

F. M. PETERS & H. H. HUNGERFORD.

MACHINE FOR SEALING PACKAGES.

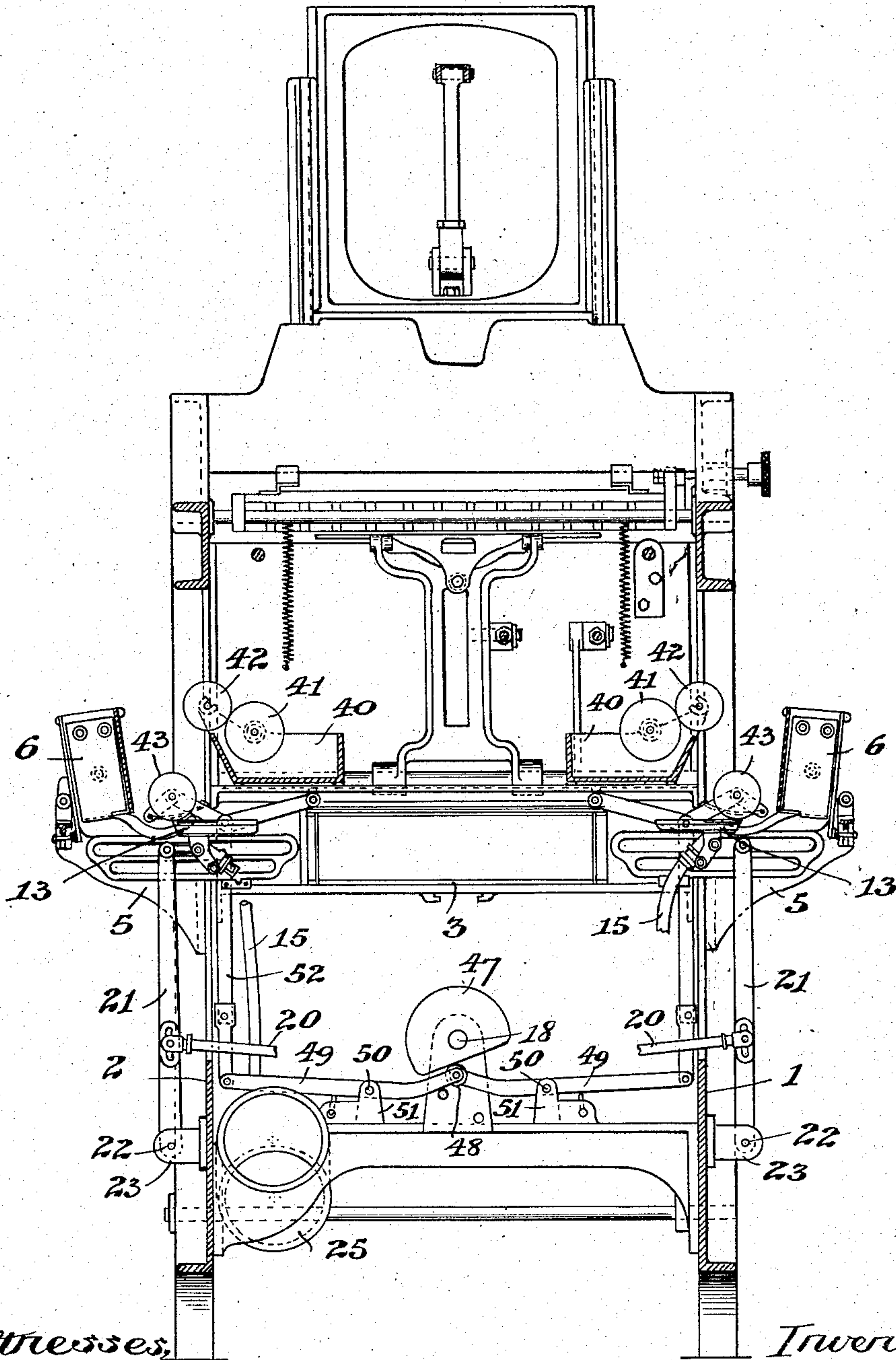
APPLICATION FILED DEC. 4, 1907.

997,580.

Patented July 11, 1911.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses,
J. D. Mann,
S. H. Pond

Inventors
Frank M. Peters,
Henry H. Hungerford,
By *Offield, Towle & Livingston*
Attys.

F. M. PETERS & H. H. HUNGERFORD.

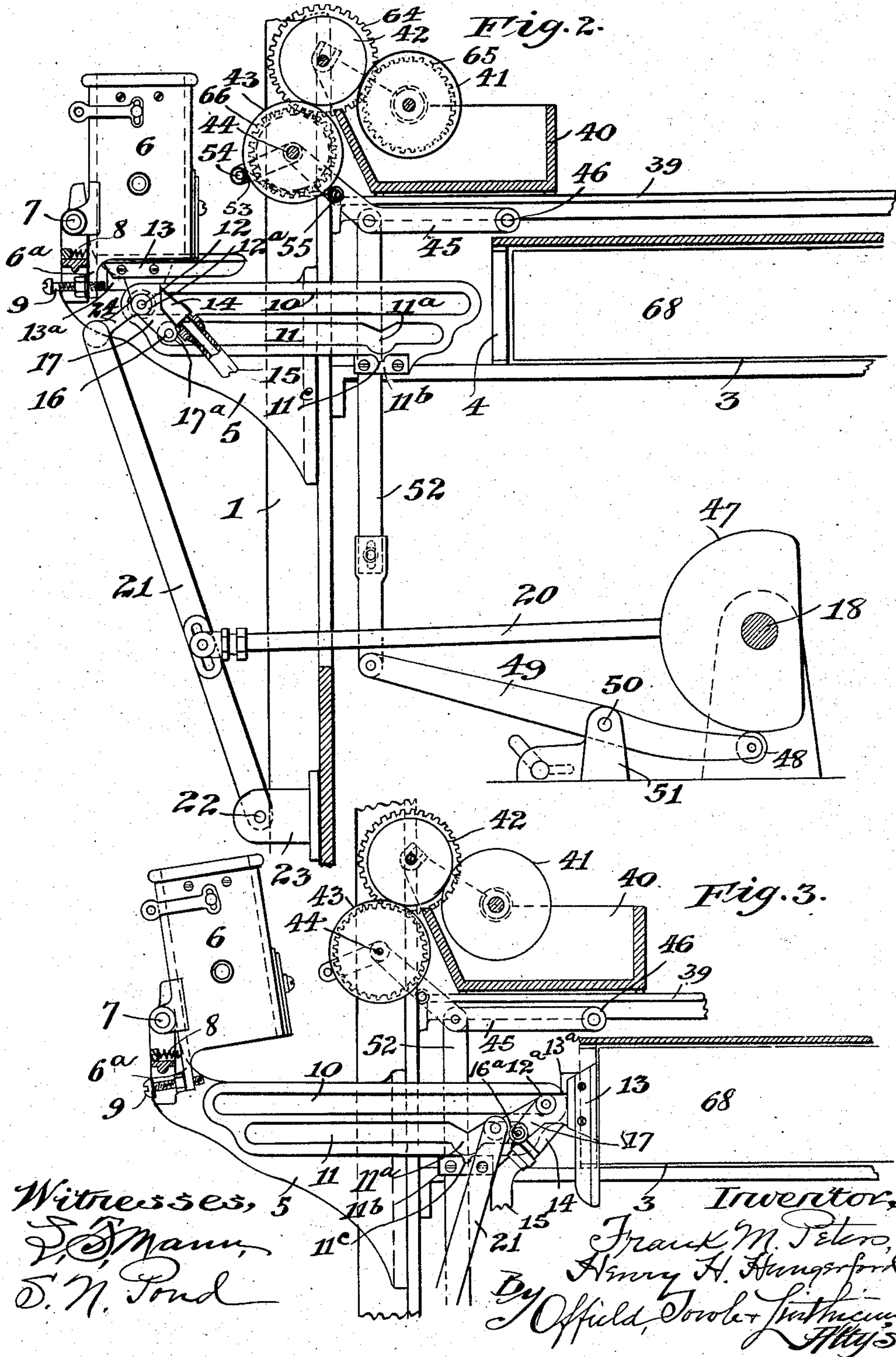
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5 SHEETS—SHEET 2.

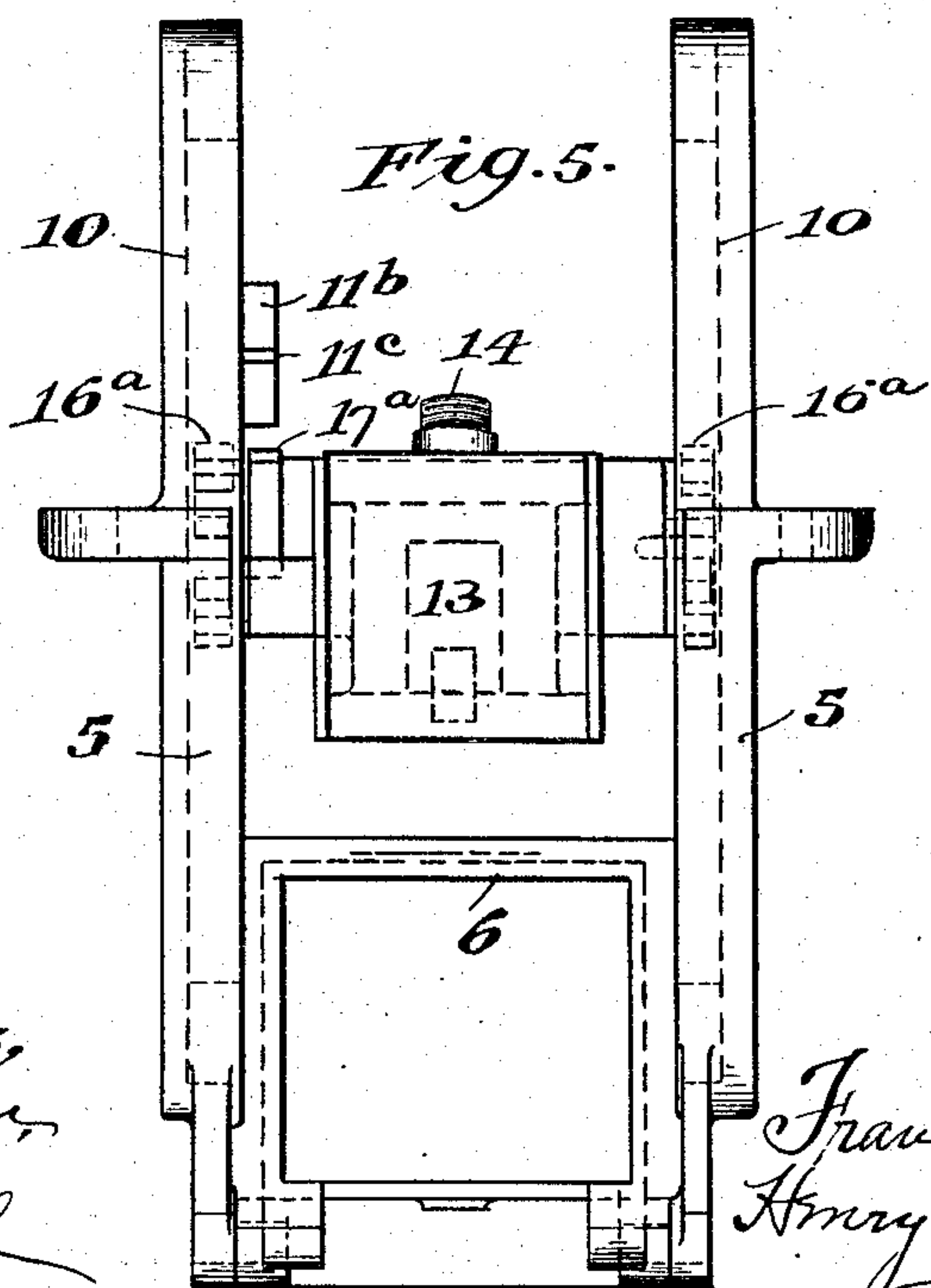
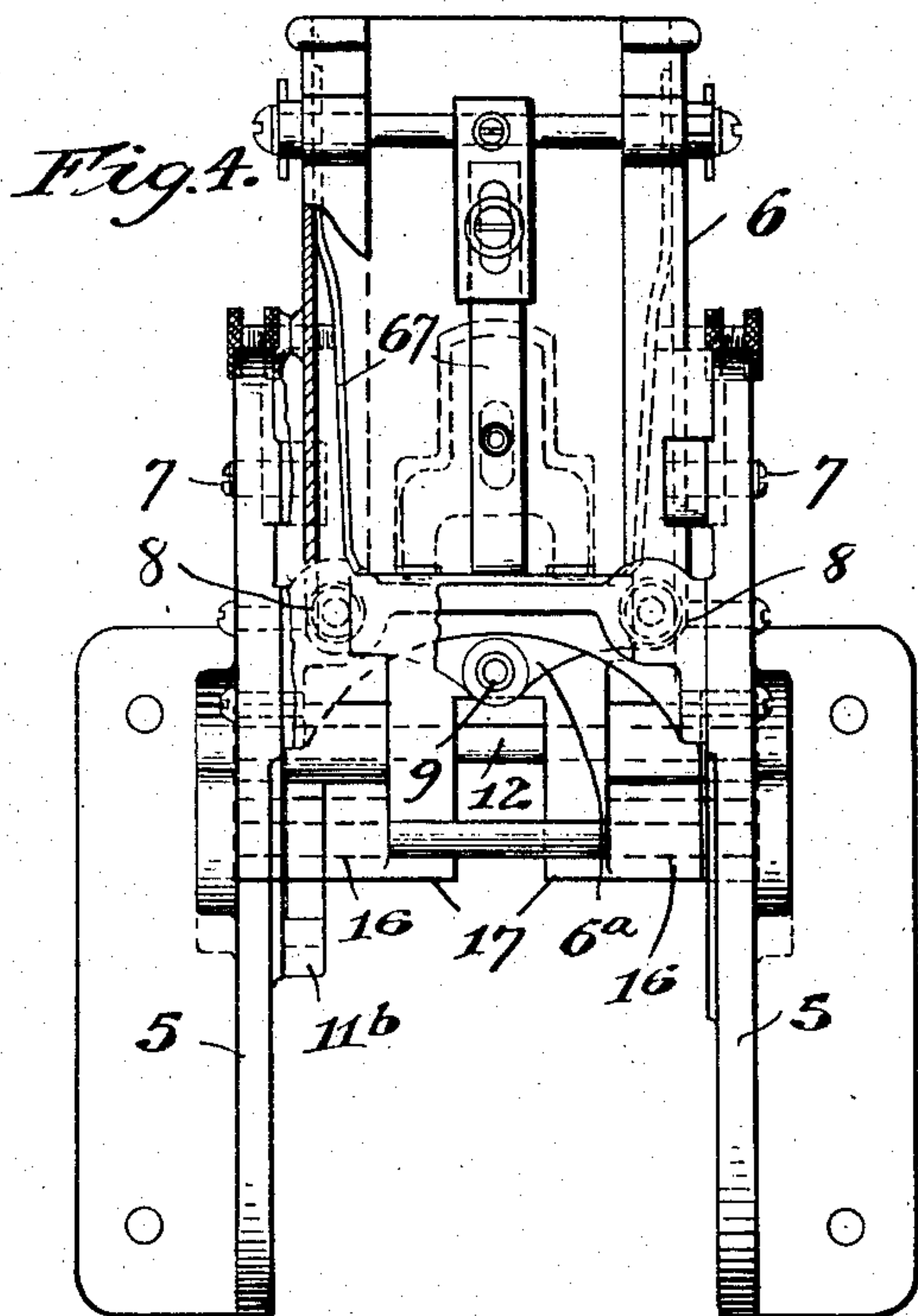


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5 SHEETS—SHEET 3.



Witnesses,
J. D. Mann,
S. N. Ford

Inventors
Frank M. Peters,
Henry H. Hungerford
By *Offield, Fowler & Hutchinson*
Attys.

F. M. PETERS & H. H. HUNGERFORD.

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5 SHEETS—SHEET 4.

Fig. 6.

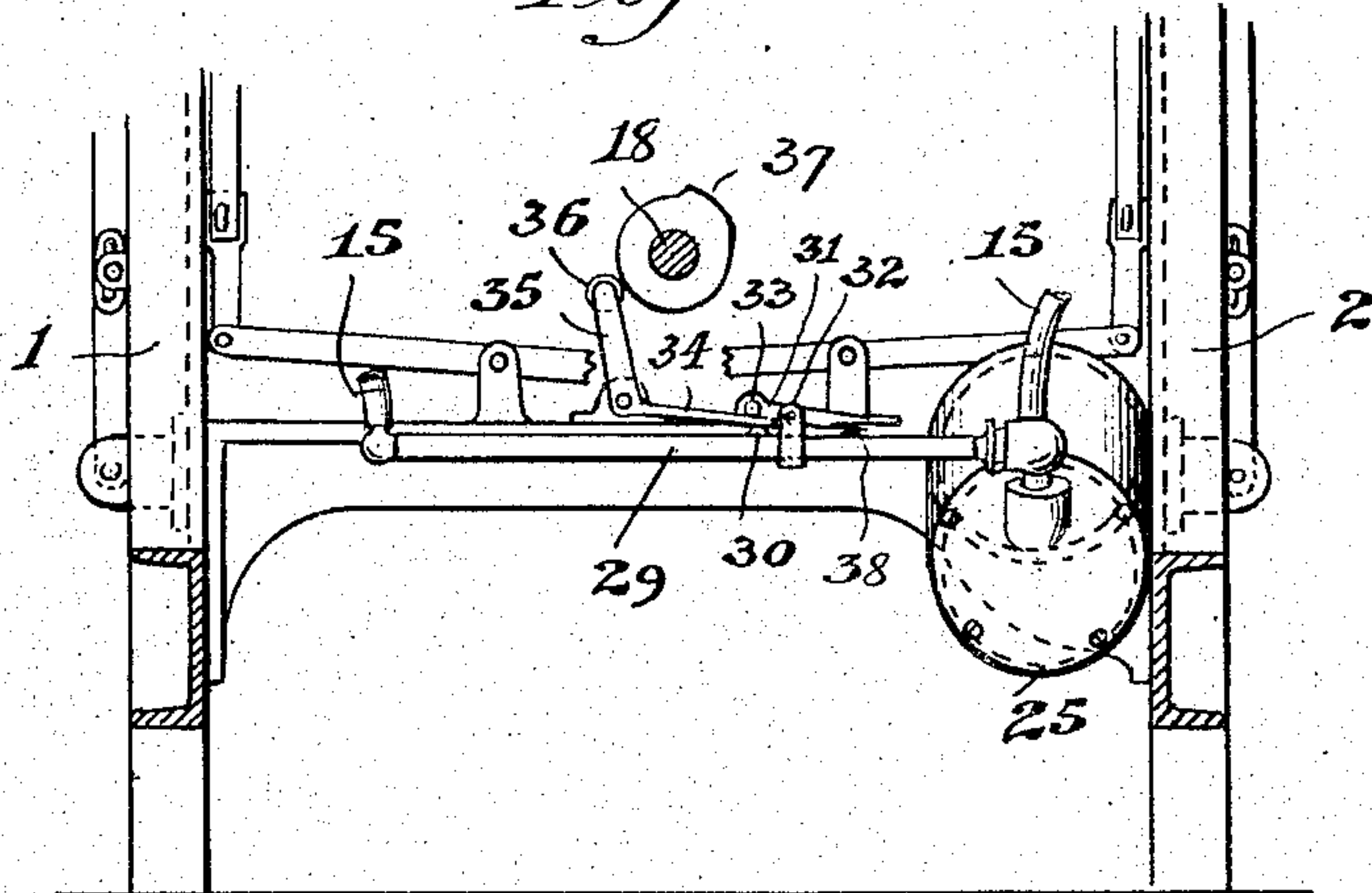
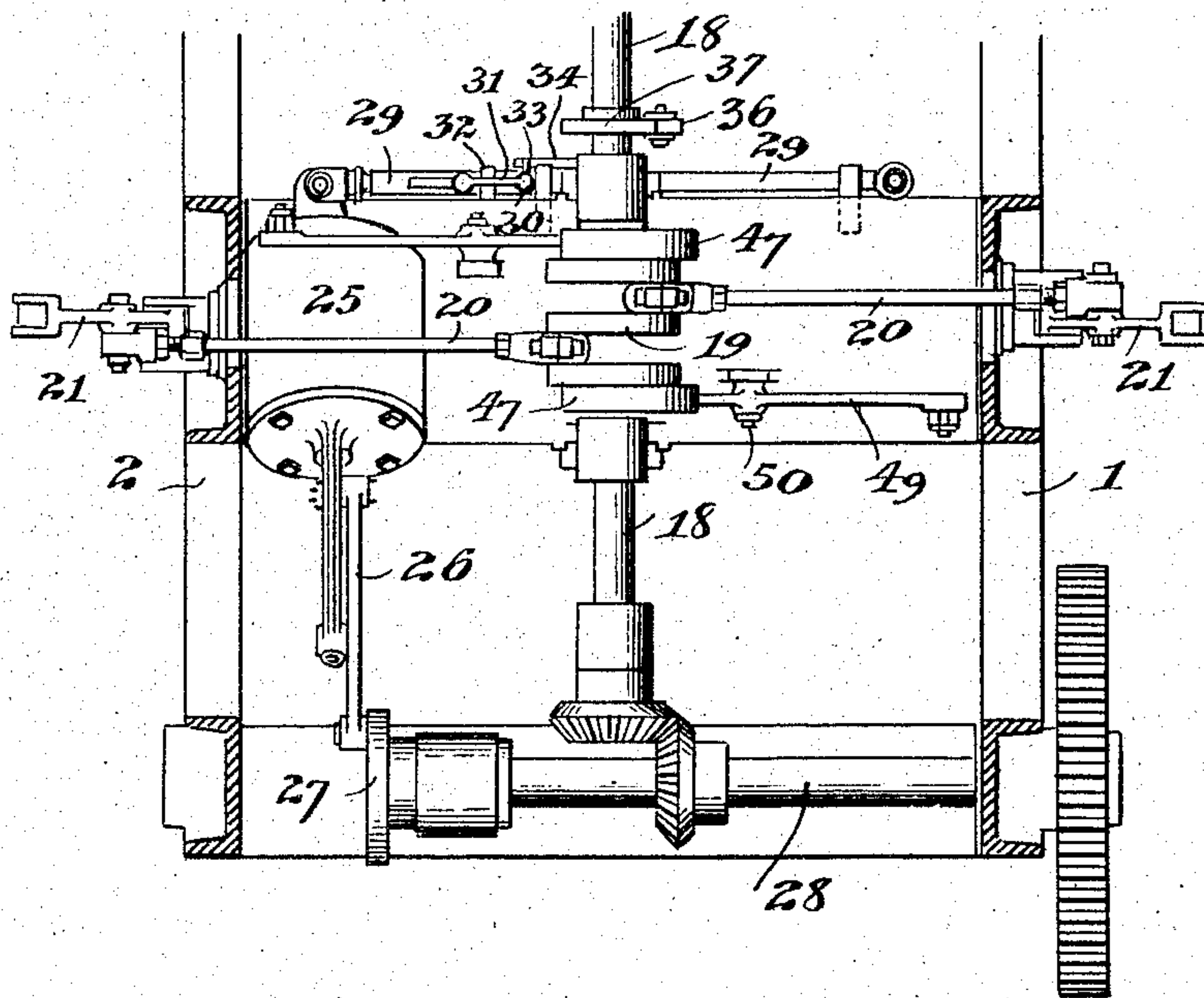


Fig. 7.



Witnesses,
S. J. Mann,
D. N. Ford

Inventors
Frank M. Peters
Henry H. Hungerford
By *Offield, Fowler & Lenth*

MACHINE FOR SEALING PACKAGES.

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5 SHEETS-SHEET 5.

Fig. 9.

39

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43^a

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Witnesses,
J. O. Mann,
S. H. Pond

Inventor,
Frank M. Peters,
Amory H. Hunsickerford
By Osfield, Towler & Smithman
Attys.

UNITED STATES PATENT OFFICE.

FRANK M. PETERS AND HENRY H. HUNGERFORD, OF CHICAGO, ILLINOIS; SAID
HUNGERFORD ASSIGNOR TO SAID PETERS.

MACHINE FOR SEALING PACKAGES.

997,580.

Specification of Letters Patent.

Patented July 11, 1911.

Original application filed May 24, 1905, Serial No. 262,065. Divided and this application filed December 4, 1907. Serial No. 405,118.

To all whom it may concern:

Be it known that we, FRANK M. PETERS and HENRY H. HUNGERFORD, citizens of the United States, both residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Sealing Packages, of which the following is a specification.

10 This invention relates to machines for applying seals to cartons and other packages, and constitutes a division of an application filed by us on the 24th day of May, 1905, on a machine for wrapping and sealing packages, Serial No. 262,065.

15 In its principal contemplated application the mechanism of the present invention is designed to apply a pasted seal to one or both ends of a previously wrapped box or carton so as to securely unite the end flaps or folds of the wrapper and effectively seal the latter in position on the box or carton. It will be evident, however, that the mechanism of the invention is equally well adapted to the application of seals or labels to boxes, packages or cartons, irrespective of whether or not the latter have previously received a wrapper or cover, and also irrespective of whether or not, where such a wrapper has been previously applied, the end flaps or folds are secured by the seal or label applied by the present mechanism or otherwise.

20 The general object of the invention is to provide a simple, reliable and highly efficient mechanism for the purpose stated, and one in which the extent of travel of the seal or label-carrier between the hopper or other containing device and the article to which it is applied is reduced to a minimum.

30 To this end the invention consists in certain novel features which we will now proceed to describe, and will then more particularly point out in the claims.

Our invention will be readily understood when considered in connection with the accompanying drawings, which illustrate the best mechanical embodiment thereof which we have as yet devised, and in which,—

50 Figure 1 is a transverse sectional view, in the plane of the sealing mechanism, of the package wrapping and sealing machine in which we have embodied our present improvements. Fig. 2 is an enlarged sectional

elevation of the principal parts of the sealing mechanism, showing the seal-carrier in connection with the lower end of the seal hopper. Fig. 3 is a view similar to Fig. 2, but illustrating the other extreme position of the seal-carrier wherein it is applying a seal or label to the end of a package. Fig. 4 is a rear elevational view, partly in section, of the seal hopper and the seal-carrier guide. Fig. 5 is a top plan view of Fig. 4. Fig. 6 is an elevation, and Fig. 7 a top plan view, of the mechanism for producing and controlling the air suction in the seal-carrier. Figs. 8 and 9 are, respectively, elevational and top plan details of parts of the mechanism for applying paste to the seal or label while in transit between the hopper and the package.

Referring to the drawings, 1 and 2 designate a pair of parallel vertical side-frame members of a package-wrapping and sealing machine such as is disclosed in our pending application, Serial No. 262,065, hereinabove referred to, and of which the present invention constitutes a division. These side-frame members are suitably connected and rigidly spaced apart and constitute the principal supporting elements of mechanisms for applying paper wrappers to cartons and packages, all as fully disclosed and described in our said application, which mechanisms constitute no part of our present invention and need not be particularly described herein.

Substantially centrally of the machine frame is formed a horizontally extending package-chute indicated at 3, through which the packages or cartons, either naked or with an outer paper wrapper folded thereabout, are successively passed through the field of action of the seal- or label-applying devices constituting the subject-matter of the present application. This chute has formed in the side walls thereof, opposite the seal-applying devices, openings indicated at 4 (Fig. 2), through which the seal-carrier operates in applying the seal. In this connection we may state that we shall hereinafter refer to the mechanism forming the subject-matter of this application as a sealing or seal-applying mechanism, meaning thereby a mechanism whereby an adhesive seal, whether plain or carrying a label, is applied

to the folded end flaps of the outer wrapper of the carton to thereby seal said end flaps or folds against spreading or opening; but it will be readily understood that the mechanism is equally applicable and efficient to apply a pasted label to a box or carton, whether such label possesses a sealing function in connection with a wrapped package, or is simply applied as a mere label to a naked or unwrapped package or carton.

The seal-applying devices of our present invention, which, in a machine of the character herein disclosed are commonly employed in duplicate, one on each side of the machine, for the purpose of applying a seal to each end of the package or carton, consist each of the following parts and mechanisms. 5 designates a bracket secured to the outer face of the main side-frame member of the machine, this bracket supporting on its outer end a seal-hopper 6, said hopper being pivotally mounted thereon at its outer side by a pair of hinges 7. The rear wall of the hopper has a depending extension 6^a, between which and a cross-frame member of the bracket are interposed a pair of coil springs 8, which normally tip or tilt the hopper, as shown in Fig. 3. The depending projection 6^a also carries an adjustable threaded contact-pin 9. In the upper ends of the parallel side walls of the bracket 5 are formed upper and lower groove guides 10 and 11, respectively. In and between the upper guides 10 is mounted a horizontal rod 12 having rollers 12^a, which rod carries a seal-carrier in the nature of a suction-box 13 having a perforated face of substantially the form and dimensions of the open lower end of the hopper 6 and of the seal to be applied. The interior of this suction box communicates through a nipple 14 and hose 15 with an air-exhausting device hereinafter described. The lower guide grooves 11 are engaged by rollers 16^a on the ends of a rod 16 carried by a pair of downwardly extending arms 17 that are rigid with the stem of the suction box 13; said guide grooves 11 having at a point intermediate their ends a downwardly offset bend 11^a. Secured to the inner side of one of the parallel bracket members directly under the offset bend 11^a of the lower guide groove is a block 11^b, which block has a notch 11^c cut in its upper edge directly beneath the center of the bend 11^a. This notch is engaged by a depending tooth 17^a carried by one of the arms 17, during the travel of the suction box; as a result of which engagement the suction box is rocked from horizontal to vertical position, and vice versa. The suction box is actuated from a longitudinally extending shaft 18 of the machine (Figs. 1 and 7) by means of a disk crank 19 on said shaft, reciprocating a connecting rod 20, the outer end of which

latter is connected to a lever 21 fulcrumed at 22 to a bracket 23 on the main side-frame, said lever being connected at its upper end with the shaft 12 through a link 24. It will be seen that the arms 17 connecting the rods or shafts 12 and 16 of the suction box are of such a length relatively to the distance between the longitudinal median lines of the upper and lower groove guides 10 and 11 that the suction box, when traveling through the parallel portions of said guides, is necessarily disposed with its face either horizontal or vertical. When the suction box is engaging the hopper, as in Fig. 2, it is maintained upright or with its operative face horizontal, and remains in this position during its inward travel until the rollers 16^a drop into the offsets 11^a of the lower grooves, which permits the turning of said suction box through an angle of 90 degrees by reason of the engagement of the tooth 17^a with the notch 11^c, thereby bringing its seal-carrying face to vertical position just prior to the application of the seal to the package or carton. It will thus be seen that the only bodily travel of the suction box is a straight horizontal travel to effect its proper registration with the hopper and end wall of the package. As the suction box returns from the package to the hopper, a lug 13^a on its rear side strikes the inner end of the contact-pin 9, thereby tilting the hopper to vertical position and effecting the registration of its lower end with the mouth of the suction box for the purpose of withdrawing the lowermost seal in said hopper. As the suction box starts to move away from the hopper, the springs 8 tilt the hopper so as to carry its lower end away from the mouth of the suction box by a relative angular movement, thereby preventing any tendency on the part of the suction box to withdraw more than one seal at a time.

The suction effect is produced and controlled by the following mechanism. Referring to Figs. 1, 6 and 7, 25 designates an air-exhaust pump, driven by a pitman 26 and disk crank 27 from a transverse shaft 28 suitably journaled in the lower portion of the machine frame. One end of said pump is in free communication with a transversely extending pipe 29, to the opposite ends of which latter are connected the flexible tubes or hose 15. In the upper side of the pipe 29 is a vent opening that is normally covered by a cap or valve 30 of rubber, felt, or the like, said valve being hung from one end of a lever 31 pivotally mounted intermediate its ends on a bracket 32. The same end of said lever has a laterally projecting pin 33 that overlies one arm 34 of a bell-crank lever, the opposite arm 35 of which engages, through a roller 36, the face of a cam-disk 37 on shaft 18. A compression spring 38 between the other arm of

said lever 31 and the upper surface of the pipe 29 normally tends to maintain said lever in a position in which the vent opening is closed by the valve 30. The cam 37 is so timed that simultaneously with the application of the seal to the ends of the package by means of the seal-carriers or suction boxes, the valve 30 is raised and the suction effect of the pump thereby intermitted, permitting the suction box to return without exerting any back pull on the applied seals.

Paste is applied to the upper surface of the seal as the latter is carried from the hopper to the end of the package by the following mechanism, which, of course, is in duplicate on both sides of the machine, where such seal is applied to both ends of the package. On a pair of transverse bars 39 is mounted a paste-box 40 carrying a pick-up roll 41 and a distributing roll 42. A paste-applying roll 43 is loosely mounted on a shaft 44 carried by and between a pair of bent arms 45 pivoted at 46, said arms being actuated in an upward movement, from a cam 47 on the shaft 18, said cam peripherally engaging a roller 48 carried by the inner end of a lever 49 pivoted at 50 to a bracket 51, the opposite end of said lever being connected to the arms 45 through a longitudinally adjustable link 52. The paste-applying roll 43, as shown in the plan view, Fig. 9, has a central annular groove 43^a, in the under side of which lies a wire strip 53, said wire strip being connected at its ends to a pair of transverse rods 54 and 55 carried by and between the arms 45; the function of this wire being to prevent the seal from adhering to the surface of the pasting roll as it wipes over the latter. The paste rolls are driven from a countershaft 56 (Fig. 8) suitably journaled in the machine frame through a bevel pinion 57 on said shaft engaging a bevel pinion 58 on one end of a way shaft 59, the opposite end of said way shaft carrying a gear 60 which, through a pair of intermediate idler gears 61 and 62, drives a gear 63 on the shaft of the roll 42, a gear 64 on the opposite end of said shaft engaging and driving a gear 65 on the shaft of the pick-up roll 41. Fast with the paste-applying roll 43 is a gear 66 adapted to engage the gear 64 on the return movement of the paste-applying roll whereby to rotate said roll in contact with the distributing roll 42 to apply a fresh re-surfacing of paste to said paste-applying roll. The cam 47 is so set that its flat side engages the roller 48, permitting the roll 43 to drop into contact with the seal carried on the face of the suction box, as the latter travels beneath said roll from the seal hopper toward the end of a package.

The specific construction of the seal-containing hopper 6 constitutes no part of our present invention, excepting as to its pivotal

manner of mounting; but as herein shown it is of a known type of label-hopper which is open at both ends and in which the seals or labels are supported with capacity for the usual abstraction through the lower end by depending adjustable spring arms 67 (Fig. 4) disposed centrally of the vertical walls thereof.

The operation has to a considerable extent been indicated in connection with the foregoing description of the mechanism. The hopper having been filled with a stack of seals or labels, the packages to be sealed or labeled are fed in close succession through the package-chute 3, each being halted opposite the openings 4 in the side walls of the chute long enough for the application of the seals thereto. The continuous rotation of the shaft 18, through the connections therefrom to the suction box and to the paste-applying roll causes the suction hopper to abstract the lowermost seal from the hopper, carry it inwardly, during which inward movement it receives an application of paste from the roll 43, and press it against the vertical end wall of the package, which latter is indicated in position at 68 in Fig. 3. Simultaneously with the pressing of the seal against the end of a package the suction in the suction box is intermitted by the raising of the valve 30, whereupon the suction box returns for another seal, the suction effect being restored during such return travel of the suction box by the closing of the vent by the valve 30. It will thus be observed that the bodily movement of the suction box is a simple straight movement along the shortest path between the hopper and the package, the suction box being shifted angularly from horizontal to vertical, and vice versa, during its travel and without any intermission of such travel. By pivotally mounting the seal hopper so that it has a slight angular movement as the suction box moves therefrom, there is less liability of two or more seals adhering and being withdrawn together through the suction effect than where the suction box moves away from the lower end of the hopper substantially in the axial line of the latter, as heretofore.

It is obvious that many and various modifications in the details of construction hereinabove set forth may be made without affecting the substance of the invention or departing from the principle thereof, and hence we do not wish to be understood as limiting the invention strictly to the particular construction herein described and shown.

We claim:

1. In a machine for sealing packages, the combination with a package holder, of a mechanism for applying a seal to the end of a package comprising a tilting seal-

hopper open at its lower delivery end located opposite the end of the package-holder, and a horizontally reciprocating angularly movable-seat-carrier operating between the
 5 end of the package and said hopper and automatically registering with the delivery end of the latter on its return movement, substantially as described.

2. In a machine for sealing packages, the
 10 combination with a package-holder, of a mechanism for applying a seal to the end of a package comprising a tilting seal-hopper open at its lower delivery end located opposite the end of the package-holder, a hori-
 15 zontally reciprocating angularly movable seal-carrier operating between the end of the package and said hopper and automatically registering with the delivery end of the latter on its return movement, and
 20 means for applying paste to the surface of the seal while held on the face of said seal-carrier, substantially as described.

3. In a machine for sealing packages, the combination with a package-holder, of a
 25 mechanism for applying a seal to the end of a package comprising a pivoted seal-hopper open at its delivery end located opposite the end of the package-holder, a spring normally maintaining said hopper
 30 inclined, a horizontally reciprocating seal-carrier angularly movable between two positions in which its suction face is horizontal and vertical operating between the end of the package and said hopper, means to apply
 35 suction to said seal-carrier, said seal-carrier on its return movement tilting said hopper against the action of said spring into registration with its suction face, and means for
 40 applying paste to the surface of the seal while held on the face of said seal-carrier, substantially as described.

4. In a machine for sealing packages, the combination with a package holder, of a
 45 bracket formed with a horizontal slide-way located opposite the end of said package holder, a seal hopper pivotally mounted on said bracket and open at its lower end and provided with a depending projection carry-
 50 ing an adjustable contact pin, a spring normally tending to tilt the lower end of said

hopper upwardly, a horizontally reciprocating seal carrier mounted in said slide-way, said seal carrier adapted to strike said contact pin near the limit of its outward
 movement and thereby tilt said seal hopper
 55 to substantially vertical position, and automatic means for imparting an angular movement to said seal carrier while traveling between said seal hopper and package carrier, substantially as described. 60

5. In a machine for sealing packages, the combination with a package holder, of a bracket formed with a pair of horizontal
 slide-ways, one below the other, located opposite the end of said package holder, a seal
 65 hopper mounted on the outer end of said bracket and open at its lower end, a horizontally reciprocating seal carrier mounted to travel in the upper of said slide-ways and provided with a depending extension en-
 70 gaging the lower of said slide-ways, and means on said last named slide-way cooperating with said depending extension of the seal carrier to tilt the latter angularly while traveling between said package holder
 75 and seal hopper, substantially as described.

6. In a machine for sealing packages, the combination with a package holder, of a bracket formed with a pair of horizontal
 slide-ways, one below the other, located op-
 80 posite the end of said package holder, the lower of said slide-ways being formed with a downwardly off-set bend between its ends, a seal hopper mounted on the outer end of said bracket and open at its lower end, and
 85 a horizontally reciprocating seal carrier mounted to travel in the upper of said slide-ways and provided with an inclined depending extension engaging the lower of said slide-ways and cooperating with the
 90 downwardly off-set bend of the latter to effect an angular movement of said seal carrier while traveling between said package holder and seal hopper, substantially as described.

FRANK M. PETERS.

HENRY H. HUNGERFORD.

Witnesses:

FREDERICK C. GOODWIN,
 SAMUEL N. POND.