No. 676,759. Patented June 18, 1901.

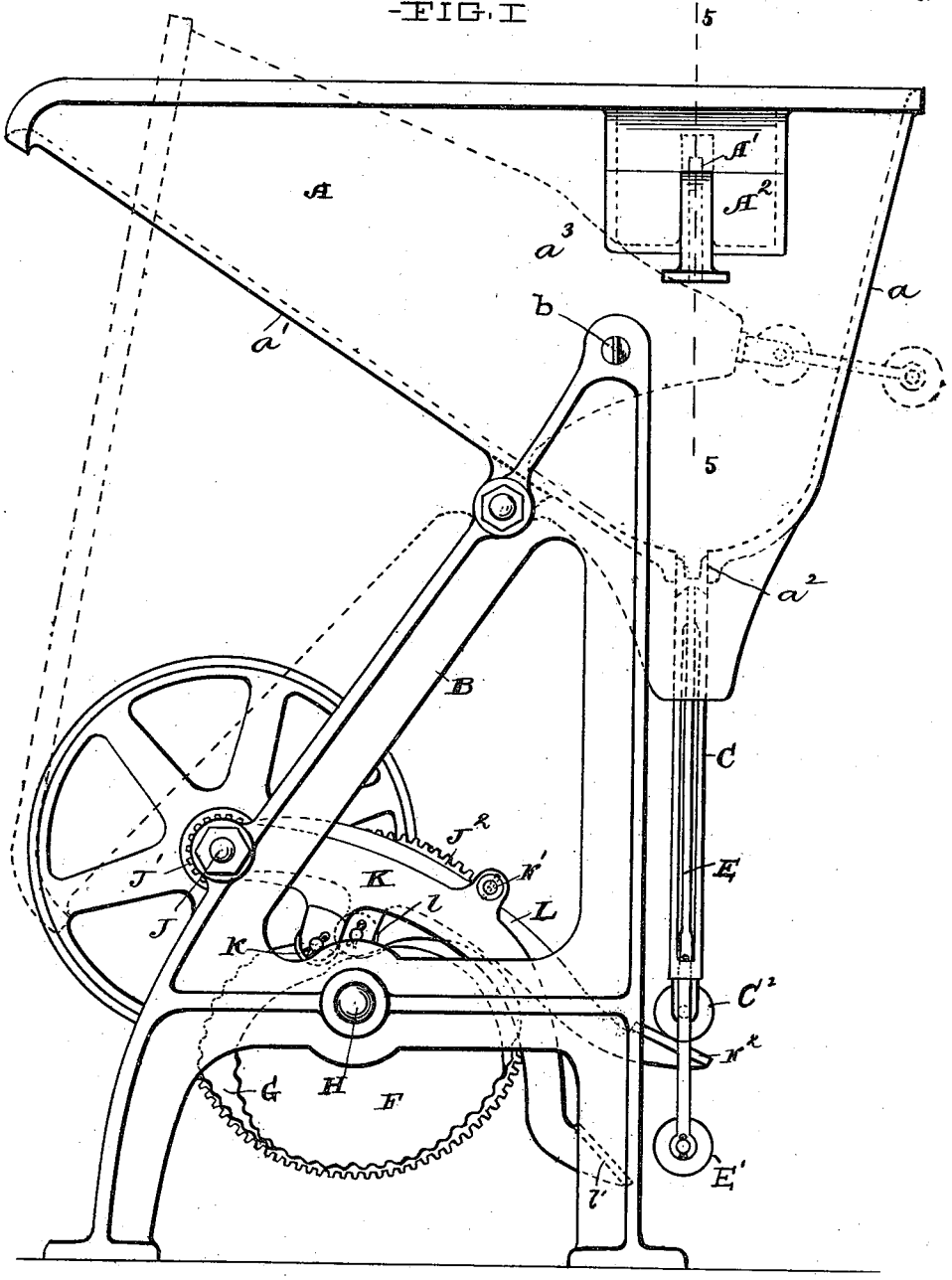
W. L. MORRIS.

WAD FEEDING DEVICE.

(Application filed Feb. 13, 1899.)

(No Model.) 4 Sheets—Sheet 1.

FIG. I



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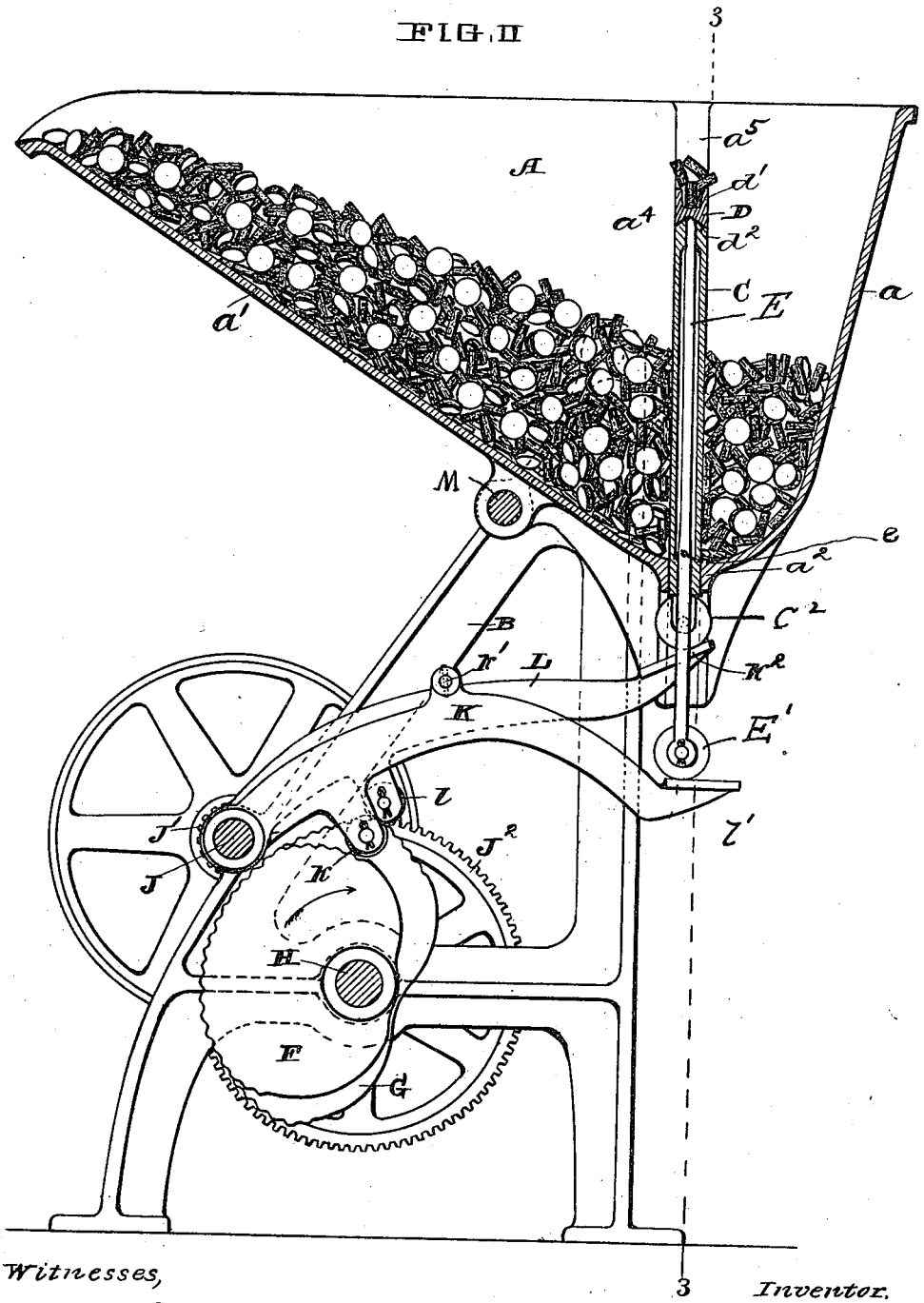
4 Sheets—Sheet 2.

FIG. II



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-FIG. III-

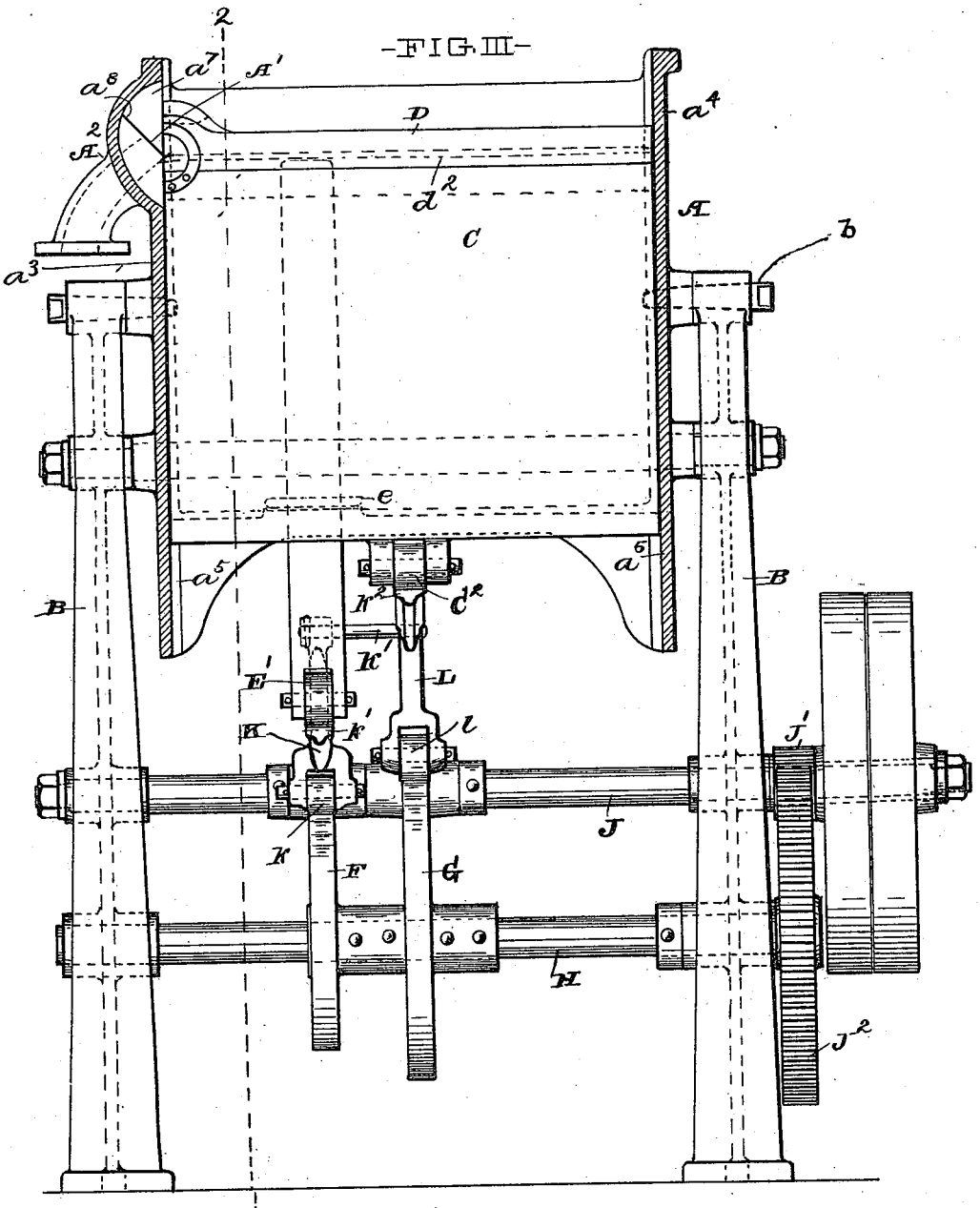

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FIG. IV

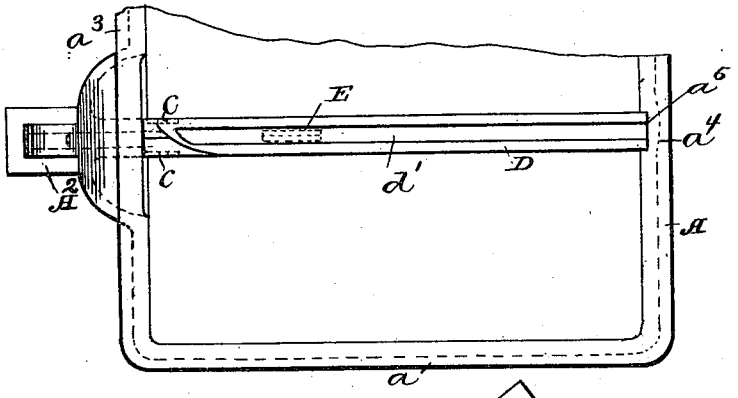


FIG. VI

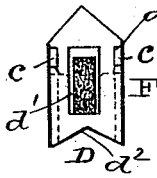
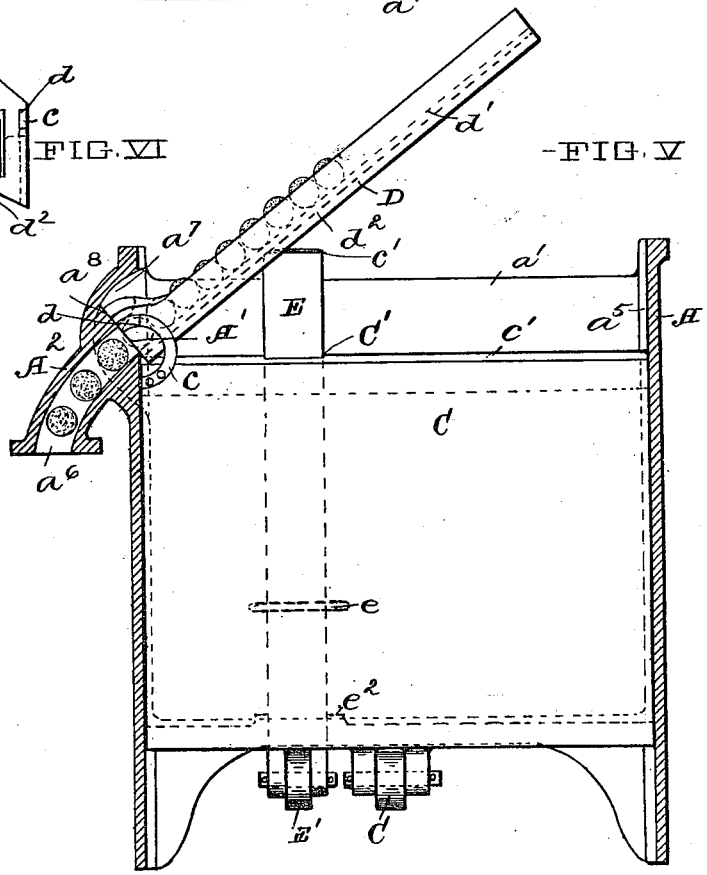


FIG. V



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Atty.

UNITED STATES PATENT OFFICE.

WILLIAM L. MORRIS, OF CLEVELAND, OHIO, ASSIGNOR TO THE AUSTIN CARTRIDGE COMPANY, OF SAME PLACE.

WAD-FEEDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 676,759, dated June 18, 1901.

Application filed February 13, 1899. Serial No. 705,363. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. MORRIS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Wad-Feeding Devices, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention has for its object the feeding of cut wads used for loading shells from a wad-receptacle; and it consists of means hereinafter fully described.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a side elevation of my improved wad-feeding device. Fig. II represents a vertical section taken upon a plane indicated by line 2 2 in Fig. III, said Fig. III representing a partial vertical section taken upon a plane indicated by line 3 3 in Fig. II, the lower portion of the machine cut by said plane being shown in elevation and the discharging-spout on the wad-hopper being shown in elevation. Fig. IV represents a partial plan view of the wad-hopper, showing also a plan view of the wad-holder located therein. Fig. V represents a section of the wad-hopper, taken upon line 5 5, Fig. I, showing the wad-holder and its support and actuating means in elevation in the discharging position; and Fig. VI represents an enlarged detail end view of the wad-holder.

A wad receptacle or hopper A is suitably supported upon two standards B B and is formed with two sides a and a', which converge from the upper edge of the hopper toward its bottom, as shown in Fig. II. Said bottom is formed between and longitudinally of the hopper with a slot a^2, which terminates at or near the sides a^3 and a^4, contiguous to said sides a and a'. Said sides a^3 and a^4 are formed with vertical guideways a^5, as shown in Figs. II and IV. In one of said contiguous sides a^3, as illustrated, and near the upper edge thereof is formed a discharge-opening A', which is located in the plane passing through the middle of the guideways a^5, as shown in Fig. IV. Formed integral with or secured to the side a^3 is a wad-spout A^2, having a curved wad-channel a^6, Fig. V, leading from the discharge-opening A'. The two sides a^3 and a^4 are extended downwardly below the bottom of the hopper, and said extensions are formed with guideways in continuation of the guideways a^5. Sliding in said guideways is a plate C, upon the upper surface of which is supported a wad-holder D, extending across the hopper and also sliding in said guideways. The said holder is pivotally secured to the plate at the end contiguous to that side of the hopper having the discharge-opening by means of two segments c, one secured on each side of said plate and each sliding in a segmental bearing d, cut in each side of the holder, Fig. VI. Along the upper portion of the said holder is cut a groove or wad-race d' of a width substantially equal to the thickness of the wads used, which cuts the lateral surface of the said holder at its pivotally-secured end. The segments c and bearings d are so located that their centers fall upon the adjacent lateral surface of the holder and at the bottom of the wad-race. The pivotal axis thus passes through such centers and is also located upon said surface. The upper portion of the side a^3 is formed with a recess a^7, having an inclined plane surface a^8, Fig. V, in which is located the discharge-opening A', the lower edge of which lies in the plane of the contiguous lateral surface of the plate. The lower surface of the holder is formed with a groove d^2 of triangular cross-section, Fig. VI, which fits upon a tongue c', Fig. V, of similar section and formed upon the contiguous surface of the plate C, thereby insuring said holder against lateral displacement when seated upon said plate. The plate C is formed with a vertical slot C', Fig. V, in which slides a lifter E, whose downward movement is limited by means of a transverse pin e, which rests upon a shoulder e^2, formed near the lower portion of slot C', as shown in dotted lines in Fig. III. The upper end of the slot C' terminates in the upper

surface of the plate, whereby the lifter on being raised may engage the lower surface of and impart an angular movement to the wad-holder relatively to the wad-hopper and cause said holder to assume an angular position relatively to its normal horizontal position. The lower end of the lifter is provided with a roller E′, suitably journaled, the lower portion of the plate C being similarly provided with a roller C^2, the middle plane of rollers being located in vertical planes some distance from each other, as shown in Figs. III and V.

Two cams F and G are secured to a driving-shaft H, rotated by a belt-pulley loosely mounted upon a shaft J, a gear J′, loosely mounted upon said shaft and rotatively connected with said pulley, meshing with a gear J^2, keyed to the end of shaft H.

Two levers K and L each have a bearing at one end journaled upon the shaft J. Each lever has a roller *k* and *l*, respectively, journaled on its lower side and intermediate of its end, roller *k* resting upon the surface of cam F and roller *l* resting upon the surface of cam G. Secured to and extending laterally from lever K is a rod *k′*, having a free end which projects a distance such that it may rest upon the upper surface of lever L, as shown in Fig. III. The free end of each of levers K and L is formed with a flat contact-surface k^2 and *l′*, respectively, upon which rest, respectively, rollers E′ and C^2. The rotation of the cams will hence cause oscillation of the levers, which effect reciprocation of the plate and the wad-holder and also reciprocation of the lifter and the angular movement of said wad-holder.

Each of the two cams F and G has a portion of its cam-surface of undulate formation, as shown in Figs. I and II, and said cams are angularly located relatively to each other, so that cam F will not reciprocate the lever K until the plate C has reached the end of its upward stroke. The stroke of said plate is of a length such that at the end of the upward stroke the bottom of the wad-race will reach the bottom of the discharge-opening, as shown in Fig. III.

The device operates as follows: The driving-shaft being rotated, cam G revolves, oscillating lever L and reciprocating the plate C and wad-holder D. During the upward stroke of the plate the wad-holder passes through the supply of wads, which are placed in a promiscuous mass in the hopper, and carries a quantity upward, such wads occupying various positions, as shown in Fig. II. After reaching a suitable height the undulate surface of said cam is brought into play and imparts to the plate and holder a vibratory upward movement. Such movement has the effect of alining the wads in a row in the wad-race, wherein they are supported upon their peripheries, as shown in Fig. V. On reaching the upward limit of its stroke, at which point cam G becomes inoperative in so far as concerns the reciprocating movement of the plate, the holder is held in such position by the cam G, the undulate surface having now passed, and the lever K, which has been carried up by the lever L through the agency of rod *k′*, actuated by cam F, which now becomes operative, causes the lifter to begin the upward stroke in its reciprocation, the undulate surface of the said cam acting during such stroke. The holder is by these means given an angular movement about the discharge-opening, revolving upon its pivotal axis, and a concomitant vibratory movement, the former movement causing the end of the wad-race to register with said opening, as shown in Fig. V, and the consequent discharge of the wad row. The vibratory movement during such discharge prevents wads from clogging the race and also alines any wads which may not have been alined during the upward stroke of the plate. The row of wads so discharged passes through the wad-spout, from whence they may be conducted through suitable tubes as desired. After the discharge of the wads the wad-holder resumes its normal position and thereupon descends with the plate, passing down through the wad-supply until the top of the said holder substantially reaches the bottom of the hopper, the wads closing in over said holder. The latter thereupon begins its upward stroke and the above operation is repeated. In this manner the wads are intermittently alined to successively form rows transversely located with respect to the hopper and which are intermittently discharged from the wad-hopper, each cam being operative during an inoperative period of the other, the one cam imparting a reciprocating and a vibratory reciprocating movement and the other producing an angular vibratory movement in the holder. The hopper is hung upon a rod M, whose ends are journaled in the supporting-frames B, as shown in Fig. III, the normal position of the hopper being maintained by two taper pins *b*, which pass through bores in the frame into corresponding bores in the hopper. On the withdrawal of said pins the hopper may be tilted, as shown in Fig. I in dotted lines, for the purpose of discharging the wads when it is desired to change the size of such wads, such tilting being facilitated by the open or contact connection of the plate and lifter with their respective levers.

The spout and wad-holder may be removed and others substituted for different sizes of wad.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. The combination of a receptacle adapted to hold a promiscuous mass of wads, a wad-holder within the receptacle reciprocable from the lower to the upper portions of said receptacle whereby it may be caused to pass through said wad mass, said holder provided with a wad-race adapted to receive a row of alined wads resting upon their peripheries, means for alining wads in said race to form a row, said race being of a width to maintain such alined wads upon their peripheries, and means for tilting the wad-holder when at its upper position to discharge such alined row, substantially as set forth.

2. The combination of a wad-receptacle, a reciprocating and tiltable wad-holder traversing said receptacle, means for alining wads upon their peripheries to successively form rows of wads traversing said receptacle transversely, and means for reciprocating and tilting the wad-holder, substantially as set forth.

3. The combination of a wad-receptacle having sides converging from the top thereof, a wad-holder reciprocating between the bottom and top portion of said receptacle, and means for imparting an angular movement to said wad-holder at the upper portion of its upward stroke, whereby wads in said holder may be discharged, substantially as set forth.

4. The combination of a wad-receptacle, a wad-holder pivotally and slidingly supported within the receptacle and having a wad-race of a width substantially equal in width to the thickness of the wads, means for reciprocating said holder in said receptacle whereby wads resting upon their peripheries are caused to lodge in said race, and means for tilting the wad-holder on its pivotal support when at its upper position to discharge the wads, substantially as set forth.

5. The combination of a wad-receptacle having downwardly-converging sides, a wad-holder pivotally and slidingly supported within the receptacle and adapted to hold a row of wads upon their peripheries and maintain such position of the wads, means for reciprocating said holder in said receptacle between the bottom and top portions thereof and means for tilting the holder on its pivotal support and discharge the wads in said holder at the end of its upward stroke, substantially as set forth.

6. The combination of a wad-receptacle, a plate in said receptacle, a pivoted wad-holder on said plate, means for reciprocating said plate, and means for moving said holder on its pivot at the end of the plate's stroke, substantially as set forth.

7. The combination of a wad-receptacle having a discharge-opening, a plate slidable in said receptacle, a wad-holder pivoted on said plate, means for reciprocating said plate so as to bring said holder into the vicinity of said opening, and means for actuating said holder to turn upon its pivot on so reaching said opening, substantially as set forth.

8. The combination of a wad-receptacle having a discharge-opening, and converging sides, a plate located between said sides, means for reciprocating said plate between the receptacle-bottom and said opening, a wad-holder pivoted upon said plate and means for actuating said holder to turn upon its pivot on reaching said opening, substantially as set forth.

9. The combination of a wad-receptacle provided with a discharge-opening, and a slot in its bottom, a plate slidingly disposed through the slot, a tiltable wad-holder carried by said plate, means for reciprocating the plate with the wad-holder, and means for tilting the wad-holder to discharge the wads through the openings in the wad-receptacle, substantially as specified.

10. The combination of a wad-receptacle, a wad-holder pivotally mounted upon a reciprocable plate, mechanism for reciprocating said plate, a lifter for turning said holder about its pivotal axis, and reciprocable relatively to said plate, and means for actuating said lifter, substantially as set forth.

11. The combination of a wad-receptacle, a wad-holder pivotally mounted upon a reciprocable plate, a cam for reciprocating said plate, a lifter for turning said holder about its pivotal axis, and reciprocable relatively to said plate, and a second cam for reciprocating said lifter, substantially as set forth.

12. The combination of a wad-receptacle, a wad-holder pivotally mounted upon a reciprocable plate, a lifter reciprocable in said plate and adapted to engage and turn said holder about its pivotal axis, a cam-actuated lever for engaging and reciprocating said plate, a second cam-actuated lever for engaging and reciprocating said lifter, and driving means for simultaneously operating said cams, the latter so arranged that each operates to produce its respective reciprocating movement during an inoperative period in the other, substantially as set forth.

13. In a wad-feeding device, the combination of a wad-receptacle having a wad-discharge opening in one side adjacent to the top thereof, and a slot in its bottom, a vertically-disposed plate slidingly projected through the said slot, a wad-holder carried on the top of the plate and having its end adjacent to the discharge in the receptacle pivotally connected to the plate, means to reciprocate the plate with the wad-holder, and means to tilt the wad-holder about its pivotal support when the plate has carried it to its upper position, substantially as specified.

Signed by me this 8th day of February, 1899.

WILLIAM L. MORRIS.

Attest:

BENJAMIN B. AVERY,

L. ROOD LOOMIS.