

No. 713,361.

Patented Nov. 11, 1902.

O. SUNDT.  
ROTARY SHEARS.

(Application filed Nov. 20, 1901.)

(No Model.)

3 Sheets—Sheet 1.

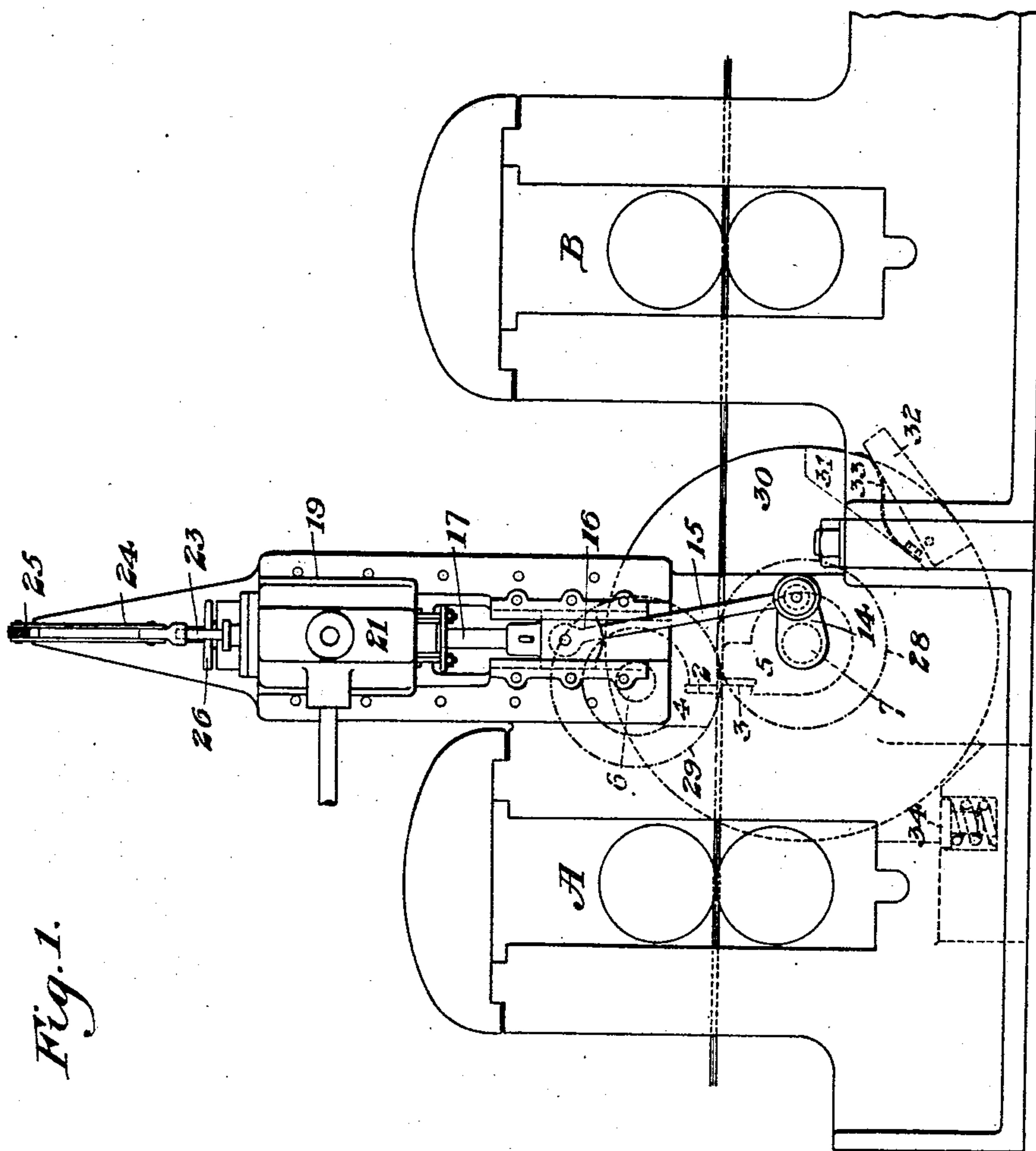


Fig. 1.

WITNESSES

*L. A. Conner*  
*L. M. Redman*

INVENTOR

*Oscar Sundt*  
*by Russell & Lyman*  
*his Atty*

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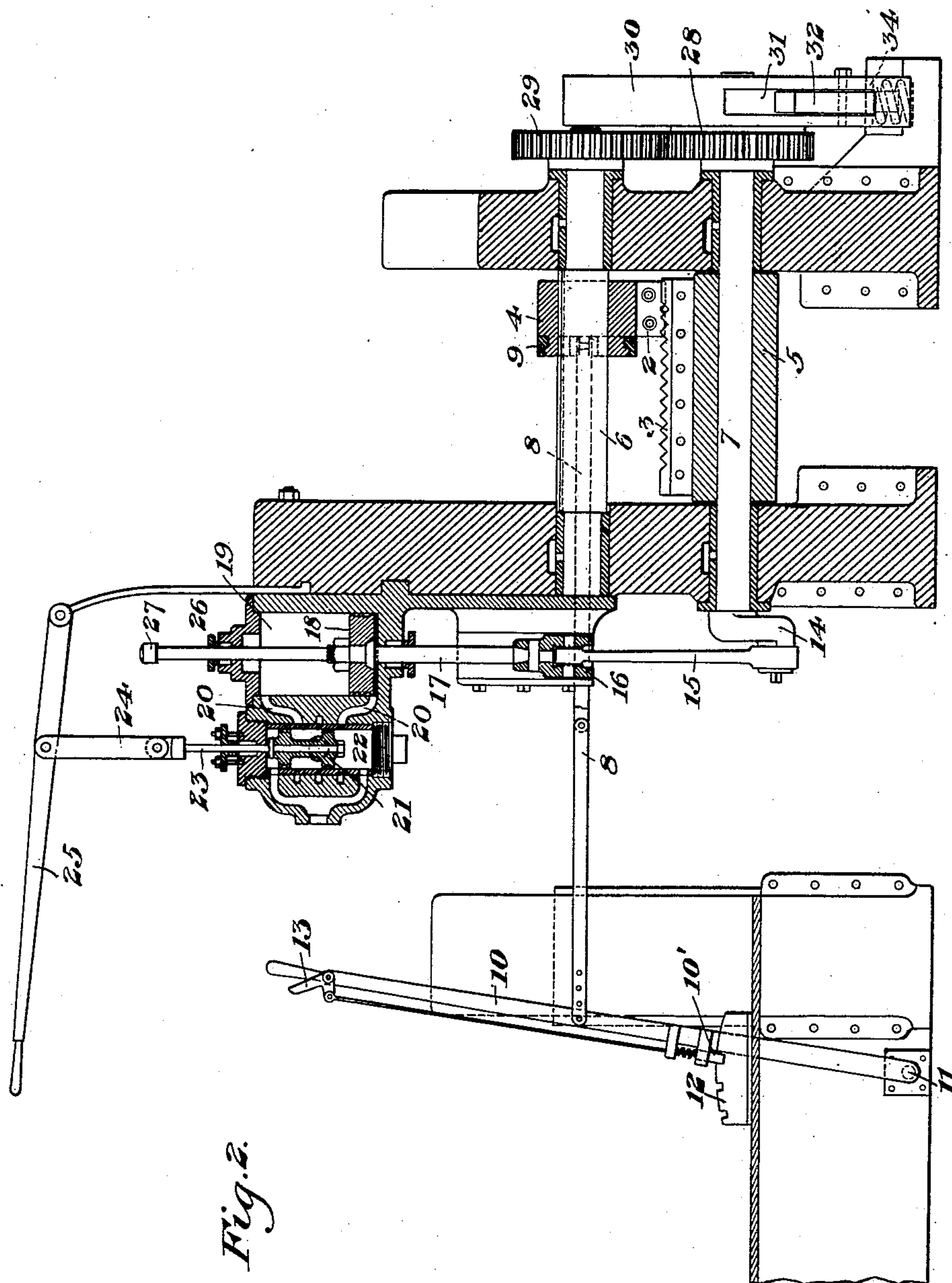
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**WITNESSES**

L.A. Comer  
L.M. Redman

**INVENTOR**

Oscar Lundt  
by Edmund A. Lyles  
his attys.

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Fig. 4.

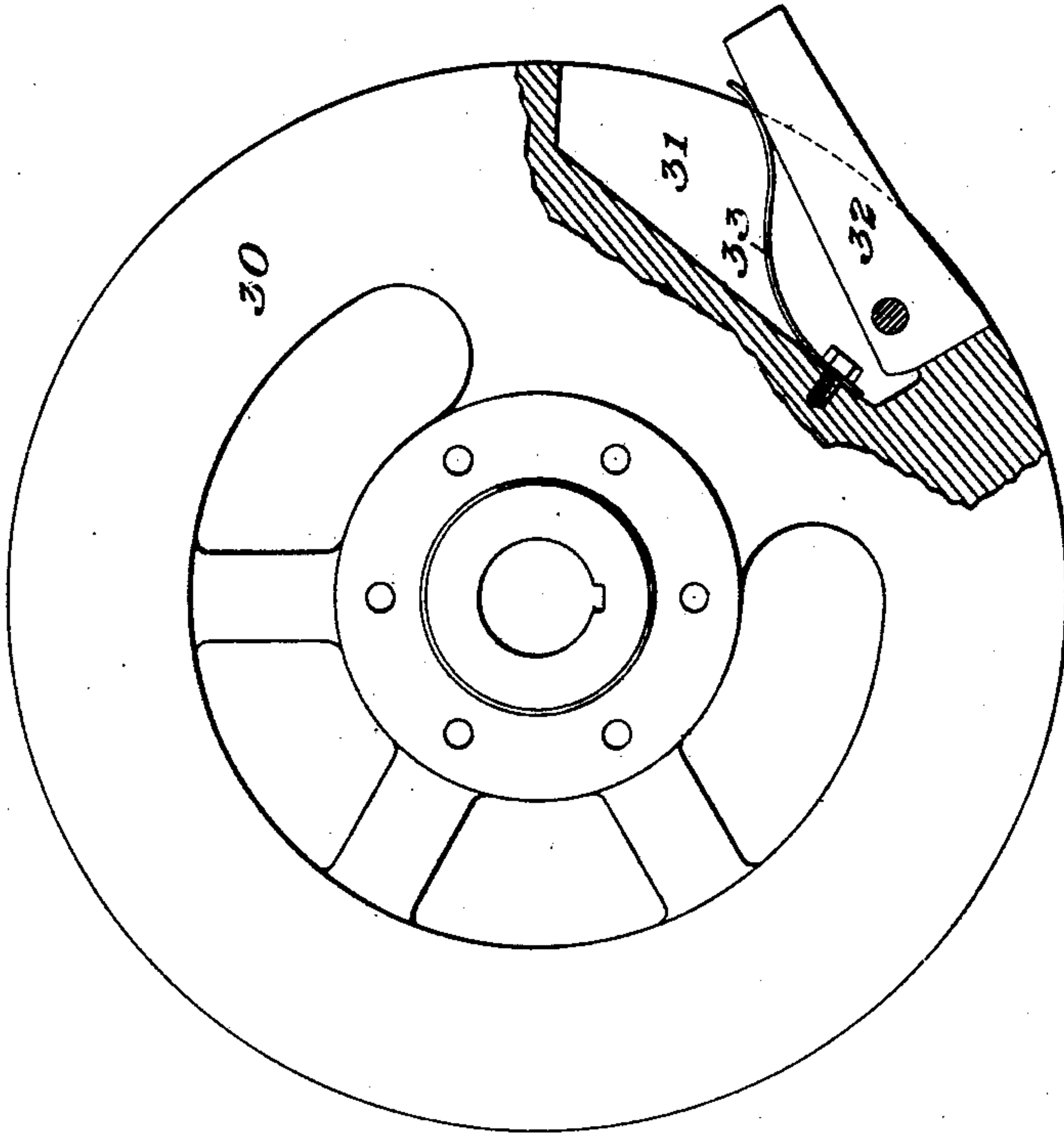
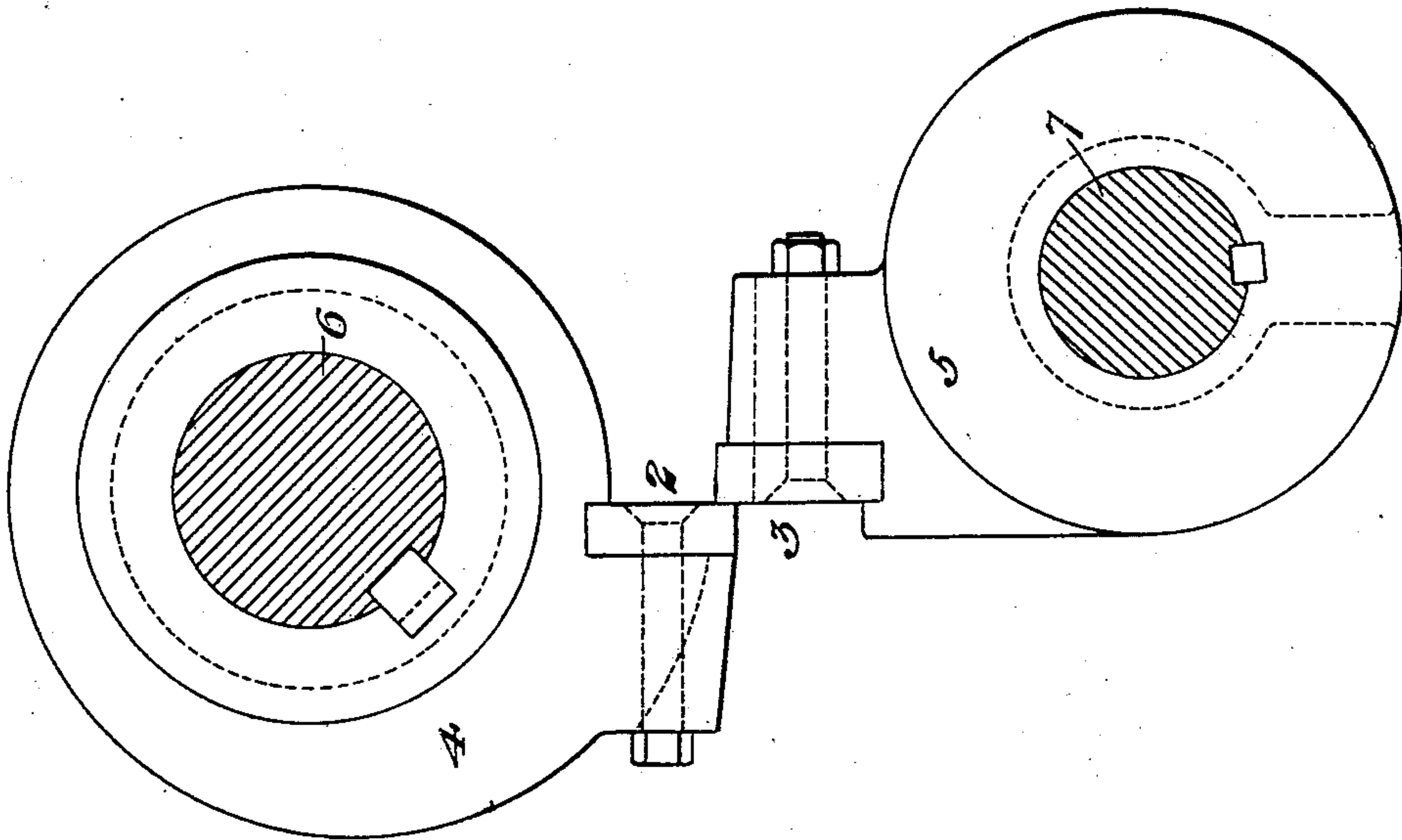


Fig. 3.



WITNESSES

*L. A. Conner*  
*L. M. Redman*

INVENTOR

*Oscar Sundt*  
*by Samuel H. Jones*  
*his attys*



# UNITED STATES PATENT OFFICE.

OSCAR SUNDT, OF CLEVELAND, OHIO, ASSIGNOR TO THE GARRETT-CROMWELL ENGINEERING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## ROTARY SHEARS.

SPECIFICATION forming part of Letters Patent No. 713,361, dated November 11, 1902.

Application filed November 20, 1901. Serial No. 83,021. (No model.)

*To all whom it may concern:*

Be it known that I, OSCAR SUNDT, of Cleveland, Cuyahoga county, Ohio, have invented new and useful Rotary Shears, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation showing my improved shears in position between two stands of rolls. Fig. 2 is a vertical cross-section of the same. Fig. 3 is an enlarged detail view showing the shear blades and carriers, and Fig. 4 is an enlarged detail view of the fly-wheel employed.

My invention relates to the class of rotary shears, and is designed to improve their action and enable a better cut to be obtained. Heretofore in this class of shears the axes of the shafts carrying the shear-blades have been vertically alined one above the other, and with this arrangement the shear-blades give a pinching or squeezing action which produces an undesirable ragged end where the cut is made. My invention overcomes this difficulty; and it consists in locating the axes of the shear-blade shafts out of alinement vertically, these shafts being staggered or set one side of the other, so that as they contact with and cut the moving bar a true shearing action is obtained, giving a squarely-cut end, as desired.

The invention further consists in providing mechanism for giving the shear-blade shafts one revolution and then stopping them in their normal position, when desired, and, further, in the construction and arrangement of the parts, as hereinafter described and claimed.

In the drawings I have shown my shears as located between two stands of two high rolls A and B and arranged to roll square bars in sets of passes therein, though it may be located at any desirable point to cut a metal bar or strip while in motion.

The shear-blades 2 and 3 are secured eccentrically to carrying-rings 4 and 5, mounted on upper and lower shafts 6 and 7. As shown in Fig. 3, these shafts are staggered or located out of vertical alinement, so that as the shears

contact with and act upon the metal bar in motion they are given not only rotary movement, but also a vertical shearing movement, which forms cut ends of the desired shape. I have shown the lower shear-blade as of substantially the width of the rolls and having a series of notches arranged to register with the passes, while the upper shear-blade and its carrying-block are narrower, the shear-blade having one recess and being adjustable along the shaft. The adjustment of the upper shear-block is obtained through link connections 8 between a collar 9 on the shear-block and a hand-lever 10, pivoted at 11. The hand-lever is locked in its different positions by a spring-latch 10', engaging notches in sector-plate 12 and actuated through bell-crank 13. The upper shear-blade may thus be brought into line with any one of the passes in order to cut the bar issuing therefrom.

The lower shaft 7 is supported in suitable bearings to the framework of the shears and is provided at one end with a crank 14, provided with a connecting-rod 15, extending to cross-head 16, actuated by piston-rod 17. The piston 18, to which the piston-rod is secured, moves in an upper motive cylinder 19, having ports 20, controlled by valve 21. This cylindrical valve moves in the valve-chest 22 and is actuated through the stem 23, connected by link 24 to a hand-lever 25. The piston-rod 17 is extended upwardly through a stuffing-box 26 in the top of the cylinder and is provided with a tappet 27, arranged to contact with the hand-lever 25. The shaft 7 is provided at its opposite end with a pinion 28, intermeshing with a pinion 29 upon the upper shaft 6, and is also provided with a fly-wheel 30, which gives the momentum action to the shears. This fly-wheel is recessed, as shown at 31, the recess containing a pivoted locking-block 32, which is forced outwardly by spring 33. When the parts are in their normal position, the locking-block 32 rests upon a spring-pressed support 34, which holds the shear-blades in their proper position before the cut is made.

In the operation of the device, the operator having adjusted the upper shear-blade in



front of the desired pass, as the metal bar is rolled and passes between the two stands of rolls the operator forces down the hand-lever 25, and thus admits steam or motive fluid beneath the piston. As the piston is forced up within the cylinder the tappet at the upper end of the piston-rod strikes the hand-lever and lifts it, thus reversing the valve. The piston immediately descends, thus giving its up-and-down stroke one revolution of the shear-blade shafts, and as it reaches the lower end of its downstroke it stops and the block of the fly-wheel drops back upon the bed-block, the parts thus assuming their normal position.

The advantages of my invention result from the placing of the shear-blade shafts out of vertical alinement, an even and desirable cut thus being given with rotary shears, and, further, from the automatic action of the device, which makes one revolution and then stops until it is again started into action by the operator, and also from the laterally-adjustable rotary shears, which can be set in front of any pass where it is desired to cut the bar.

Many changes may be made in the form and arrangement of the shear-blades and the shafts, as well as in the connections for actuating the shears, without departing from my invention.

I claim—

1. In rotary shears, a pair of shafts located out of vertical alinement with each other, co-acting shear-blades secured in fixed relation to said shafts and arranged to move in circular paths, and connections for rotating the shafts substantially as described.

2. In rotary shears, a pair of rotary shafts, located out of vertical alinement with each other, a pair of coacting shear-blades rigidly secured in fixed relation to said shafts and arranged to move in circular paths, and actuating connections arranged to give one revolution to the shafts and then automatically stop; substantially as described.

3. In rotary shears, a pair of rotary shafts

located out of vertical alinement with each other, shear-blades secured in fixed relation to each of said shafts, and arranged to move in circular paths, at least one of the shear-blades being located in a non-radial position to its shaft, mechanism for rotating the shaft, and a stop device arranged to stop the rotation after one revolution; substantially as described.

4. In rotary shears, a pair of shafts carrying shear-blades, a power-cylinder having connections arranged to rotate the shafts, and valve mechanism for the cylinder arranged to give one revolution to the shafts and then stop them; substantially as described.

5. In rotary shears, a shaft having the blocks linked thereto and carrying a shear-blade, and connections for moving the blocks to different points along the shaft and holding it at such point; substantially as described.

6. In rotary shears, a pair of shafts carrying shear-blades, one shear-blade being longer than the other, and mechanism for adjusting the shorter shear-blade along its shaft; substantially as described.

7. In rotary shears, a pair of shafts carrying coacting shear-blades, a momentum-wheel actuated by the shafts, mechanism for giving the shaft one revolution only, and stop mechanism for holding the shafts in a predetermined position when at rest; substantially as described.

8. In rotary shears, a pair of shafts located out of vertical alinement with each other and carrying shear-blades, a motive cylinder arranged to rotate the shafts, a hand-operated valve controlling the cylinder, and tappet mechanism arranged to give the shafts one revolution and then stop them; substantially as described.

In testimony whereof I have hereunto set my hand.

OSCAR SUNDT.

Witnesses:

J. C. CROMWELL,  
WALTER L. NASON.