(No Model.) 3 Sheets—Sheet 1.

J. BOTT.

MACHINE FOR CUTTING METAL STRIPS, RODS, &c.

No. 546,726. Patented Sept. 24, 1895.

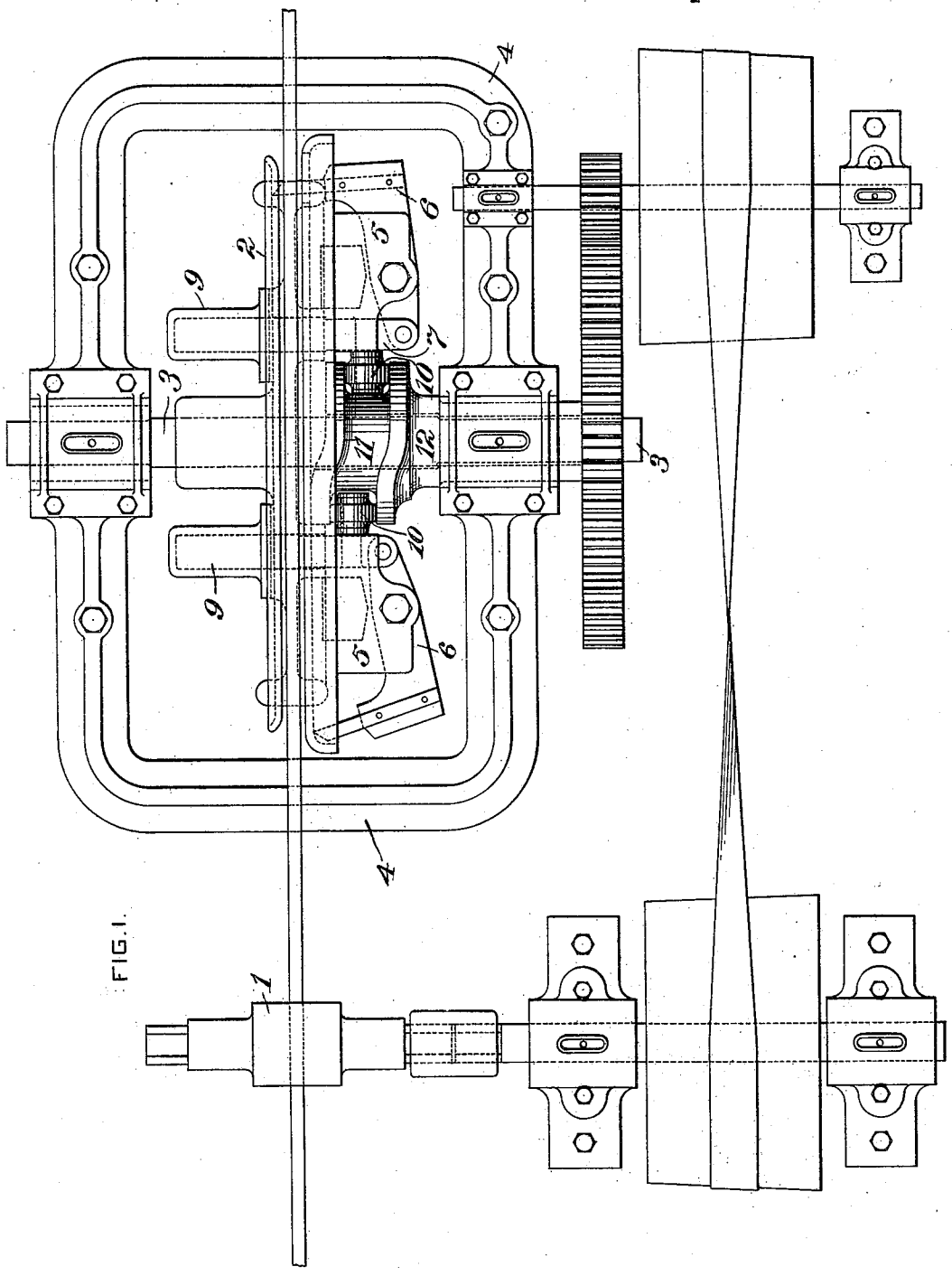

FIG. 1.

WITNESSES

Chas. F. Miller.

F. E. Gaither

INVENTOR

John Bott

by Damon S. Wolcott

Atty

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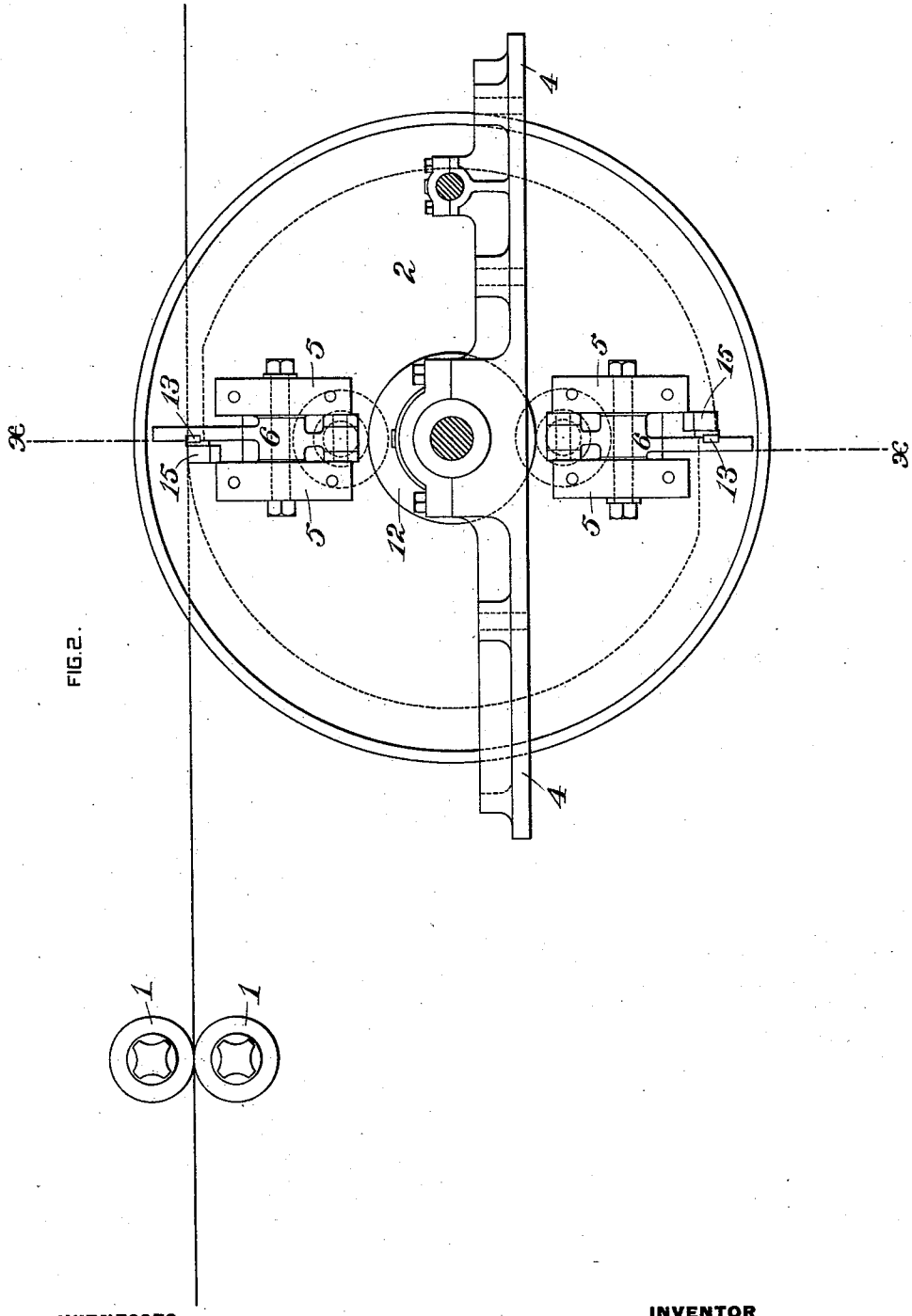

FIG. 2.

WITNESSES

Chas. F. Miller.

F. E. Gaither

INVENTOR

John Bott

by Darwin S. Wolcott

Atty

(No Model.) 3 Sheets—Sheet 3.

J. BOTT.

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FIG. 3.

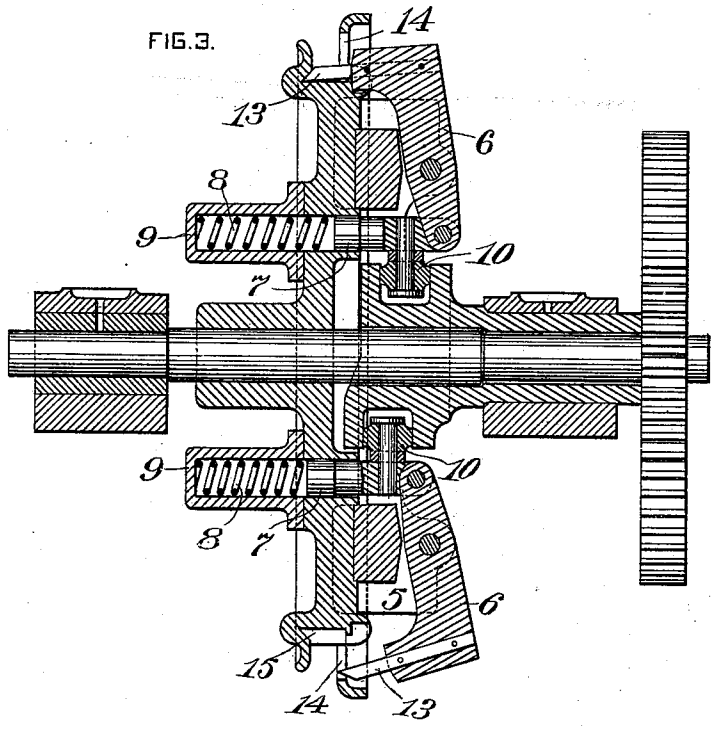
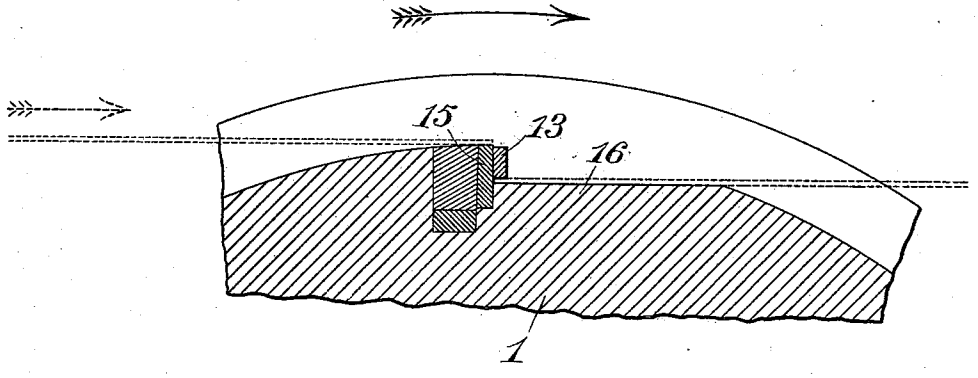


FIG. 4.



WITNESSES

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F. E. Gaither.

INVENTOR

John Bott

by Damon S. Wolcott

Atty

UNITED STATES PATENT OFFICE.

JOHN BOTT, OF YOUNGSTOWN, OHIO.

MACHINE FOR CUTTING METAL STRIPS, RODS, &c.

SPECIFICATION forming part of Letters Patent No. 546,726, dated September 24, 1895.

Application filed April 12, 1895. Serial No. 545,472. (No model.)

To all whom it may concern:

Be it known that I, JOHN BOTT, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented or discovered certain new and useful Improvements in Machines for Cutting Metal Strips, Rods, &c., of which improvements the following is a specification.

The invention described herein relates to certain improvements in mechanism for cutting metal strips, rods, or wire into suitable lengths for bale-bands, hoops, &c., as such material comes from the reducing-rolls, whereby considerable labor and expense in the manufacture of hoops, bands, &c., are avoided.

In general terms the invention consists in the arrangement of the cutting mechanism upon a suitable carrier, which is adapted to be shifted in the same direction and at or about the same speed as the strips, rods, or wire as they come from the reducing-rolls.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of my improved cutting mechanism, showing its arrangement in relation to a pair of feed or delivery rolls—as, for example, the last pair of rolls of a reducing-train. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional elevation, the plane of section being indicated by the line $x\,x$, Fig. 2; and Fig. 4 is a sectional detail view on an enlarged scale.

In the practice of my invention as applied to the cutting of hoops the cutting mechanism (one, two, or more in number, dependent upon the length of sections to be cut) is mounted upon a suitable carrier—as, for example, a disk wheel or drum—arranged in the line of movement of the metal strip as it comes from the last pair of rolls 1 of a reducing-train and adapted to be shifted in the same direction and at or about the same speed as the metal strip.

In the embodiment of my invention as shown in the drawings, the cutting-mechanism carrier consists of a wheel or drum 2, secured on a shaft 3, which is mounted in suitable bearings on a suitable frame 4, as clearly shown in Figs. 1 and 2. This wheel or drum is provided with a peripheral groove, into which the metal strip is guided as it comes from the rolls 1.

The sets of housings 5 are bolted to one side of the wheel or drum on opposite sides of the axis of the latter. In these housings are mounted radially levers 6, provided at their inner ends with plungers 7, which pass through openings in the web of the wheel or drum and bear at their free ends against springs 8, arranged in sockets 9 on the web of the wheel or drum. Pins provided with antifriction-rollers 10 are attached to the plungers or the inner ends of the levers and project into a cam-groove 11, formed in the periphery of a collar or sleeve 12, surrounding the shaft 3, but held from rotation therewith by one of the bearings of the shaft on the frame 4, as clearly shown in Fig. 3.

Cutting-blades 13 are so attached to the outer ends of the levers 6 as to project through slots 14 in one of the peripheral flanges of the wheel or drum and operate in conjunction with the cutting-blades 15, arranged transversely of the peripheral groove of the wheel or drum to cut the strip.

The wheel or drum is driven from the shaft of the rolls 1, or may be driven independently of the rolls, but in either case the peripheral speed of the bottom of the groove should be the same or approximately the same as the onward movement of the metal strip as it comes from the rolls.

As shown in Fig. 2, the cutting mechanism is arranged in such relation to the rolls 1 that the metal strip will be tangential with or bear only on that portion of the bottom of the peripheral groove which is uppermost, and the sleeve 12 is so adjusted as to operate the levers to effect the cutting operation only when the fixed blades have reached the point where the strip is tangential with the bottom of the groove.

Although the wheel or drum has a peripheral speed equal or nearly equal to the onward movement of the strip, yet, by reason of the angular movement of a point on the drum and the straight movement of the strip, points on the drum or strip will move in unison only where they are in contact. Hence as the slightest stoppage of the strip is very liable to cause the latter to kink and tangle up it is necessary not only to effect the cutting when the strip and cutting mechanism are moving in unison, but also to remove the movable cutting-blade out of the path of the

strip. To effect this function, the cam-groove is so constructed as to cause the movable blade, in its cutting movement, to pass down entirely below the bottom of the peripheral groove in the wheel, as shown in Fig. 4, thereby permitting the end of the on-coming strip to pass over the movable cutting-blade as the latter begins to have a slower onward movement than the strip.

As shown in Figs. 2 and 4, recesses 16 are formed in the bottom of the peripheral groove, in front of the fixed blade, for the reception of the rear ends of the severed sections, which are pressed down into said recesses by the movable blade. As the cutting operation does not in any way check the onward movement of the strip or severed section, the latter will usually move clear of the wheel or drum by its own momentum, but if the momentum is not sufficient for that purpose the shoulders formed at the rear ends of the recesses 16 will push the several sections onward to clear the wheel or drum.

The cam-groove is constructed to hold the movable blade down below the bottom of the peripheral groove, at least until all liability of contact of the movable blade with the on-coming strip is past. As a matter of fact, the movable blade is usually held in its closed position until it has been carried through an arc of about ninety degrees.

While the springs 8 are not necessary, their use is preferred as insuring the prompt and rapid action of the movable cutting-blade.

As hereinbefore stated, one, two, or three or more cutting devices may be arranged on the wheel or drum, dependent upon the length of sections to be cut.

While my improvement is shown and described in connection with the last or delivery pair of rolls of a reducing-train, for the reason that it is generally preferable to cut up the material into the desired lengths as soon as it is rolled, the two operations—*i. e.*, reducing and cutting to length—need not be in immediate sequence, and when such operations are separated any suitable form or construction of rolls or other feed mechanism may be employed for feeding the material to the cutting mechanism.

I claim herein as my invention—

1. In a mechanism for cutting metal strips, rods, &c., the combination of mechanism for moving the strips, rods, &c., longitudinally, a wheel or drum arranged in the line of feed of such mechanism and adapted to be driven at a peripheral speed approximately equal to the onward movement of the strip or rod, one or more pairs of cutting blades arranged transversely of the face of the wheel or drum, and means for operating the cutting blades during the rotation of the wheel or drum, substantially as set forth.

2. In a mechanism for cutting strips, rods, &c., the combination of a rotating wheel or drum, one or more cutting blades arranged transversely of the face of the wheel or drum, and stationary with respect thereto one or more movable cutting blades mounted on the wheel or drum in operative relation to the stationary blades, means for operating the movable blade or blades during the rotation of the wheel or drum, and one or more recesses in the face of the wheel or drum in front of the stationary cutting blade or blades, substantially as set forth.

3. In a mechanism for cutting strips, rods, &c., the combination of a rotating wheel or drum provided with one or more recesses in its face, one or more cutting blades arranged, at the rear ends of the recess or recesses with their upper edges flush or approximately flush with the periphery of the wheel or drum, and stationary with respect thereto, one or more movable cutting blades mounted on the wheel or drum in operative relation to the stationary blade or blades, and means for shifting the movable blade or blades to a position wholly behind the stationary blade or blades, substantially as set forth.

4. In a mechanism for cutting strips, rods, &c., the combination of a rotating wheel or drum, one or more cutting blades arranged transversely of the wheel or drum, and stationary with respect thereto, one or more radial levers pivotally mounted on the wheel and provided with cutting blades, a stationary sleeve surrounding the shaft of the wheel or drum, and provided with a cam groove for operating the lever or levers, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JOHN BOTT.

Witnesses:
DARWIN S. WOLCOTT,
F. E. GAITHER.