

No. 753,681.

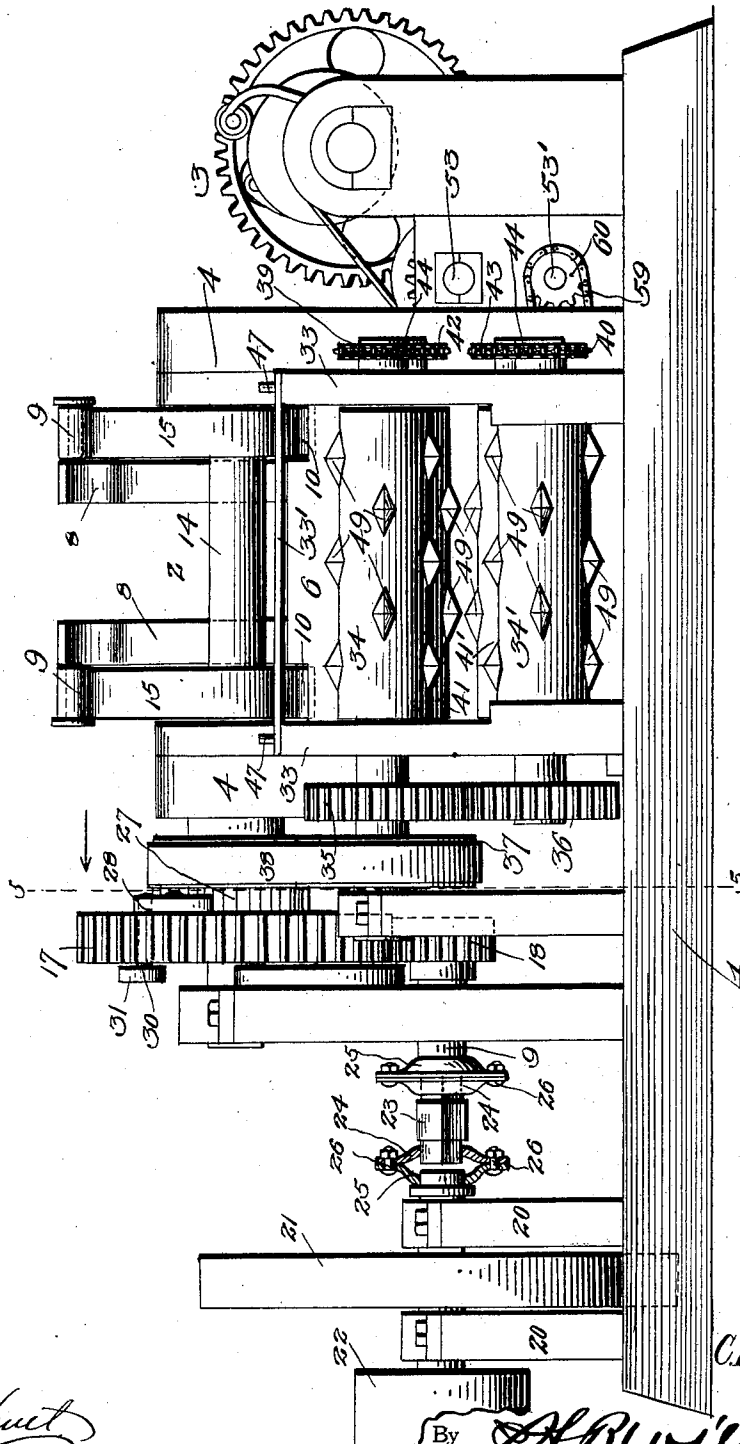
PATENTED MAR. 1, 1904.

C. F. DEITRICK.
METAL CUTTING SHEARS.
APPLICATION FILED JULY 27, 1903.

NO MODEL.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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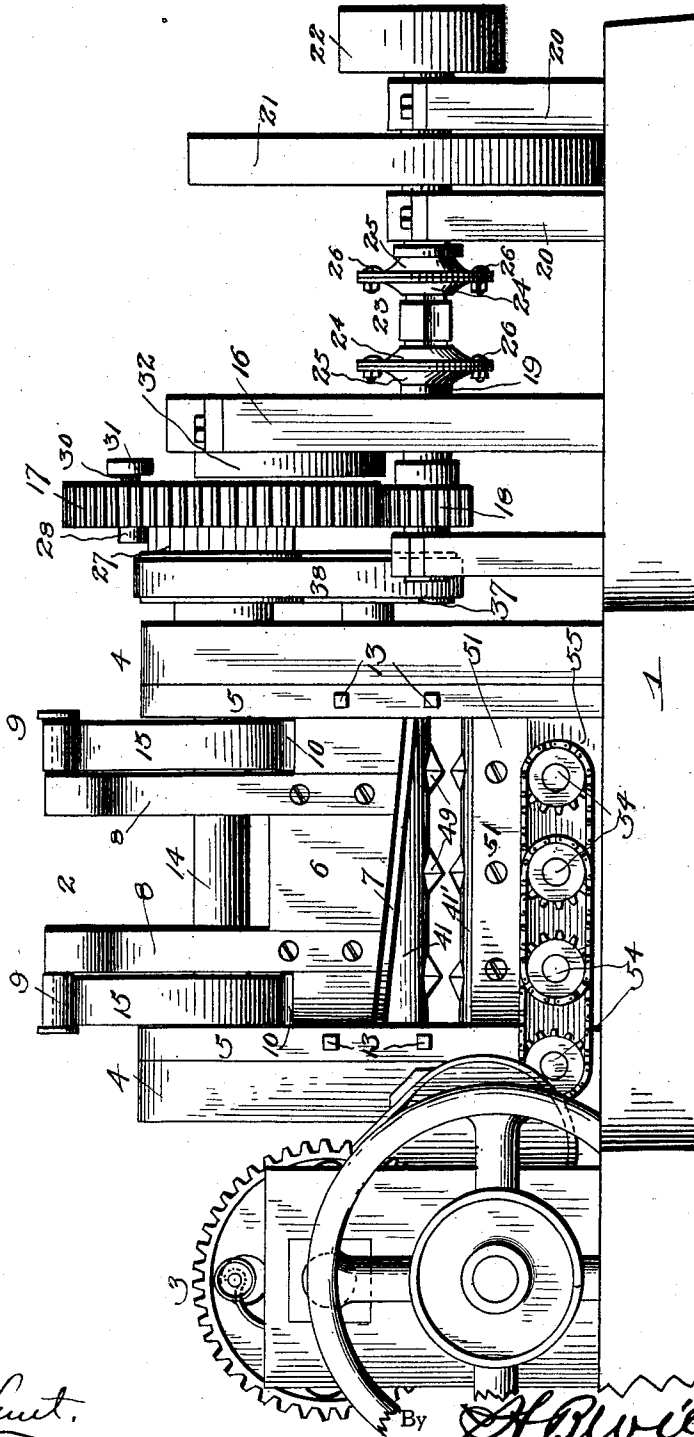
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5 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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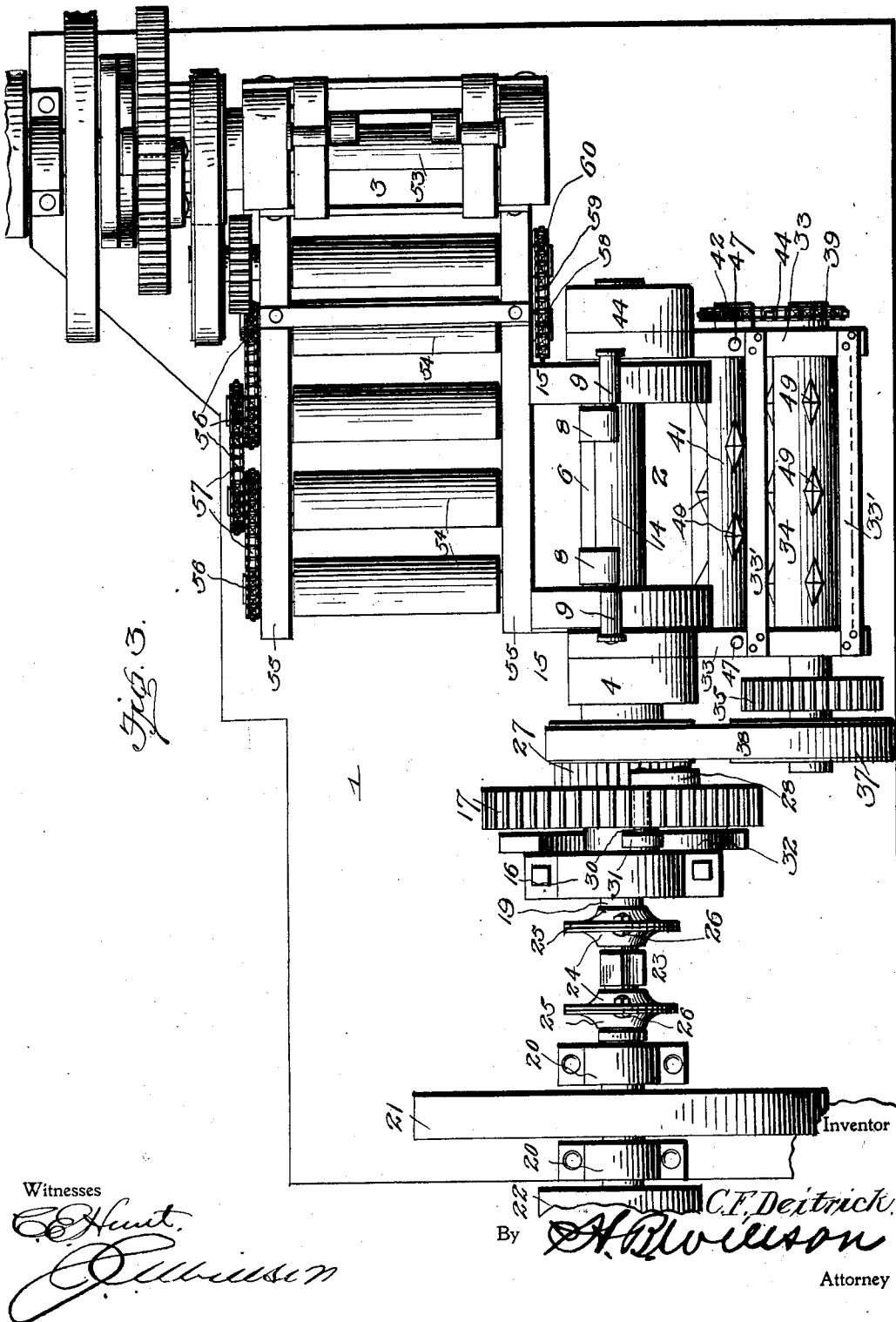
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5 SHEETS—SHEET 3.



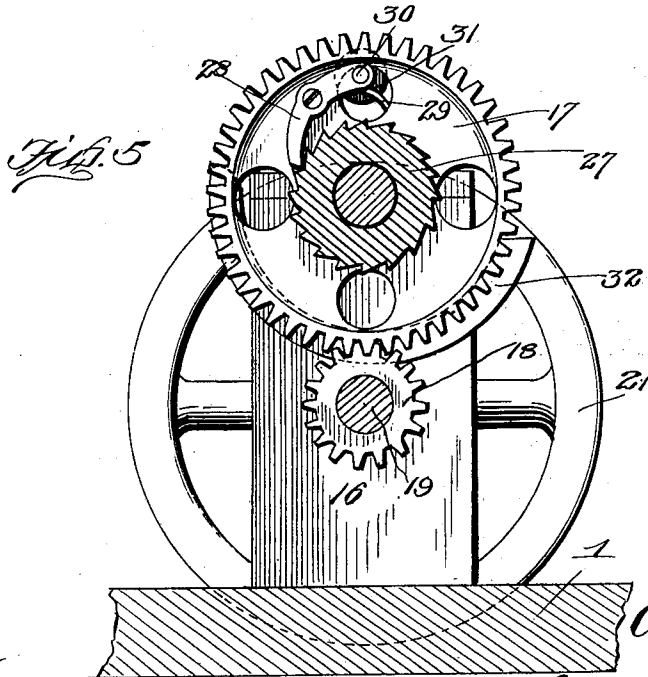
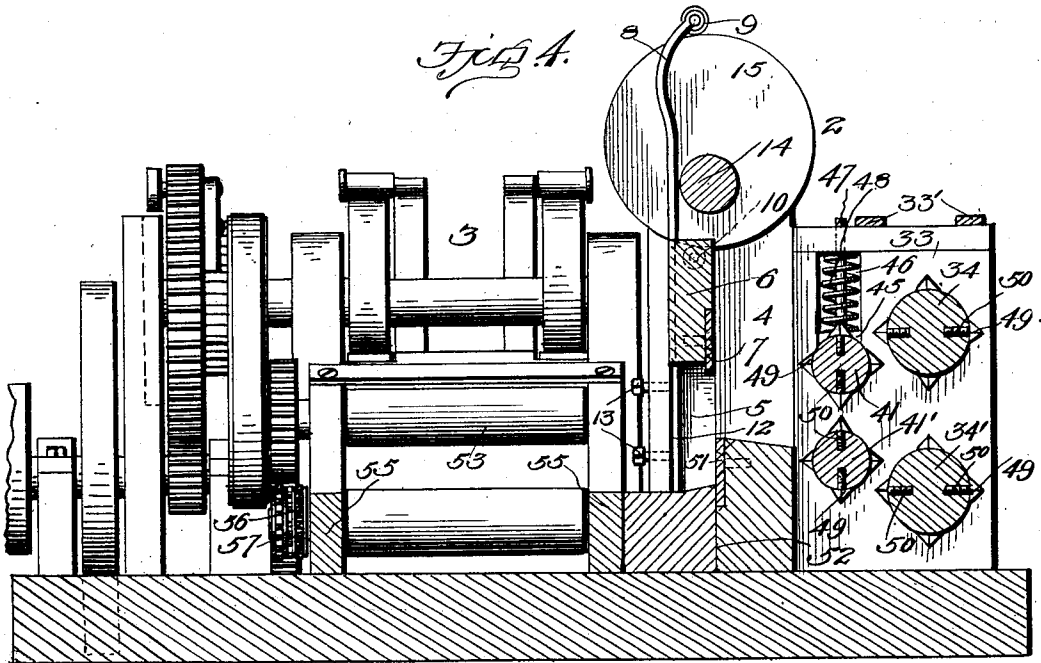
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5 SHEETS—SHEET 4.



Witnesses

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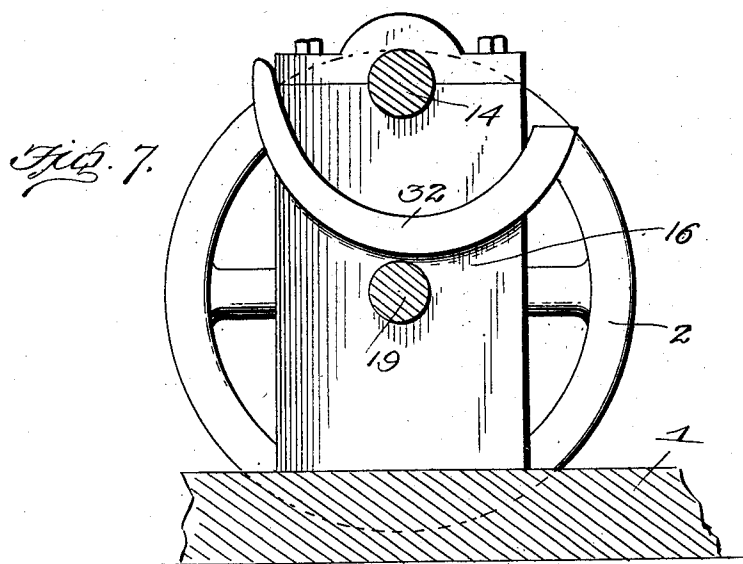
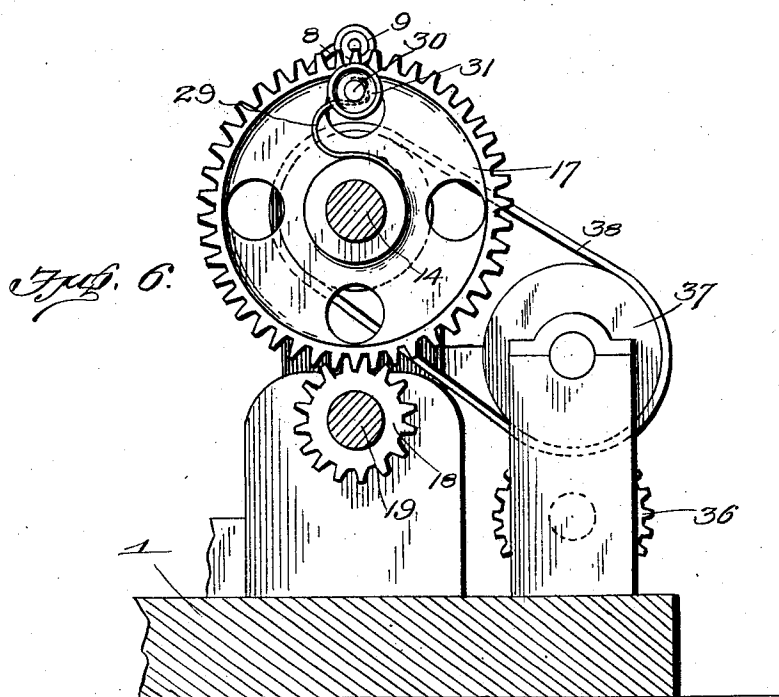
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NO MODEL.

5 SHEETS—SHEET 5.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES F. DEITRICK, OF BERWICK, PENNSYLVANIA.

METAL-CUTTING SHEARS.

SPECIFICATION forming part of Letters Patent No. 753,681, dated March 1, 1904.

Application filed July 27, 1903. Serial No. 167,199. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. DEITRICK, a citizen of the United States, residing at Berwick, in the county of Columbia and State of Pennsylvania, have invented certain new and useful Improvements in Metal-Cutting Shears; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to metal-cutting shears.

The object of the invention is to provide a machine which will be especially adapted for cutting scrap-iron, bunches of old wire, and the like.

Another object is to provide such a machine in which means are provided for stopping the feed of the metal while the shears are in the act of cutting, thereby preventing the metal from becoming jammed up against the knives.

A further object is to provide a machine of this character which will be simple in construction, strong and durable, efficient in operation, and which will cut the material fed thereto in two directions.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front elevation of the machine. Fig. 2 is a rear view. Fig. 3 is a top plan view. Fig. 4 is a transverse vertical sectional view through the primary cutting-blades and feed-rolls, looking toward the secondary cutting mechanism. Fig. 5 is a similar view on the line 5 5 of Fig. 1 looking in the direction of the arrow. Fig. 6 is a sectional view showing the opposite side of the driving-gears to that shown in Fig. 5; and Fig. 7 is an inner side view of one of the supporting-standards of the operating-shaft showing the construction of the cam which operates the pawl to throw the feed-rolls out of gear.

Referring more particularly to the accompanying drawings, 1 denotes the base, 2 de-

notes the primary cutting mechanism, and 3 the secondary cutting mechanism.

The primary cutting mechanism consists of a pair of standards 4, suitably bolted to the base 1 and provided with vertical guideways 5, in which is adapted to travel a reciprocating knife-carriage 6, to which is removably secured the movable blade 7 of the shears.

8 denotes arms fixed to and projecting upwardly from the carriage 6, said arms being curved at their upper ends, as shown, and carrying laterally-projecting friction-rollers 9. In the upper edge of the knife-carriage, adjacent to the ends of the same, are journaled other friction-rollers 10.

12 denotes wear-plates arranged in the guideways 5 and adjustably secured to the rear walls of the same by means of set-screws 13. Thus by adjusting the plates 12 the wear of the knife-carriage may be taken up and the knife-blades kept in proper cutting relation.

14 denotes an operating-shaft journaled in bearings in the upper ends of the standards 4, and on said shaft are fixed two cam-disks 15, one of which is arranged over each of the friction-rollers 10 and engages the friction-rollers 9 on the arms 8.

One end of the shaft 14 projects beyond its supporting-standard and is journaled in an auxiliary standard 16. On the shaft 14 adjacent to the standard 16 is fixedly mounted a master gear-wheel 17, which is in mesh with a gear-pinion 18, mounted on a drive-shaft 19, which is suitably journaled in the lower portion of the standard 16 and in short standards 20. The shaft 19 is immediately below the shaft 14 and is made up of sections, an outer section carrying a fly-wheel 21 and a power-wheel 22, an inner section carrying the gear-pinion 18, and a middle square section 23. On the square ends of the middle section 23 are slidably-mounted concave disks 24. On the adjacent ends of the outer and inner shaft-sections are fixedly mounted concave disks 25. The disks 24 and 25 are provided with bolt-holes, and the concave faces of the same are adapted to be brought together and securely connected by bolts 26, as shown. This construction serves to weaken the shaft somewhat

at this point, so that should an obstruction be brought under the knife which the same could not cut the shaft would be broken at this weak point, thereby preventing the knife or other expensive parts of the machine from breaking. The shaft when broken at this point may be quickly and inexpensively repaired.

27 denotes a combined belt and ratchet-wheel loosely mounted on the shaft 14 between the gear-wheel 17 and the standard 4. The wheel 27 is adapted to be intermittently locked to and released from the shaft 14 by means of an automatically-operated pawl 28, which is pivoted to the inner face of the gear-wheel 17.

The pawl 28 is normally held in engagement with the ratchet-teeth of the wheel 27 by means of a spring 29, which bears against a pin or stud 30, projecting laterally from the end of the pawl through an opening in the wheel 17. The pin or stud 30 is provided on its free end with a friction-roller 31, which when the wheel 17 is rotated will be brought into engagement with a cam-shaped projection 32, formed on the adjacent side of the standard 16, which will rock the pawl on its pivot, thereby disengaging the same from the teeth of the wheel 27 and causing the same to stop until the friction-roller 31 reaches the end of the cam 32, when the spring 29 will again throw the pawl into engagement with the ratchet-teeth on wheel 27 and rotate the same.

33 denotes standards arranged in front of the standards 4 and connected at their upper ends by bars 33'. In the forward portion of the standards 33 are journaled the first pair of feed-rolls 34 and 34', said rolls being arranged one above the other and spaced apart at a considerable distance for the reception of bulky "scrap."

The journals of the rolls 34 and 34' project through the standards 33 and have fixed thereto upper and lower spur gear-wheels 35 and 36. On the extended end of the upper roll-journal is fixed a belt-pulley 37, which is connected to the wheel 27 by a belt 38. The journals on the opposite ends of the rolls 34 and 34' have fixed thereto sprocket gear-pinions 39 and 40.

41 and 41' denote a second pair of feed-rolls arranged behind the rolls 34 34' and journaled in the standards 33, but mounted closer together than the rolls 34 and 34'. At one end thereof the journals of the rolls 41 and 41' are provided with sprocket gear-pinions 42 and 43, which are connected to the sprocket-gears 39 and 40 by means of sprocket-chains 44, so that when the rolls 34 and 34' are rotated they will also rotate the rolls 41 and 41'.

The upper roll 41 of the rear pair of rolls is journaled in movable boxes 45, which are adapted to slide in guideways 46, formed in the standards 33. The boxes 45 are provided with pins 47, which project upwardly through

holes in the upper wall of the guideways 46. Coiled springs 48 are arranged on the pins 47 between the boxes 45 and the upper wall of the guideways 46 to hold said boxes and the roll 41 yieldingly down in place. This manner of mounting the upper roll permits the same to raise to allow any large obstruction to pass through without breaking any of the parts.

The feed-rolls are each provided with teeth 49, which preferably have triangular-shaped heads and threaded shanks 50, which are adapted to be screwed into rolls to secure the teeth in place thereon.

51 denotes the stationary blade of the shears removably secured to a bed-lock 52, fixed to the base in such a position that the upper movable blade will be brought down into close engagement with the same. The upper blade is connected to the carriage in a slanting or diagonal position, so that when the two blades are brought together a drawn cut is made after the manner of a pair of shears. This form of cut permits of the cutting of large bulky material. The cams on the operating-shaft are of such size as to raise the carriage and upper blade high enough to admit such bulky material beneath the same.

The secondary cutting mechanism 3 is arranged upon the base 1 in rear of the primary cutting mechanism and at right angles to the same. The construction and operation of the secondary cutting mechanism, with the exception of being somewhat lighter in form, is substantially the same as that of the primary mechanism, and it is thought that the description of one will be sufficient for both.

The feeding mechanism for the secondary cutting mechanism consists of a pair of feed-rolls 53 53', arranged in front of the cutting-blades and driven as in the primary rolls. In front of this pair of feed-rolls are arranged a series of feed-rolls 54, which are disposed in horizontal alinement and lie immediately in rear of the primary cutting-blades.

The rolls 54 are journaled in bearing-blocks 55, fixed to the base 1 and on one end of the rolls are fixed sprocket-gears 56, which are connected together by sprocket-chains 57. The end roll adjacent to the lower roll 53' is provided with a sprocket-gear 58 on its opposite end, which is connected by a sprocket-chain 59 to a sprocket-gear 60 on the end of the roll 53', by which means the feed-rolls 54 are driven. In operation the metal is fed through the primary feed-rolls to the primary cutting-blades, where it is cut by the blade 7, carried by the carriage 6, which is operated by the cams 15. The feed-rolls are intermittently driven by the belt 38 from the loose belt and ratchet-wheel 27, which is operated by the pawl 28 on the master-gear 17.

The movement of the wheel 27 is so timed that the feed-rolls are only driven while the

knife-carriage and blade are moving up and down, so that during the actual operation of cutting the feed-rolls are still, thus preventing the material from jamming against the cutting apparatus when the blades are together.

After the material is cut by the primary cutting apparatus it falls in strips onto the horizontal feed-rolls 54 of the secondary cutting apparatus, by which it is fed to the secondary cutting-blades, which cut the strips in the opposite direction into small pieces, in which condition it is found to be more readily and profitably marketed and also more conveniently handled.

The feed-rolls of the secondary cutting mechanism are provided with an intermittent movement mechanism similar to that of the primary rolls.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine of the class described, the combination of a continuously-revoluble master-wheel, a shaft to which it is fixed, revolved thereby, a cutter, means driven by said shaft to operate the cutter, feed-rolls, a driving element therefor, and an intermittently-operating mechanism connecting the said driving element in the master-wheel, said intermittently-operating mechanism being timed to pretermitt the operation of the feed-rolls during the cutting action of the cutter.

2. In a machine of the class described, the

combination of a continuously-revoluble master-wheel, a shaft to which it is fixed, revolved thereby, a cutter, means driven by said shaft to operate the cutter, feed-rolls, a driving element therefor, including a ratchet-wheel, a pawl carried by the master-wheel to engage the ratchet-wheel and rotate the latter therewith to drive the feed-rolls, and means to periodically disengage the pawl from the ratchet-wheel, to pretermitt the action of the feed-rolls during the cutting action of the cutter.

3. In a machine of the class described, the combination of a continuously-revoluble master-wheel, a shaft to which it is fixed, revolved thereby, a cutter, means driven by said shaft, to operate the cutter, feed-rolls, a driving element therefor, including a ratchet-wheel, a pawl carried by the master-wheel, a spring to engage the pawl with the ratchet-wheel and rotate the latter with the master-wheel, to drive the feed-rolls, and a cam to periodically disengage the pawl from the ratchet-wheel, to pretermitt the action of the feed-rolls during the cutting action of the cutter.

4. In a machine of the class described, the combination of a reciprocating cutter, a shaft, means operated by the shaft to actuate the cutter, a continuously-revoluble master-wheel fast to said shaft, feed-rolls, driving means therefor, including a ratchet-wheel loose on said shaft, a pawl carried by the master-wheel, to engage the ratchet-wheel, and means to periodically disengage the pawl from the ratchet-wheel.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES F. DEITRICK.

Witnesses:

DANIEL W. STEPHENS,
HARRY R. OLIVER.