No. 684,862. Patented Oct. 22, 1901.

G. M. PETERS.

APPARATUS FOR PACKING CARTRIDGES.

(Application filed July 26, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

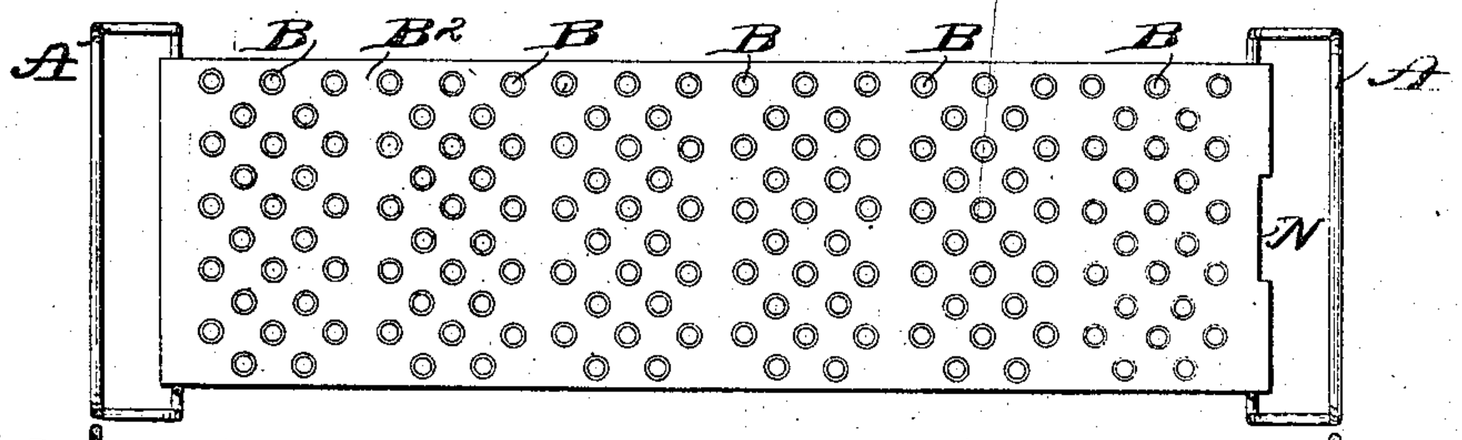


Fig. 2.

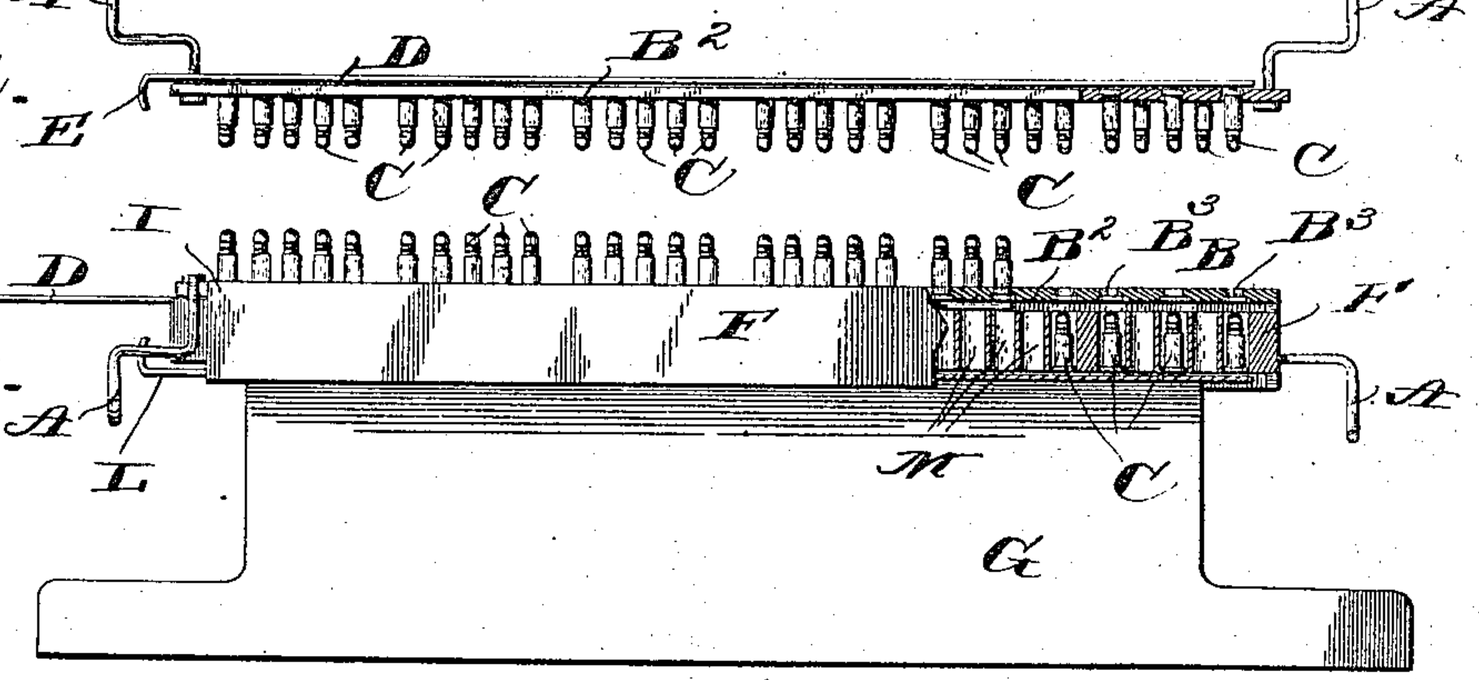


Fig. 3.

Fig. 4.

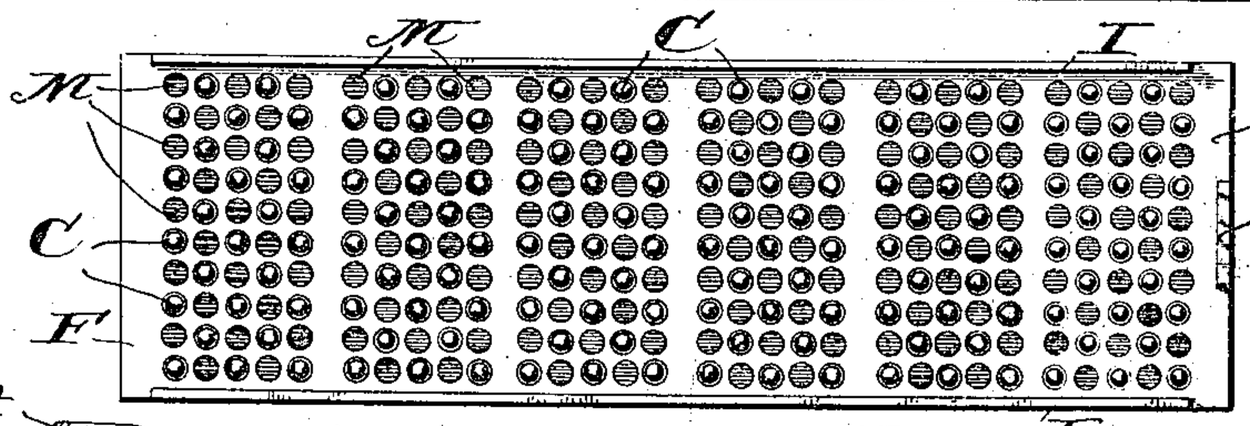


Fig. 5.

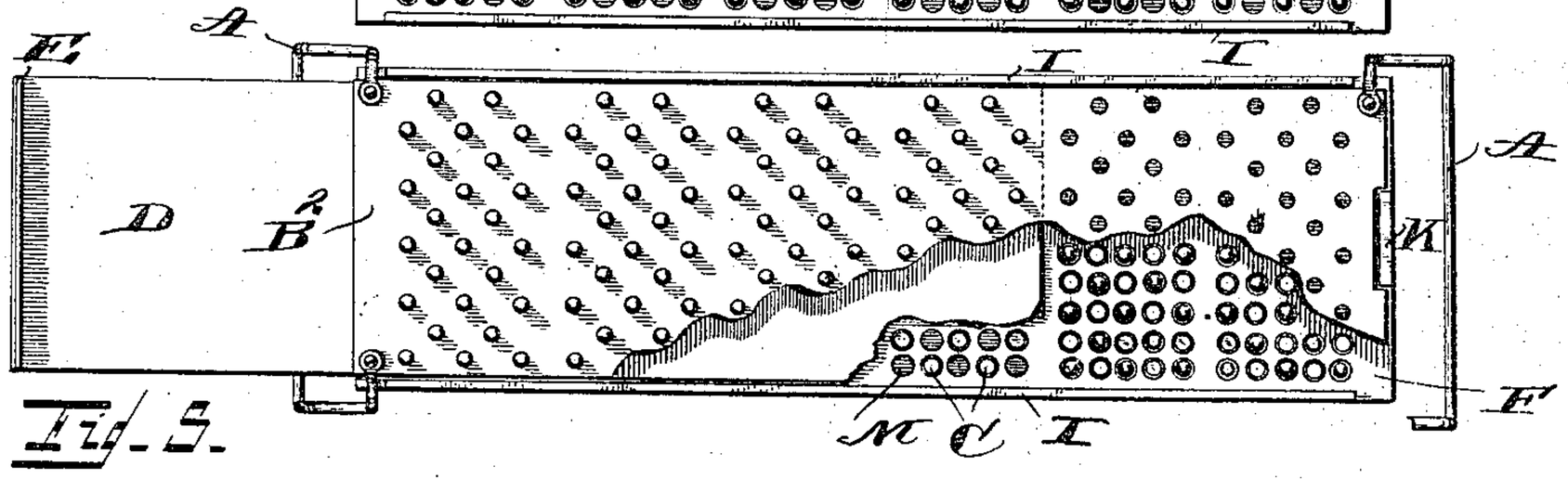


Fig. 6.

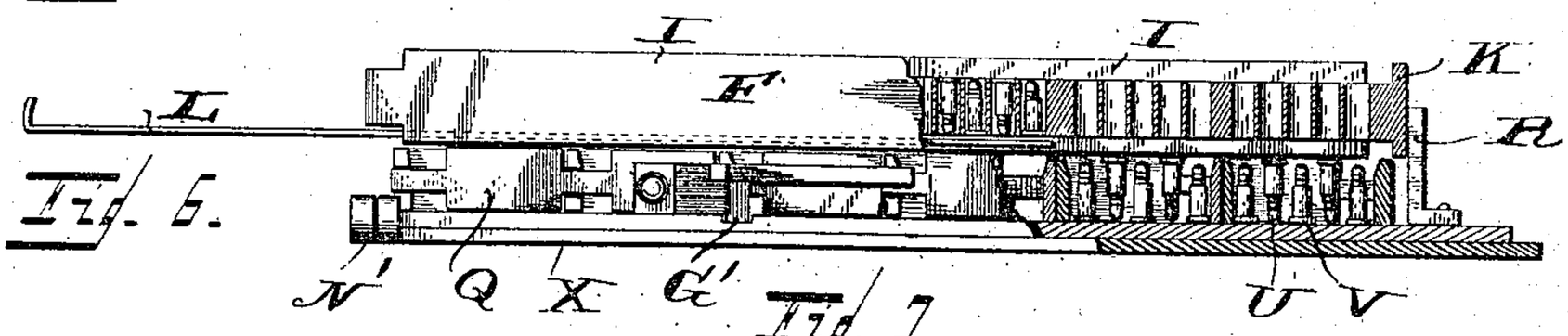
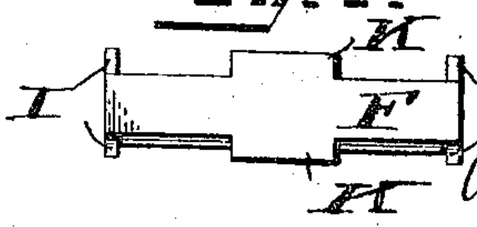


Fig. 7.



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No 684,862. Patented Oct. 22, 1901.

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APPARATUS FOR PACKING CARTRIDGES.

(Application filed July 26, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 8.

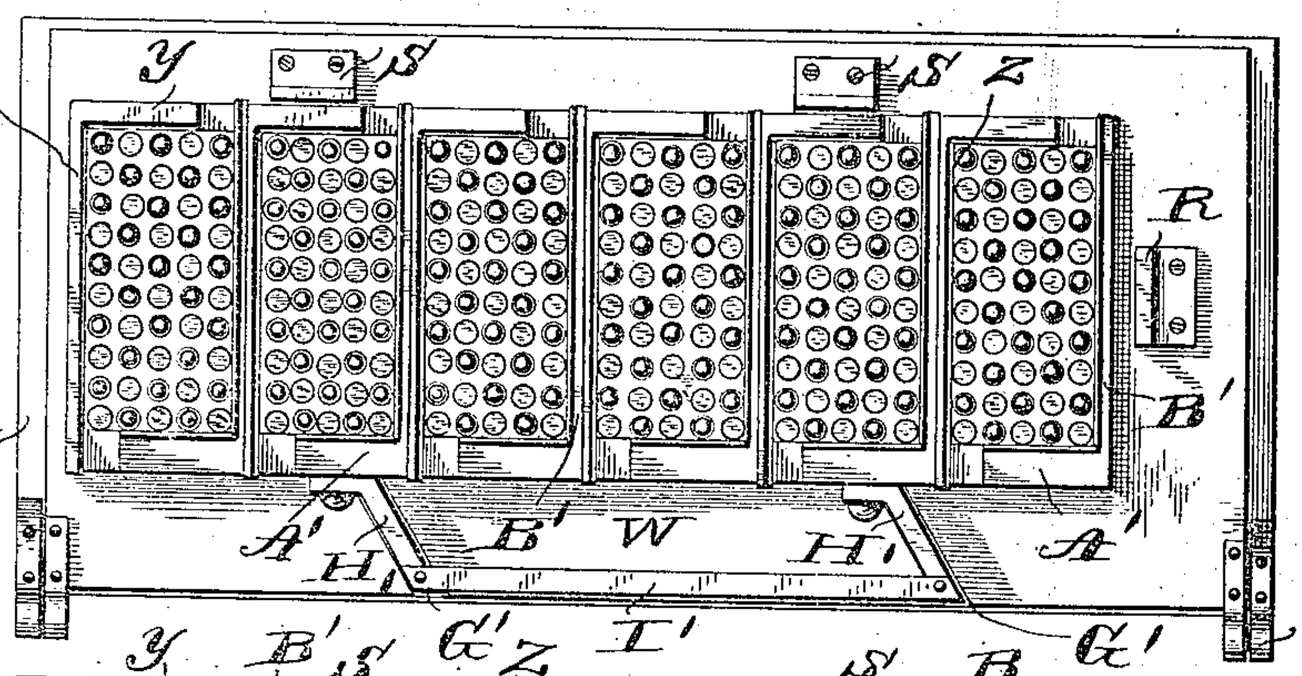


Fig. 9.

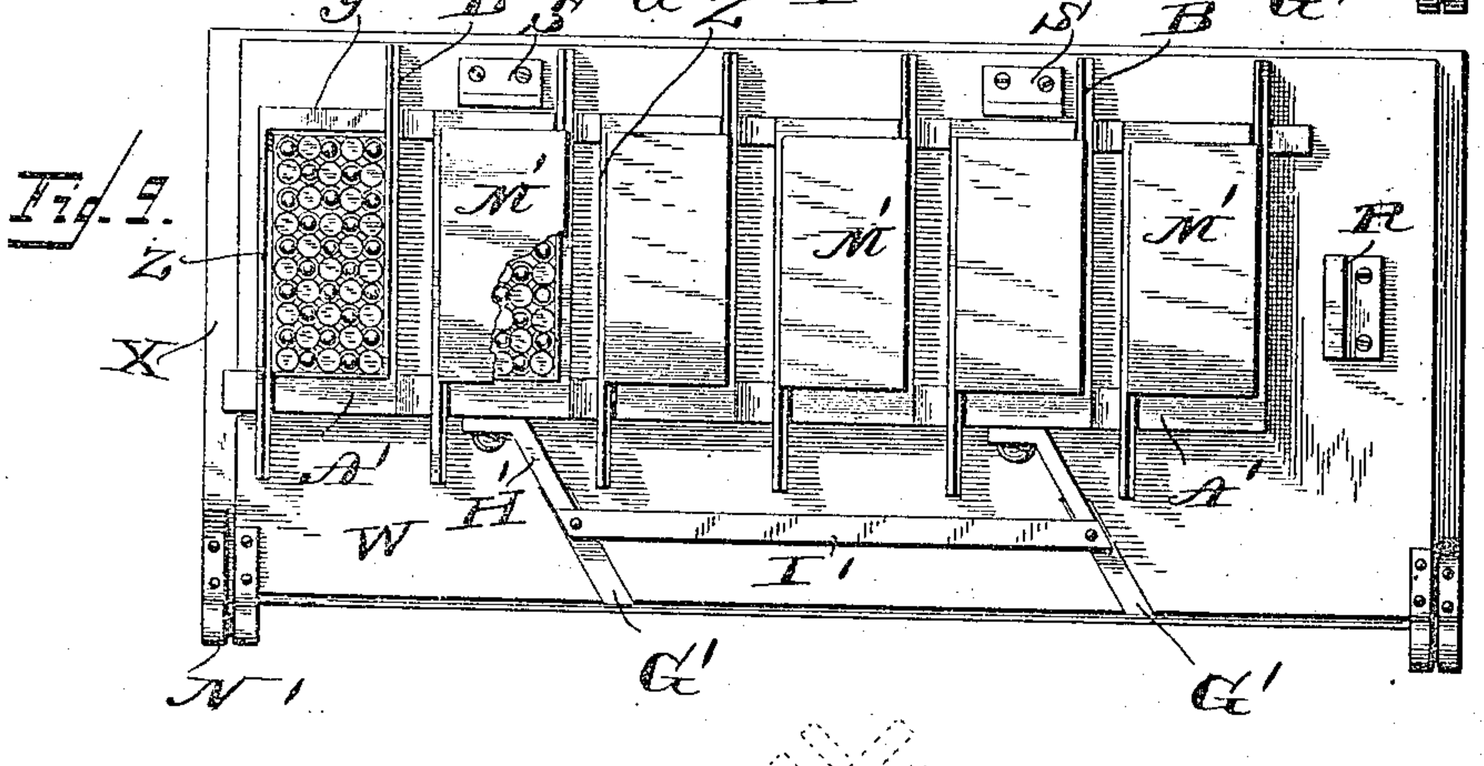


Fig. 10.

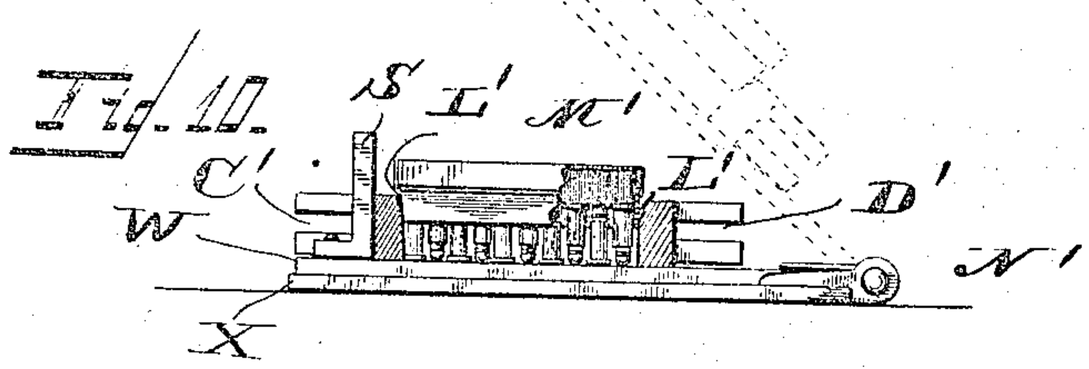
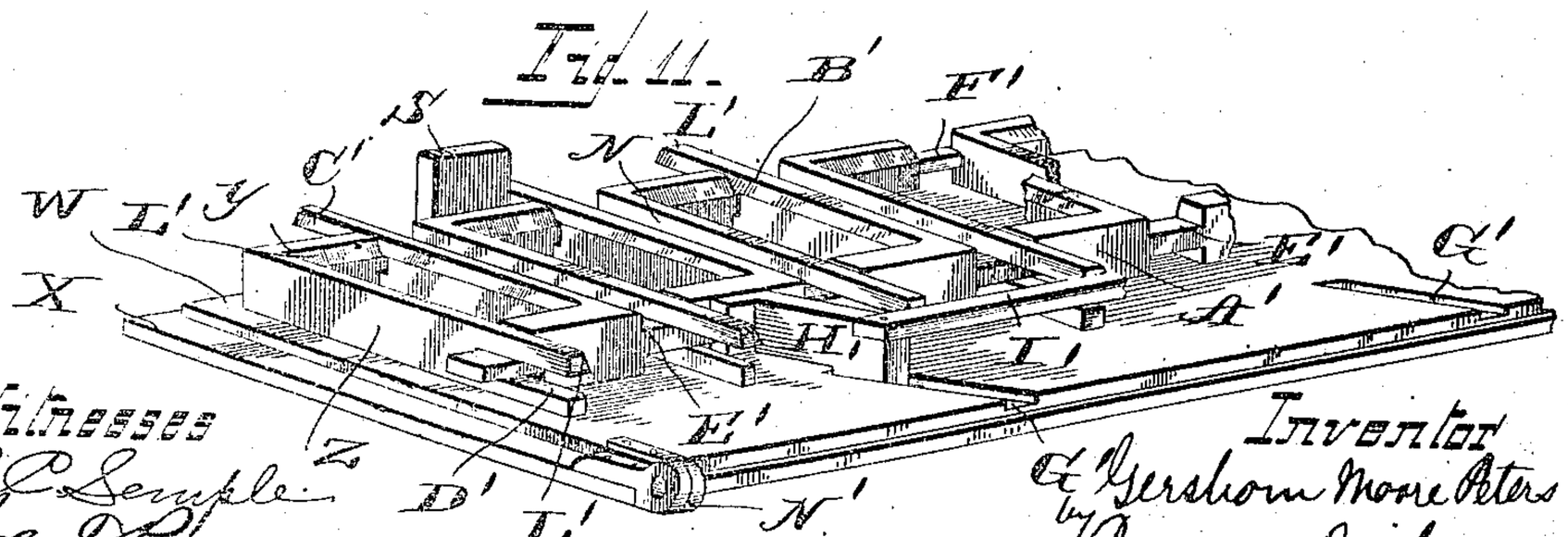


Fig. 11.



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APPARATUS FOR PACKING CARTRIDGES.

SPECIFICATION forming part of Letters Patent No. 684,862, dated October 22, 1901.

Application filed July 26, 1900. Serial No. 24,873. (No model.)

To all whom it may concern:

Be it known that I, GERSHOM MOORE PETERS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Apparatus for Packing Cartridges, of which the following is a specification.

This invention relates to the packing of cartridges in boxes.

The object of the invention is to provide an apparatus of simple construction and which is efficient in operation whereby cartridges may be readily arranged in proper relation and assembled in condition to be readily received in packing-boxes suitable for storing or shipping.

The invention consists, substantially, in the construction, combination, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a top plan view of a greasing-plate employed in connection with my invention. Fig. 2 is a side elevation or edge view of the same, partly in section, to show the manner of suspending the cartridges therein. Fig. 3 is a view similar to Fig. 2 of a forming-plate with a greasing-plate applied thereto in position to effect a delivery of the cartridges into the forming-plate. Fig. 4 is a top plan view of the forming-plate after the greasing-plate has made its first delivery of cartridges in such forming-plate. Fig. 5 is a top plan view, parts being broken away, of a forming-plate and a greasing-plate applied thereto for final delivery and showing the holding plate or slide partially withdrawn from between said greasing and forming plates to permit the cartridges carried by the greasing-plate to be deposited into the forming-plate. Fig. 6 is a view similar to Fig. 3, parts in section, showing a condensing-plate with a forming-plate applied thereto to effect a delivery of the cartridges into the compartments of the condensing-plate. Fig. 7 is an end view of the forming-plate. Fig. 8 is a top plan view of the condensing-plate after receiving the cartridges thereof and before the condensing operation is effected. Fig. 9 is a similar view of the condensing-plate after the condensing operation is completed and showing the packing-boxes placed over the condensed sets of cartridges. Fig. 10 is a broken detail view, partly in section, of one of the compartments of the condensing-plate, showing the application of a packing-box to the condensed cartridges and indicating in dotted lines the manner of delivering the filled packing-boxes from the condensing-plate. Fig. 11 is a view in perspective of the condensing-plate.

The same part is designated by the same reference-sign wherever it occurs throughout the several views.

In packing cartridges it is customary to pack them fifty in a box, the boxes being usually oblong, so as to accommodate five rows of cartridges, with ten cartridges in each row, although it is not uncommon to pack the smaller sizes of cartridges in square boxes, each containing one hundred cartridges. In order that the cartridges may be closely packed in the boxes, so as to form a compact mass and occupy the least possible space, whereby the shaking and rattling thereof is prevented while the packed boxes are being handled or shipped, the cartridges occupy a perpendicular position in the box, the butts and points of the cartridges alternating with each other, one half of the cartridges required to fill the box presenting the butt-ends in one direction and the other half of the cartridges presenting the points or bullet ends in the opposite direction. This work of packing the cartridges in boxes has been heretofore generally accomplished by hand, and as a rule the cartridges are greased or lubricated before being placed in the packing-boxes. It is the purpose of the present invention to provide an apparatus which is of simple construction and which is efficient, whereby the packing of cartridges in boxes may be accomplished mechanically, thus greatly assisting and facilitating the packing operation and enabling this work to be accomplished with greater rapidity and at less expense than heretofore.

In carrying out my invention I provide a plate B^2, which I will hereinafter designate as the "greasing-plate." Through this plate I form holes or perforations and arrange such

holes or perforations in groups, each group containing holes or perforations equal in number to one-half the number of cartridges required to fill a box, the holes or perforations in each group being relatively arranged to approximately correspond with the position occupied by alternate cartridges in the complete or filled box. In order to facilitate the handling of the greasing-plate B^2, I provide the same, at the ends thereof, with the handles A. Each hole or perforation formed through the greasing-plate is of a size or diameter permitting the body of a cartridge to pass freely therethrough, but not of sufficient size to permit the rims of the butt-ends of the cartridges to pass through, and preferably, and as shown most clearly at B^3, the perforations or holes B are countersunk on one face or surface of plate B^2 to receive the rims of the butt-ends of the cartridges, so that when the cartridges are placed or suspended through the holes or perforations B the end surface of the butts thereof will lie flush with the top surface of said plate B^2. In any suitable manner the cartridges are shaken or otherwise placed into the holes or perforations B in plate B^2, so that when said plate B^2 occupies the position shown in Fig. 2 the cartridges C are suspended by said plate with their bullet ends presented downwardly, as will be clearly understood. The end handles A of this plate are so shaped and arranged as to afford means for holding plate B^2 in the position shown in Fig. 2, thereby facilitating the operation of dipping the bullet ends of the cartridges into the lubricant to grease the same.

It will be understood from the foregoing description that when all the holes or perforations through plate B^2 are filled with cartridges said cartridges in each group of holes will be equal in number to one-half of the number of cartridges required to fill a box and will occupy approximately the same relative position as is occupied by the cartridges in the filled box, which present the butt-ends in the same direction with respect to each other. Reference-sign F designates what I will hereinafter call the "forming-plate." This plate is provided with openings or passages therethrough, as indicated at M, Fig. 4, each opening or passage M being of a length and size adapted to wholly receive longitudinally therein a cartridge C, so that each cartridge when placed in an opening or passage M will be wholly contained therein. The openings or passages M through forming-plate F are arranged in groups, each group containing openings or passages corresponding in number to the total number of cartridges required to fill a complete box and relatively arranged to correspond approximately with the arrangement of the cartridges in the filled box.

In the operation of packing a box the greasing-plate B^2, filled with cartridges, as above described, is placed over the forming-plate, so that the holes or openings B will register with alternate openings or passages M of the forming-plate; but the greasing-plate should first be reversed or turned over from the position thereof, as shown in Fig. 2, so as to bring the bullet ends or points of the cartridges on top, as clearly shown in Fig. 3. In order to permit this to be done, I make suitable provision for preventing the cartridges from falling out of the holes B when said plate B^2 occupies its reversed position. This may be accomplished in many ways. An exceedingly simple arrangement is shown for accomplishing this purpose, wherein before reversing or turning over plate B^2 from the position shown in Fig. 2 I place a holding-plate D thereover, as clearly shown, which plate may be efficiently held in place by the thumbs or fingers of the operator or in any other suitable or convenient manner while the plate B^2 is being reversed. After the reversal of this plate it is placed in the manner above described and as clearly shown in Fig. 3 upon the forming-plate. In order that the holes or openings B in the greasing-plate may be brought into accurate alinement with the passages or openings M of the forming-plate, suitable registering devices may be employed, whereby said plates when applied to each other may accurately register with each other. A simple and efficient manner of securing this result is shown as illustrative of one form and arrangement for accomplishing the desired object and wherein the forming-plate F is provided with the longitudinal ribs or flanges I at the edges thereof and with a projection K at the end thereof. As will be more fully hereinafter explained, the forming-plate F is reversible—that is, said plate may receive cartridges from opposite sides thereof—and therefore in order to enable the register to be effected of plates B^2 and F upon either side of said plate F the flanges I and projection K may be formed on both sides or faces of plate F, as most clearly shown in Fig. 6. The greasing-plate B^2 is provided at one end thereof with an offset or jog, (indicated at N, Fig. 1,) adapted to receive the projection K of the forming-plate. When said plate B^2 is applied to the forming-plate, it is received between the flanges I, and the projection K is received in the jog or offset N, thereby securing accurate and registering alinement of said plates. The registering relation of these plates is clearly shown in Fig. 3. Now in order to effect a delivery of the cartridges carried by plate B^2 into the passages or openings M of the forming-plate the retaining-plate D is withdrawn from between the greasing and forming plates, as clearly indicated, and, if desired, said retaining-plate D may be provided with a suitable handle, (indicated at E,) by which its quick withdrawal may be effected. While the delivery of the cartridges from the greasing-plate to the forming-plate is being effected said forming-plate is arranged to rest flat-

wise upon any suitable support—such, for instance, as a block, (indicated at G, Fig. 3;) but in order to permit the forming-plate F to be reversed or turned over after receiving a charge of cartridges from the forming-plate I interpose a retaining-plate L, similar in purpose and function to plate D, between the forming-plate and its support, thereby forming or constituting a floor upon which the ends of the delivered cartridges rest, as clearly shown in Fig. 3. It will be understood from the foregoing description that as a result of the first delivery of cartridges from the greasing-plate to the forming-plate cartridges will be deposited in only alternate passages or openings M of each group, as clearly indicated in Fig. 4. When this first delivery is effected, the greasing-plate is removed and refilled for another and similar operation. The operation is then continued by placing a retaining-plate L or D upon the top surface of the forming-plate in order to retain the cartridges in the passages or openings, and then the forming-plate is reversed or turned over side for side. Another loaded or filled greasing-plate is then applied thereto in the same manner as before described and another delivery or charge of cartridges is deposited therefrom into the unfilled openings or passages in the forming-plate; but by reason of the intermediate operation of reversing or turning over the forming-plate the cartridges of the first delivery will occupy reversed position relative to the cartridges of the second delivery, and also by reason of such reversal the cartridges of the second delivery will alternate with respect to the cartridges of the first delivery. At this stage in the operation all the openings or passages through the forming-plate will be filled, one half of the cartridges in each group presenting their butt-ends in the same direction with the bullet ends of the other half of the cartridges in the same group. Thus the cartridges are assembled in the forming-plate in groups and each group containing the number of cartridges required to fill a box.

The next operation is to effect a condensation of the mass of cartridges contained in each group, so as to permit the boxes to be applied thereto or to receive the cartridges. In order to accomplish this result, I employ what I shall hereinafter term a "condensing-plate" Q, containing contractible compartments corresponding in number and arrangement to the groups of passages or openings through the forming-plate, and the forming-plate, loaded, as above described, is placed in registering relation with respect to the condensing-plate, as clearly shown in Fig. 6, a suitable stop or abutment R S or other suitable means serving to effect the proper register of the forming and condensing plates. When these plates are in suitable registering relation, the retaining-plate L, which is employed to retain the cartridges in the passages of the forming-plate during the operation of applying such plate to the condenser, is quickly withdrawn, thereby permitting the several groups of cartridges contained in the forming-plate to be deposited in the respective and corresponding compartments of the condensing-plate, as clearly indicated in Fig. 6. At this stage in the operation the desired number of cartridges to fill a box are deposited in each compartment of the condenser and in proper relation with alternating butts and bullets; but, as shown in Fig. 8, the cartridges of each group occupy considerable space, and therefore the next step in the operation is to effect a condensation or contraction of the compartments, so as to form the cartridges into a compact mass to receive the boxes. To effect this result, I provide a construction of condenser wherein the area of each compartment may be readily and easily contracted. This idea may be carried out in many different ways, and while I have shown and will now describe a construction which is simple and efficient for the desired purpose it is to be understood that my invention is not limited or restricted in the generic conception thereof to the particular and specific construction shown.

Referring to Figs. 8, 9, 10, and 11, reference-sign W designates a plate constituting the floor of the condenser and upon which plate are mounted the compartments. Each compartment comprises a stationary end Y and side Z and a movable end A′ and side B′. In practice I have found it convenient to form the side Z integral with the end Y and the side B′ integral with the end A′, and in order to effect the condensation of the mass of cartridges contained in each compartment I impart to the movable side and end portion of each compartment a movement toward the stationary side and end portions thereof. A convenient manner of effecting this result is to impart a movement to the movable side and end portions toward the stationary side and end portions of the compartments and in a direction diagonal with respect to the compartment. In order to accomplish this movement, I provide suitable guiding-grooves G′ in the floor-plate W, which grooves are inclined relative to the edge of the floor-plate W in the diagonal line of movement to be imparted to the movable side and end portions of the compartments, and I arrange guiding-blocks H′ to operate in said inclined grooves, said blocks being connected to the movable portions of the compartments, and, if desired, and in order to secure uniformity in movement and simultaneous action throughout all the compartments the guide-blocks H′ may be connected by a cross-bar I′. In practice I have found it convenient to form all the movable end portions A′ integral with each other and with the movable side portions B′, and similarly all the end portions Y are formed integrally with each other and with the side portions Z, and in order to permit the movement of the integral side and

end portions A′ B′ relative to the stationary side and end portions Z Y of the compartments the stationary side portions Z are extended and grooved, as indicated at D′, Figs. 10 and 11, and the ends of the side portions B′ are extended and grooved, as indicated at C′, and the end portions A′ and Y are suitably reduced, as at E′ F′, Fig. 11, said reduced portions operating in the grooves D′ C′, respectively.

The operation of effecting a condensation of the mass of cartridges contained in the condenser-compartments is exceedingly simple. After the cartridges are delivered into such compartments the operator grasps the guiding-blocks H′ or the connecting cross-bar I′ and shoves or pushes the same along the grooves G′, said guiding-blocks being connected to the movable portions of the compartments, and the grooves G′ being properly inclined the condensation of the mass of cartridges into a compact mass is effected. After the condensation of the cartridges is effected in the manner above described the boxes are applied by placing the same bottom side up upon the condensed mass of cartridges, as clearly indicated in Figs. 9 and 10, and in order to facilitate the insertion of the edges of the packing-boxes over and around the condensed mass of cartridges the edges of the side and end portions of the compartments may be beveled, as clearly indicated at L′. When the packing-boxes are thus placed over the condensed masses of cartridges by suitably reversing or turning over the condensing-plate, the boxes, with the cartridges contained therein, are delivered from such condenser. A simple and convenient manner of turning or reversing the condenser-plate to effect a delivery of the boxes and cartridges is shown, wherein the floor-plate W is hinged or pivoted, as at N′, to a base-plate X, said floor-plate carrying the compartments swinging around or about its pivots, as indicated in dotted lines in Fig. 10. In this manner the boxes M′, which, as above stated, have been inserted in inverted relation, are delivered from the condenser with the condensed masses of cartridges therein.

From the foregoing description it will be observed that I provide an exceedingly simple and efficient construction and arrangement for greasing or dipping the cartridges, assembling the same in suitable relation to be received in a packing-box, and condensing the assembled cartridges into a compact mass while retained in such suitable relation and enabling the packing-boxes to be applied thereto, and finally discharging the boxes with the cartridges therein. It will also be seen that the operation may be a continuous one—that is to say, commencing with the initial step, while one greasing-plate is being filled another may be discharging its load into the forming-plate, and while one forming-plate is receiving its first charge another may be receiving its second charge in the reversed position of such forming-plate, and while these operations are being carried on another loaded or charged forming-plate may be discharging into a condenser, and while one condenser is receiving the assembled cartridges the condensing operation may be carried on in another condensing-plate, and so on.

The sides of the compartments may be sufficiently narrow to permit the cartridges to project a considerable distance above the top edges thereof, so that the boxes M′ may be readily and easily slipped thereover after the groups of cartridges have been condensed to the space required to fit the boxes. In placing the boxes over the groups of condensed cartridges the edges thereof are pushed down a sufficient distance within the compartments to enable the boxes to hold the condensed mass of cartridges together and in assembled relation. At this stage the movable portions of the compartments are slightly withdrawn, thereby permitting the boxes to be shoved fully down until the bottom thereof rests upon the top ends of the cartridges. If desired and in order to prevent the boxes from dropping out of the compartments before the condensing-plate has been fully reversed or turned over, a retaining-plate similar to plates D and L may be employed to retain the boxes in the compartments until the condenser has been completely reversed.

It is obvious that many variations and changes may readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited or restricted to the exact details of construction shown and described; but,

Having now set forth the object and nature of my invention and a construction embodying the principles thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is—

1. In an apparatus for packing cartridges, the combination with means for assembling the cartridges in groups and the cartridges in each group in suitable relation to be received in a packing-box, of means for simultaneously condensing such assembled cartridges in all the groups into compact masses to permit the packing-boxes to be placed upon such compacted masses, as and for the purpose set forth.

2. In an apparatus for packing cartridges, the combination with means for assembling the cartridges in groups with each alternate cartridge in each group presenting the butt-end thereof in one direction and the intermediate cartridges of the same group presenting their butt-ends in the opposite direction, of means for simultaneously condensing all the groups of such assembled cartridges into compact masses to permit the packing-boxes to be received over and upon such compacted masses, as and for the purpose set forth.

3. In an apparatus for packing cartridges,

the combination with means for assembling the cartridges in groups, each group containing the required number of cartridges to fill a single packing-box, each alternate cartridge in each group presenting its butt-end in one direction and the intermediate cartridges of the same group presenting their butt-ends in the opposite direction, means for condensing such assembled groups of cartridges to form compacted masses to permit the packing-boxes to be received or applied thereto, as and for the purpose set forth.

4. In an apparatus for packing cartridges, the combination with a forming-plate having passages therethrough each of a size and length adapted to receive a cartridge and retaining-plates adapted to be applied to the sides of said forming-plate, of a greasing-plate adapted to receive the cartridges and to be applied to either side of said forming-plate, and means for registering said greasing-plate and forming-plate whereby cartridges may be delivered from said greasing-plate to said forming-plate, as and for the purpose set forth.

5. In an apparatus for packing cartridges, a reversible forming-plate having openings or passages therethrough, each adapted to wholly receive therein a cartridge, whereby cartridges may be deposited therein from either side, retaining-plates for retaining the cartridges in said openings or passages, a greasing-plate, and means whereby said greasing-plate may be registered with said forming-plate at either side thereof, as and for the purpose set forth.

6. In an apparatus for packing cartridges, a condensing device having compartments, in combination with means for assembling the cartridges in suitable number and relation to fill a box, and depositing such assembled cartridges in said compartments, and means for contracting such compartments, as and for the purpose set forth.

7. In an apparatus for packing cartridges, a forming-plate having passages or chambers formed therethrough, each of a size and length adapted to receive a cartridge therein, said plate being reversible side for side, and retaining-plates adapted to be applied to both sides thereof to prevent the cartridges inserted in said passages or chambers from falling out, as and for the purpose set forth.

8. In an apparatus for packing cartridges, a forming-plate having chambers or passages formed therethrough adapted to receive the cartridges, said plate being reversible, means for delivering cartridges with the butt-ends thereof presented in a uniform direction to each alternate chamber or passage and from one side of such plate, means for retaining said cartridges in said chambers or passages while said plate is reversed, whereby by reversing said plate the remaining chambers or passages may be filled with cartridges presenting their butt-ends in the opposite direction to that in which the butt-ends of the cartridges of the first filling are presented, as and for the purpose set forth.

9. In an apparatus for packing cartridges, a condenser having compartments, each adapted to receive the required number of cartridges to fill a packing-box, said condenser being reversible, means for condensing or contracting the cartridges in each compartment to receive the packing-boxes, whereby by reversing said condenser the filled box may be delivered therefrom, as and for the purpose set forth.

10. In an apparatus for packing cartridges, a condenser provided with compartments, said compartments having a movable side and end, and an inclined groove forming a guide for said movable side and end, as and for the purpose set forth.

11. A condenser for a cartridge-packing apparatus having one or more compartments, each provided with a movable side and end, and means connected with said movable side and end and operating in a guide, as and for the purpose set forth.

12. The combination of a greasing-plate, a forming-plate, and a condenser-plate, arranged and operating as and for the purpose set forth.

13. In an apparatus for packing cartridges, a condenser having a plurality of compartments, each adapted to receive the required number of cartridges to fill a packing-box, means for delivering the cartridges endwise into said compartments with their butt-ends alternating in the direction in which they are presented, a side and end wall of each compartment being movable, and means for simultaneously moving the movable side and end walls of all of said compartments to compact and condense the cartridges contained in said compartments into condition to receive the packing-boxes, as and for the purpose set forth.

14. In an apparatus for packing cartridges, a condenser having a plurality of compartments adapted to receive the cartridges to be boxed, the side and end walls of said compartments being movable to contract the area of said compartments, and means for simultaneously moving said side and end walls of all the compartments, as and for the purpose set forth.

15. In an apparatus for boxing cartridges, a condenser having a plurality of compartments, means for delivering into each compartment the required number of cartridges to be packed in a single box, and means for simultaneously contracting the area of all of said compartments to condense the groups of cartridges contained therein and to enable the packing-boxes to be applied thereto, as and for the purpose set forth.

16. In an apparatus for boxing cartridges, a condenser having a plurality of compartments, means for delivering into each compartment the required number of cartridges to be packed in a single box, and means for

simultaneously moving one of the end walls of each of said compartments to contract the longitudinal dimensions of said compartments, whereby several groups of cartridges are condensed into a compact mass to receive the packing-box, as and for the purpose set forth.

17. In an apparatus for boxing cartridges, a condenser having a plurality of compartments, means for delivering into each compartment the required number of cartridges to be packed in a single box, and means for simultaneously contracting the areas of all of said compartments both transversely and longitudinally to condense the several groups of cartridges into compact masses to receive packing-boxes, as and for the purpose set forth.

18. In an apparatus for boxing cartridges, a condenser having a plurality of compartments, means for delivering to each compartment the required number of cartridges to be packed in a single box, a movable end wall for each of said compartments, a guide for said movable end walls, and connections between said end walls whereby all of said end walls may be simultaneously moved to contract the areas of said compartments, thereby condensing the groups of cartridges into compact masses to receive the packing-boxes, as and for the purpose set forth.

19. In an apparatus of the class described, a greasing-plate having holes or openings therethrough of sufficient size to receive the butts of cartridges but not large enough to permit the cap ends of the cartridges to pass through said holes or openings, and arranged in a series of distinct groups, each group containing one-half as many holes as there are cartridges to be received in the packing-box, and a retaining-plate adapted to be applied to said greasing-plate to retain the cartridges therein, in combination with forming and condensing mechanism, and means for adjusting said greasing-plate with respect to said forming and condensing mechanism, as and for the purpose set forth.

20. In an apparatus for boxing cartridges, a forming-plate having chambers or passages formed therethrough and arranged in groups, each group containing as many holes as there are cartridges to be received in a box to be filled, said chambers or passages being of a length adapted to receive therein the cartridges, and of a diameter to permit the butt-ends of the cartridges to pass therethrough, guides or ways formed in one side of said forming-plate, a retaining-plate adapted to be removably received in said guides or ways, and a hinged retaining-plate for the other side of said forming-plate, said retaining-plates operating to retain the cartridges in said chambers or passages to permit of said forming-plate being reversed, in combination with means for delivering cartridges into said chambers or passages from opposite sides of said forming-plate, whereby the butt-ends of one-half of the cartridges of each group are presented in one direction and those of the other half in the opposite direction, and condenser-compartments adapted to receive each group of cartridges from said forming-plate, as and for the purpose set forth.

21. In an apparatus for boxing cartridges, a forming-plate having chambers or passages formed therethrough, each of a size and length adapted to receive and contain a cartridge, said passages or chambers being arranged in groups, each group containing chambers or passages corresponding in number to the number of cartridges to be packed in a single box, and a removable retaining-plate adapted to be applied to each side of said forming-plate, whereby the cartridges contained in said chambers or passages may be retained therein while said forming-plate is being reversed side for side, in combination with means for delivering cartridges into said chambers or passages from opposite sides of said plate, and condenser-compartments arranged to receive the cartridges of each group, as and for the purpose set forth.

22. In an apparatus for packing cartridges, a forming-plate having passages or chambers formed therethrough, each of a length and size adapted to receive therein a cartridge, said chambers or passages arranged in groups, each group containing a number of such chambers or passages corresponding to the number of cartridges to be packed in a single box, the chambers or passages of each group being arranged in regular order and in such close proximity to each other as to just permit the butt-ends of the cartridges when inserted therein to pass longitudinally by each other, a retaining-plate for each side of said forming-plate, in combination with means for delivering from each side of said plate cartridges to fill one-half the chambers or passages therein, a condenser mechanism arranged to receive said groups of cartridges from said forming-plate, and to condense the same into distinct, compact masses, as and for the purpose set forth.

23. In an apparatus for packing cartridges, a forming-plate having chambers or passages formed therethrough and arranged in groups, each group containing as many passages or chambers as there are cartridges to be received in a single box, in combination with a greasing-plate having holes therethrough arranged in corresponding groups, each containing one-half as many holes as there are cartridges to fill a single box, said greasing-plate adapted to receive and initially support the cartridges in said holes, means for retaining the cartridges in said greasing-plate, means for registering said greasing and forming plates from both sides of the latter, and means for retaining the cartridges in said forming-plate while the latter is being reversed, and condenser mechanism adapted to

receive said groups of cartridges from said forming-plate and compact the same into distinct masses, as and for the purpose set forth.

24. In an apparatus for boxing cartridges, a forming-plate having chambers or passages formed therethrough, said plate being reversible side for side, in combination with a greasing-plate adapted to initially support the cartridges, means for registering the greasing-plate and forming-plate from either side of the latter, and means for delivering the cartridges from said greasing-plate to said forming-plate, whereby when a charge of cartridges is received by said forming-plate on one side from said greasing-plate, said forming-plate may be reversed to receive another charge from the other side and in reversed relation to the first charge, and condenser mechanism arranged to receive said groups of cartridges from said forming-plate and compact the same into distinct masses to receive the packing-boxes, as and for the purpose set forth.

25. In an apparatus for boxing cartridges, a forming-plate having chambers or passages formed therethrough, said plate being reversible side for side, and provided with lugs, said lugs being engageable from either side of said plate, in combination with a greasing-plate adapted to initially support the cartridges, said greasing-plate provided with projections adapted to engage the lugs on the forming-plate to effect a register of said plates with each other, and means for delivering cartridges from said greasing-plate to said forming-plate, whereby when a charge of cartridges is received by said forming-plate on one side from said greasing-plate said forming-plate may be reversed to receive another charge from the other side and in reversed relation to the first charge, and condenser mechanism arranged to receive the cartridges in groups from said forming-plate and to compact the same into distinct masses to receive the packing-boxes, as and for the purpose set forth.

26. In an apparatus for boxing cartridges, a forming-plate having chambers or passages formed therethrough, each of a size and length adapted to receive a cartridge, said chambers or passages arranged in divisions or groups, the chambers or passages in each group corresponding in number and arrangement to the number of cartridges to be packed in a single box, in combination with a greasing-plate having holes adapted to receive therethrough and preliminarily support the cartridges, said holes being arranged in groups or divisions corresponding in size to the area of the packing-box, and each group containing one-half as many holes as the number of cartridges to be received in a single box, means for applying the greasing-plate to first one side and then to the other side of the forming-plate and in registering relation thereto for the groups of holes to register with the groups of chambers or passages in the forming-plate, the holes in the greasing-plate registering with alternate chambers or passages when said greasing-plate is applied to one side of said forming-plate, and with the intermediate chambers or passages when applied to the other side, means whereby the cartridges supported in the greasing-plate are permitted to drop therefrom into the passages or chambers in the forming-plate, a removable retaining-plate for each side of said forming-plate, and condenser-compartments arranged to receive each group of cartridges from said forming-plate and condense the same into compact relation to receive the packing-boxes, as and for the purpose set forth.

27. In an apparatus for boxing cartridges, a reversible forming-plate having chambers or passages formed therethrough, each of a length and size adapted to receive a single cartridge, in combination with a greasing-plate having holes therethrough, each of a size to permit the body of a cartridge to pass therethrough but not large enough for the cap ends of the cartridges to pass through, a retaining-plate for retaining the cartridges in said greasing-plate, and means for registering the greasing-plate with respect to the forming-plate from either side of the latter, whereby by removing said retaining-plate the cartridges supported by said greasing-plate are permitted to drop into the chambers or passages in said forming-plate, a removable retaining-plate for each side of said reversible forming-plate, and a condenser mechanism arranged to receive the cartridges from said forming-plate and compact the same into distinct masses to receive the packing-boxes, as and for the purpose set forth.

28. In an apparatus for boxing cartridges, a support, a forming-plate having chambers or passages formed therethrough adapted to receive cartridges therein, said forming-plate being hinged at one side to said support, whereby it may be reversed to permit the insertion of cartridges in said chambers or passages from both sides thereof, and removable retaining-plates for each side of said forming-plate, in combination with a condenser mechanism adapted to receive the cartridges from said forming-plate and compact the same into distinct masses, each adapted to be received in a packing-box, as and for the purpose set forth.

29. In an apparatus for boxing cartridges, a support, a forming-plate having chambers or passages formed therethrough, each of a size and length adapted to receive a cartridge therein, said plate being hinged along one edge thereof to said support, whereby said plate may be swung into reverse position to permit cartridges to be inserted in said passages or chambers from either side thereof, and retaining-plates for retaining the cartridges in said forming-plate while being reversed, as and for the purpose set forth.

30. In an apparatus for boxing cartridges, a forming-plate having chambers or passages

formed therethrough adapted to receive the cartridges therein from both sides of said plate, said plate being hinged to permit the same to be swung into reverse position, removable retaining-plates arranged to be applied to the respective sides of said forming-plate, whereby the cartridges inserted in said passages or chambers from one side thereof are retained in said plate when it is swung into reverse position to receive cartridges from the other side, as and for the purpose set forth.

31. In an apparatus for boxing cartridges, a forming-plate having chambers or passages formed therethrough adapted to receive the cartridges from either side of said plate, said plate being hinged, whereby it may be swung into reverse position, ways formed in one side of said plate, and a removable retaining-plate adapted to be received in said ways, a removable retaining-plate for the other side of said forming-plate, whereby the cartridges inserted in said chambers or passages from one side of said plate are retained therein when said plate is swung into reverse position to receive the cartridges from the other side, in combination with condenser mechanism arranged to receive the cartridges from such forming-plate in separate groups, each group containing the required number of cartridges to fill a packing-box, said condenser operating to compact said groups into suitable condition to receive the packing-boxes, as and for the purpose set forth.

32. In an apparatus for boxing cartridges, a support, a forming-plate having passages or chambers formed therethrough, each of a size and length adapted to receive a cartridge therein, said plate being hinged or pivoted to said support, whereby it may be swung into reverse position to receive cartridges from either side thereof, and a hinged or pivotally mounted bottom and a removable retaining-plate to prevent the cartridges inserted in said passages or chambers from falling through, as and for the purpose set forth.

33. In an apparatus for boxing cartridges, a support, a forming-plate having chambers or passages formed therethrough adapted to receive the cartridges, said plate being hinged or pivoted to said support, means for delivering the cartridges with the butt or cap ends thereof presented in a uniform direction to each alternate chamber or passage from one side thereof, means arranged to be applied to both sides of said forming-plate for retaining said cartridges in said chambers or passages, whereby by swinging said plate about its hinge the remaining chambers or passages may be filled with cartridges presenting their butt-ends in the opposite direction to that in which the butt-ends of the cartridges of the first filling are presented, as and for the purpose set forth.

34. In an apparatus for boxing cartridges, a forming-plate having chambers or passages formed therethrough and arranged in groups, each chamber or passage adapted to receive a cartridge, said chambers or passages in each group corresponding in number to the number of cartridges to be packed in a single box, said plate being hinged or pivoted, and retaining-plates arranged to be applied to both sides of said forming-plate, in combination with a greasing-plate adapted to receive and support preliminarily the cartridges in groups corresponding in arrangement to the groups of chambers or passages in the forming-plate, each group in the greasing-plate containing cartridges adapted to be received in alternate passages or chambers in each group of the forming-plate, the cartridges as supported by the greasing-plate being arranged in regular relation—that is, with the butt-ends presenting in uniform direction, and means for registering the greasing-plate and forming-plate from both sides of the latter, whereby one-half of the cartridges may be supplied to the forming-plate from one side thereof and one-half supplied from the other side thereof, the cartridges alternating with each other with respect to the direction in which the butt-ends thereof present in the filled forming-plate, as and for the purpose set forth.

35. In an apparatus for boxing cartridges, a condenser having a series of compartments, means arranged to deliver into each compartment the required number of cartridges to be packed in a single box, the butt-ends of adjacent cartridges in each compartment projecting in opposite directions, means for condensing the cartridges in all of said compartments simultaneously, whereby the packing-boxes may be applied thereto, as and for the purpose set forth.

36. In an apparatus for packing cartridges, a condenser having a plurality of compartments, means arranged to deliver into each compartment the number of cartridges required to fill a single packing-box, the butt-ends of adjacent cartridges in each compartment projecting in opposite directions, and means for simultaneously contracting said compartments to condense the cartridges into solid, compact groups or masses, whereby the packing-boxes may be telescoped thereon, as and for the purpose set forth.

37. In an apparatus for boxing cartridges, a condenser having a plurality of compartments, means arranged to deliver into each compartment the required number of cartridges to fill a packing-box, the butt-ends of adjacent cartridges in each compartment projecting in opposite directions, and means for simultaneously moving a side and end wall of each of said compartments, whereby the cartridges are condensed or compacted closely together to be received in the packing-boxes, as and for the purpose set forth.

38. In an apparatus for boxing cartridges, a condenser having one or more compartments, each adapted to receive the required number of cartridges to fill a packing-box, said condenser being hinged, means for con-

densing or contracting the cartridges in each compartment to receive the packing-boxes, whereby by swinging said condenser about its hinge the filled box may be delivered therefrom, as and for the purpose set forth.

39. In an apparatus for boxing cartridges, a condenser having a plurality of compartments, each adapted to receive the required number of cartridges to fill a packing-box, means for delivering the cartridges into said compartments with the butt-ends thereof alternating in the direction in which they are presented, and means for simultaneously contracting the area of all of said compartments, thereby condensing or compacting the cartridges supplied to each compartment, whereby the packing-boxes may be applied thereto, as and for the purpose set forth.

40. In an apparatus for boxing cartridges, a condenser having a plurality of compartments adapted to receive the cartridges to be packed, one side wall and one end wall of each compartment being stationary, and the other side wall and end wall being movable toward and from said stationary side and end walls, and means for simultaneously moving said side and end walls to contract the area of said compartments, as and for the purpose set forth.

41. In an apparatus for boxing cartridges, a condenser having a plurality of compartments, each adapted to receive the required number of cartridges to fill a packing-box, each of said compartments provided with a movable side and end wall, and means for simultaneously moving said movable side and end walls of all the compartments to contract the area of said compartments, whereby the cartridges supplied to said compartments are condensed or compacted into close relation, said side and end walls having their edges beveled to facilitate the insertion of the packing-boxes upon the condensed cartridges, as and for the purpose set forth.

42. In an apparatus for boxing cartridges, a support, a forming-plate hinged along one side thereof to said support, whereby it may be reversed side for side, said plate provided with chambers or passages therethrough adapted to receive cartridges from either side thereof, and retaining-plates for retaining the cartridges inserted in said chambers or passages, in combination with a greasing-plate adapted to preliminarily receive and support the cartridges, a retaining-plate for retaining the cartridges in said greasing-plate, means for registering said greasing and forming plates from either side of the latter, and a condenser arranged in position to receive the cartridges from said forming-plate and adapted to condense the cartridges into a compact mass to receive the packing-boxes, as and for the purpose set forth.

43. In an apparatus for packing cartridges, a support, a forming-plate hinged or pivoted thereto and adapted to be inverted to receive cartridges from opposite sides, removable retaining-plates for retaining the cartridges in said forming-plate, a greasing-plate, means for registering said greasing-plate and forming-plate with each other, whereby cartridges supported by said greasing-plate may be delivered to said forming-plate from opposite sides of the latter, a removable retaining-plate for said greasing-plate, a condenser arranged to receive the cartridges from said forming-plate when the latter is swung about its pivot, means for contracting said condenser to condense or compact the cartridges supplied thereto into distinct groups or masses to receive the packing-boxes, said condenser being hinged or pivoted for delivering the filled boxes therefrom, as and for the purpose set forth.

44. In an apparatus for boxing cartridges, a hinged or pivoted forming-plate, removable retaining-plates therefor, a greasing-plate also provided with a removable retaining-plate for delivering the cartridges to said forming-plate, means for registering said greasing-plate with respect to said forming-plate from opposite sides of the latter, whereby the cartridges are received by said forming-plate in alternating directions, a condenser adapted to receive the cartridges from said forming-plate when the latter is swung upon its pivot, and means for compacting the cartridges in said condenser to receive the packing-boxes, as and for the purpose set forth.

45. In an apparatus for boxing cartridges, a forming-plate having passages or chambers formed therethrough, each of a size and length adapted to receive a cartridge, said chambers or passages arranged in groups or sections, the chambers or passages in each group or section corresponding in number to the number of cartridges required to fill a packing-box, a greasing-plate having holes formed therethrough grouped to correspond to sections or divisions of the forming-plate, each group of holes in the greasing-plate corresponding in number to one-half the number of passages or chambers in the corresponding group of the forming-plate, said holes respectively alternating with the chambers or passages in the corresponding group or section of said forming-plate and of a size permitting the passage therethrough of the body of the cartridge but preventing the passage of the butt-ends of the cartridges, said forming-plate being hinged or pivoted, and provided with retaining-plates, means for registering said greasing-plate and forming-plate, whereby cartridges from said greasing-plate may drop into the alternate chambers or passages in the sections or divisions of the forming-plate from each side thereof in order that adjacent cartridges may alternate with each other with respect to the direction in which the butt-ends thereof present, a condenser arranged to receive said forming-plate when

swung about its hinge or pivot, said condenser provided with compartments corresponding in arrangement and area to the groups or sections of chambers or passages in said forming-plate, whereby the cartridges may deliver in proper relation to each compartment of the condenser to be received in a packing-box, and means for contracting the area of said compartments, whereby the cartridges are condensed to receive the packing-boxes, as and for the purpose set forth.

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

GERSHOM MOORE PETERS.

Witnesses:
F. C. TUTTLE,
A. M. BEEKLEYS.