

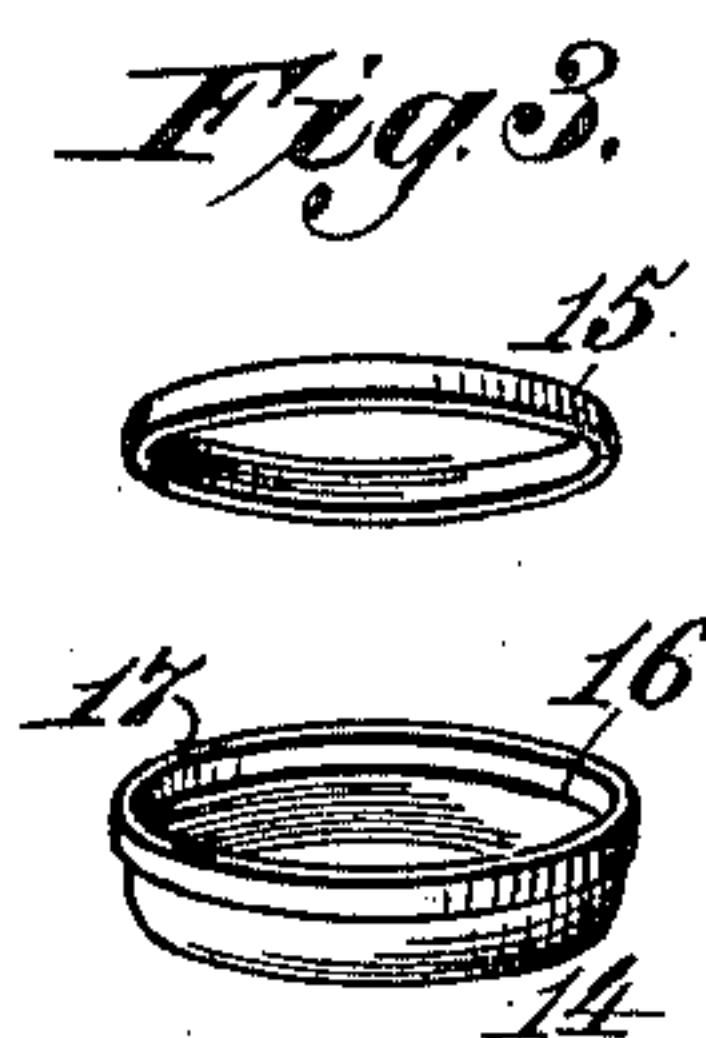
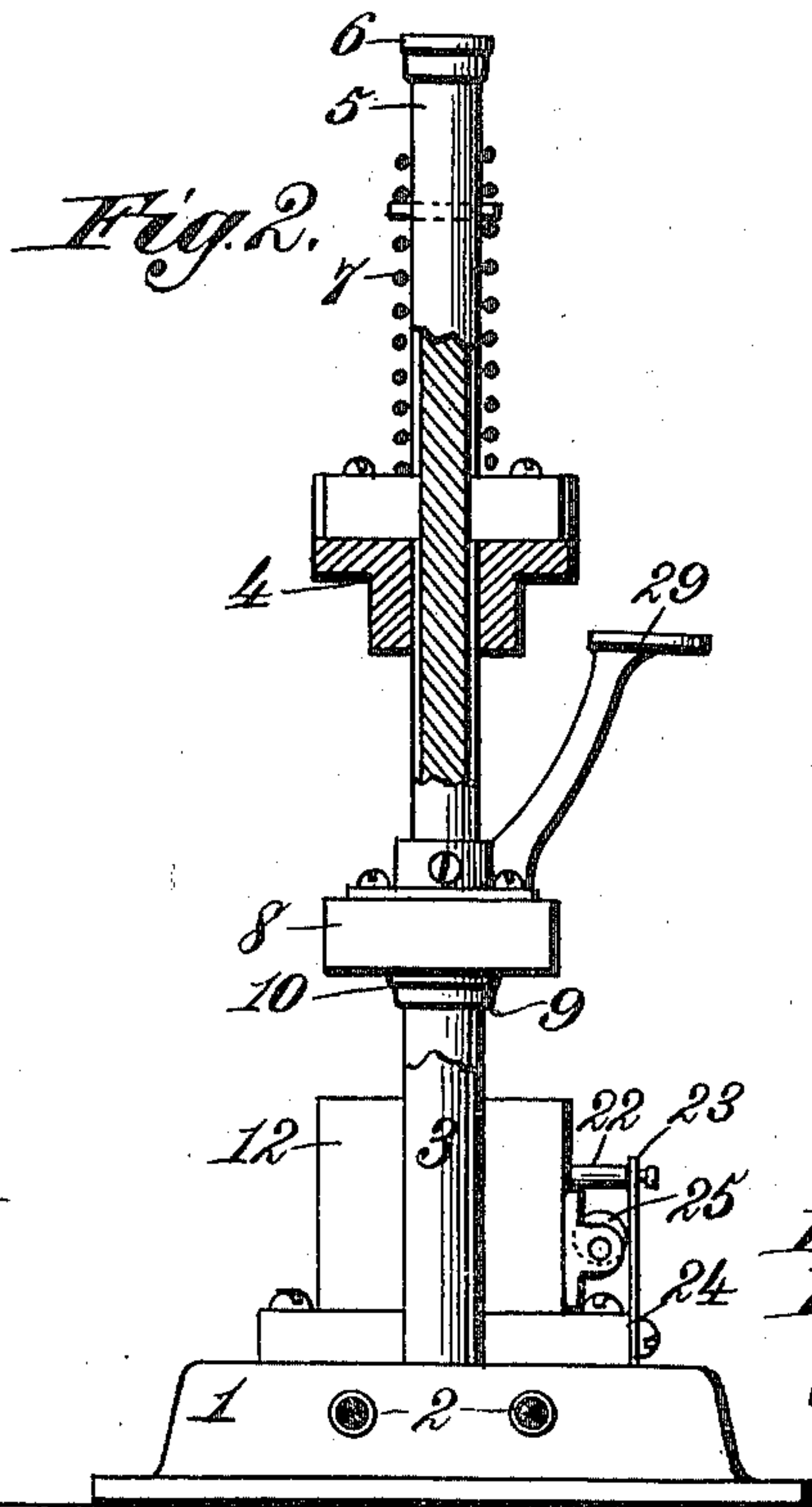
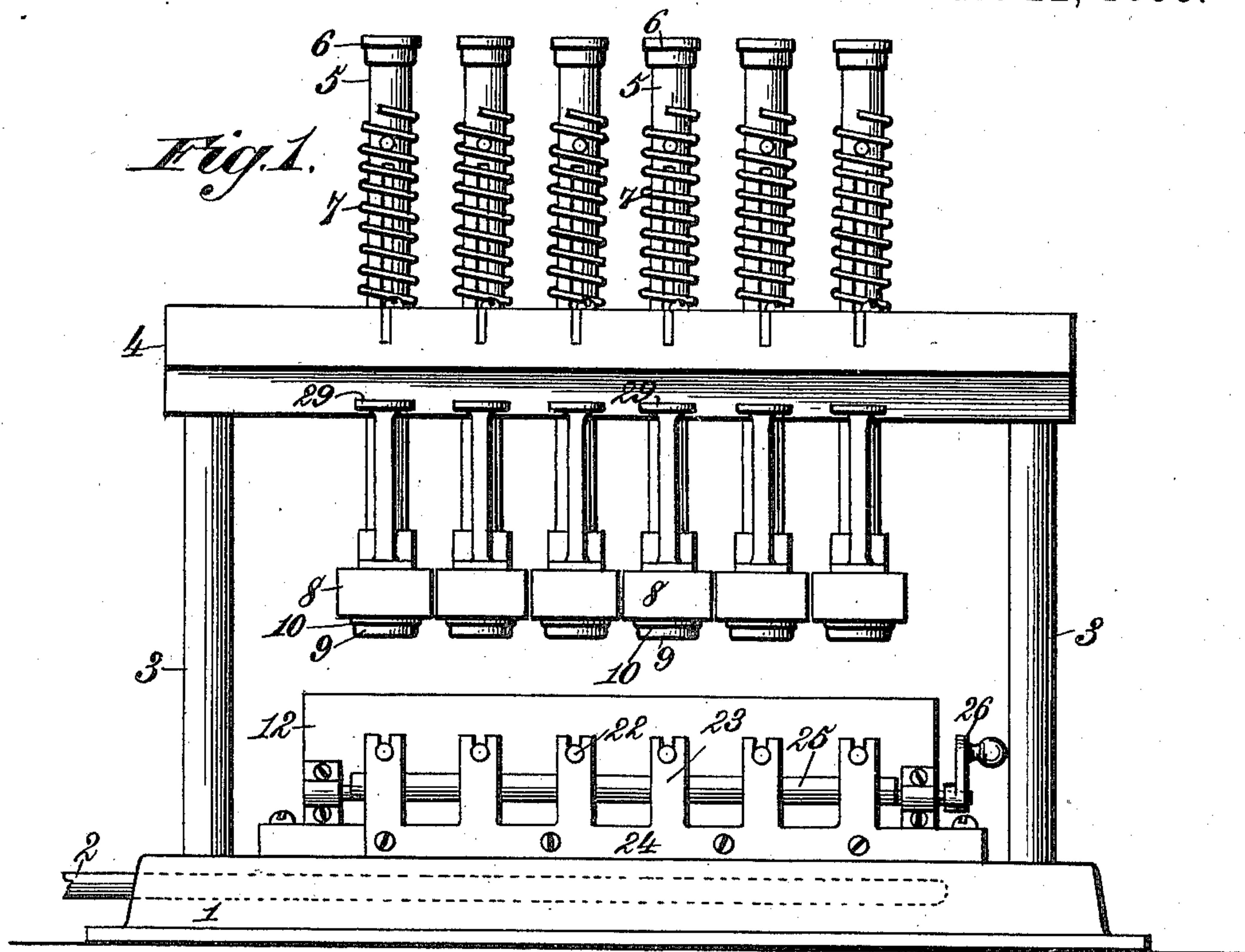
(No Model.)

2 Sheets—Sheet 1.

D. GENESE.  
CAPSULE MACHINE.

No. 600,863.

Patented Mar. 22, 1898.



Witnesses.  
*Robert Everett.*  
*Alfred J. Westland.*

Inventor.  
*David Genese.*  
By *James L. Norring.*  
*Atty.*

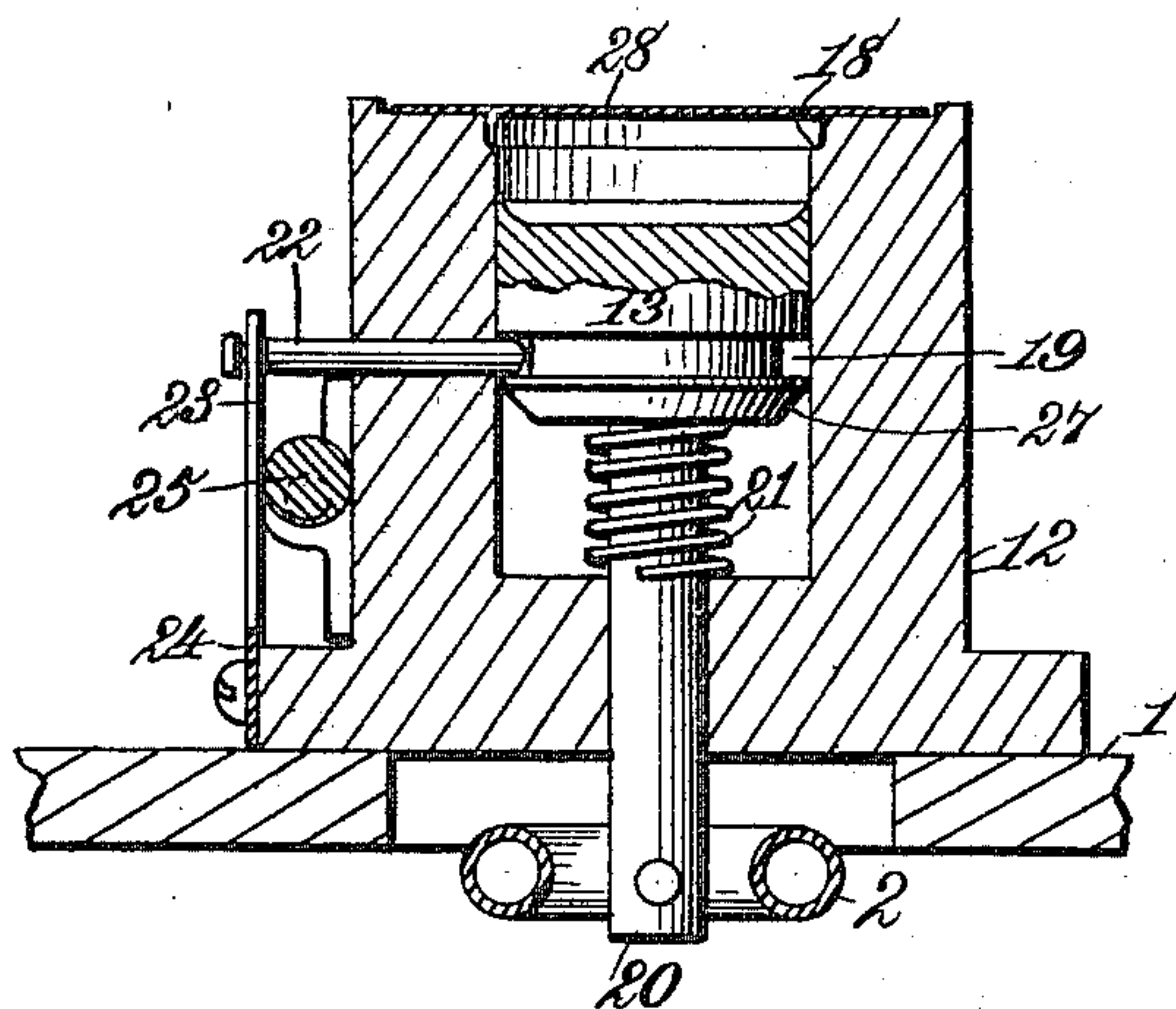
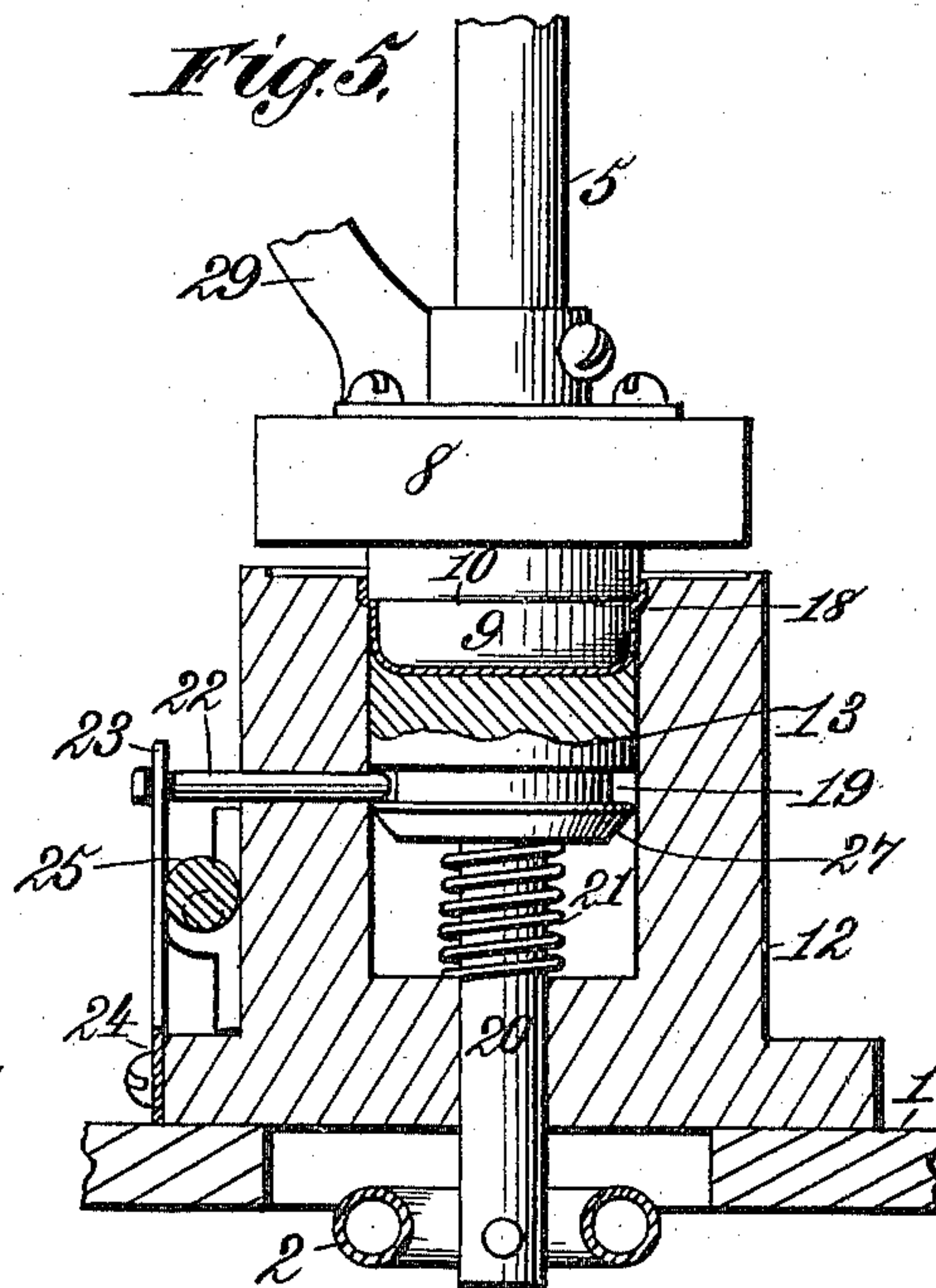
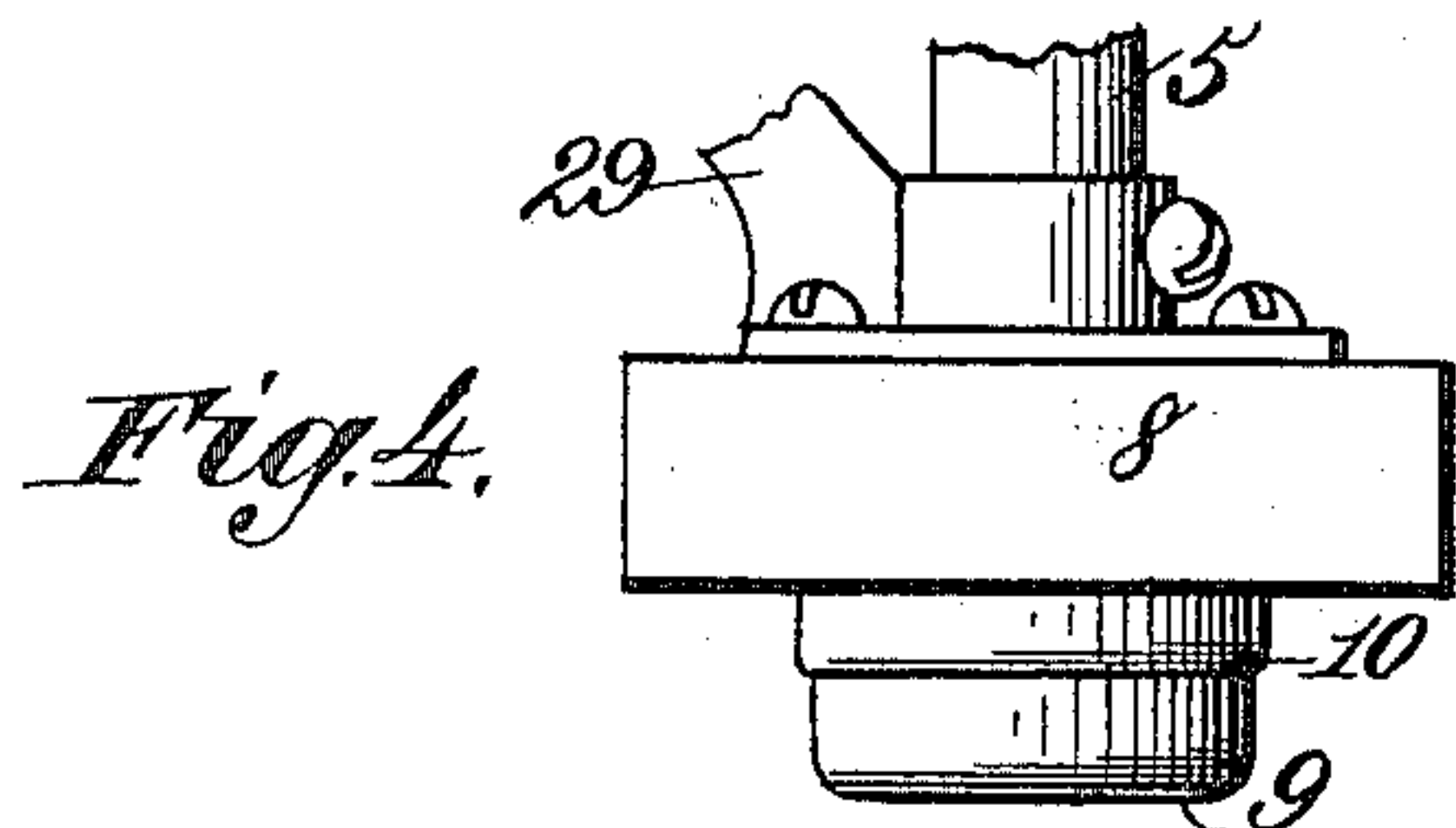
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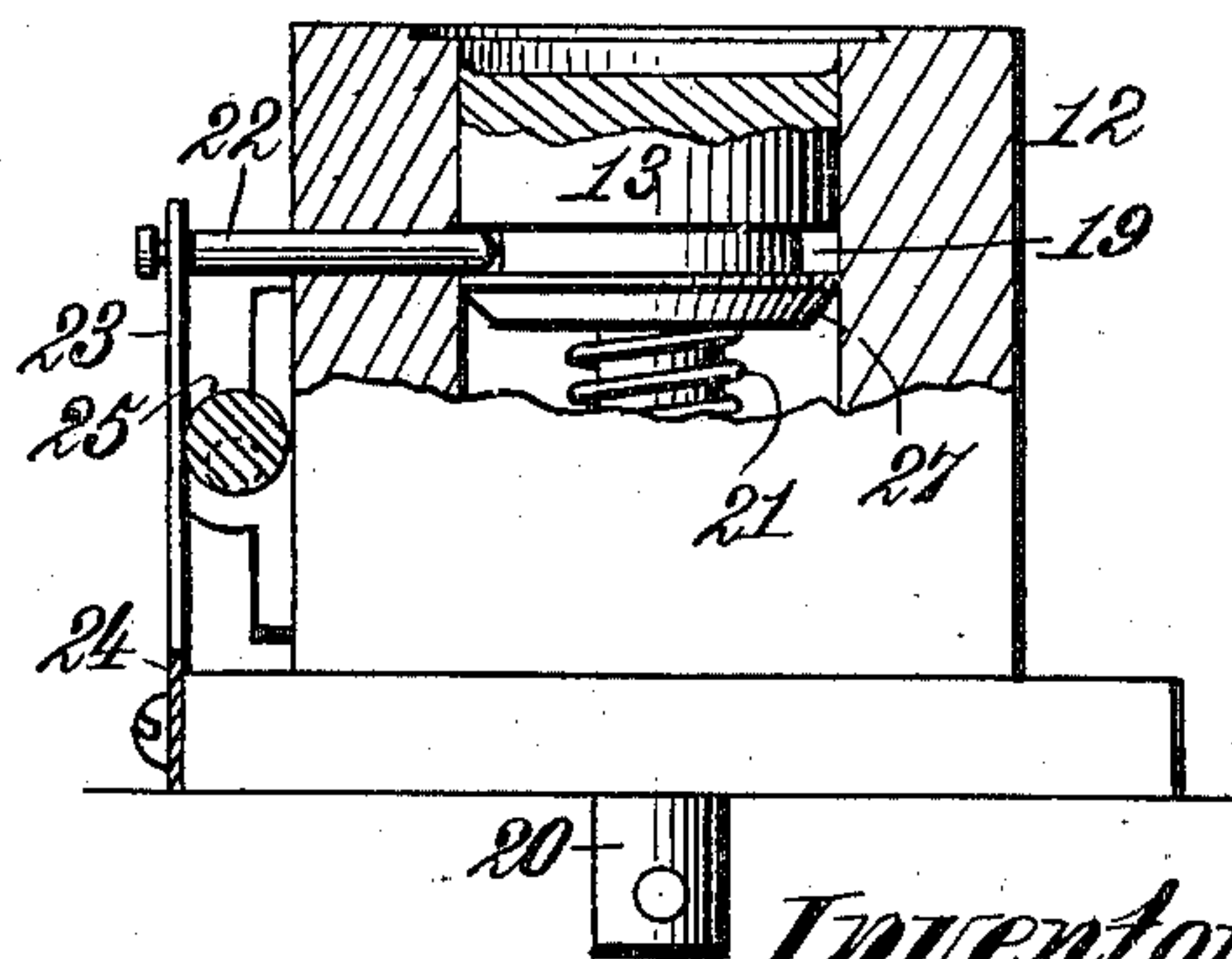
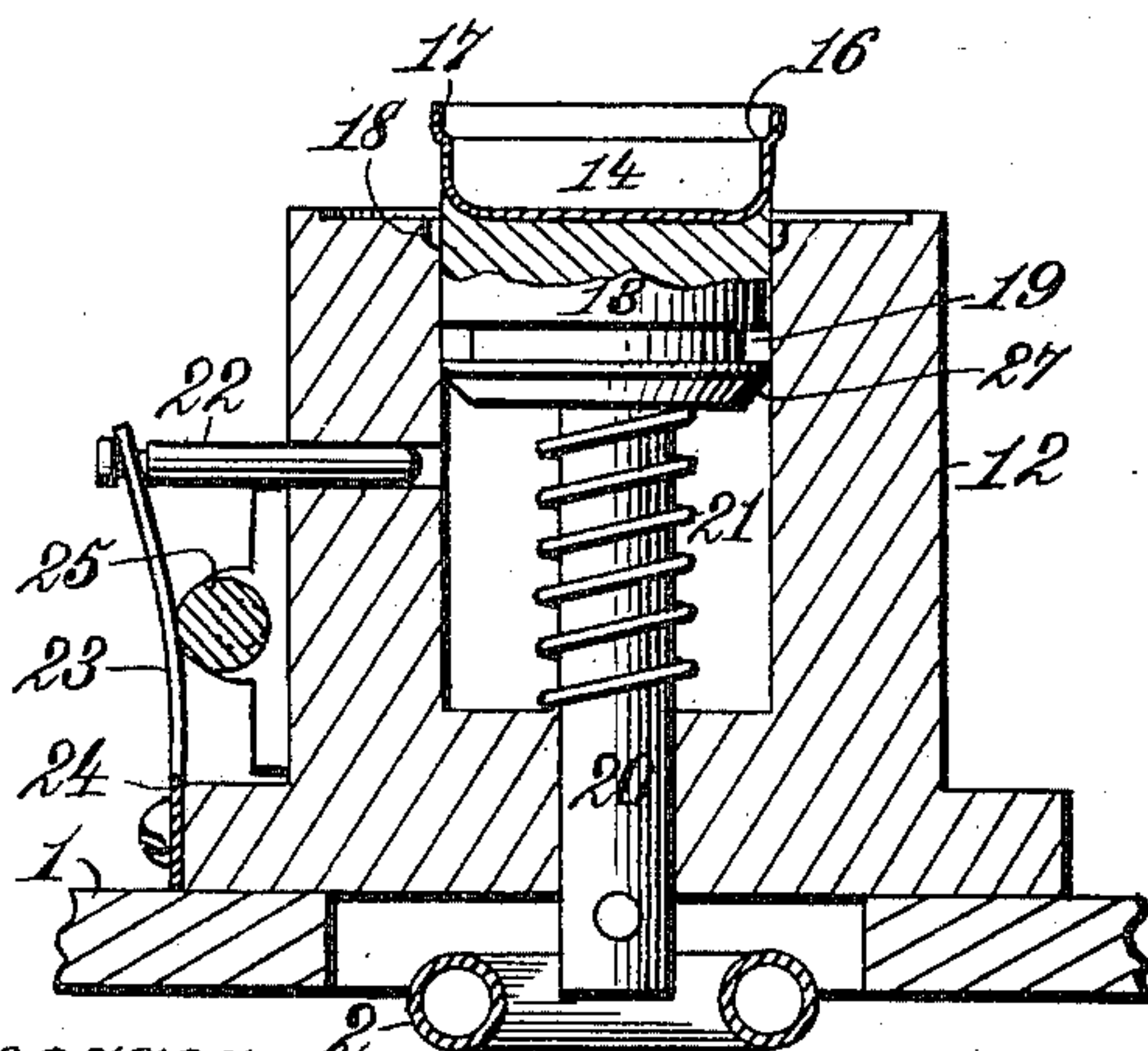
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*Fig. 7.*



Witnesses.  
*Robert Emmett.*  
*Nancy S. S. S.*

*Inventor.*  
*David Genese.*  
*By James L. Norris.*  
*Atty.*



# UNITED STATES PATENT OFFICE.

DAVID GENESE, OF BALTIMORE, MARYLAND.

## CAPSULE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 600,863, dated March 22, 1898.

Application filed April 12, 1897. Serial No. 631,790. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID GENESE, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented  
5 new and useful Improvements in Capsule-Machines, of which the following is a specification.

The chief object of the present invention is to provide a new and improved apparatus  
10 or machine for rapidly manufacturing soluble capsules designed for administering medicine and prepared from a paste-like composition of matter which requires to be cured and hardened or set by heat to enable the  
15 capsule when filled to be effectually closed, preserved in proper form, and safely handled, moved, or transported. This object is accomplished in the manner and by the means hereinafter described and claimed, reference  
20 being made to the accompanying drawings, in which—

Figure 1 is a front elevation of a capsule-machine embodying my invention. Fig. 2 is a sectional end elevation of the same. Fig.  
25 3 is a detail perspective view of the two parts of a capsule formed or shaped by my improved machine. Fig. 4 is a detail sectional elevation showing one of the male formers and one of the female formers, the male former being in its elevated position. Fig.  
30 5 is a similar view showing the male former lowered into the female former for shaping one section of a capsule. Fig. 6 is a detail sectional view of the female former, showing the ejector released to eject the formed or  
35 shaped half-section of a capsule; and Fig. 7 is a detail sectional elevation showing the construction of formers designed for making the cover-sections of the capsules.

40 In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates a base frame or  
45 plate of any form suitable for the purpose in hand, but of such construction that a steam-pipe 2 may be introduced thereinto or between parts of the same for the purpose of heating the female formers hereinafter explained.

50 Although I have illustrated a steam-pipe as a means for heating the female formers referred to, I wish it clearly understood that

I may use a gas-burner, a lamp, or any other heater suitable for the purpose.

The base frame or plate is provided with  
55 posts or standards 3, on the upper ends of which is mounted a horizontal top frame or plate 4, which serves to support and guide a plurality of vertically-reciprocatory rods 5,  
60 provided at their upper ends with finger-pieces 6 and acted upon by suitable springs 7, which serve to automatically raise the rods. The lower ends of the rods carry suitably-shaped heads 8, having male formers 9 on  
65 their lower sides.

Inasmuch as the machine illustrated in the drawings is designed to form or shape capsules circular in outline the male formers 9 are correspondingly shaped and are constructed with annular shoulders 10 for a purpose  
70 hereinafter explained. The base frame or plate 1 serves to support a frame 12, having a plurality of vertical chambers at different points along its median line, which chambers are, as here shown, circular to correspond with the circular form of the male  
75 formers 9 and constitute female formers. In the drawings I have represented six vertically-movable rods 5, carrying male formers, and accordingly there will be six female  
80 formers in the frame 12 in exact coincidence with the male formers, so that when one of the rods is lowered the male former will enter the upper end of the female former. In each female former is arranged a disk-shaped  
85 ejector 13, having its upper surface suitably shaped to cooperate with the upper end of the female former in the formation of one half-section of a capsule when the capsule material is placed in position and the proper  
90 male former is depressed.

The construction and shape of the two sections to compose a complete capsule are clearly shown in Fig. 3, where the numerals 14 and 15 indicate the two half-sections,  
95 the section 14 being what may be termed the "body" portion and the section 15 the "cover" portion. The body portion or section is so fashioned or shaped as to provide an internal annular shoulder 16, from which  
100 rises a vertical annular rim 17. The cover portion or section 15 is adapted to rest upon the annular shoulder 16 and be held in position by the rim 17, and to secure the two sec-



tions together after the capsule has been properly filled the edge of the section 15 may be dipped in a suitable cement, so that when inserted into the section 14 the two parts will be firmly secured together.

The apparatus or machine illustrated in Figs. 1 to 6, inclusive, is designed, as represented, to produce the body portions or half-sections 14 of the capsules. I prefer to produce the cover portions or sections 15 by a separate machine, Fig. 7, which, however, is substantially the same as described with reference to Figs. 1 to 6, inclusive.

The upper end of each female former is constructed with a countersunk recess to provide an internal annular shoulder 18, the construction being such that the female former, the ejector-head, and the male former cooperate to shape the cup-shaped half-section 14, so that it will possess the annular shoulder 16 and annular rim 17, before referred to.

The ejector-heads 13 are each provided with an annular groove 19 and a pendent vertical stem 20, which projects down through the bottom of the frame 12 and is encircled by a suitable spring 21, which tends to elevate or throw the ejector-head upward. The ejector-heads 13 are each held depressed or in the lowest position in the frame 12 through the medium of a locking device, composed, as here shown, of a locking-pin 22, mounted in and movable horizontally through one side wall of the frame 12 to engage and disengage the annular groove 19 of the ejector-head. The outer ends of the locking-pins 22 are acted upon by flat or leaf springs 23, forming part of a plate 24, which is attached by screws to the base of the frame 12. The locking-pins 22 can all be simultaneously withdrawn from engagement with the ejector-heads 13 to permit the latter to spring upward through the medium of any suitable device or mechanism; but, as here shown, this is effected by a horizontal cam-shaft 25, journaled in suitable bearings at the ends of the frame 12 and provided with a handle 26, by which the cam-shaft can be rotated or turned. If the shaft is turned in one direction, the eccentric part of the shaft will act upon all the flat or leaf springs 23 and press them outward for the purpose of withdrawing the locking-pins from engagement with the ejector-heads. If the shaft be turned in the opposite direction, the flat or leaf springs are released and by their resiliency force the locking-pins 22 inwardly, so that when the ejector-heads are forced downward within the frame 12 they will be automatically engaged by the locking-pins and held depressed, as will be best understood by reference to Figs. 4 and 5. To permit the automatic engagement of the locking-pins with the ejector-heads, the lower portions of the latter are beveled, as at 27, so that when the heads are depressed the beveled lower ends 27 force the locking-pins outward and hold them in such position until the annular groove 19 registers with the in-

ner ends of the pins, whereupon the latter will automatically spring into engagement with the grooves, thus holding the ejector-heads depressed or retracted in the female formers while the male formers are in their elevated positions.

The locking devices for retaining the ejectors depressed or retracted enable the molded capsule-sections to be cured in the female formers while the male formers are withdrawn therefrom and are supported in their elevated or normal position ready to be operated when required. By this means it is unnecessary to hold the male formers depressed while the capsule-sections are being cured.

The material of which the capsules are composed may be of any character suitable for the purpose; but I prefer to prepare a composition of matter composed of ground rice, water and albumen, or white of egg. This composition is prepared in about the consistency of ordinary paste or of such consistency that it can be made into a sheet susceptible of being cut into disk-shaped pieces, which are laid upon the upper end of the frame 12, as best seen in Fig. 4, where the numeral 28 indicates the disk-shaped piece of material designed to form one half-section of the capsule. These disk-shaped pieces are formed or shaped by depressing the rods 5, which cause the male formers 9 to force the disk-shaped pieces down into the female formers, as will be understood by reference to Fig. 5. The rods 5 are preferably so arranged that they can be independently depressed by operating with the fingers on the finger-pieces 6 in a manner similar to operating the keys of a type-writer. For the purpose of enabling the rods to be more swiftly and conveniently operated I prefer to provide them with auxiliary finger-pieces 29, connected with their lower end portions and located at a level below the level of the finger-pieces 6. I do not wish to be understood, however, as confining myself to the independent depression of the rods, nor do I confine myself to any particular means for depressing the rods.

The construction of rods described and shown is advantageous, desirable, and efficient in that the rods guide the male formers and they can be swiftly operated to secure the desired shaping of the capsule-sections.

The frame 12 is heated through the medium of the steam-pipe 2 or other suitable heater, and consequently when the capsule-sections have been properly shaped and lie within the female formers they are quickly cured and hardened or set, after which the locking-pins 22 are withdrawn from engagement with the ejector-heads by turning the eccentric shaft in the proper direction, so that the ejector-heads will spring upward and discharge or eject the formed or shaped capsule-sections.

The construction shown in Fig. 7 for producing the cover-sections 15 of the capsules is the same in all respects as the corresponding parts in the other figures except as to



shoulders 10 and 18, and therefore I do not consider it essential to give a detailed description of Fig. 7, as the numbers thereupon indicate the parts corresponding to those hereinbefore explained.

The number of male formers, guide-rods, and female formers may be increased to any desired extent, or a number less than the number represented in the drawings may be employed, without altering the spirit of my invention.

Having thus described my invention, what I claim is—

1. The combination, in a capsule-making machine, of a frame having a series of female formers, means for heating the latter, a series of male formers constructed to enter the female formers to form or shape the capsule-sections, a series of ejectors arranged, respectively, in the mold-chambers, means for projecting the ejectors, locking devices for holding the ejectors retracted when the male formers are withdrawn from the female formers, and means for moving the locking devices to release the ejectors, substantially as described.

2. The combination, in a capsule-making machine, of a frame having a series of female formers, means for heating the latter, a series of male formers constructed to enter the female formers to form or shape the capsule-sections, a series of ejectors arranged, respectively, in the mold-chambers, springs operating to project the ejectors, locking devices mounted on the frame of the female formers for holding the ejectors retracted when the male formers are withdrawn from the female formers, and means for moving the locking

devices to release the ejectors, substantially as described.

3. The combination, in a capsule-making machine, of a frame having a series of female formers, a series of male formers constructed to enter the female formers to form or shape the capsule-sections, a series of ejectors arranged, respectively, in the female formers, means for projecting the ejectors, locking devices carried by the frame of the female formers and constructed to engage and hold the ejectors retracted in the female formers, and means for simultaneously moving the locking devices to disengage them from the ejectors, substantially as described.

4. The combination, in a capsule-making machine, of a frame having a series of female formers, a series of guide-rods provided with male formers which enter the female formers to form or shape the capsule-sections, a series of ejectors arranged, respectively, in the female formers, springs for projecting the ejectors, locking-pins carried by the frame of the female formers and constructed to engage and hold the ejectors retracted, springs acting upon the locking-pins to force them into engagement with the ejectors, and means for withdrawing the locking-pins from engagement with the ejectors, substantially as described.

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

DAVID GENESE.

Witnesses:

G. EVERETT REARDON,  
JOHN B. SANNER.