(No Model.)

3 Sheets—Sheet 1.

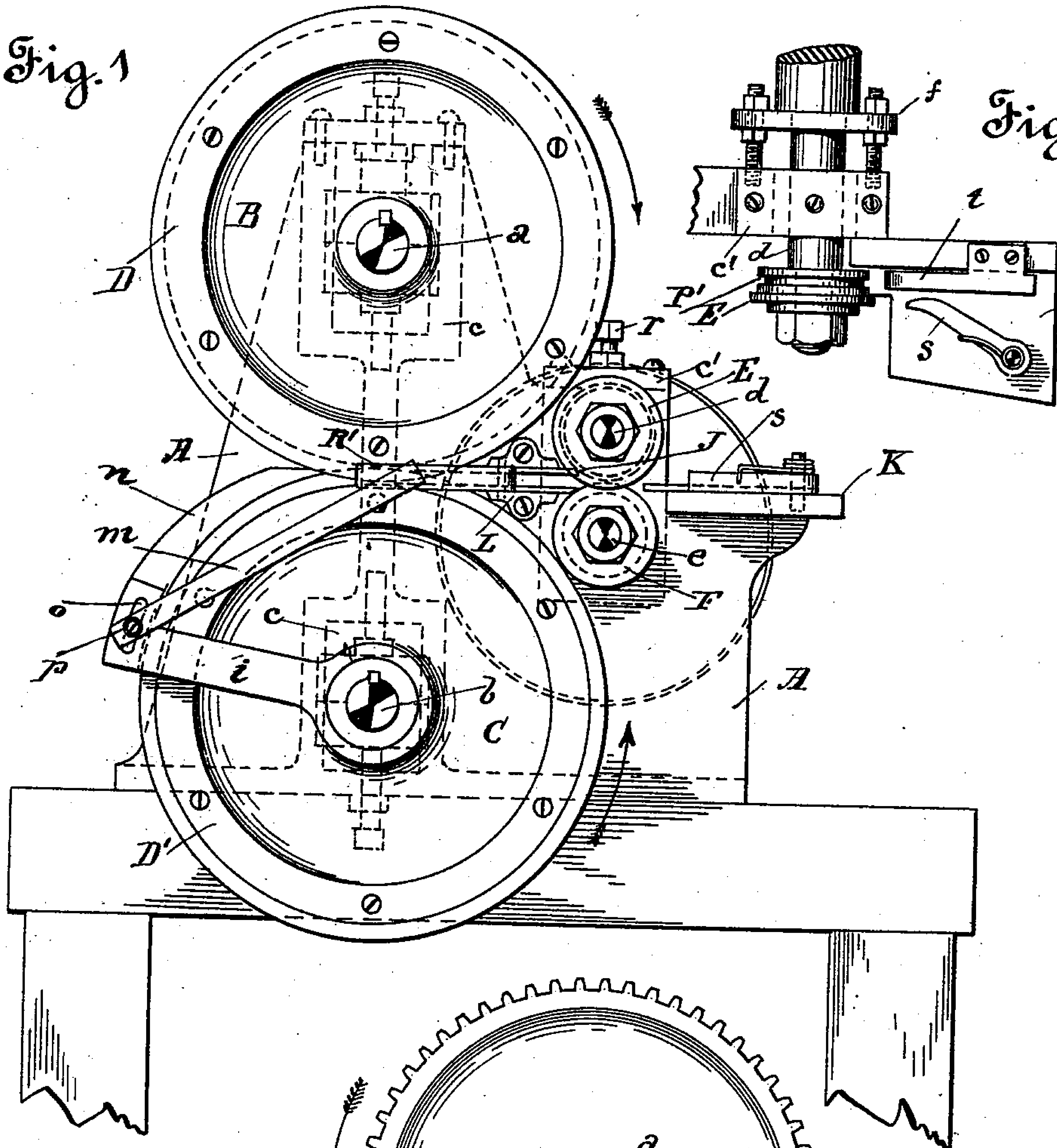
M. A. CLENNAM.

METAL CUTTING AND FOLDING MACHINE.

No. 547,750. Patented Oct. 8, 1895.

Fig. 1

Fig. 3.



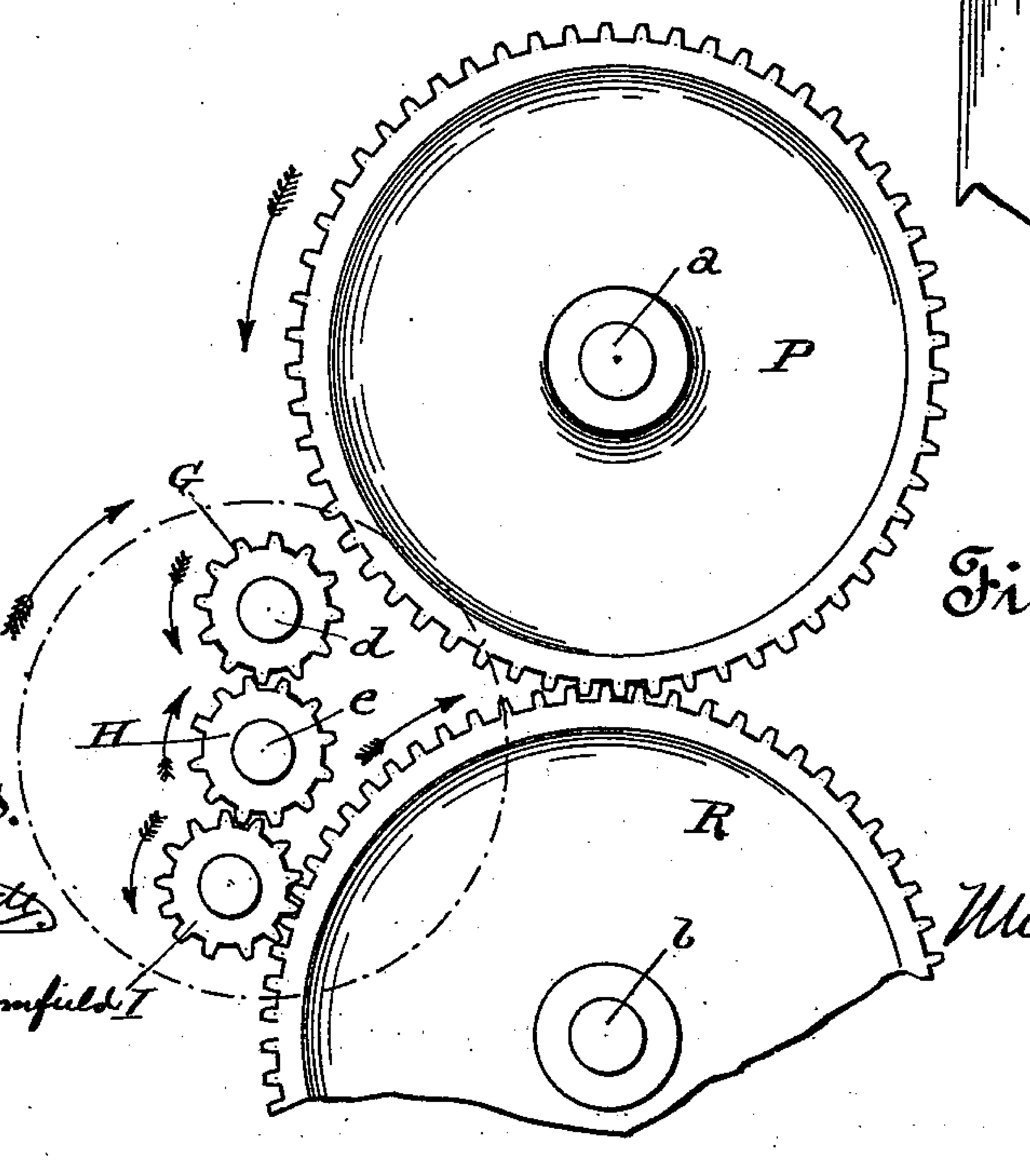


Fig. 2.

Witnesses.

H. J. Fortdeverde

James T. Bloomfield

Inventor.

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M. A. CLENNAM.

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Fig. 4.

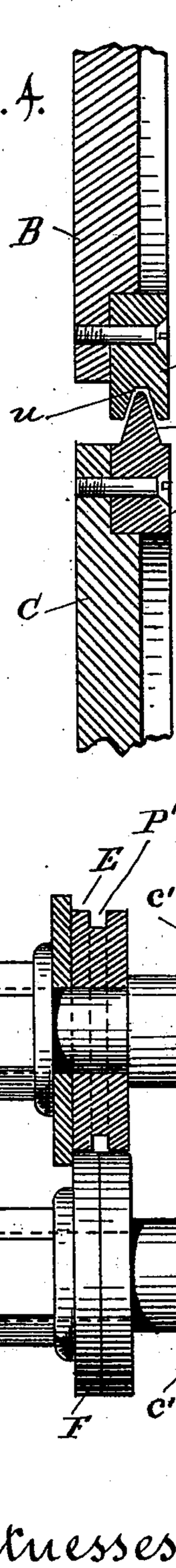

Fig. 6.

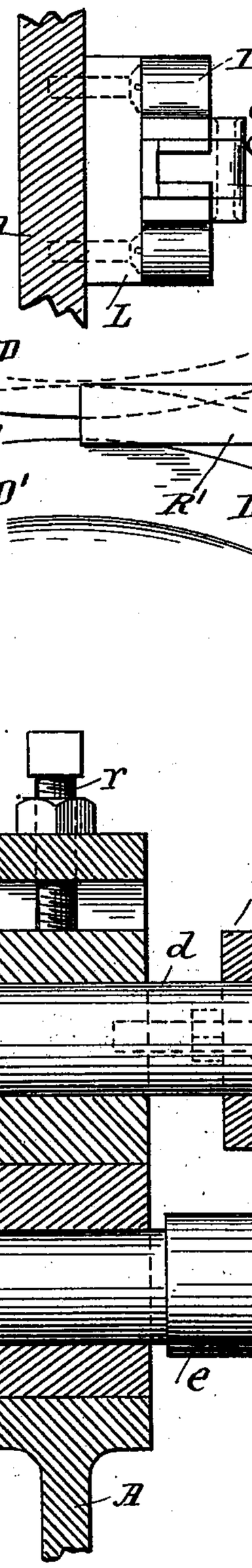

Fig. 5.

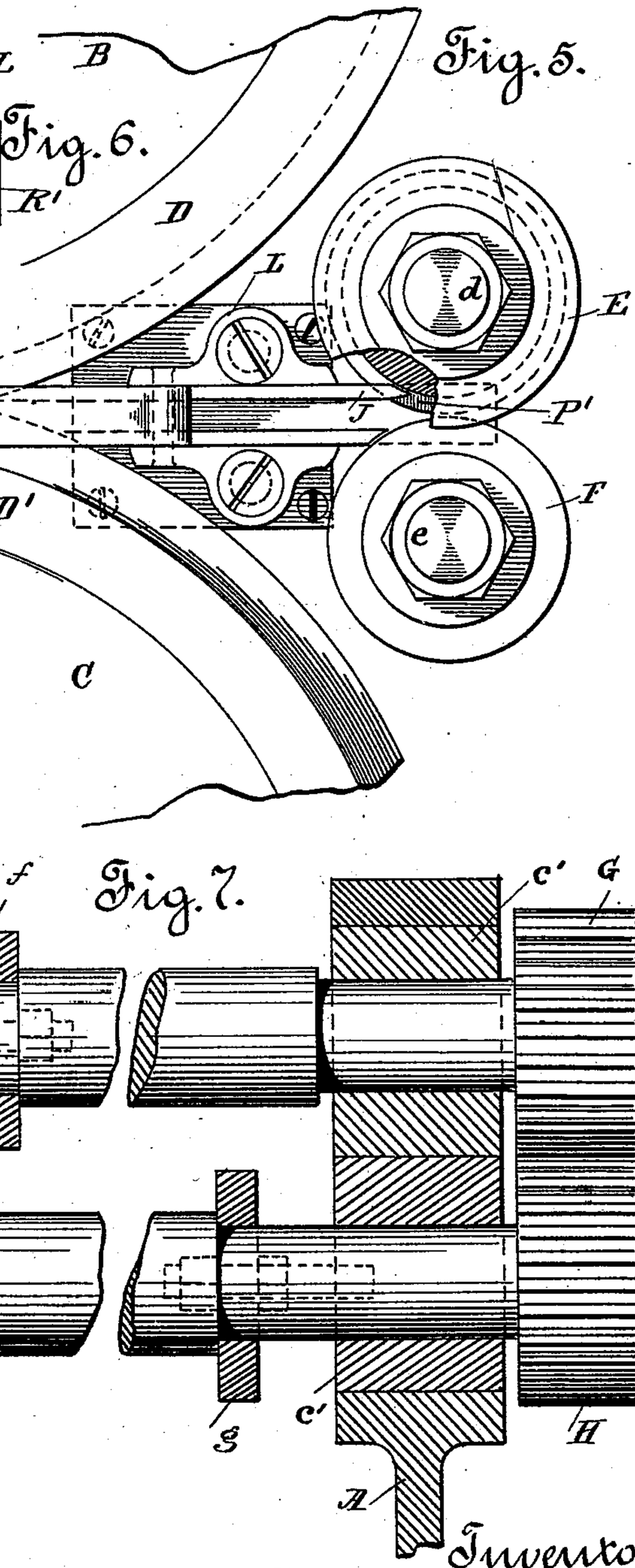

Fig. 7.

Witnesses.

F. L. Montenerdl.

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Fig. 8.

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(No Model.)

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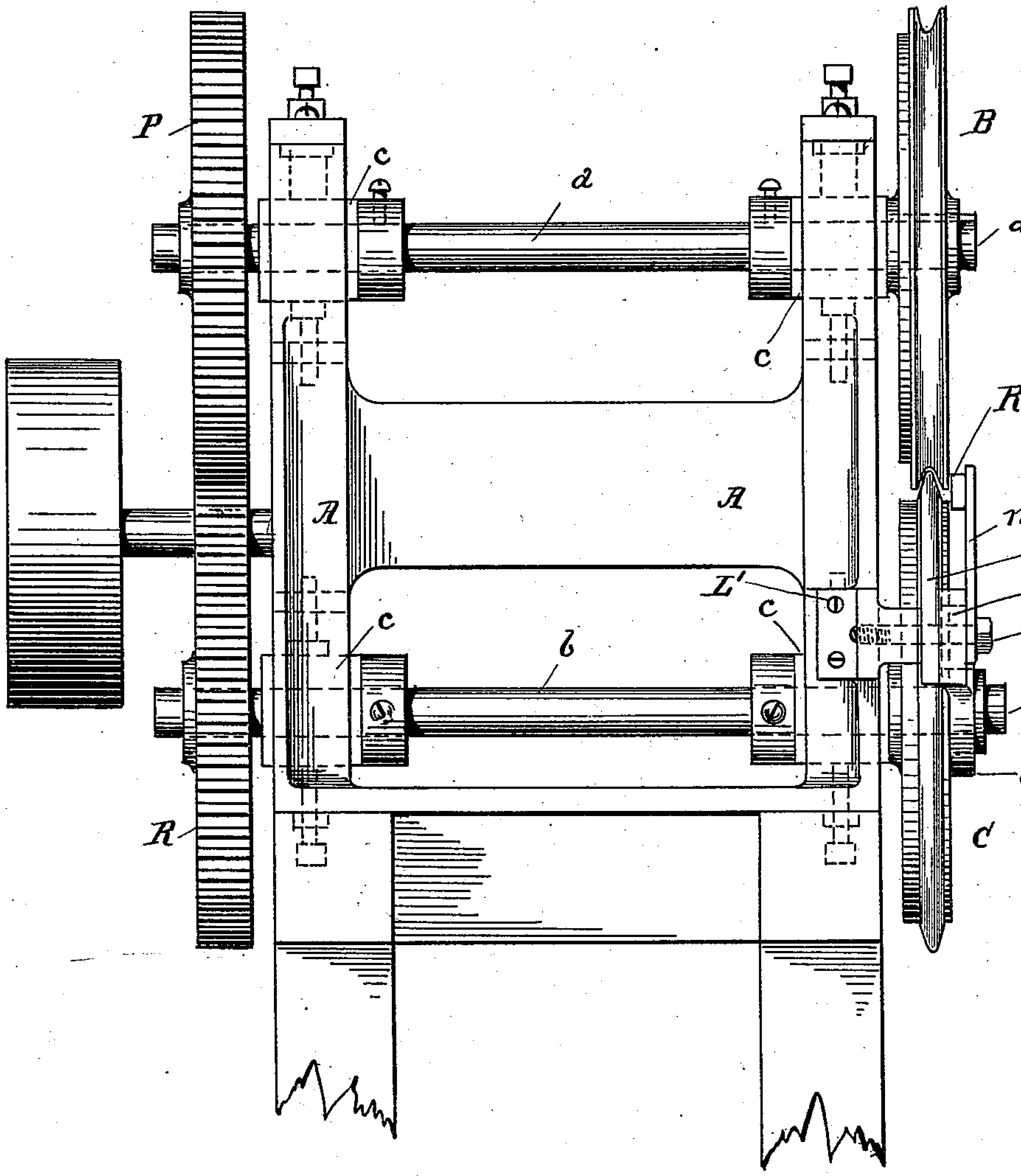
M. A. CLENNAM.

METAL CUTTING AND FOLDING MACHINE.

No. 547,750.

Patented Oct. 8, 1895.

Fig. 9.



Witnesses.

J. H. Monteverde.

George. Senn

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UNITED STATES PATENT OFFICE.

MILTON A. CLENNAM, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE WESTON BASKET AND MANUFACTURING COMPANY.

METAL CUTTING AND FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 547,750, dated October 8, 1895.

Application filed March 15, 1894. Serial No. 503,767. (No model.)

To all whom it may concern:

Be it known that I, MILTON A. CLENNAM, residing at San Francisco, county of San Francisco, and State of California, have invented a certain new and useful Improvement in Tin or Metal Cutting and Folding Machines, of which the following is a specification.

My invention relates to improvements in tin or metal cutting and folding machines consisting of two solid iron disks or wheels of large size set on the ends of two shafts, with boxings one above the other, each of said shafts having set upon the ends opposite to said disks large gear-wheels the cogs of which mesh into each other, said wheels and shafts being mounted and set into a frame or bed-piece constructed for the purpose, and having in front of said disks, their shafts, and cog-wheels two small solid friction-wheels, also set on the ends of two shafts, the one above the other, having small pinion or cog wheels set on the opposite ends of said shafts, the lower pinion-wheel meshing into a third cog-wheel as an idler, which also meshes into the lower large gear-wheel on shaft carrying lower disk, the lower shaft *b* being operated, when extended, by a driving-pulley, thus working the entire machine. The solid disks or large wheels have bands of steel screwed upon the side circumferences of them, so as to form a part of said disks or wheels. The band on the lower disk has a rounded edge and the band on the upper disk has a groove in it, into which said rounded edge of the lower band works for the purpose of shaping the tin or metal sheets that are drawn by the revolution of said disks between them. The small friction-wheels are made to revolve the one upon the surface of the other, the upper one being made in two parts—viz., the bearing-surface part and a steel rim fitted to it, the outer edge of which is sharp, so that as the narrow strips of tin are fed in between said bearing-surfaces and are drawn forward this steel rim acts as a knife or cutter, trimming off the outside edge of the strip, so as to leave the tin strip or metal piece of an even width, as may be required, and as the tin or metal strip is moved forward by the revolution of the wheels and comes in contact with the steel bands of the large disks the round tapering circumference of band on lower disk presses upon the center of it, bending it into the groove of the upper disk, giving it the required shape. A jaw-piece is fitted to the frame between the friction-wheels and the large disks, over and through which the metal strips are guided, on which jaw-piece are two tongues for the purpose of directing the metal strips straight forward. In order that it may come out from between said disks straight, there is fitted loosely on the end of the shaft and held in place by a collar a bracket-piece which slips at its larger end onto the hub or shaft end of the lower disk and extends along the side of said lower wheel or disk a little beyond the outer circumference of the same, where it is supported by being attached to the frame, and to the end of said bracket there is a circular finger-piece of iron attached, corresponding to the outside circumference of the disk and tapering to where the two disks come together, the tapering end extending itself under the groove of the tin or metal piece, supporting it and allowing it to be carried forward in a straight line when it is rightly adjusted on the end of said bracket. There is an opening in the end of said bracket through which a set-screw works, and which allows of its being moved upward or downward, as required, to place said finger-piece in the proper position. In front of the small friction-wheels and cutter is a feed-table with a guiding-piece set to the table and held in position by a spring which holds the tin strip or metal piece firmly in place against the opposite raised position of the feed-table as it passes to the friction-wheels and cutter. Said feed-table is, however, no part of my invention. The said shafts are held firmly in place in the said framework or bed-piece by the boxings fitted to them, as seen in the drawings. On the upper and lower shafts carrying the small friction and pinion wheels, at ends opposite to each other, is a collar-piece which fits closely about the shafts and against the boxing of the upper friction-wheel and against the boxing of the lower pinion-wheel. These collar-pieces may be adjusted as desired when there is any wear of the steel rim or cutter on the upper pinion-wheel acting on the edge of the lower pinion-wheel as a pair

of shears in cutting the metal strip, so that said pinion-wheels may revolve accurately with each other. To take up the wear of the cutting-edges of E and F, they are adjusted to be kept with their cutting or shearing edges close to each other by the collars *f* and *g*, which are adjusted by two screws, one on each side of same, (shown in plan, Fig. 3,) by which the collars are forced inward from the frame or boxings. The collars *f* and *g* are forced inward from the frame by the two studs firmly screwed into the side of the frame, and the collars slipping upon these studs or bolts are held in place and regulated by the check-nuts on each stud, one on each side of the collar. In this manner the said collars are made to recede or approach the inner face of the frame, and are securely held in the position required by the said check-nuts. These collar-pieces are very necessary to the said shafts to keep them always in the proper relation to each other in carrying said wheels and pinions with exactness.

I attain the objects of my invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the machine. Fig. 2 is a back end elevation of the driving-gears of the machine. Fig. 3 is a detailed top plan of the feeding table and cutter. Fig. 4 is a detail of the shaping-wheel and rims. Fig. 5 is a detail of cutting and feeding rollers and guide in end elevation; Fig. 6, (back end elevation,) a detail of guide-plate; Fig. 7, a detail of rollers and shafts. Fig. 8 is a folded metal strip as formed by the machine; Fig. 9, a discharge end elevation of the machine.

A represents the frame-support or bed-piece; B, the upper disk or wheel on the end of upper shaft; C, the lower disk or wheel on the end of lower shaft, said disks or wheels being solid metal pieces; D and D′, steel bands which are screwed onto said disks B and C. The band on the upper disk or wheel has a groove in the outer circumference, and the band on the lower disk or wheel has a round tapering circumference, which fits and works within the groove formed in the band around the upper wheel. These bands on said disks are fastened or secured rigidly upon the solid part or plate of the same.

a is the shaft carrying the upper disk or wheel.

b is the shaft carrying the lower disk or wheel.

On the ends opposite to the disks or wheels B and C are the large gear-wheels P and R.

c is the boxing on the ends of the shafts *a* and *b*.

E is the small friction-wheel on upper shaft *d*, and F is the small friction-wheel on lower shaft *e*, said shafts having on the opposite ends the pinions G and H, set in the boxings *c′* and meshing into the idler-wheel I, which also meshes into the lower gear-wheel R, communicating motion to it, which also meshes into gear-wheel P and communicates motion to it.

The upper friction-wheel is made in two parts—viz., the solid friction and the inside part and the outer part, having a little larger circumference with a sharp edge, the same being made of hard steel to be used as a cutter in trimming off the edge of the tin or metal strips that are fed into and pass between said friction-wheels.

P′ is a groove in the friction-wheel for the entrance of tongue J.

J is a tongue on the jaw and guide piece, which extends a little into the groove in the friction-wheel to prevent the tin or metal strip from turning upward as it passes from between the friction-wheels into the jaw and guide piece.

L is the jaw and guide piece, through which the metal strip passes from the cutter and friction-wheels to the disks or larger wheels, where it is caught and partly folded or shaped by being pressed into the groove of the upper wheel by the rounded rim or circumference of the lower disk, as shown in the drawings.

R′ is a tongue pivoted on the jaw-piece, guiding the tin or metal strip between bands D and D′ for the purpose of having the metal strip enter the groove centrally over the oval or rounded rim of the lower disk, being fastened so as to allow of some play and the action of the spring, and is held in place by spring-piece *m*. On the end of the shaft, outside the lower disk or wheel, a bracket-piece is fitted loosely at its larger end and is held thereon by a collar, which also holds it closely to the outer surface of said disk or wheel, and said bracket extends a little beyond its outer circumference, at which end an arc-shaped finger-piece *n* is attached, running to a point on its lower side for the purpose of guiding the folded metal strip as it passes out from between the shaping disks or wheels and for keeping it straight as it leaves the machine. In the end of said bracket where the finger-piece is attached there is a slot *o*, through which a set-screw *p* passes into the end of the finger-piece, so that its position may be exactly fixed to guide said strip and keep it straight as it emerges from between the disks.

m is a straight metal piece, the lower end of which is also attached to the outer end of said bracket by means of said set-screw *p*, by which the said piece is held at its extremity against the tongue R′, keeping it in place, and also acting as a spring in allowing the tongue to slide over any unevenness there may be on the edge of said strip.

K is the feed-table, having the spring-piece *t*, under which the metal strip is passed as it enters between the friction-wheels and the cutter, and having also the finger-piece with spring, and held by a set-screw for the purpose of holding the metal strip in a straight position.

r is the set-screw holding the boxing *c′* in place. *f* and *g* are collars on shafts fitting against shoulders upon same and held in position by two bolts, each fitting against the

boxing, so as to adjust the pinions and friction-wheels when the latter become worn by use.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. A tin or metal cutting and folding machine consisting of the frame support or bed piece, A; the shafts, *a* and *b*, set in said bed-piece; the large wheels or disks, B and C, on the end of said shafts; the steel bands, D and D′ secured to said wheel or disks and made a part of the same, forming the outer circumference to form a shaper for shaping the tin or metal strips; the groove, *u*, formed in band, D, and the rounded tapering circumference, *v* formed on D′, which works into said groove, the two operating as a shaper in forming the folded metal strip; the gear wheels, P and R, on the ends of said shaft opposite to said wheels or disks; the shafts, *d* and *e*, carrying on the ends, the friction wheels, E and F; the pinion wheels, G and H, on the opposite ends of said shafts; the idler wheel, I, communicating motion to the large gear wheel, R; the jaws or guide piece, L, for guiding and holding the metal strips in place; the tongue, J, on jaw piece, the end of which extends into the groove of upper friction wheel and prevents the tin or metal strips from turning upward, as they emerge from between the friction wheels; P′, a groove in the upper friction wheel into which said tongue extends as aforesaid; the tongue, R′, on the jaw piece guiding the tin or metal strips forward to shaping wheels; the bracket, *i*, on the end of shaft *b* attached to frame A; the finger piece, *n*, attached to the outer end of said bracket for guiding and keeping the same straight as it leaves the shaping wheels; the spring and guide piece, *m;* also secured to the end of said bracket for retaining the tongue R′ in place; the slot, *o*, in the end of said bracket, and the set screw, *p*, for securing and adjusting the finger piece, *n*, so that it may guide the metal strip straight, as it emerges from the shaping disks; the boxings, *c*′, the set screw, *r;* and the collars, *f* and *g*, for adjusting shafts,—substantially as herein described and set forth.

2. In a tin or metal cutting and folding machine, the combination of the solid disks or wheels, B and C, with the shaping and folding bands, D and D′, screwed on to the outer circumference of said disks; the groove *u*, in band D, and the rounded tapering circumference *v* on band D′ for shaping the metal strip; the shafts, *a* and *b;* the gear wheels, P and R, on the ends of said shafts meshing into each other; the shafts, *d* and *e;* the friction wheels, E and F, on the ends of said shafts, the upper wheel being in two parts, the solid friction bearing part, and the outside cap or surface part secured to said solid friction part made of steel, with a sharp circumference for cutting the metal strip as it passes between said friction wheels; the groove, P′, the tongues, J and R′, on the jaw piece for guiding said strips; the pinion wheels, H and G, on the ends of said shafts meshing into each other; the idler wheel, I, meshing into the lower pinion wheel, H, for communicating motion to gear wheel, R; the jaw piece, L, through which said metal strips pass, guiding them to the shaper; the bracket, *i*, on the end of shaft *b* attached to frame A; the finger piece, *n*, secured to the outer end of said bracket for keeping the metal strips straight as they emerge from the disks, wheels or shaper; the guide and spring piece, *m*, secured to said bracket for retaining tongue R′ in place; the slot, *o;* and the set screw, *p*, for holding and adjusting the finger piece, *n*, and for holding in place the guiding piece, *m;* the boxings, *c*′; the set screw, *r*, and the collars, *f* and *g*, for adjusting the shafts, *d* and *e;* substantially as herein described and set forth.

3. In a tin or metal folding machine, the combination of the bands, D and D′, secured to the wheels or disks, B and C, set on shafts, *a* and *b;* with the groove, *u*, and the rounded tapering circumference, *v*, fitting into said groove; the solid wheels or disks, B and C; the gear wheels, P and R; the shafts, *d* and *e;* the friction wheels, E and F; the pinion wheels, G and H, meshing into each other; the idler wheel, I, meshing into the pinion wheel, H, communicating motion to the gear wheel, R; the jaw piece, L, for holding and guiding said strip; the groove, P′; the tongues, J and R′, on the jaw piece for guiding the metal strips; the bracket, *i*, on the end of shaft *b* attached to frame A; the finger piece, *n*, secured to the outer end of said bracket piece; the guide and spring piece, *m*, also secured to the end of said bracket for retaining metal strips in place; the slot, *o*, in the end of said bracket; the set screw, *p*, for securing and adjusting the finger piece, *n*, so that it may guide the metal strip straight as it emerges from the shaping wheels; the boxings, *c*′; the collars, *f* and *g*, for adjusting the shafts; and the set screw, *r*,—substantially as herein described and set forth.

4. In a tin or metal cutting and folding machine, the combination of the friction wheel, E, on shaft, *d*, being in two parts, having secured to its wheel or bearing part a steel cap or surface part, the outer circumference of which is sharp and acts as a cutter, trimming off the outer edge of the tin or metal strips as they pass between the said friction wheels; with the friction wheel, F, on shaft, *e;* the pinions, G and H; the idler, I, meshing into H, and communicating motion to R, which operates the gear wheel, P, and disk wheels, B and C, having secured thereon and made a part of same, the bands, D and D′, having groove, *u* in D, and round tapering circumference, *v*, on D′; the jaw piece, L; the groove, P′; the tongues, J and R′ on said jaw piece for guiding the metal strips; the bracket, *i;* the finger piece, *n*, secured to the end of the bracket; the guide and spring piece, *m*, also

secured to said bracket; the slot, *o;* the set screw, *p*, for securing and fastening said finger piece; the collars, *f* and *g;* and the boxing, *c'*,—substantially as herein described and set forth.

5. In a tin or metal cutting or folding machine, the combination of the bracket, *i*, on the end of shaft, *b*, attached to frame A having slot, *o;* with finger piece, *n*, secured to said bracket by means of set screw, *p*, through said slot,—substantially as herein described and set forth.

MILTON A. CLENNAM.

Witnesses:
GEORGE SENN,
WILLIAM FITZGERALD.