

No. 762,321.

PATENTED JUNE 14, 1904.

J. A. KEYES.
PUNCHING MACHINE.
APPLICATION FILED OCT. 10, 1903.

NO MODEL.

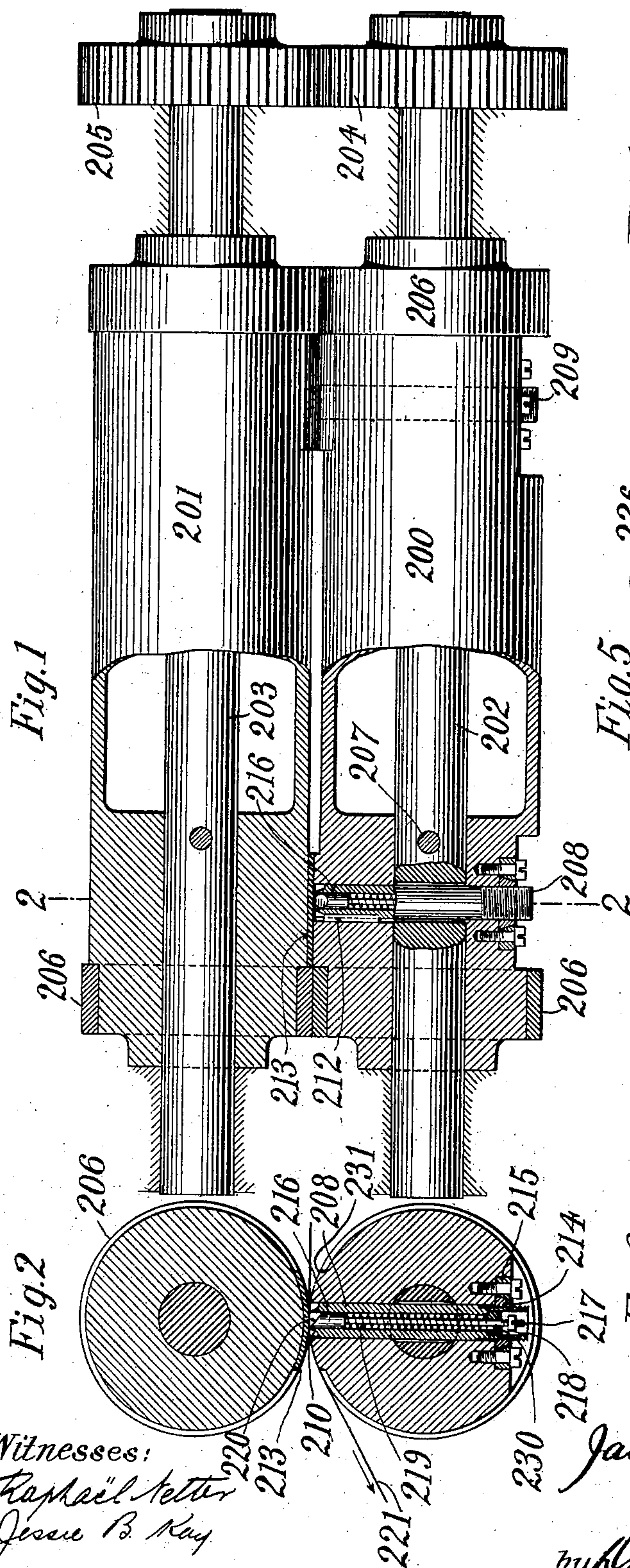


Fig. 1

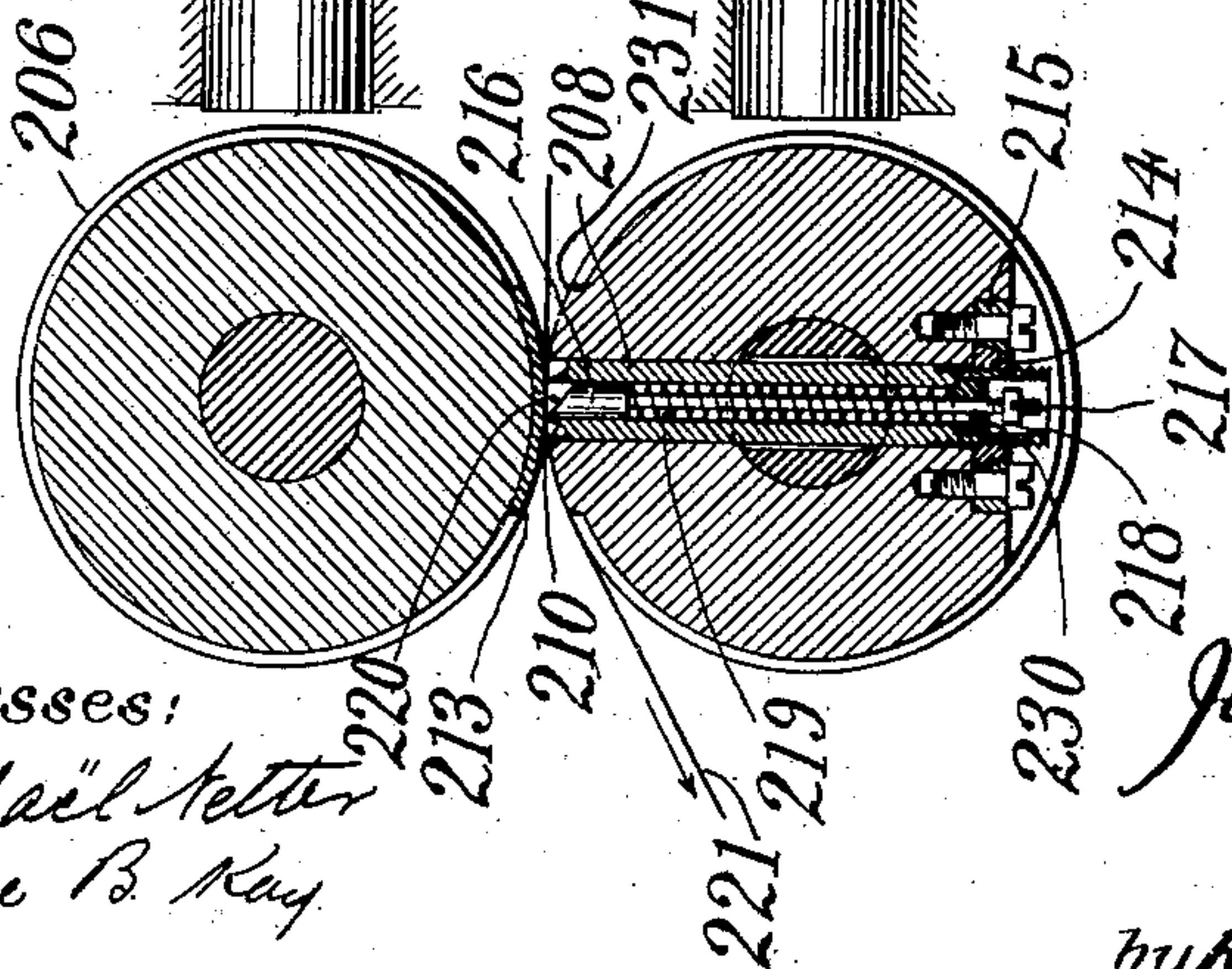


Fig. 2

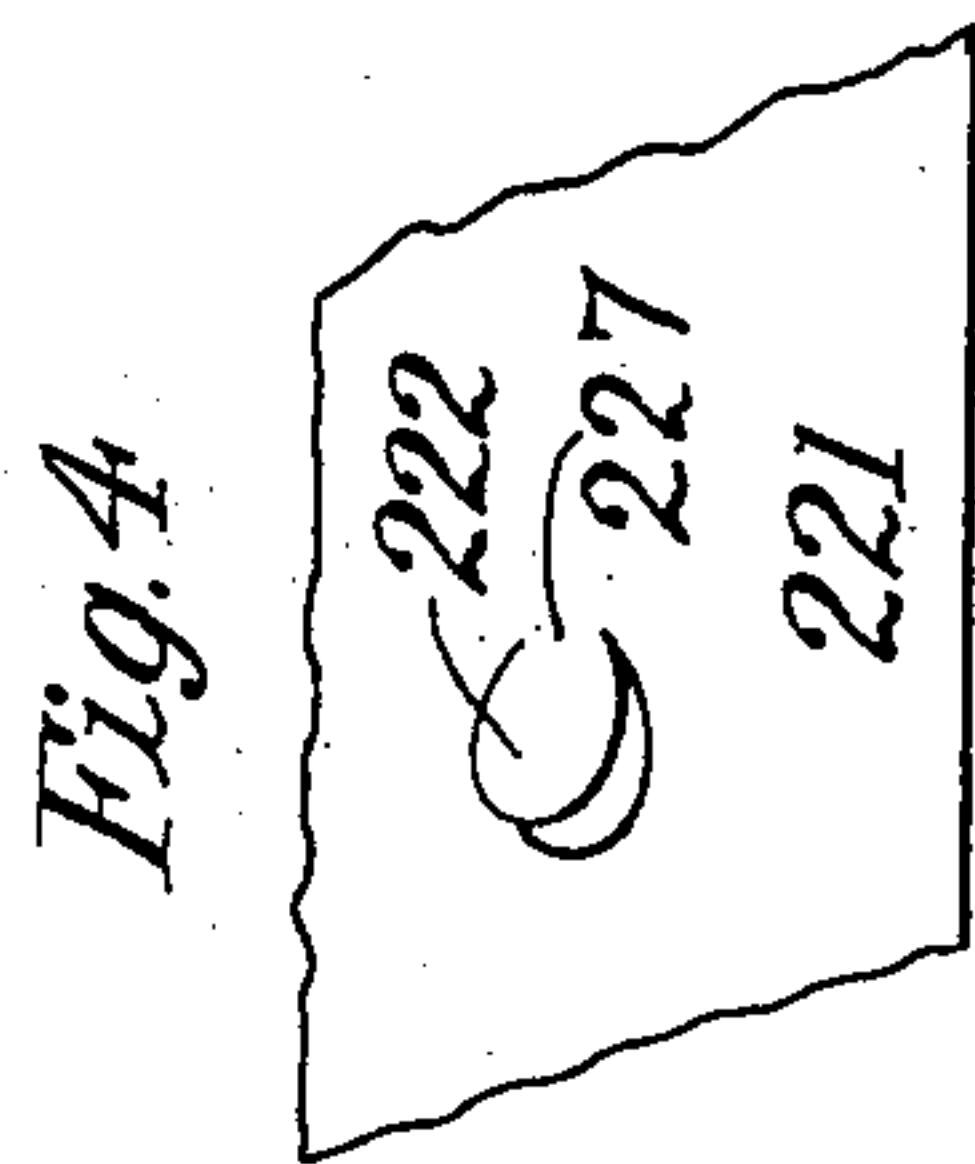


Fig. 4

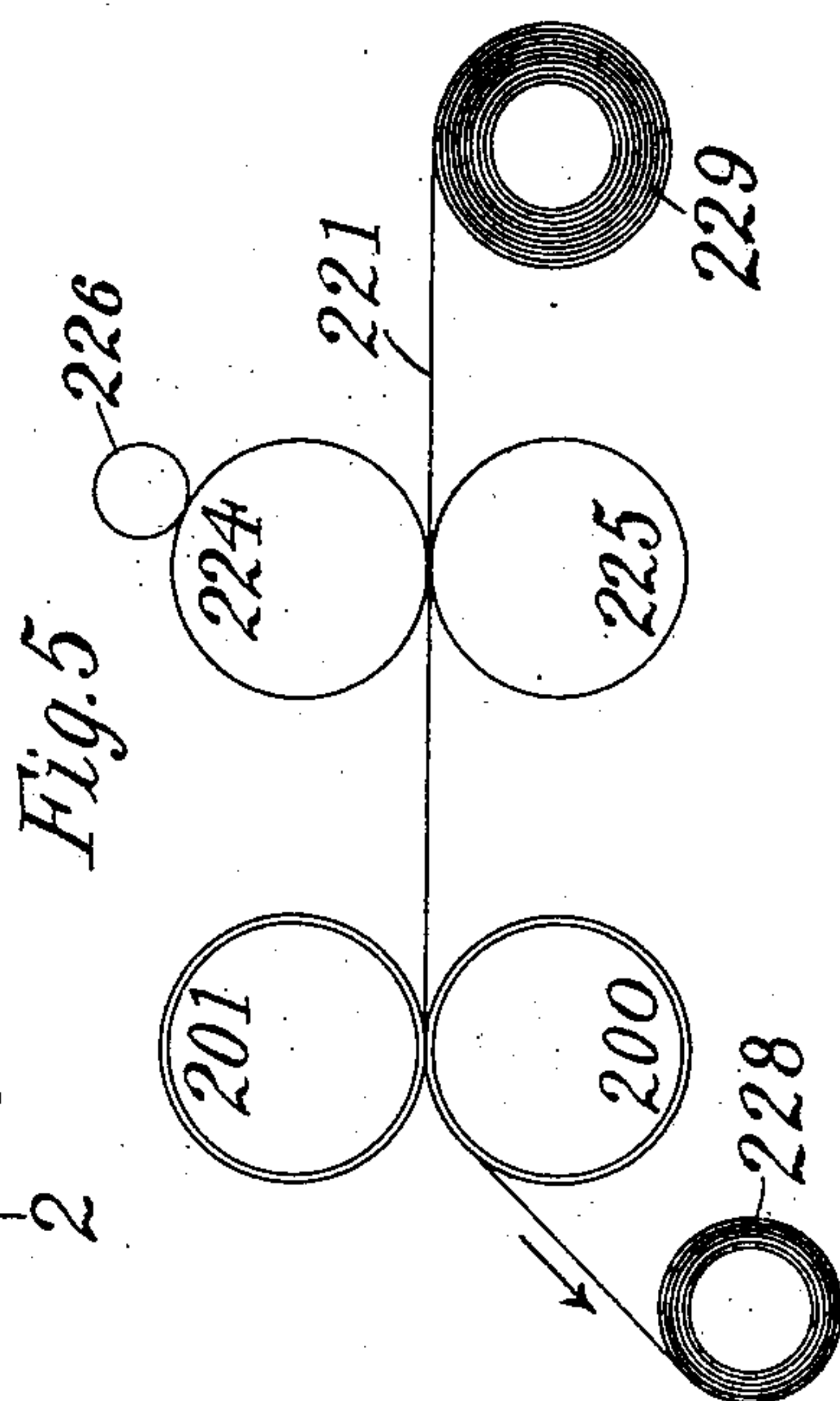


Fig. 5

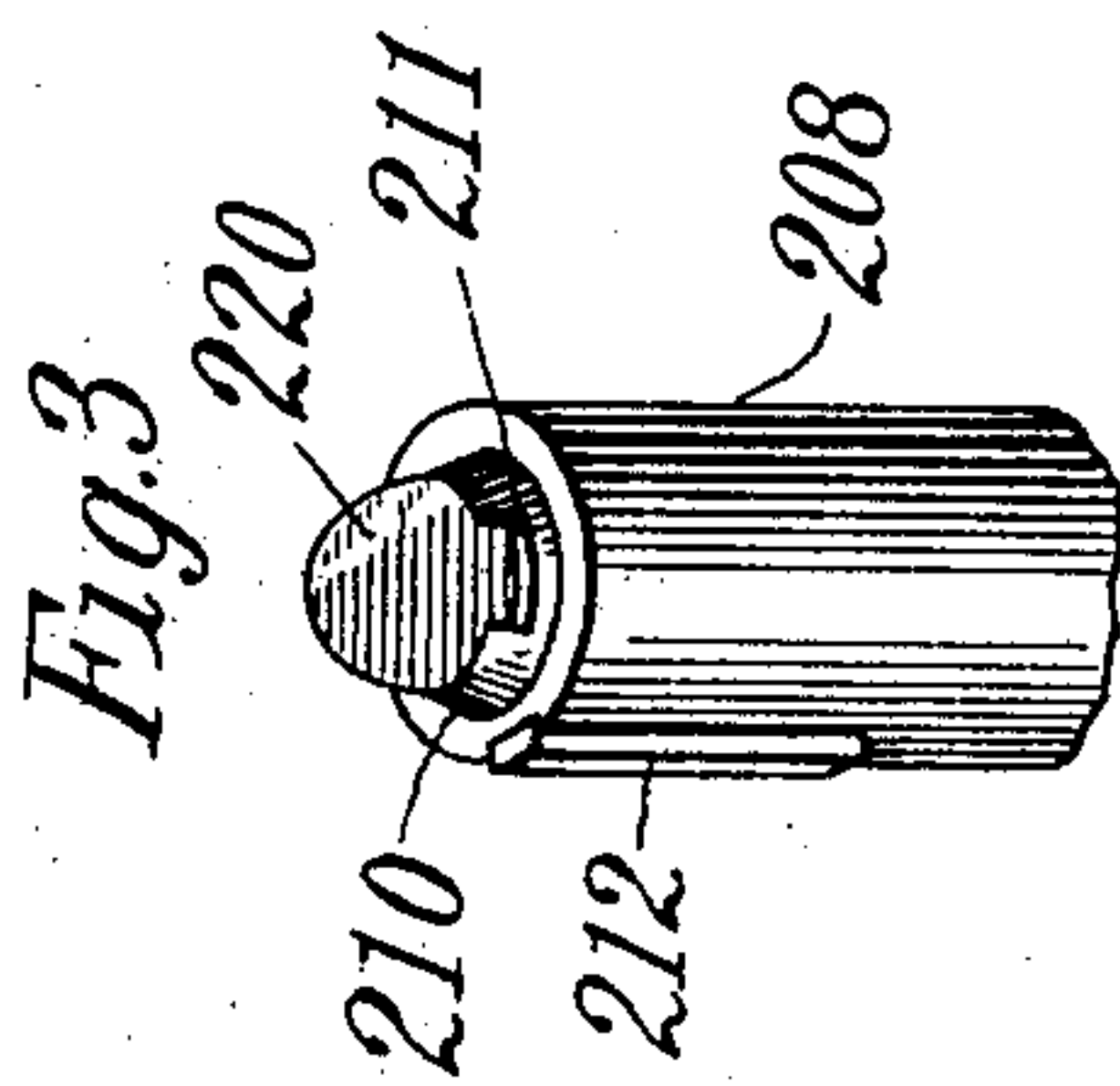


Fig. 3

Witnesses:

Raphael Tetter
Jesse B. Kay

James A. Keyes Inventor

butler & Hume Att'ys

UNITED STATES PATENT OFFICE.

JAMES A. KEYES, OF NEW YORK, N. Y.

PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 762,321, dated June 14, 1904.

Application filed October 10, 1903. Serial No. 176,482. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. KEYES, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Punching-Machines, of which the following is a specification, taken in connection with the accompanying drawings, which form a part of the same.

This invention relates to punching-machines, and relates especially to machines for punching alining holes in strips of paper or other material.

In the drawings, in which the same reference-numeral refers to similar parts in the several figures, Figure 1 is an elevation, partly in section, of an embodiment of this invention. Fig. 2 is a transverse section of the same, taken substantially along the line 2 2 of Fig. 1. Fig. 3 is a detail of the cutter. Fig. 4 is a detail showing the manner in which the paper strip is punched. Fig. 5 is a diagrammatic view showing the arrangement of this machine in connection with a printing-press.

In the embodiment of the invention shown in the drawings the cutter-roll 200 is shown as rigidly secured to the cutter-shaft 202 by the pin 207. This cutter-shaft is mounted in suitable bearings supported in a frame. The supporting-roll 201 is similarly mounted upon the shaft 203, which is rigidly supported in bearings, so that the two rolls cooperate properly, the rolls being driven in unison by the gears 204 205 upon their shafts and being rotated in any desired way during the operation of the machine. The rolls are preferably formed with suitable alining sleeves, so as to accurately maintain them in alinement during their operation. The sleeves 206 are indicated as being formed at either end of the rolls and by their engagement hold the rolls in their proper position. The supporting-roll is preferably formed with the facing 213, which may be of copper, and the cutting-roll is preferably formed with the gripping-face 231, which grips and feeds forward the paper strip 221 in connection with the facing. The cutters are preferably given the tubular form indicated and may be mounted in the cutting-roll in any desired way, being preferably adjustable therein.

As indicated in Fig. 3, the outer end of the cutter is formed with a suitable key 212, which cooperates with a keyway in the roll. The rear end of the cutter 208 is threaded and cooperates with an adjusting-nut 214, this adjusting-nut being rigidly clamped in position by the locking-collar 215, which may be screwed to the roll and which securely holds the adjusting-nut by the conical form of these cooperating parts. The cutter-face 210, which is accurately finished to cooperate with the facing, is preferably formed with a recess 211, so that the cutter-face does not engage the strip at this portion of its surface.

In order to completely sever and disengage the blank from the paper strip throughout the desired portion of its circumference, a plunger is preferably employed movable with relation to the paper strip and engaging the blank, so as to throw it out away from the plane of the strip into substantially the position indicated in Fig. 4, in which the main body of the blank 222 is shown at an angle to the rest of the strip 221, the blank being connected with the strip, however, by the tongue 227. If desired, the plunger may be mounted within the cutter, as is shown in the drawings, the plunger 216 fitting within the tubular cutter and preferably having the beveled point 220 opposite the recess 211. The plunger is secured to the stem 207, the lower end of which is preferably threaded to engage the adjustable head 218, which limits the outward movement of the plunger under the action of the spring 219. The plunger may be kept in alinement and prevented from rotating, if desired, by forming the lug or key 230 on the stem, which engages a suitable slot in the collar, through which the rear end of the plunger-stem passes.

In the operation of this machine the cutter may be adjusted so that the paper strip is completely severed by the cutting-faces of the punches, or, if desired, the adjustment may be such that the paper strip is merely indented, but not completely severed, throughout the desired portion. This paper strip, which, as indicated in Fig. 5, may be fed from a suitable reel 229 and may pass through a printing-couple of any desired form and indicated

as comprising a type-cylinder 224, supplied by an inking-roll 226 and printing the paper strip 221 in connection with the cooperating cylinder 225. The paper strip then passes
 5 through the punching-machine, being preferably positively fed therethrough at the same surface speed as the roll and which may in some cases be fed forward by engagement with the alining collars on the rolls 200 201
 10 and thereafter being wound upon the winder 228. As the strip 221 passes between the facing 213 and the cutter, as indicated in Fig. 2, the blank is indented and weakened or in some cases entirely severed throughout the desired
 15 portion of its circumference. Then the continued rotation of the cutter-roll rotates the cutter and the plunger contained therein out of the vertical plane, and this movement allows the plunger to be protruded under the action
 20 of its spring, so as to disengage the blanks from the strip to the extent indicated. The machine is in this way certain and efficient in its operation, and the punching can be done at a rapid rate and without the continual sharp-
 25 ening and adjusting of the cutters.

It is of course understood by those familiar with this art that many modifications may be made in the form, proportions, and numbers of parts of this machine, parts of the same
 30 may be omitted and parts may be employed in connection with other devices without departing from the spirit of this invention or losing the advantages of the same. I do not, therefore, desire to be limited to the details of
 35 the disclosure which has been made in this case; but

What I claim as new, and what I desire to secure by Letters Patent, is set forth in the appended claims:

40 1. In punching-machines, a cutter-roll and supporting-roll formed with cooperating alining sleeves and rotating in unison, a tubular cutter adjustably mounted in said cutter-roll and cooperating with a facing in said support-

ing-roll, said cutter having a sharpened face 45 formed with a recess and a plunger having a beveled point mounted in said cutter to be normally protruded therefrom.

2. In punching-machines, a cutter-roll, a cooperating supporting-roll, a tubular cutter 50 mounted in said cutter-roll and having a cutting-face provided with a recess and a plunger mounted within said cutter and normally protruded therefrom.

3. In punching-machines, a cutter-roll, a 55 cooperating supporting-roll, a cutter mounted in said cutter-roll and a plunger mounted within said cutter to be normally protruded beyond the cutting-face of the same.

4. In punching-machines, a cutter-roll, a 60 cooperating supporting-roll, a cutter mounted in said cutter-roll and a plunger to engage a strip acted upon by said cutter and to disengage a blank from said strip.

5. In punching-machines, a cutter-roll, a 65 cutter mounted therein having a cutting-face formed with a recess, means to bring said cutter into engagement with a strip, a plunger and means to bring said plunger into engagement with said strip to disengage the 70 blank therefrom.

6. In punching-machines, a tubular cutter having a cutting-face formed with a recess and a plunger mounted within said cutter to be normally protruded therefrom, said plunger 75 having a point opposite said recess.

7. In punching-machines, a cutter having a cutting-face formed with a recess to leave an unsevered tongue secured to the blank, means to bring said cutter into engagement 80 with a strip, a plunger and means to bring said plunger against said strip to disengage the blank therefrom.

JAMES A. KEYES.

Witnesses:

W. E. PEARSE,
 W. L. BREMER.