

(Model.)

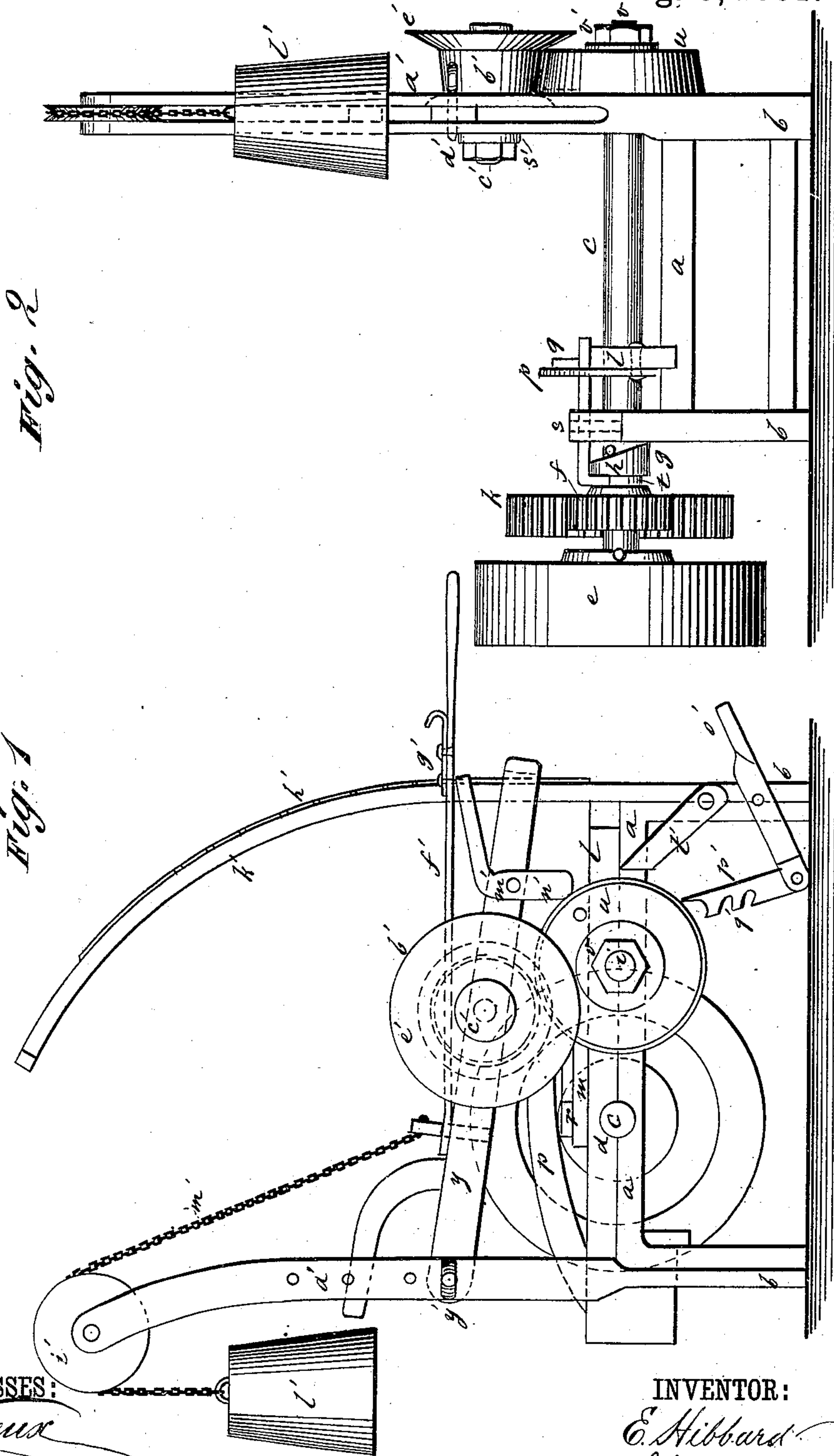
2 Sheets—Sheet 1.

E. HIBBARD.

MACHINE FOR BENDING AND FLARING BARREL HOOPS.

No. 245,495.

Patented Aug. 9, 1881.



WITNESSES:

C. Neveu
C. Sedgwick

INVENTOR:

E. Hibbard

BY

Almon H. Co.

ATTORNEYS.

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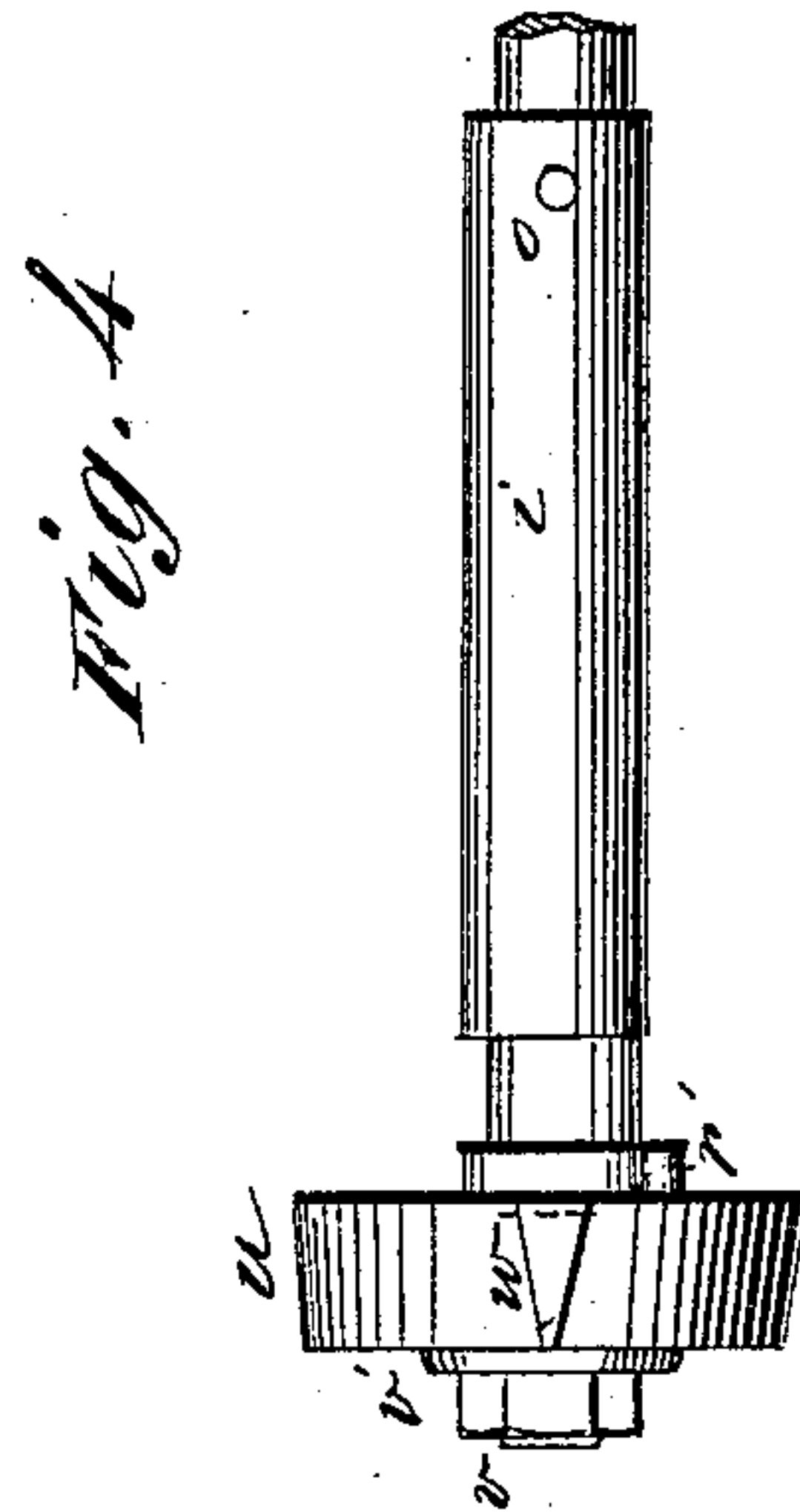
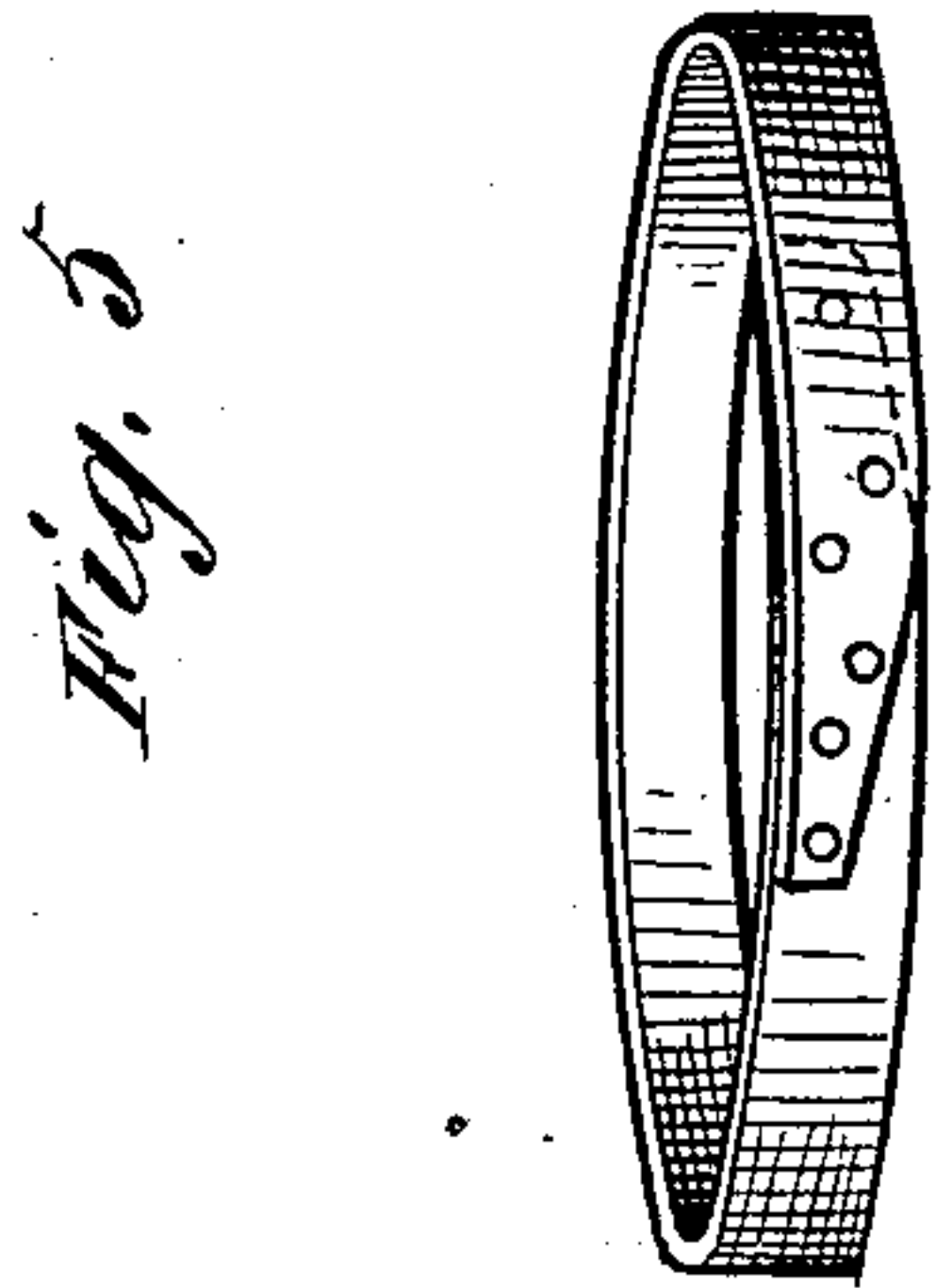
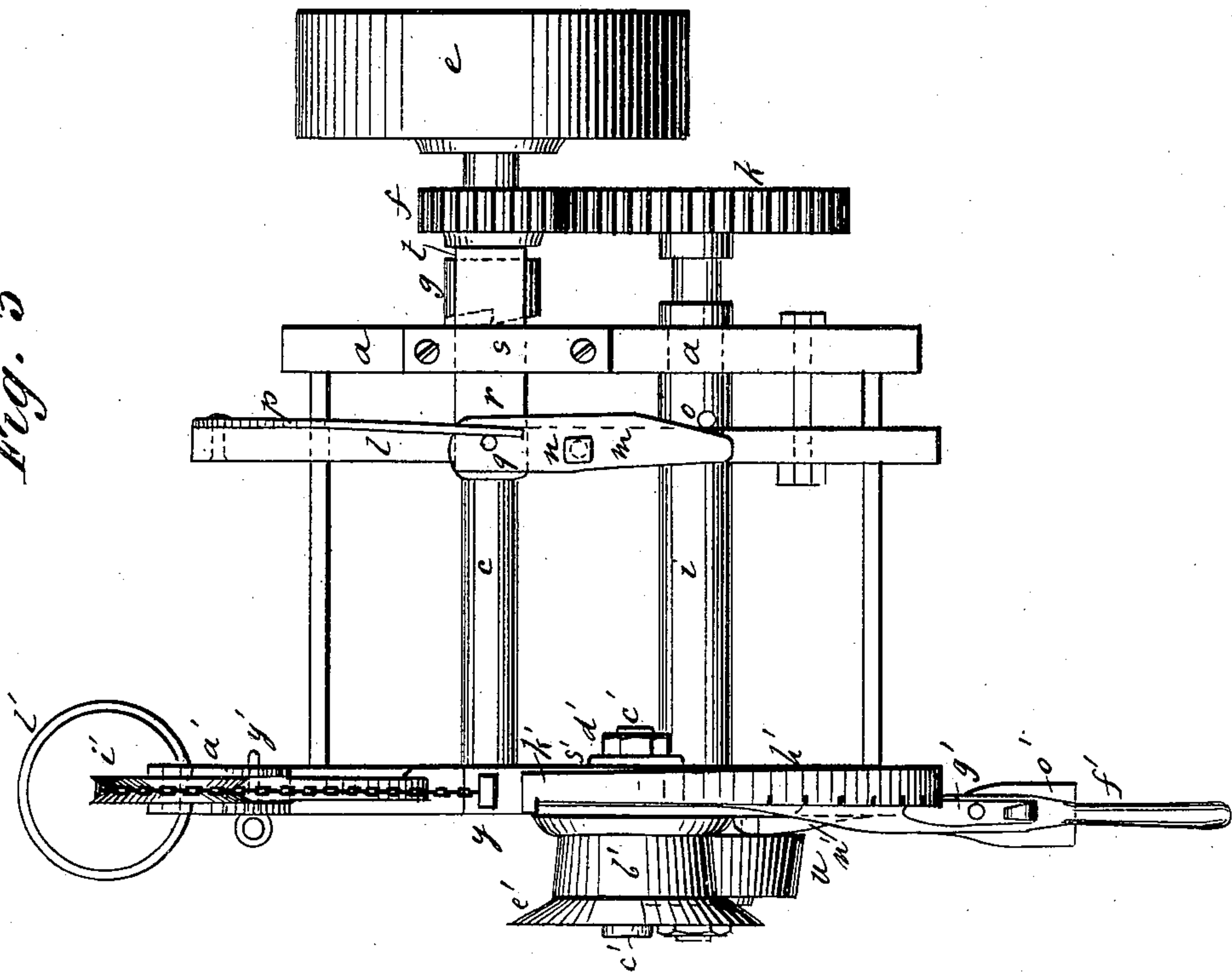


Fig. 3



WITNESSES:
C. Neveu
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UNITED STATES PATENT OFFICE.

ERASTUS HIBBARD, OF SOUTH BARRE, NEW YORK.

MACHINE FOR BENDING AND FLARING BARREL-HOOPS.

SPECIFICATION forming part of Letters Patent No. 245,495, dated August 9, 1881.

Application filed November 26, 1880. (Model.)

To all whom it may concern:

Be it known that I, ERASTUS HIBBARD, of South Barre, in the county of Orleans and State of New York, have invented a new and
5 useful Improvement in Machines for Bending and Flaring Barrel-Hoops, of which the following is a specification.

In the manufacture of wooden hoops for barrels and tubs it is usual to saw out the strip
10 of which the hoop is made with a bevel or one edge thinner than the other, so that when the strip is bent to form the hoop it will have the proper bevel to fit upon the barrel. Hoops of that character are deficient in strength at the
15 lower or thinner edge, where the greatest strain comes. With sawed bevel-hoops it is necessary to use two upon each end of the barrel, one to take off to permit the removal or insertion of the head, while the other keeps the
20 staves in place, as a single beveled hoop wide enough to hold the staves and at the same time be slid partly off to allow the insertion of the head would have its lower edge thinned down to nothing and would not be practicable for use. Hoops have also been made by
25 steaming a plank and bending it to a curved shape in cross-section. Then, after seasoning, the plank is cut into strips by ripping, and the hoops have a bevel. It is necessary, however,
30 in this case, to resteam the strips for bending, and the second steaming injures the strength of the wood and the tenacity of its fibers.

The object of my invention is to furnish a hoop which will have the proper flare to fit a
35 barrel or tub and will be of nearly the same thickness at both edges, and ready for application to a barrel without work upon it by the cooper; also, to construct a machine for manufacturing hoops having the above-named
40 characteristics, which machine will make the hoops of uniform size, bend and flare them at the same time, and hold them while the ends are nailed together.

My invention consists, first, in a wooden
45 hoop for tubs or barrels, of uniform thickness, having flaring sides and nailed together at its ends; second, in a machine provided with a circular former having a beveled face and a flanged pressure-wheel for bending the hoop and flaring its sides. The wheels are driven
50 by gearing which is automatically stopped at

each revolution of the former, to permit the ends of the hoops to be nailed and the finished hoop removed.

In the drawings, Figure 1 is an elevation at
55 one end of my machine. Fig. 2 is a side view. Fig. 3 is a plan. Fig. 4 is a plan of the circular former and a portion of its shaft; and Fig. 5 shows the finished hoops.

Similar letters of reference indicate corresponding parts.

a a is the frame of the machine, resting upon legs *b*.

c is a horizontal shaft supported in bearings
65 *d* across one side of the frame, and projecting beyond the frame *a*, as seen in Figs. 2 and 3.

e is the main driving-pulley, keyed upon the end of the shaft *c*, and the machine is driven by a belt from competent power to the pulley *e*.

f is a small gear-wheel loose upon the shaft
70 *c*. The hub of *f* is formed as a clutch, *g*, which clutch is caused to engage with a cross-pin, *h*, through the shaft *c*, or to be disengaged therefrom by the movement of the gear *f* and clutch *g* upon shaft *c*, as hereinafter described.

i is a shaft in bearings upon the frame *a*,
75 parallel to shaft *c*, and projecting at each end of the machine.

k is a large gear-wheel upon shaft *i*, meshing
80 with the gear *f*.

l is a bar bolted adjustably to frame *a* at right angles to shafts *c* and *i*, (see Fig. 3.)

m is a lever pivoted in a flat position upon the upper edge of bar *l* by a fulcrum-pin, *n*,
85 midway of its length. One end of *m* extends upon the shaft *i*, while the other end extends over shaft *c*. The end of lever *m* over the shaft *i* is beveled to form an incline, which comes in the path of a pin, *o*, projecting from shaft *i*, so that at each revolution of shaft *i* the
90 lever *m* is swung upon its fulcrum *n*.

p is a flat spring attached to bar *l* and bearing upon a vertical pin, *q*, on that end of lever *m* which is over shaft *c*. The spring *p* acts
95 upon *m* to turn it in a direction contrary to the action of pin *o*, and the lever *m* is thereby returned to place by the spring as soon as the pin *o* clears *m*.

r is a link attached to lever *m* by the pin *q*,
and held in a bearing, *s*, on frame *a*, so that it
100 is parallel with shaft *c* and moves with lever *m*. The outer end of *r* is bent downward, form-

ing a toe, which passes into an annular groove, *t*, in the clutch *g*. The motions of the lever *m*, as just described, act through the link *r* to unship the clutch *g* at each revolution of the shaft *i*.

u is a circular former upon the end of shaft *c*, at the end of the machine opposite to gear-wheel *k*. It is held upon the shaft *c* by a nut, *v*, and *v'* is an intervening washer. The periphery or face of the former *u* is beveled to correspond with the flaring sides which are to be given to the hoop, and *w* is a swinging latch pivoted to the inner side of the former *u* and bent over upon its beveled surface. The latch *w* swings in the direction of the revolution of the former, to permit the end of a strip which is to be bent around the former to pass under it, and clamps it firmly while the former *u* revolves.

y is a swinging lever above the former *u*, at right angles to the shaft *i*. Its end is pivoted at *y'* in the slotted post *a'*, which rises from one corner of frame *a*, and there are a number of holes through the post *a'*, for securing the lever *y* at different heights.

b' is a pressure-roller secured upon the lever *y* by a pin, *c'*, on which *b* revolves, and a nut, *d'*. The roller *b'* has its periphery beveled in a direction opposite to the bevel on *u*, so that the two bevels coincide, and it is provided with a flange, *e'*, upon its outer edge, which flange is tapering or beveled at the inner side. I prefer to form the bevel of *b'* slightly rounding or highest in the center, so that the hoop will be clamped upon *u* at its center and the sides thereof may contract. The lever *y* is used to raise the pressure-roller *b'* out of contact with the former *u* when the hoop is to be taken off. Pressure is applied to *b'* by the spring-handle *f'*, which is attached to the upper side of lever *y* and extends outward. The spring *f'* has a swinging latch, *g'*, which may be turned to engage with one of the notches in a plate, *h'*, attached to the curved arm *k'*. This latch *g'* holds the spring-handle *f'* down to impart the necessary spring-pressure to roller *b'* when it is upon the former *u*, and it also retains the lever *y* when raised.

I provide a weight, *l'*, attached to a cord or chain, *m'*, which passes over a roller, *i'*, at the upper end of post *a'*, and is connected to lever *y*. This weight serves to counterbalance lever *y*.

The curved arm *k'* rises from one corner of the frame *a*, and the end of lever *y* is slotted for the arm *k'* to pass through, and lever *y* is thereby prevented from moving sidewise.

n' is a swinging gage pivoted by a pin, *m'*, on lever *y* in such position that its point comes adjacent to the inner edge of the former *u*. This gage *n'* takes against the inner edge of the strip of wood as it is wound on the former *u* and acts to throw the strip out of line with the former *u*. The beveled flange *e'* of the pressure-roller *b'* acts upon the opposite edge of the strip and brings it into line just in front of the point of pressure between *u* and *b'*, so

as to give the strip a curve edgewise at the moment the flaring sides are formed and aid in that operation.

o' is a treadle, pivoted below the former *u* on one of the legs *b*, and carrying at its inner end the swinging plate *p*, which has notches *q'*.

r' is a pin projecting from the former *u*, at the inner side, in such position that it engages with one of the notches *q'* just before the shaft *i* ceases to revolve by the disengagement of clutch *g*. The latch *w* should be positioned on the former *u* so that it will be at the upper part of *u* at the moment when *i* stops.

t' is a stop for preventing misplacement of plate *p'*.

Fig. 5 shows completed hoops, such as are made upon the machine above described. In the manufacture of such hoops a plank is sawed out of the same thickness as the hoop is to be in width. Then from the edge of the plank strips are sawed of the thickness required for the hoops. The ends of the strips are then chamfered and beveled for the lap of the hoop, and after being steamed they are ready for the machine above described. The machine is set in motion and the shaft *i* revolves until the pin *o* comes in contact with the incline at the end of lever *m* and turns said lever *m*, and by the link *r* moves the clutch *g* and gear *f* upon the shaft *c* until the clutch is disengaged from its pin *h* and the shaft *i* stops. This is at the moment when the latch *w* is upward and the pin *r'* has engaged with the notch *q'* in plate *p'*. The end of the strip, which has been previously steamed, is placed under the latch *w*, and a slight pull on the strip will cause the latch to bind it firmly. The strip is entered in the direction which will cause it to be wound on the former *u* when the former revolves, and the lever *y* is pulled down and caught by its latch to cause the necessary pressure of roller *b'*. The treadle *o'* is next pressed down and the former *u* and shaft *i* thereby revolved by the action of plate *p'* on the pin *r'* far enough to clear pin *o* from lever *m*, and the spring *p* brings the clutch *g* back to place, and the former *u* revolves. The strip is thereby wound upon the former *u* and the proper bevel imparted to it by the bevel-edge of the former acting in connection with the gage *n'* and flange *e'* of the pressure-roller. As soon as the former *u* has completed one revolution it is stopped, as before described, by the unshipping of the clutch. A single nail is then driven through the lapped ends of the hoop, the lever *y* is raised, and the nailing completed. The hoop may then be removed. I prefer to use "clout-nails" for securing the ends together.

It will be seen that the hoops are all made of uniform size when the machine is once set, and they are ready for use without further work.

In turning out hoops one-eighth inch larger or more than the form *u* bands of hoop-iron of the proper thickness are to be placed upon the former.

The hoop may be varied in size, so that it

will be plump or scant, of a given size, by changing the position of the washer *s'* upon the pin *c'*, placing it inside the lever *y* or outside the roller *b'*, to position the roller *b'* nearer
 5 to or farther from the form *u*, and thereby cause the hoop to run more or less at the largest part of the former *u*, according to whether the hoop is to be plump or scant.

Only four of the hoops above described are
 10 required for a barrel, and they can be manufactured quicker, cheaper, and from a lower grade of timber than hoops heretofore in use. No tool except a hammer is needed for loosening the upper hoop on a barrel, and they are
 15 of uniform strength throughout.

I do not limit myself to exact details of construction set forth, as they may be varied without departing from my invention.

Having thus described my invention, I claim
 20 as new and desire to secure by Letters Patent—

1. The combination of the beveled former *u* and oppositely-beveled pressure-roller *b'*, the pressure-roller being provided with an inward-

ly-beveled flange, *e'*, on the outer edge and the
 25 former with a pivoted latch, *w*, bent in the direction of its revolution, as shown and described.

2. The spring-handle *f'*, attached to the lever that carries the pressure-roll, and provided
 30 with a swinging latch, *g'*, working in notches of plate *h'* to both retain the lever when raised and regulate the pressure on roll, as described.

3. The combination, with the roll having beveled flange *e'*, of the swinging gage *n'*, tak-
 35 ing against the inner edge of hoop-strip to throw it out of line with the former while the flange acts against the outer edge, as described.

4. The combination of the treadle *o'*, carry-
 40 ing the notched swinging plate *p'*, the former *u*, having pin *r*, the shaft *i*, and the stop *t'*, as and for the purpose specified.

ERASTUS HIBBARD.

Witnesses:

FRED. H. HARDING,
 WILLIAM L. STRICKLAND.