No. 752,847. PATENTED FEB. 23, 1904.

I. LIBERMAN.

PRESSURE ROLLS FOR CIGAR WRAPPER CUTTER AND ROLLING TABLES.

APPLICATION FILED DEC. 23, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

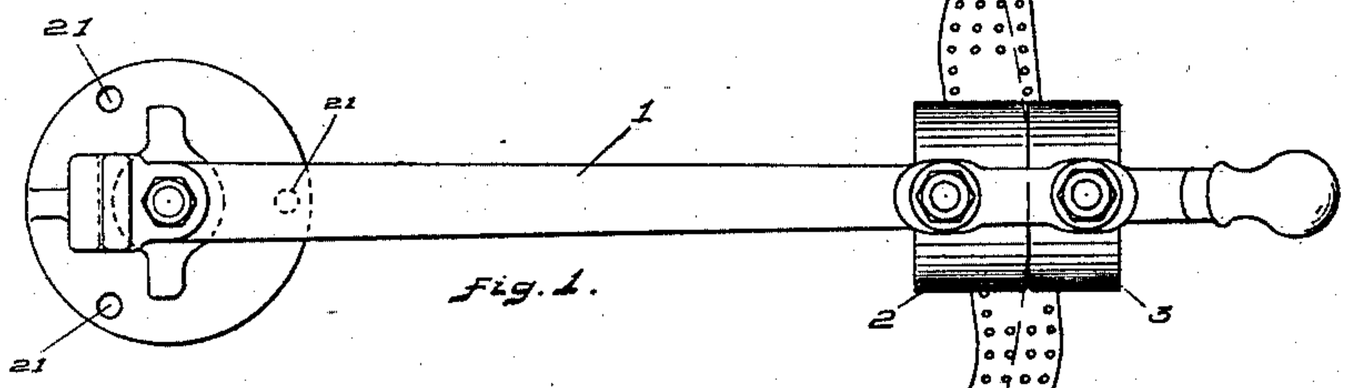

Fig. 1.

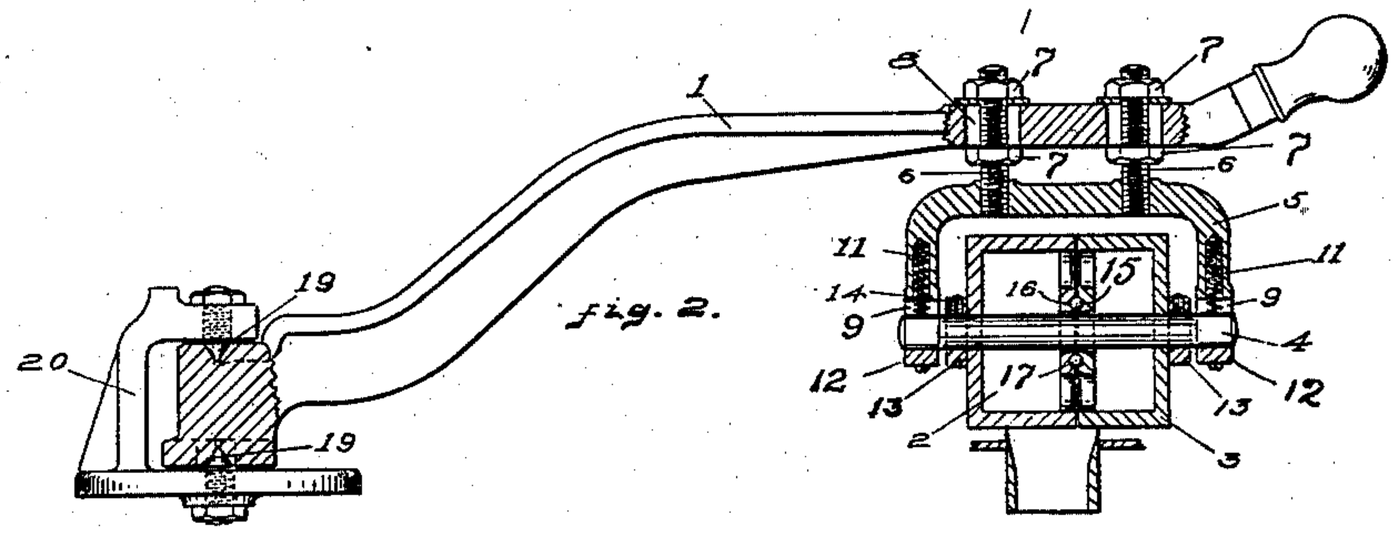

Fig. 2.

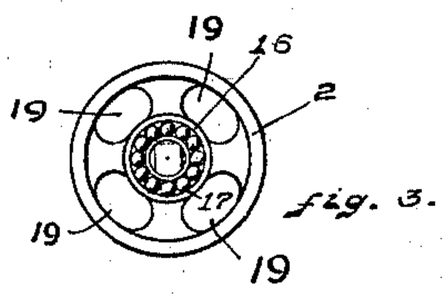

Fig. 3.

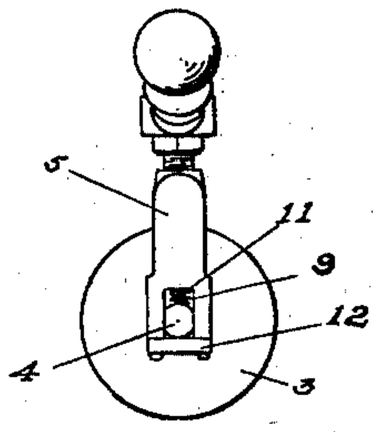

Fig. 4.

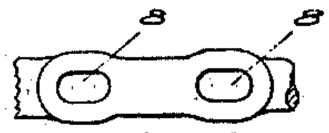

Fig. 5.

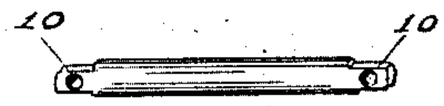

Fig 6.

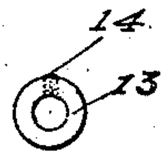

Fig 7.

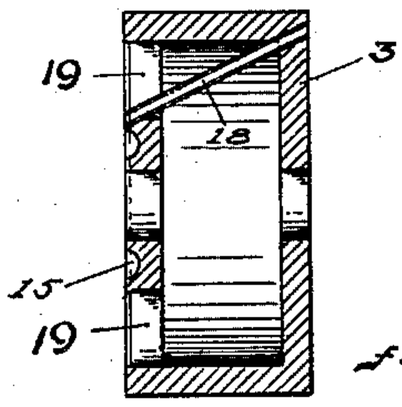

Fig. 8.

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NO MODEL. 2 SHEETS—SHEET 2.

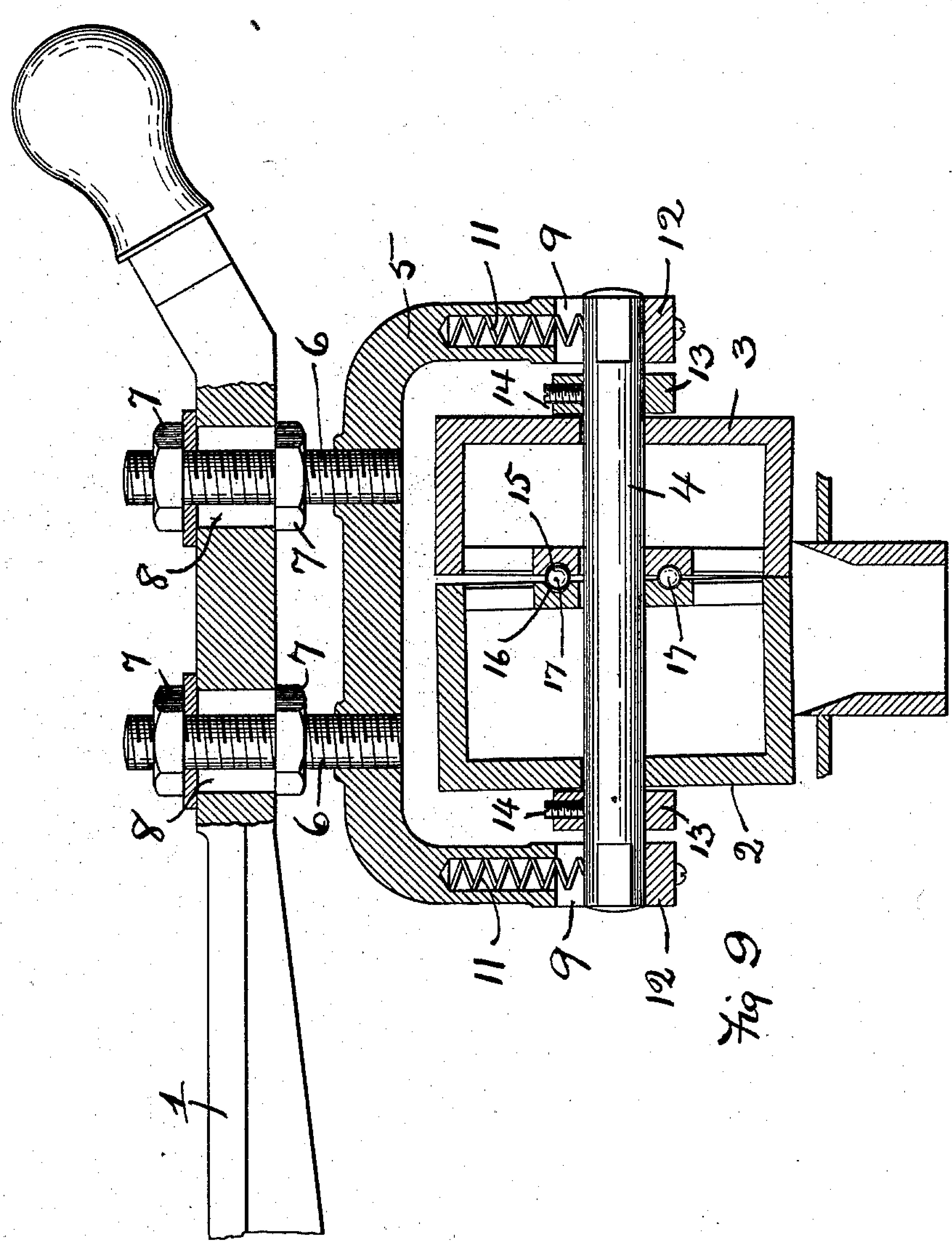

Fig 9

WITNESSES:

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No. 752,847. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

ISADORE LIBERMAN, OF PHILADELPHIA, PENNSYLVANIA.

PRESSURE-ROLLS FOR CIGAR-WRAPPER CUTTER AND ROLLING TABLES.

SPECIFICATION forming part of Letters Patent No. 752,847, dated February 23, 1904.

Application filed December 23, 1902. Serial No. 136,323. (No model.)

To all whom it may concern:

Be it known that I, ISADORE LIBERMAN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Pressure-Rolls for Cigar-Wrapper Cutter and Rolling Tables, of which the following is a specification.

My invention relates to pressure-rolls for cigar-wrapper cutter and rolling tables.

My invention relates especially to improved means for supporting and guiding and furnishing pressure to the elements of said pressure-roller.

My invention relates especially to rollers mounted upon pivoted or swinging arms and traveling in the line of an arc, and consequently being in two sections or elements to permit of a relatively faster travel of one element than the other.

My invention comprises spring means for enabling said roller to exert resilient pressure upon the leaf against the die and is especially directed to the antifriction means interposed between the abutting ends of said elements to maintain and assure their proper separation and to enable them to have a free frictionless relative movement with respect to each other.

My invention also comprises means for permitting a relative tilting of one roller element with respect to the other and also means for permitting a tilting of the said roller element with respect to the supporting-arm.

My invention also comprises certain improvements in details of construction—namely, I construct my roller of larger circumference than heretofore generally used and therefore less likely to pick the leaf from the table, and thereby tear the same; also, by cause of its larger circumference it easily overcomes obstacles and more easily rides over rough places in the leaf or on the die.

My roller is of hollow construction and therefore lighter in weight than the ordinary solid roller commonly used and less likely by its momentum or inertia to batter and nick the die.

My roller is so constructed that a minimum surface bears upon its supporting-shaft, so that a minimum friction is exerted between the shaft and the roller. The antifriction means are so located and placed as to prevent any binding or rubbing of the abutting end of one roller element against the other, thereby obviating the necessity of applying oil between the abutting ends of the said roller element near their outer or peripheral surfaces. Such application of oil is objectionable, as the oil works to the surface of the roll and is communicated to the wrapper, thereby spoiling it. The location of the antifriction means is such that oil can be applied thereto in such a way as to absolutely obviate the possibility of oil getting therefrom to the peripheral surface of the roller. I also provide means for conveniently introducing oil to the antifriction means operating between the abutting ends of the rollers and means for carrying off into the interior of the roller any excess of oil that might escape therefrom. I also provide means for adjustably securing the roller to the supporting-fork.

My invention also comprises the relative proportioning of the axial dimension of the two roller elements, so that each will coöperate with the desired portions of the die. For example, where the travel of the rollers is in a circular path and said path is the arc of a circle of smaller diameter than that of the cutting-die it is necessary for the inner roller to contact with the die over a greater axial distance at the middle of the die than is necessary for the outer roller in order that the space between the abutting ends of the roller elements should be at approximately the middle portions of the rounded ends of the cutting-die at the initial and final contact therewith. This is desirable for the most efficient operation of the same, and consequently it is important for the inner roller to have a greater axial extension than the outer roller.

My invention further comprises means for adjustably securing the roller-yoke to the swinging arm, both with respect to its horizontal position and its vertical position—that is, with respect to its distance horizontally from the center of rotation of the supporting-arm and also with respect to its distance or

altitude vertically from the surface of the table, said means of adjustment also being such as to enable the roller to be tilted, so as to give its axis any desired inclination with respect to the surface of the table.

Referring to the drawings, Figure 1 is a top view of my pressure-roller and its pivoted supporting-arm. Fig. 2 is a side elevation of the supporting-arm, showing the rollers and yoke in section. Fig. 3 is a view of the abutting end of one of the roller elements, showing the antifriction-balls. Fig. 4 is an outer end view of the roller, yoke, and supporting-arm. Fig. 5 is a top view of a portion of the supporting-arm, showing the apertures through which are secured the rods supporting the yoke. Fig. 6 is a view in perspective of the roller-shaft. Fig. 7 is a detail of the adjusting-collar of said shaft. Fig. 8 is a sectional view of one of the roller elements similar to that shown in Fig. 2 only enlarged. Fig. 9 is a sectional view of the yoke and rollers, on an enlarged scale, showing the rollers in tilted position.

Similar numerals refer to similar parts throughout the several views.

The roller consists of the two elements 2 and 3, which turn upon the shaft 4, which is supported in the yoke 5, the yoke 5 being in turn supported by the threaded rods 6 to the swinging arm 1, which is pivotally supported by set-screws 19 to the bracket 20, said bracket 20 being secured to the table by screws through the holes 21 or other suitable means. These threaded rods are adjustably secured to the swinging arm 1 by the nuts 7. The apertures 8 in said swinging arm are of such dimensions as to permit not only of a vertical adjustment of said rods 6, but also a horizontal adjustment to or away from the center of rotation of said swinging arm, and also a tilting or inclining adjustment, so that the shaft 4 or the axis of the roller elements 2 and 3 shall have any desired inclination with respect to the surface of the table or cutting-die. The shaft 4 is flattened at its ends and has a vertical reciprocating movement in the slots 9 of the yoke 5. The shaft 4 has engaging in apertures 10 upon its upper side at either end the compression-springs 11, which reside in recesses in the yoke. Said springs 11 act through said shaft 4 to cause the roller elements 2 and 3 to exert a yielding pressure against the die. The shaft 4 is secured in the two arms of the yoke 5 by the plates 12, which are screwed against the lower ends of said yoke. The collars 13 are secured to the shaft by suitable set-screws 14 to guide or maintain the roller elements in the desired position on the shaft. Between the abutting ends of the two elements 2 and 3 of the roller and close to the supporting-shaft 4 are provided two coöperating annular channels 15 and 16, supplied with antifriction-balls 17, the respective dimensions of the channels and the balls being such as to provide a slight space to be maintained between the abutting ends of said roller elements. Sufficient play is allowed between the roller elements and the shaft, especially at their abutting ends, to permit a slight relative tilting between said two roller elements to enable the said roller elements to accommodate themselves to various unevennesses in the path of travel. Through one of the roller elements from the upper outer end to the inner portion above the annular channel 15 I provide a tube 18 for conveying oil to the balls residing in said channels 15 and 16, the construction of my roller elements being such that any superfluous oil which may overflow from channels 15 and 16 will have ample opportunity to be dissipated into the interior of the roller through the apertures 19 in its inner web to prevent its reaching the outer peripheral surface.

What I claim is—

1. In combination with a cutting-die, a compound pressure-roller, the rolling elements of which are provided with coöperating annular channels in their abutting ends, and antifriction-balls in the channels, the channels and balls being so proportioned as to maintain a space between said abutting ends sufficient to permit of a relative tilting of said roller elements.

2. In combination with a cutting-die, a compound pressure-roller, a supporting-shaft therefor, the rolling elements being loosely mounted upon said shaft and provided with coöperating annular channels in their abutting ends and antifriction-balls in the channels, the channels and balls being so placed and proportioned as to maintain a sufficient space between the abutting ends of said elements and the play between the elements and the shaft being sufficient to permit of a relative tilting of said elements.

3. In combination with a cutting-die, a compound pressure-roller, and a supporting-shaft therefor, the rolling elements being loosely mounted upon said shaft and provided with coöperating annular channels in their abutting ends and antifriction-balls in the channels, the channels and balls being so placed and proportioned as to maintain a sufficient space between the abutting ends of said elements and the play between the said roller elements and the shaft at their abutting ends being sufficient to permit of a relative tilting of said roller elements.

4. In combination with a cutting-die, a compound pressure-roller, and a spring-pressed supporting-shaft therefor, the rolling elements being loosely mounted upon said shaft and provided with coöperating annular channels in their abutting ends and antifriction-balls in the channels, the channels and balls being so placed and proportioned as to main-

tain a sufficient space between the abutting ends of said elements and the play between the said roller elements and the shaft at their abutting ends being sufficient to permit of a relative tilting of said roller elements.

5. In combination with a cutting-die, a compound pressure-roller, a spring-pressed supporting-shaft therefor, a supporting-yoke for said shaft and lock-nut means for securing the adjustment of the same with respect to its vertical and also its longitudinal position, the rolling elements being loosely mounted upon said shaft and provided with coöperating annular channels in their abutting ends and antifriction-balls in the channels, the channels and balls being so placed and proportioned as to maintain a sufficient space between the abutting ends of said elements and the play between the said roller elements and the shaft at their abutting ends being sufficient to permit of a relative tilting of said roller elements.

6. In combination with a cutting-die, two roller elements, a spring-actuated shaft therefor, a rotative arm carrying said shaft and ball-bearings between the abutting ends of the roller elements, the ball-bearings being so proportioned as to maintain a sufficient space between the abutting ends of the roller elements and the play of the roller elements at their abutting ends upon the supporting-shaft being such as to permit of a relative tilting of said roller elements.

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Witnesses:
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