arms *k*. The lever K' forms a means of rotating this collar. Each sleeve H has a projecting finger *h*<sup>7</sup> extending upward sufficiently to be readily connected to its corresponding arm *k* by a link *k'*. Springs *h*<sup>8</sup>, abutting the head and arm *h*<sup>7</sup> and guided by bolts, serve to keep the shoes against the sides of the tub, and the sleeves I are provided with similar extending arms *i*<sup>6</sup> and springs, but require no connection to the collar K, as in swinging out the shoes *h*<sup>5</sup> they strike the sleeve I and carry it and its shoes out with them.

To balance the weight of the shaft, head, arms, &c., the collar E' is connected by a chain L', running over pulleys to the weight L.

The operation of the mechanism is as follows: The position shown in Fig. 1 is just after the hoops have been made tight. The lever K' is now turned in the direction necessary to swing out the shoes far enough to clear the hoops above them, when the lever F' is raised until it takes the position shown by broken lines high enough to allow tubs to be slid under the lowest shoe. The tub, with the hoops loosely placed on by hand, is slid underneath, and again turning the lever K' to swing out the shoes far enough to drop clear of the hoops the head is lowered by the lever F' until the shoes <sup>h</sup> are in position to contact the hoops, when releasing the lever K' allows the springs to force the shoes in until they grip the periphery of the tub and at the same time act to center it. Pressure now applied to the lever F' acts with a greatly increased leverage, as the toggle-arms F and F' are nearly in a straight line, and this pressure is continued until the hoops become tight. Thus this mechanism enables the operator to work very rapidly and at the same time to apply the very heavy pressure required at the right time, and at the same time allows for any variation necessary when one hoop gets tight before another.

While I have described my invention with considerable minuteness as regards the details thereof and as being embodied in more or less precise form, I do not desire to be limited thereto unduly, as I contemplate all proper changes in form, omission of parts, and the substitution of equivalents as circumstances may suggest or necessity render expedient.

I claim—

1. The combination in a hoop driving machine for tubs or casks, of a head firmly connected to a shaft and provided with radially adjustable knees, having oscillating sleeves, such sleeves provided with adjustable arms having shoes adapted to fit the circumference of a tub, a collar capable of being rotated on said shaft, and having projecting arms adapted to be connected by links to projecting fingers of said sleeves, said combination being such that to turn said collar in one direction actuates such sleeves to swing their shoes away from the periphery of the tub, and to turn such lever in the opposite direction actuates the sleeves to swing their shoes in to the periphery of the tub, in position for contacting the hoops, and means for raising and lowering said shafts, substantially as described.

2. The combination, in a hoop driving machine for tubs or casks, of a vertical shaft provided with a suitable guide, a forked lever to straddle such shaft and pivoted to a collar provided with means of adjustment on the shaft, two arms suitably connected to bosses on the vertical guide, and to the forked arms of the lever, and adapted to form a toggle joint actu-

ated by the lever, a head firmly connected to such shaft and provided with radially adjustable knees having oscillating sleeves, such sleeves provided with adjustable arms having shoes adapted to fit the circumference of the tub, a collar capable of being rotated on said shaft by means of a lever, and having projecting arms adapted to be connected by links to upwardly projecting portions of said sleeves, said combination being such that to turn such collar in one direction operates to swing such sleeves and their shoes away from the periphery of the tub, and to turn such collar in the opposite direction operates to swing such sleeves and their shoes in to the periphery of the tub in position to contact the hoops, substantially as described.

3. The combination, in a head for hoop driving machines for tubs or casks, of a main cross shaped body provided with radially adjustable knees, each knee forked at its lower end to receive on a pin or shaft two sleeves, such sleeves supported by projecting ears and adapted to oscillate on said shaft, an arm in each sleeve provided at its upper end with means of vertical adjustment, and at its lower end with a boss arranged to be connected to a shoe adapted to fit the circumference of the tub, an upwardly extending finger connected to and forming a part of each sleeve, connections to such fingers adapted to swing said shoes away from the periphery of the tub and to swing them back to the periphery of the tub in position to contact the hoops, substantially as described.

4. The combination, in a head for hoop driving machines for tubs, of a main cross shaped body provided with radially adjustable knees, each knee forked at its lower end to receive on a pin or shaft two sleeves, such sleeve supported by projecting ears and adapted to oscillate on said shaft, an arm in each sleeve provided at its upper end with means of vertical adjustment and at its lower end with a boss arranged to be connected to a shoe adapted to fit the circumference of the tub, an upwardly extending finger connected to and forming a part of each sleeve, a spring abutting each finger and the main body, a bolt projecting from the main body to guide such spring and a nut to regulate its tension against said finger, a shaft firmly connected to the main body and having a collar provided with a lever and with projecting arms, each arm adapted to be connected by a link to one of the fingers of each pair of sleeves, substantially as described.

5. The combination, in a head for hoop driving machines for tubs, of a main cross shaped body provided with radially adjustable knees, each knee forked on its lower end to receive on a pin or shaft two sleeves supported on said shaft by projecting ears, one of such sleeves arranged to straddle the other and both to oscillate independently on the shaft, an arm in each sleeve provided at its upper end with an adjusting nut, and at its

lower end with a boss arranged to be connected to a shoe adapted to fit the circumference of the tub, one or both of each pair of sleeves provided with a spring interposed between its arm and the adjusting nut to form a cushion to said arm, an upwardly extending finger connected to and forming a part of each sleeve, a spring abutting each finger and the main body, a bolt projecting from the main body to guide such spring and a nut to regulate its tension against said finger, a shaft firmly connected to the main body and having a collar provided with a lever and with projecting arms, each arm adapted to be connected by a link with one of the fingers of each pair of sleeves, substantially as described.

6. The combination in a head for hoop driving machines for tubs, of a main cross shaped body provided with radially adjustable knees, each knee forked on its lower end to receive on a pin or shaft a sleeve supported on such shaft by a projecting ear, an arm in each sleeve provided at its upper end with an adjusting nut, and at its lower end with a boss arranged to be connected to a shoe adapted to fit the circumference of the tub, an upwardly extending finger connected to and forming a part of each sleeve, a spring abutting each finger and the main body, a bolt projecting from the main body to guide such spring and a nut to regulate its tension against said finger, a shaft firmly connected to the main body and having a collar provided with a lever and with projecting arms each arm adapted to be connected by a link to its corresponding finger, substantially as described.

7. The combination in a hoop driving machine for tubs, of a vertical shaft provided with a suitable guide, a forked lever to straddle such shaft, and pivoted to a collar provided with means of adjustment on the shaft, two arms suitably connected to bosses on the vertical guide and to the forked arms of the lever, and adapted to form a toggle joint actuated by the lever, a main body firmly connected to such shaft and provided with radially adjustable knees, each knee forked on its lower end to receive on a pin or shaft two sleeves supported on such pin by projecting

ears, one of such sleeves arranged to straddle the other and each to oscillate independently on the pin, an arm in each sleeve provided at its upper end with an adjusting nut, and at its lower end with a boss arranged to be connected to a shoe adapted to fit the circumference of the tub, one or both of each pair of sleeves provided with a spring interposed between its arm and the adjusting nut, to form a cushion to said arm, an upwardly extending finger connected to and forming a part of each sleeve, a spring abutting each finger and the main body, a bolt projecting from the main body to guide such spring and a nut to regulate its tension against the said finger, a collar on the main shaft provided with a lever and with projecting arms, each arm adapted to be connected by a link with one of the fingers of each pair of sleeves, substantially as described.

8. The combination, in a hoop driving machine for tubs, of a vertical shaft provided with a suitable guide, a forked lever to straddle such shaft, and pivoted to a collar provided with means of adjustment on the shaft, two arms suitably connected to bosses on the vertical guide, and to the forked arms of the lever, a main body firmly connected to such shaft and provided with radially adjustable knees, each knee forked on its lower end to receive on a pin or shaft a sleeve supported on such pin by projecting ears, and adapted to oscillate on such pin, an arm in each sleeve provided at its upper end with an adjusting nut, and at its lower end with a boss arranged to be connected to a shoe adapted to fit the circumference of the tub, an upward extending finger connected to and forming a part of each sleeve, a spring abutting each finger and the main body, a bolt projecting from the main body to guide such spring, and a nut to regulate its tension against the said finger, a collar on the main shaft provided with a lever and with projecting arms, each arm adapted to be connected by a link with a corresponding finger, substantially as described.

HENRY SCHMIDT.

Witnesses:

E. P. MARION,  
HENRY F. NOYES.