(No Model.) 3 Sheets—Sheet 1.

E. E. THRESHER.

Barrel Hoop Making Machine.

No. 238,987. **Patented March 15, 1881.**

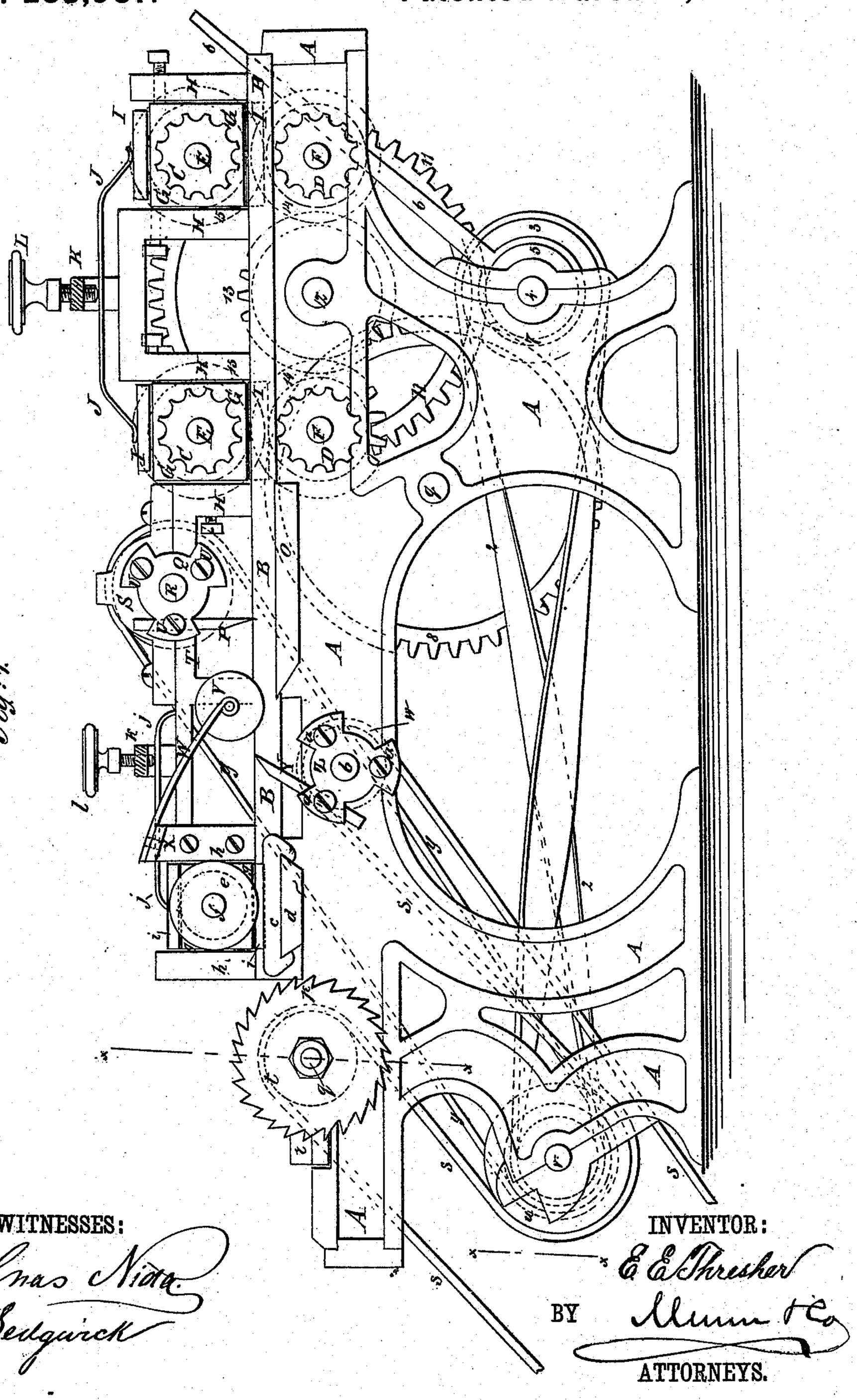

Fig: 1.

WITNESSES:

Chas Nichs.

C Sedgwick

INVENTOR:

E E Thresher

BY Munn & Co

ATTORNEYS.

(No Model.)

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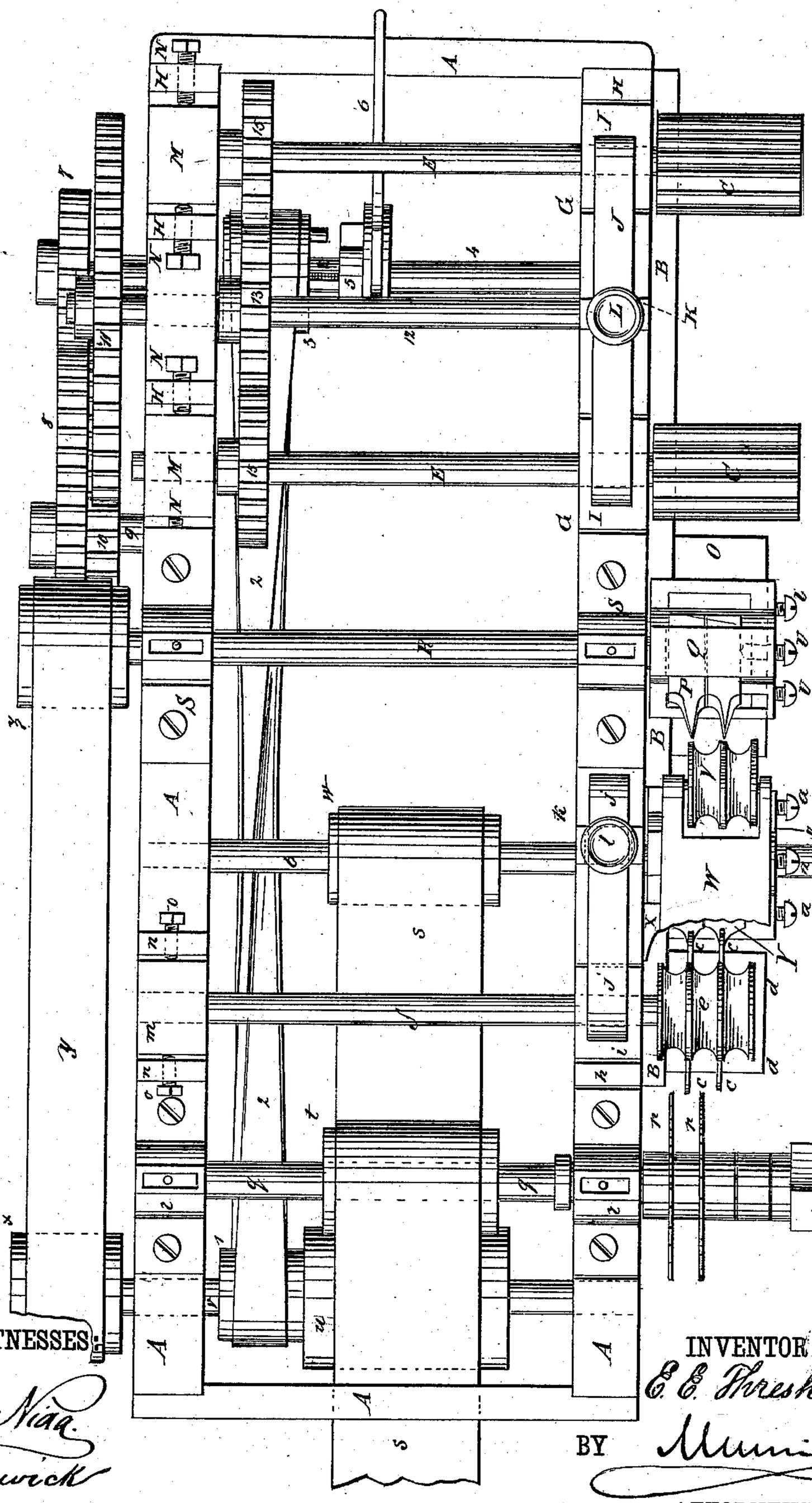

Fig: 2.

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(No Model.) 3 Sheets—Sheet 3.

E. E. THRESHER.

Barrel Hoop Making Machine.

No. 238,987. Patented March 15, 1881.

Fig: 3.

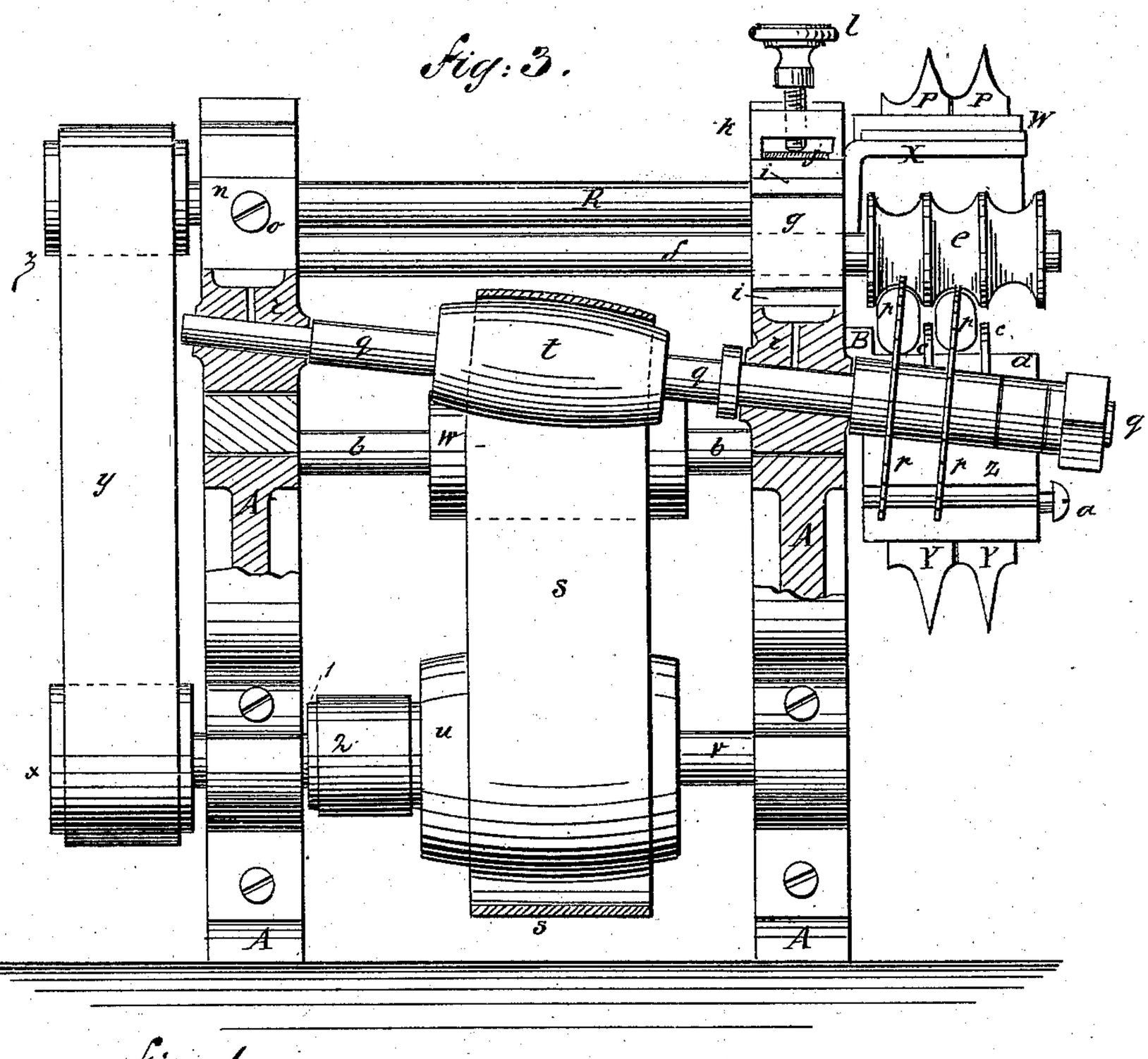


Fig: 4.

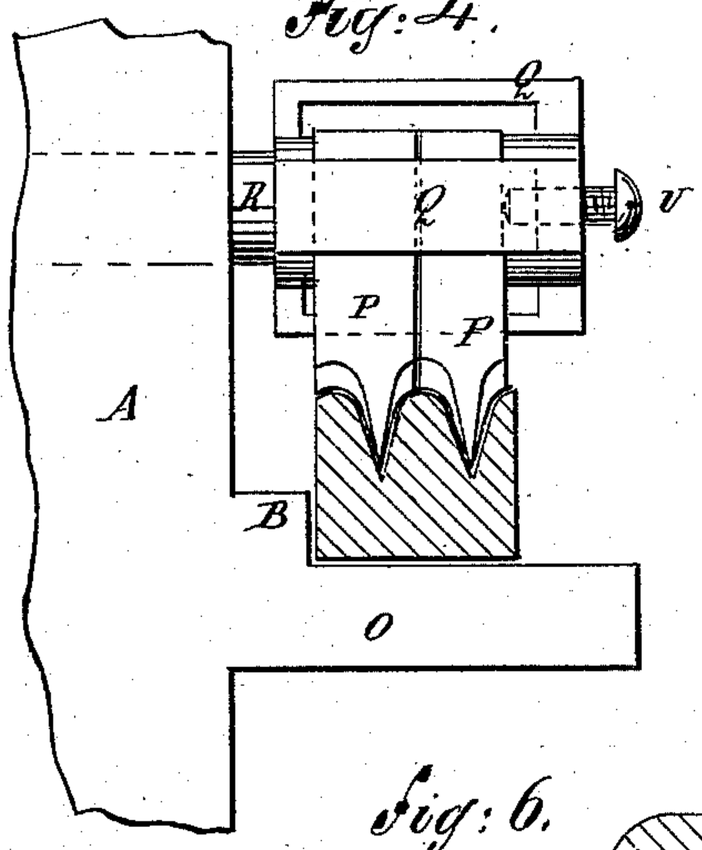


Fig: 5.

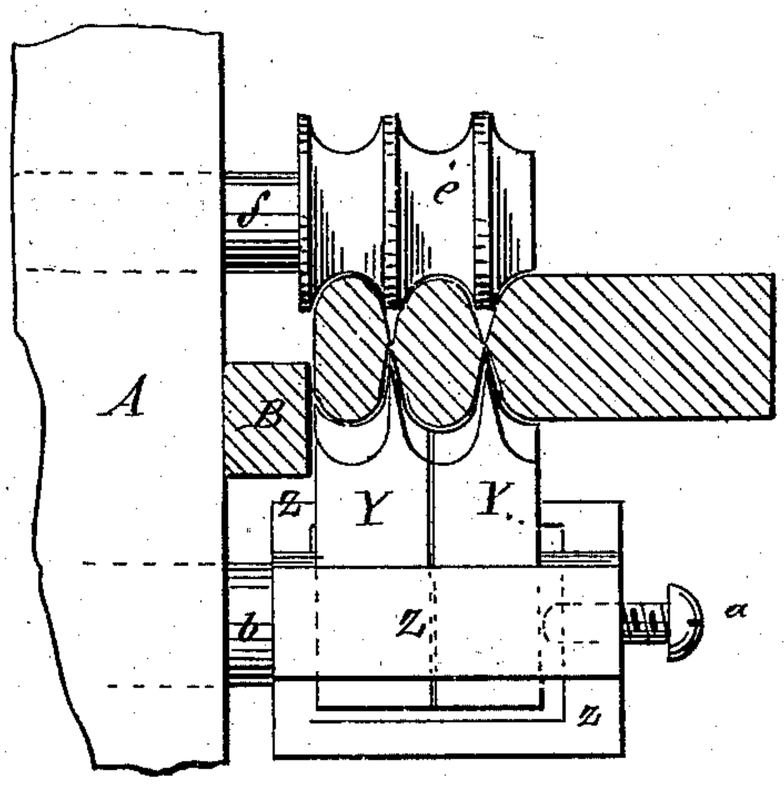
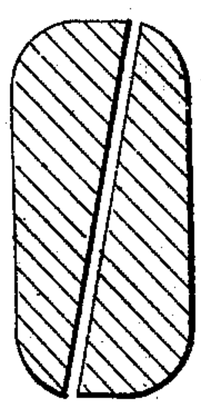


Fig: 6.



WITNESSES:

Chas. Nida

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INVENTOR:

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWARD E. THRESHER, OF REED CITY, MICHIGAN.

BARREL-HOOP-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 238,987, dated March 15, 1881.

Application filed November 15, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. THRESHER, of Reed City, in the county of Osceola and State of Michigan, have invented a new and useful Improvement in Barrel-Hoop-Making Machines, of which the following is a specification.

Figure 1, Sheet 1, is a side elevation of the improvement. Fig. 2, Sheet 2, is a plan view. Fig. 3, Sheet 3, is a sectional end elevation taken through the line *x x*, Fig. 1. Fig. 4, Sheet 3, is an elevation showing the upper cutter-head and cutter. Fig. 5, Sheet 3, is an elevation showing the holding and guide roller and a cross-section of the timber cut into oval strips. Fig. 6 is a cross-section of an oval strip cut into two beveled hoops.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish machines designed especially for cutting hoops from boards or planks, which shall be so constructed as to cut the timber into oval strips and cut each strip into two beveled hoops, and which can be readily adjusted for sawing lath and making moldings.

The invention consists in constructing a hoop-machine of a frame having a guide-bar for the timber to rest against while being fed forward, a set of corrugated feed-rollers arranged to feed the timber forward at uniform speed, a smooth table and a grooved roller for holding the timber in place while being operated upon by the cutters, a grooved table and separate guides for keeping the strips in place while being sawed into hoops, a pair of cutter-heads and cutters made with cutting-points and concaved cutting-shoulders for cutting the timber into oval strips, and a set of saws and their inclined mandrel for cutting the oval strips into beveled hoops, as will be hereinafter fully described.

A is the frame of the machine, to one side of which is attached, or upon it is formed, a guide, B, against which the timber is held while being operated upon. This side of the frame A is also provided with a feed-table, which table is not shown in the drawings.

At the side of the frame A, above and below the guide B, are placed two pairs of corrugated or fluted rollers, C D, attached to the projecting ends of the shafts E F. The two lower shafts, F, revolve in stationary bearings in the sides of the frame A. The forward parts of the upper shafts, E, revolve in bearings G, which slide up and down between standards H, attached to the cap of the lower bearings or to the frame A. The sliding bearings G have rubber blocks I above and below them, to regulate their positions and cause them to work more freely. The sliding bearings G are held down with sufficient force to cause the feed-rollers C D to carry the timber forward by a spring, J, the ends of which rest upon the tops of the said sliding bearings G, or upon the rubber blocks I, place dupon the said tops. The spring J is arched, and its middle part passes through a keeper, K, attached to the inner standards, H, and through which passes a hand-screw, L, to bear against the upper side of the center of the spring J and cause it to bear upon the sliding bearings G with any desired pressure. The rear ends of the shafts E revolve in bearings M, which are hinged to and between the standards H by set-screws N, passing in through the said standards, as shown in Fig. 2.

To the frame A, in rear of the lower rear feed-roller, D, is attached, or upon it is formed, an iron table, O, to support the timber while being operated upon by the cutters P of the upper cutter-head, Q, which is attached to the end of a mandrel or shaft, R. The mandrel or shaft R revolves in bearings S, attached to the frame A, or to supports T, attached to the said frame A. The cutters P are formed with a point to cut a groove in the timber, and with curved shoulders to round off the edges of the strips between the grooves. The cutters P are made of such a length as to cut half-way through the timber, as shown in Fig. 4, and one, two, or more cutters, P, may be placed side by side in each socket or seat of the cutter-head Q, according as one, two, or more strips are to be cut from the timber at a time. The cutters P are secured in the sockets of the cutter-head Q by set-screws U, or other suitable means. As the timber comes from the cutter-head Q it is held down to its place and guided by a roller, V, the face of which is grooved to correspond with the form given to the timber by the cutters P. The roller V is pivoted to the

lower end of a bent spring, W, the upper end of which is secured to an arm, X, formed upon or attached to the frame A, or a standard formed upon or attached to the said frame. As the timber passes back from the roller V its lower side is operated upon by the cutters Y, made like the cutters P, and secured in the sockets of the cutter-head Z by set-screws *a*, or other suitable means. The cutter-head Z is attached to the projecting end of a shaft or mandrel, *b*, which revolves in bearings attached to the frame A. The cutters Y cut half-way through the timber from its lower side, and thus separate the strips from the said timber, leaving the said strips in oval form, as shown in Fig. 5. As the strips pass from the lower cutter-head, Z, they pass between the guide-plates *c*, inserted in grooves in an iron table, *d*, formed upon or attached to the frame A. The strips are held down between the guides *c* by a roller, *e*, grooved to fit upon the upper edges of the said strips, and thus hold them firmly as they are fed to the saws. The grooved roller *e* is attached to the projecting end of a shaft, *f*. The forward part of the shaft *f* revolves in bearings *g*, that slide up and down between standards *h*, formed upon or attached to the frame A, and have rubber blocks *i* placed above and below them in the same manner as the bearings G. The bearings *g* are held down to hold the feed-roller *e* upon the strips with the necessary pressure by a bent spring, *j*, passed through a keeper, *k*, formed upon or attached to the frame A, or to supports attached to or formed upon the said frame. The spring *j* is held in place and its pressure is regulated by a hand-screw, *l*, passing in through the keeper *k* and resting against the said spring *j*. The rear end of the shaft *f* revolves in bearings *m*, placed between standards *n*, formed upon or attached to the frame A. The bearings *m* are hinged to the standards *n* by screws *o*, which pass in through the said standards *n* and rest against the sides of the said bearings *m*, so that the grooved roller *e* can move up and down freely.

p are the saws, which are placed in the rear of the roller *e*, and are attached to the mandrel *q*. The mandrel *q* revolves in inclined or adjustable bearings *r*, to give such an inclination to the mandrel *q*, and consequently to the saws *p*, that the said saws will divide the strips each into two equal parts or hoops, with their inner sides beveled, as shown in Fig. 6. As the hoops pass from the saws *p* they are complete except the lap and pointing, which must be done in other machines.

The machine is driven from any convenient power by a driving-belt, *s*, which passes around a pulley, *t*, attached to the saw-mandrel *q*, around a pulley, *u*, attached to the shaft *v*, and around a pulley, *w*, attached to the mandrel *b* of the lower cutter-head, Z, as shown in Figs. 1 and 2. The shaft *v* revolves in bearings attached to the rear end of the frame A, and to the rear end of the said shaft is attached a pulley, *x*, around which passes a belt, *y*. The belt *y* also passes around a pulley, *z*, attached to the rear end of the mandrel R, that carries the upper cutter-head, Q.

To the shaft *v* is also attached a small pulley, 1, around which passes a belt, 2. The belt 2 also passes around a pulley, 3, running loose upon a shaft, 4, which revolves in bearings attached to the lower part of the forward end of the frame A. The pulley 3 is thrown into gear with the shaft 4 by means of a clutch, 5, which slides upon the said shaft 4, and is moved toward and from the said pulley 3 by a lever, 6, one end of which rides in a ring-groove in the clutch 5, and its other end projects at the forward end of the frame A, so that it can be conveniently reached and operated by the sawyer, to throw the feed mechanism into and out of gear with the driving mechanism.

To the rear end of the shaft 4 is attached a small gear-wheel, 7, the teeth of which mesh into the teeth of a large gear-wheel, 8. The gear-wheel 8 revolves upon a gudgeon, 9, attached to the frame A, and with the said gear-wheel 8 is rigidly connected a small gear-wheel, 10, the teeth of which mesh into the teeth of a large gear-wheel, 11, attached to the rear end of the shaft 12, which revolves in bearings in the frame A, and is placed midway between the shafts F F.

To the shaft 12, within the frame A, is attached a gear-wheel, 13, the teeth of which mesh into the teeth of the two smaller gear-wheels, 14, attached to the shafts F. The teeth of the gear-wheels 14 mesh into the teeth of the gear-wheels 15, attached to the shafts E. The four gear-wheels 14 14 15 15 are all of the same size, so that the shafts F F E E, and with them the feed-rollers D D C C, will be driven at a uniform speed. This arrangement of the gear-wheels 13 14 14 15 15 causes the lower shafts, F F, and their feed-rollers D D to be driven in one direction, and the upper shafts, E E, and their feed-rollers C C to be driven in the other direction, so that all four rollers will work together to feed the timber forward.

To adjust the machine for sawing lath, both the cutter-heads Q Z are detached, and the belt *y* is thrown off, so that the mandrel R will not be run. The mandrel *q* is adjusted into a horizontal position and to a level with the mandrel *b*, and saws are placed upon the two mandrels *b q*. The saws upon the mandrel *b* are placed at such a distance apart as to saw the timber into strips equal in thickness to two laths and a saw-kerf, and the saws upon the mandrel *q* are placed midway between the saws upon the mandrel *b*, so as to saw each strip into two laths. The guides *c* are adjusted upon the table *d* into such positions as to pass between the strips as they come from the first set of saws and guide the said strips to the second set of saws. The rollers V *e* are replaced by others of proper shape to fit upon, hold, and guide the strips as they are being operated upon by the saws.

To adjust the machine for making moldings

the cutter-heads are provided with cutters of the desired shape, and the corrugated rollers V *e* are replaced by smooth rollers, so as to press the work down firmly upon the table, and thus insure the production of smooth work.

I am aware that it is not broadly new to cut a strip diagonally, so as to form two beveled strips; but

What I claim is—

1. In a hoop-machine, the combination, with the frame A, having guide-bar B, of the grooved table *d*, the separate guides *c*, and the grooved roller *e*, having a shaft, *f*, revolving at its forward part in vertically-sliding bearings *g*, held down by a spring, *j*, and revolving at its rear end in a hinged bearing, *m*, substantially as herein shown and described, whereby the strips of timber are held in place and guided to the saws, as set forth.

2. In a hoop-machine, the combination, with the frame A, having guide-bar B, the smooth table O, the grooved table *d*, having separate guides *c*, the grooved roller V, pivoted to a spring, W, and the spring-pressed grooved roller *e*, of the cutter-heads Q Z and the cutters P Y, made with tapering cutting-points and concaved cutting-shoulders, substantially as herein shown and described, whereby the timber is cut into oval strips, as set forth.

3. In a hoop-machine, the combination, with the frame A, having guide-bar B, the grooved table *d*, having separate guides *c*, and the spring-pressed grooved roller *e*, of the saws *p* and the inclined mandrel *q*, substantially as herein shown and described, whereby the oval strips, as they come from the cutters, are cut into beveled hoops, as set forth.

EDWARD E. THRESHER.

Witnesses:
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WALLIE E. THRESHER,
WM. MCNAMARA.