

No. 674,316.

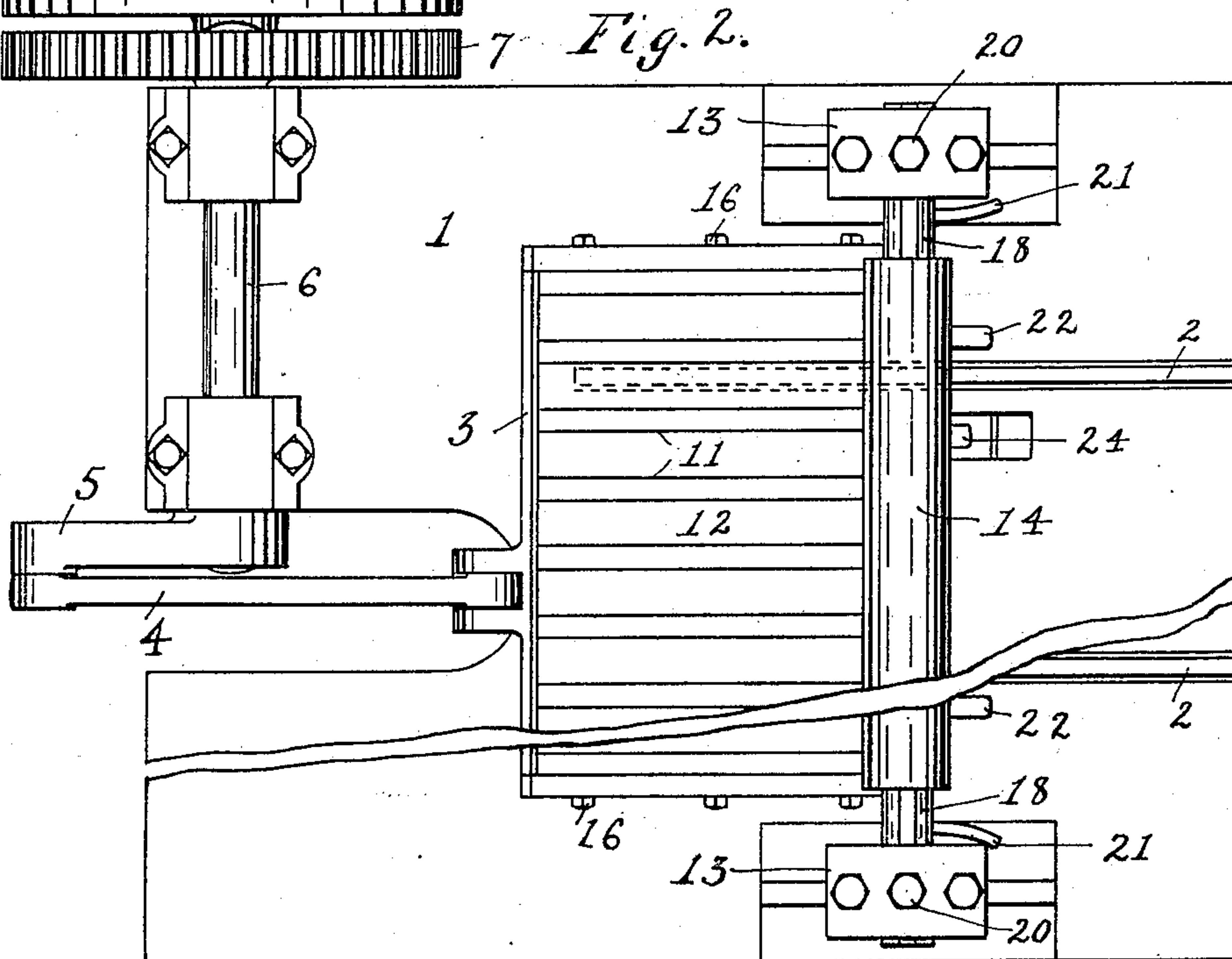
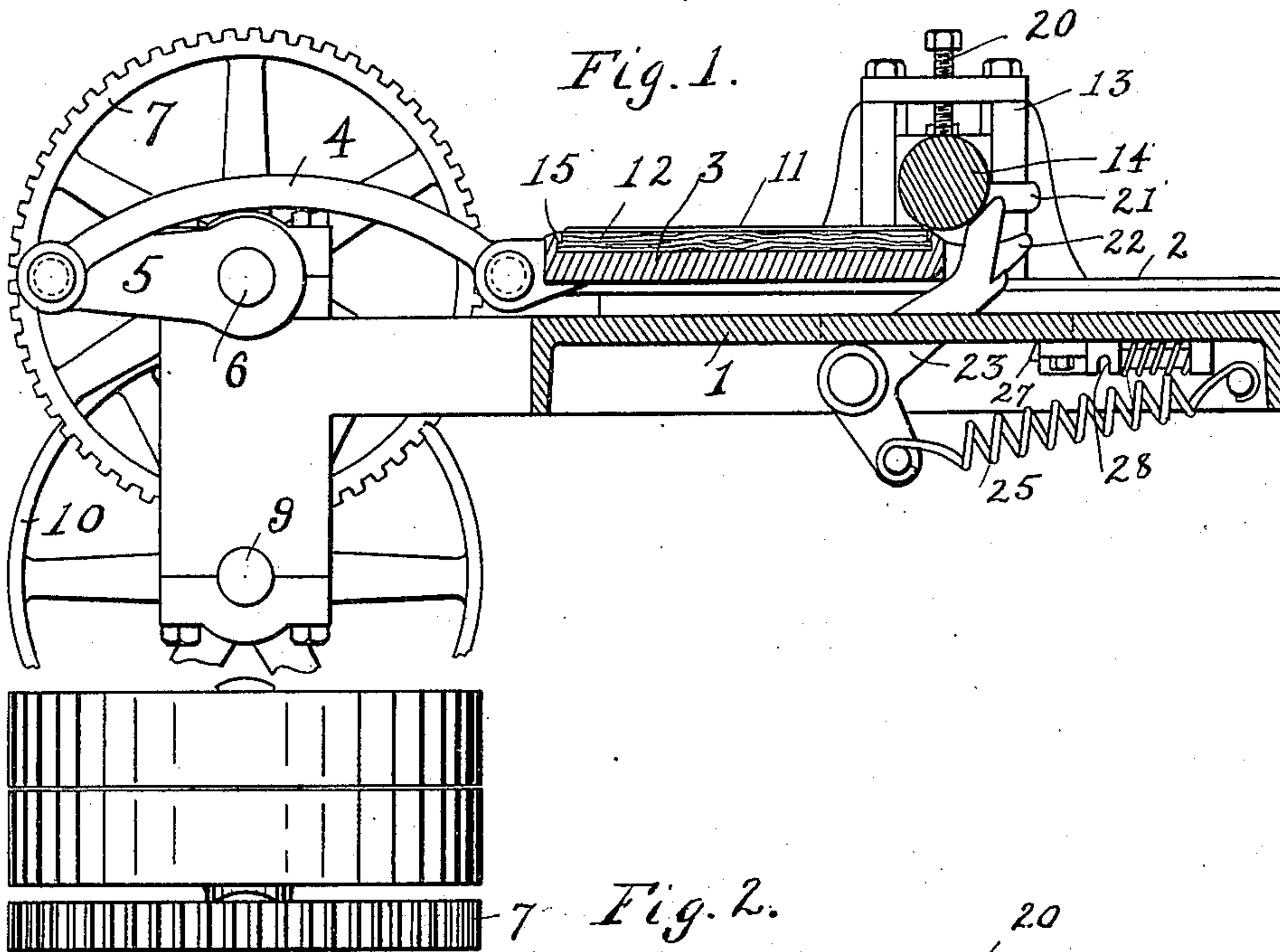
Patented May 14, 1901.

L. C. PALMER.
MACHINE FOR CUTTING TUBES.

(Application filed July 18, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
W. E. Snyder
H. M. Snyder

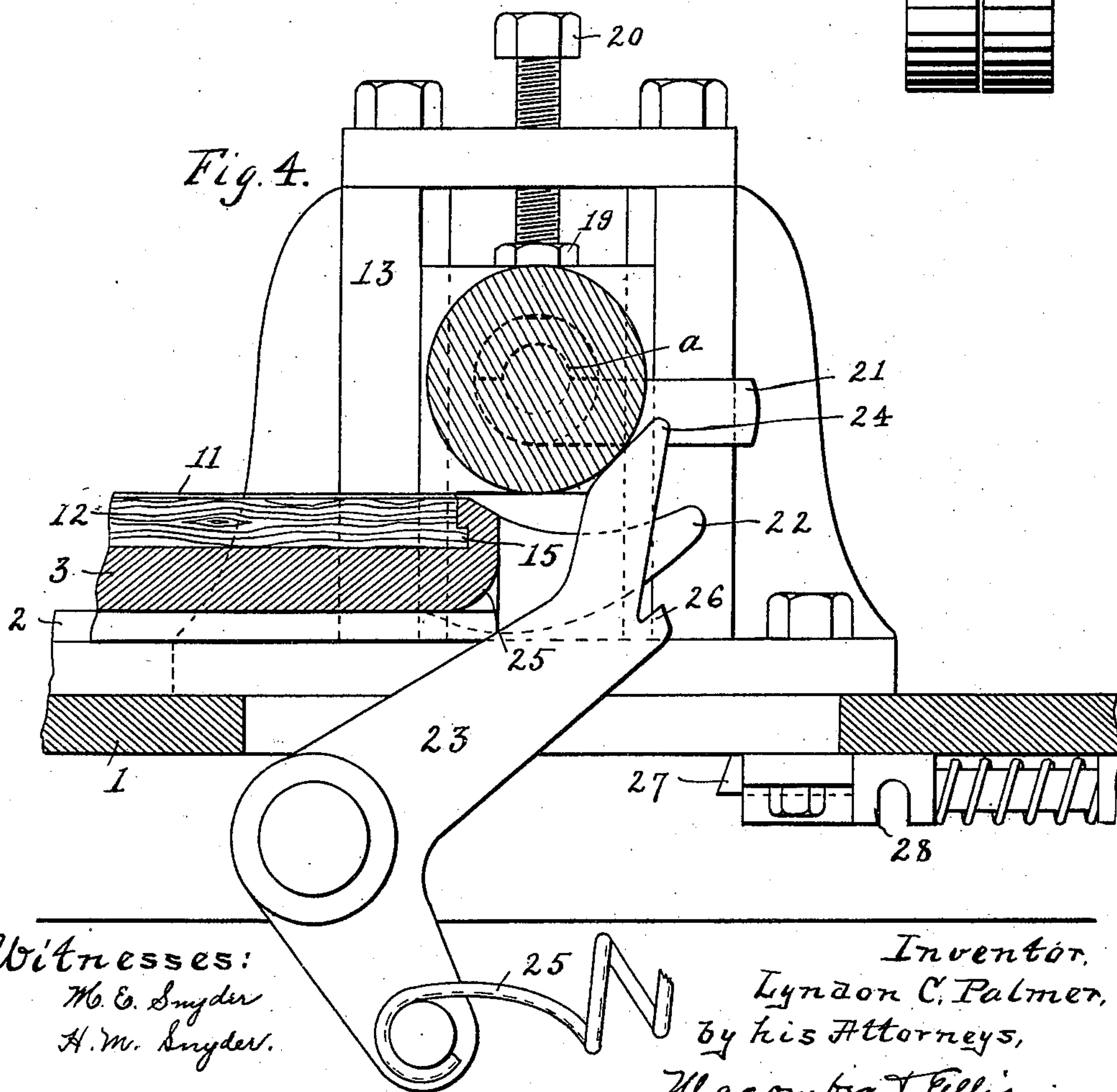
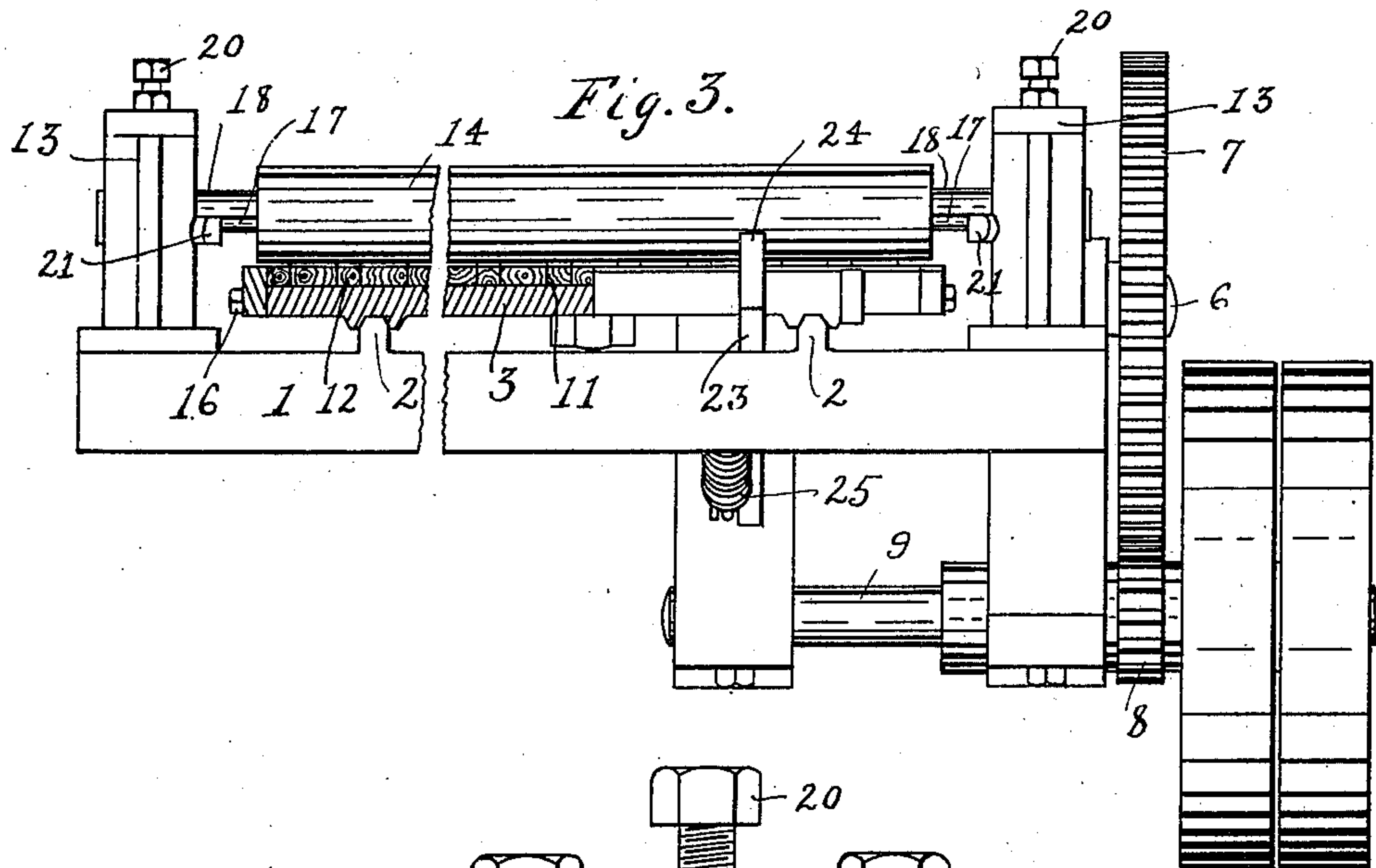
Inventor,
Lyndon C. Palmer,
by his Attorneys,
Macomber & Ellis.

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UNITED STATES PATENT OFFICE.

LYNDON C. PALMER, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF
TO FREDERICK N. BURT, OF SAME PLACE.

MACHINE FOR CUTTING TUBES.

SPECIFICATION forming part of Letters Patent No. 674,316, dated May 14, 1901.

Application filed July 18, 1900. Serial No. 24,009. (No model.)

To all whom it may concern:

Be it known that I, LYNDON C. PALMER, a citizen of the United States, residing at Buffalo, New York, have invented certain new and useful Improvements in Machines for Cutting Tubes, of which the following is a full, clear, and exact description.

My invention relates to machines for cutting tubes of paper or pasteboard for the purpose of producing cylindrical sections of given length for various purposes.

My invention relates, further, to an improvement whereby a long length of tube is cut up into a number of cylindrical sections at a single operation and means for rendering the machine rapid of operation and readily adjustable to various uses. My machine is furthermore especially adapted to cutting very short cylindrical sections, such as rings for pill-boxes and the like.

To this end my invention consists of the hereinafter-described mechanism, which I have illustrated in four figures upon two sheets, like characters of reference indicating like parts, in which—

Figure 1 is a central vertical section. Fig. 2 is a plan view. Fig. 3 is an end view. Fig. 4 is a detail view of one of the bearings and adjacent portions of the machine.

I will first indicate the several principal parts of my machine and thereafter describe the same in detail and their method of operation.

1 is a bed-plate or frame of the machine, which is properly secured to legs or other supports. This bed-plate has longitudinal ways upon its upper surface, (indicated at 2.) Upon these ways is a reciprocating bed 3, provided with proper grooves to take over the ways 2.

4 is a connecting-rod, which connects the reciprocating bed with a crank 5, moved upon a shaft 6, upon which is mounted the gear 7, which meshes with a pinion 8 (see Fig. 3) upon the shaft 9, which is driven by the pulley 10. The pulley 10 is properly belted to a source of power.

Upon the reciprocating bed 3 are mounted a series of parallel cutters 11, which are held parallel and the proper distance apart by intervening strips of wood 12.

13 represents bearings mounted upon the bed-plate 1, and 14 is the mandrel.

Referring now to the reciprocating bed 3, there are transverse grooves formed therein, as shown at 15, into which the notched ends of the knives and the intervening strips of wood take, thus holding the knives and strips firmly down upon the bed, and at the sides of the reciprocating bed there are bolts 16, as clearly shown in Fig. 2, which serve to force the knives and strips into close contact, preventing any lateral motion of the same. Thus it is seen that I provide a system of parallel knives detachably secured to the reciprocating bed in such manner that by changing the intervening strips different distances between the knives may be provided to meet the demands of different work. The knives are made of thin steel and from the nature of the work which they perform rarely need sharpening.

Referring now to the mandrels 14, these are preferably made of metal and covered with several thicknesses of hard paper to make the cut clean and sharp.

Referring to Figs. 3 and 4, the ends of the mandrel 14 are provided with bearing ends 17. Rigidly secured to the bearings 13 are semicylindrical sections 18. These sections are secured non-rotatably in the bearings 13 by means of lock-nuts 19 and vertical threaded bolts 20 and upon their inner ends are drilled or hollowed centrally and cut away upon their under sides, as clearly shown in the broken lines of Fig. 4 and indicated at *a*, so that the bearing ends of the mandrel 14 may pass underneath and engage in the semicircular bearing formed by said openings. The bearing-sections surrounding the semicylindrical sections 18 are made adjustable by means of vertical threaded bolts 20, by means of which the bearings of the mandrel 14 may be adjusted up and down to regulate the contact of the mandrels with the cutting edges of the knives. The semicylindrical sections 18 are also adjustable longitudinally in the bearings 13.

Secured to the under sides of the cylindrical sections 18 are guides 21, which engage with the bearing ends of the mandrel 14 and regulate its position axially. By releasing

the lock-nuts 19 and vertical threaded bolts 20 the semicylindrical sections 18 and the mandrel 14 may be moved axially for the purpose of bringing a new portion of the periphery of the mandrel over the knives to give a fresh clean cut when the continued use has creased and rendered ragged the surface of the mandrel directly over the knives. Thus it will be seen that I am enabled to adjust the mandrel both vertically and axially to meet the two requirements of a particular depth of cut and a change to a new position when the surface of the mandrel becomes worn.

Projecting from the end of the reciprocating bed 3 adjacent to the operator are curved arms 22. As soon as a complete action of the reciprocating bed has taken place the mandrel 14 will drop down out of its bearings and be retained by the curve-shaped arms 22, where it may be readily removed for the purpose of removing the sections cut and for the placing of a new tube upon it. In order to throw the mandrel back into the bearings quickly after a tube has been placed upon it and it is ready to receive the action of the knives, I provide a bell-crank lever 23, pivoted to the fixed bed of the machine, having an upper arm so curved as to come in contact with the under side of the mandrel 14, as clearly shown at 24 in Fig. 4. A spring 25 throws the lever up and carries the mandrel to place. The under side of the reciprocating bed is curved to engage with the surface of the upper member of the bell-crank lever 23, as shown at 25 in Fig. 4, so as to throw the lever 23 down from engagement of the roll when the reciprocating bed comes back and the mandrel should be released. A lug 26 upon said lever 23 engages with a spring-actuated latch 27, which is secured to the under side of the bed and by means of which the lever 23 when depressed is locked and held in position until the operator is ready to release the same. The spring-actuated latch 27 is provided with a lug 28, which engages with a lever (not shown) of the ordinary type actuated by foot-power, which releases the arm 23, which in turn carries the mandrel 14 to place in the bearings for the next action of the knives.

Having thus indicated the several parts of my invention, I will now describe the method of operation.

The reciprocating bed is set in operation and the operator provided with two or more mandrels identical in construction. A tube is slid upon one mandrel, which is then put in place. The latch 27 is withdrawn, whereupon the arm 23 carries the mandrel 14 to place within the bearings, and upon the next action of the reciprocating bed it is rotated by the action of the moving bed upon the knives and the sections of the tube are cut. When the reciprocating bed passes underneath the mandrel, it depresses the arm 23 and locks the same by means of the latch 27,

ready for the next succeeding operation. While this operation is in progress the operator takes another mandrel and places a tube upon it. This put in place and the former mandrel removed, the sections of tube are slipped off and an uncut tube put in place, and so the operation goes on.

It will be noted that by this simple mechanism I am enabled to cut sections of tubing accurately and rapidly of any desired size and without the employment of any skilled labor, an ordinary boy being able to operate the machine, inasmuch as it requires no further intelligence than that of slipping off the cut sections and slipping on the uncut tubes. The head workman will from time to time oversee the work, and in the event of the mandrels becoming creased will move them axially and make any other necessary adjustment, so that one skilled operator will oversee a large number of machines attended by unskilled operators.

Having thus described my invention and its method of operation, what I claim is—

1. In a machine for cutting tubes, a bed, a reciprocating bed mounted thereon, means for actuating the same, knives arranged longitudinally upon said reciprocating bed, a removable mandrel and bearings for supporting the same transversely over said knives, substantially as and for the purposes set forth.

2. In a machine for cutting tubes, a bed, a reciprocating bed, means for actuating said reciprocating bed, a removable mandrel, bearings for supporting the same, a series of knives, mounted adjustably upon said reciprocating bed, and provided with tongues, intervening strips between said knives also provided with tongues, transverse undercut grooves in said reciprocating bed with which the tongues of said knives and strips are adapted to engage, and bolts extending transversely across said reciprocating bed whereby said knives and strips are held in place, substantially as and for the purposes set forth.

3. In a machine for cutting tubes, a bed, a reciprocating bed and means for actuating the same, knives secured to said reciprocating bed, a mandrel, and bearings supporting said mandrel having inverted segmental journals to receive the bearing ends of said mandrel, substantially as and for the purpose set forth.

4. In a machine for cutting tubes, a bed, a reciprocating bed and means for actuating the same, knives secured to said reciprocating bed, a mandrel, and bearings supporting said mandrel, having inverted segmental journals to receive the bearing ends of said mandrel, and means for adjusting said segmental journals in said bearings vertically and longitudinally, substantially as and for the purposes set forth.

5. In a machine for cutting tubes, a bed, a reciprocating bed and means for actuating the same, knives secured to said reciprocating bed, a mandrel, and bearings supporting said

mandrel, having inverted segmental journals to receive the bearing ends of said mandrel, means for adjusting said segmental journals, and guide-arms secured to said segmental journals and engaging against the ends of the bearings of said mandrel to determine its longitudinal position, substantially as and for the purposes set forth.

6. In a machine for cutting tubes, a bed, a reciprocating bed, and means for actuating the same, a mandrel and bearings for supporting the same, knives arranged upon said reciprocating bed, and curved arms upon said reciprocating bed to support said mandrel out of the bearings and clear of the knives, substantially as and for the purposes set forth.

7. In a machine for cutting tubes, a bed, a reciprocating bed and means for actuating the same, a mandrel and bearings for supporting the same, knives arranged upon said reciprocating bed, arms upon said reciprocating bed to support said mandrel out of its bearings and clear of said knives, and lever-arms

and means for actuating the same to raise said mandrel from said supporting-arms and into its bearings and in the line of travel of said knives, substantially as and for the purposes set forth.

8. In a machine for cutting tubes, a bed, a reciprocating bed and means for actuating the same, a mandrel and bearings, knives and supporting-arms upon said reciprocating bed, and pivoted spring-actuated lever-arms pivoted to said fixed bed for raising said mandrel from said supporting-arms into bearing position, a spring-latch for holding said spring-actuated lever-arms out of action when depressed by said reciprocating bed, and means for releasing the same, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

LYNDON C. PALMER.

Witnesses:

M. E. SNYDER,

D. B. TUTTLE.