(No Model.) 4 Sheets—Sheet 1.

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SHELL PLACER FOR CARTRIDGE LOADING MACHINES.

No. 528,096. Patented Oct. 23, 1894.

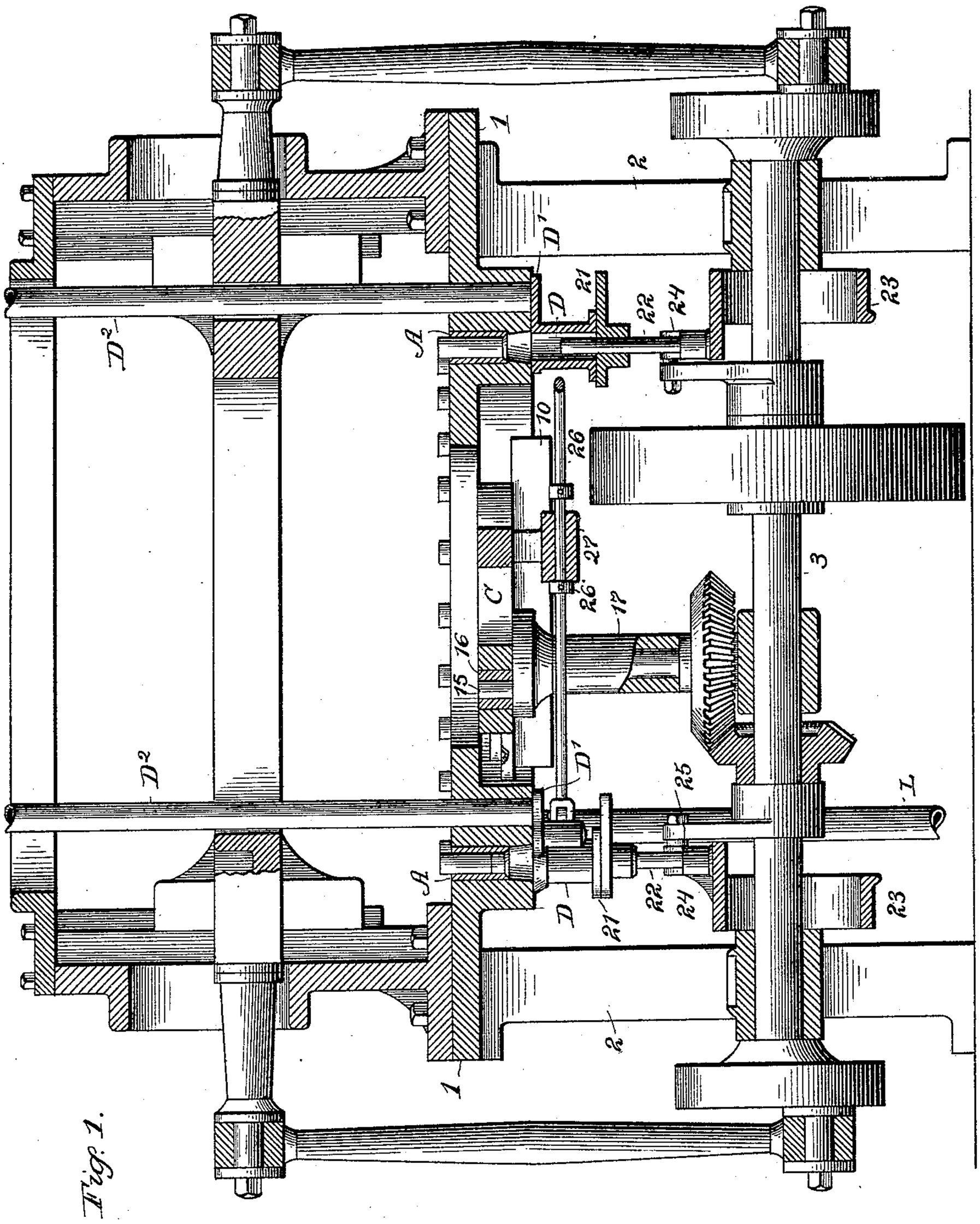

Fig. 1.

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Fig. 2.

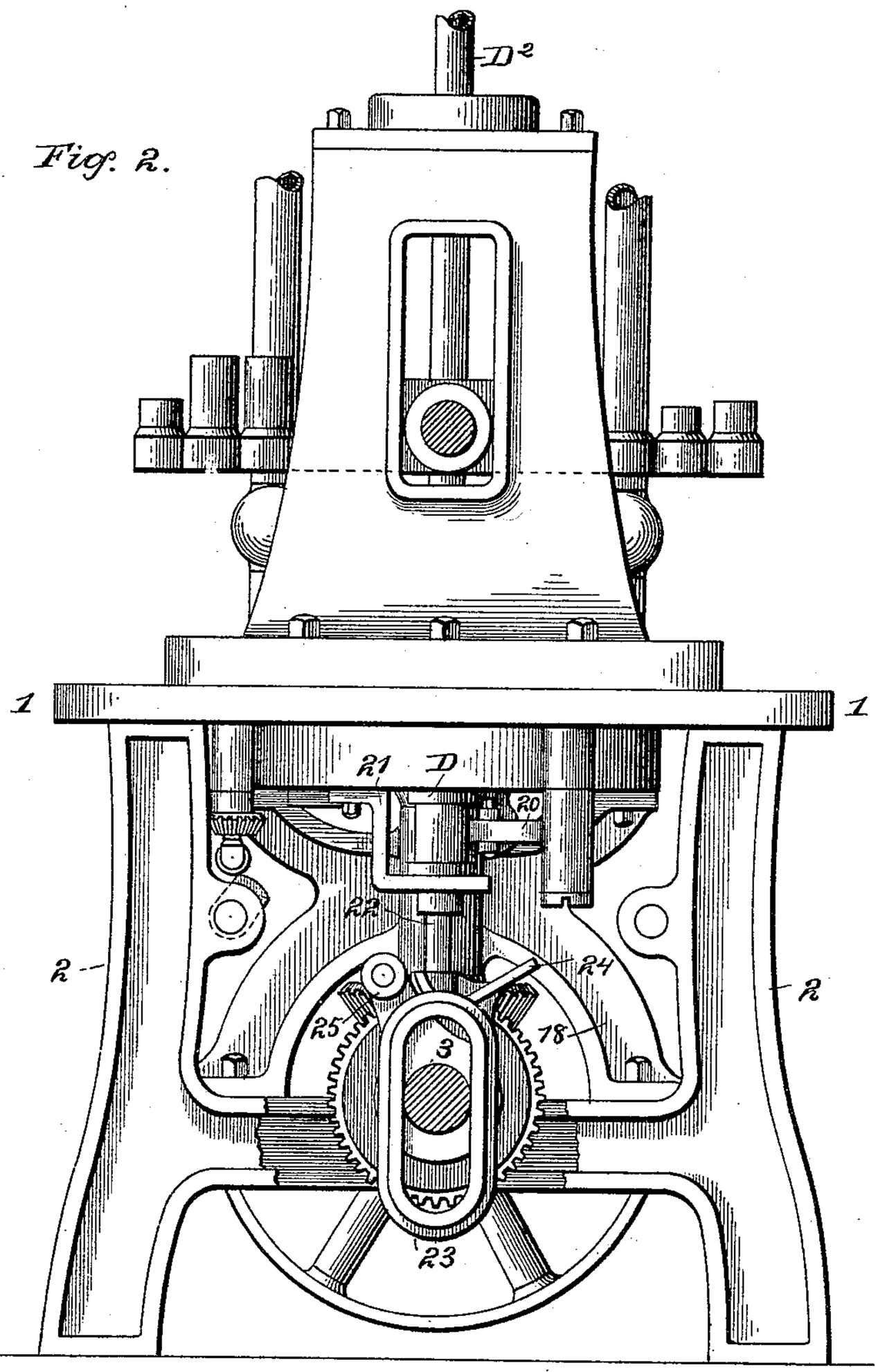

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Fig. 3

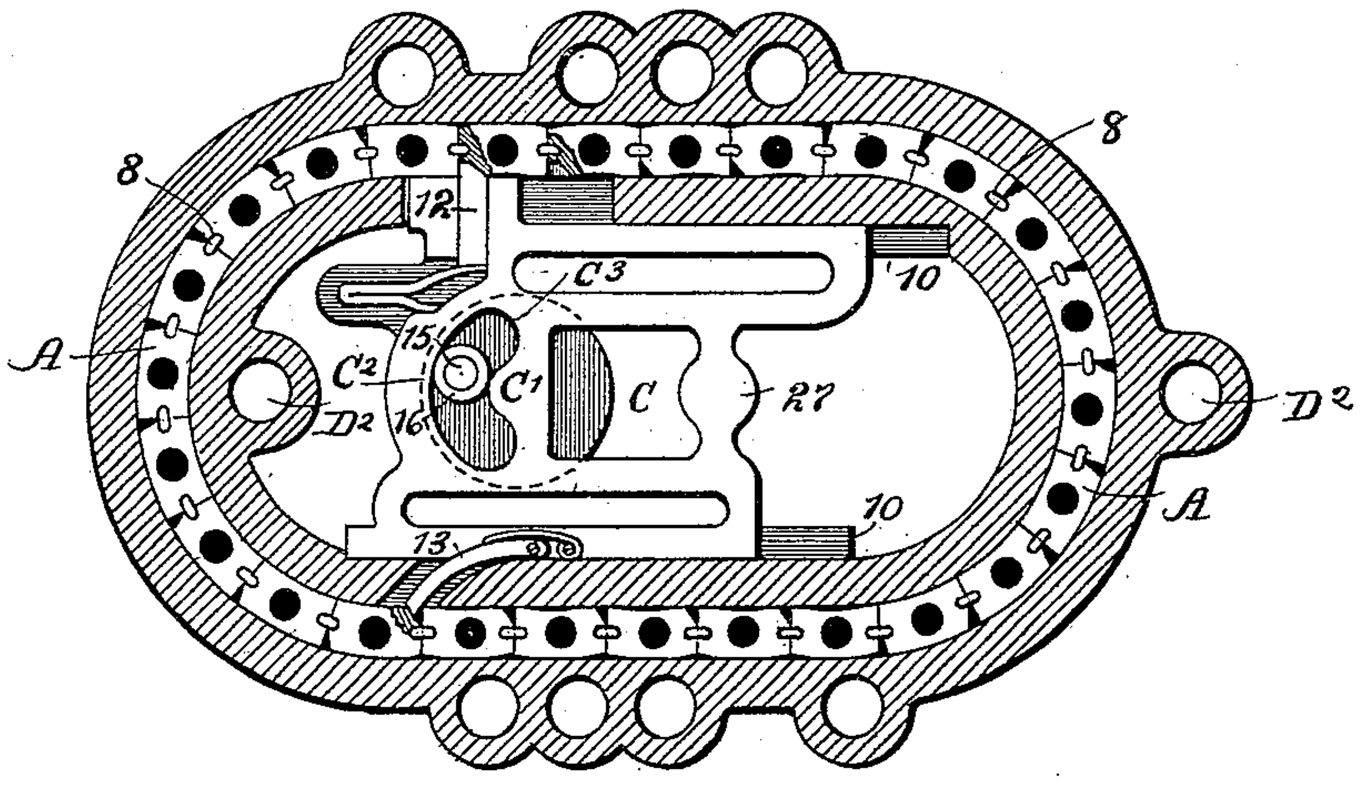

Fig. 6.

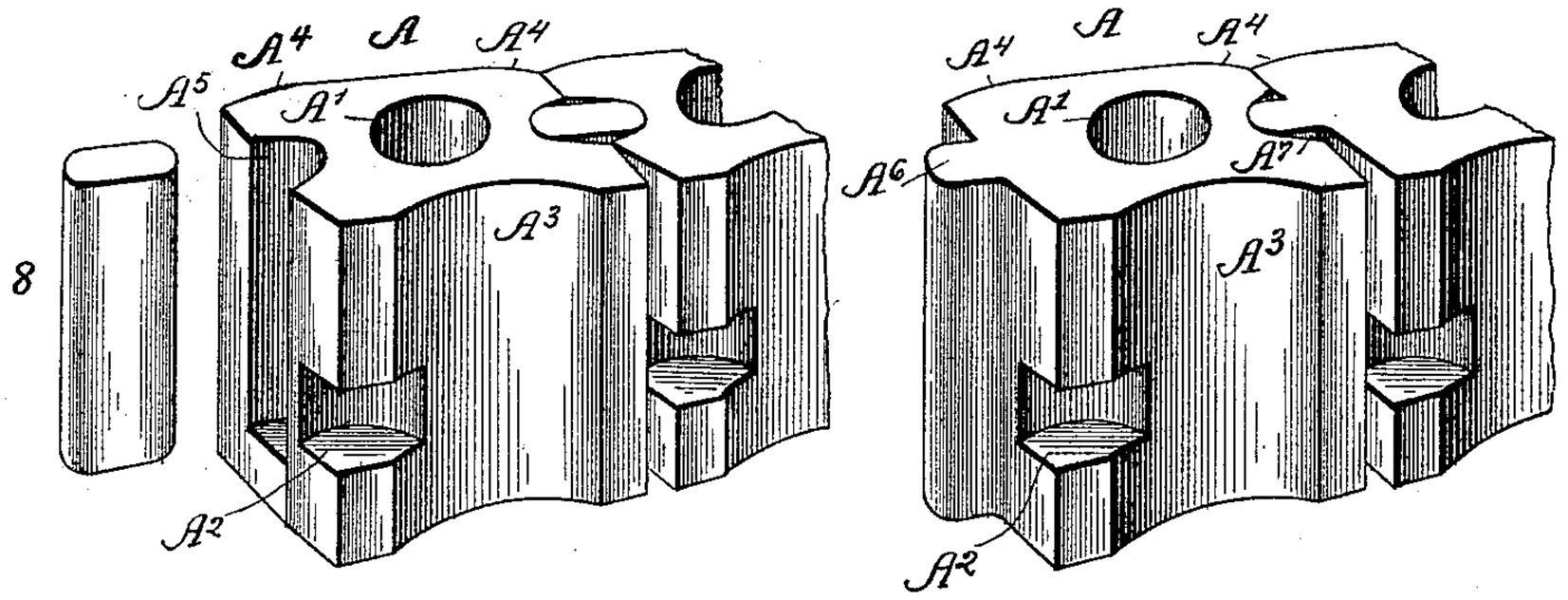

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Fig. 4.

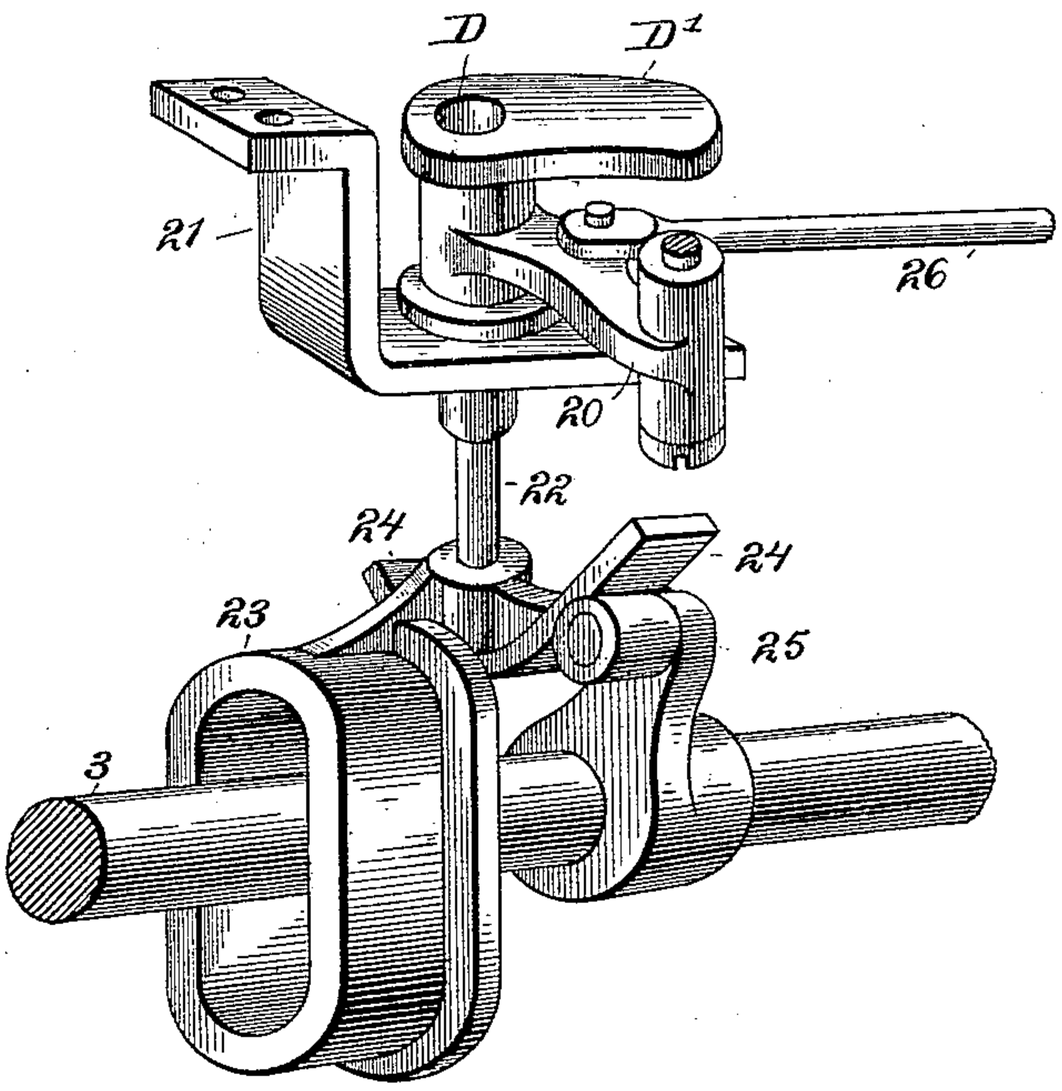
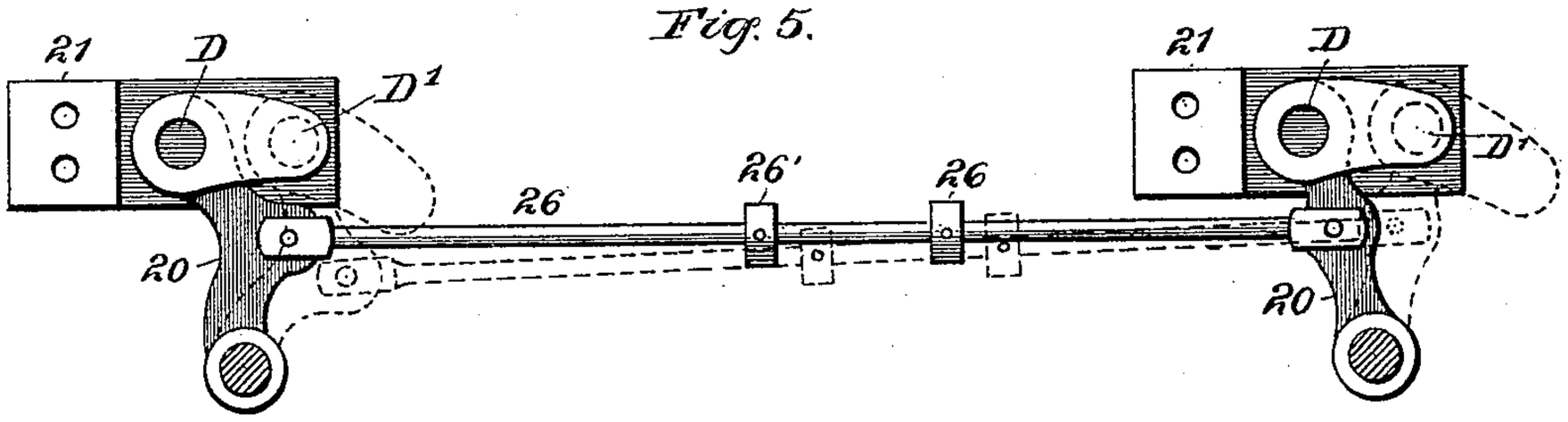


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES S. HISEY, OF AURORA, INDIANA, ASSIGNOR TO ELLIOTT S. RICE, OF CHICAGO, ILLINOIS.

SHELL-PLACER FOR CARTRIDGE-LOADING MACHINES.

SPECIFICATION forming part of Letters Patent No. 528,096, dated October 23, 1894.

Application filed March 26, 1894. Serial No. 505,177. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. HISEY, a citizen of the United States, residing at Aurora, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Shell-Placers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to cartridge loading machines, and to the particular class of said machines which is constructed and adapted to charge or fill shot gun cartridges, and it consists in an improved shell placer, which will be hereinafter fully described and particularly pointed out in the claims.

In automatic cartridge loading machines, it is necessary that the empty cartridge shells shall be fed with entire certainty and uniformity into the shell cases of the shell carrier, so that the cartridge loading tools may always find a shell in position on which to operate.

The object of my invention is to produce a shell carrier which shall completely perform the function assigned to it, and shall at the same time be simple in construction, and easily adjusted in place on the cartridge loading machine.

The shell placer which I have constructed to fulfill the objects of my invention consists of a pivoted arm having an aperture formed in its outer end sufficiently large to hold a cartridge shell, which is caused to oscillate from the position in which it receives the shell to that in which the shell is discharged by the actuating mechanism for the shell carrier, and from which the shell is discharged by the reciprocation of a plunger, rigidly attached to a slotted casting, and operated by a crank pin on the power shaft of the machine. By so operating the shell placer, I obtain a better distribution of applied power over the entire machine than can be obtained in the machines now in use.

A further feature of my invention consists in so operating the shell placer by the shell carrier actuating mechanism, which in the construction shown has a dwell at the forward part of its movement, that the shell placer will have a dwell in one of its operative positions due solely to the dwell of the said actuating mechanism, and entirely independent of any further dwell which may be given it by other means.

My shell placer may be used on any automatic cartridge loading machine, but it is especially adapted for use on the cartridge loading machine shown and described in the joint application of myself and Elliott S. Rice, filed March 1, 1894, Serial No. 501,935, and in the drawings forming a part of this application, in which my invention is fully illustrated, I have represented my shell placer as adapted for use on such a machine.

Like letters and numerals refer to the same or corresponding parts in the drawings, in which—

Figure 1 is a longitudinal section of the cartridge loading machine, showing the manner by which the shell placer is actuated by the operative mechanism for the shell carrier. Fig. 2 is an end view of the machine, showing particularly the pivotal support of my shell placer. Fig. 3 is a plan section of the machine table, specially illustrating the actuating means for the shell carrier. Fig. 4 is a detail perspective view of my shell placer. Fig. 5 is a plan view showing the mode of connection of two shell placers, when the machine of which the shell placer forms a part is so formed as to permit the use of more than one shell placer. Fig. 6 is a detail view of two forms of the shell carrier blocks.

In order to understand the action of the shell placer on the machine in connection with which it is illustrated, it will be necessary to describe with some detail the shell carrier, and the actuating mechanism therefor, as the shell placer is operated by such shell carrier actuating mechanism.

Referring then to the drawings, 1 represents the machine bed or table. It is rectangular in form, and is supported from the ground by the standards 2. In the upper surface of the table, is cut a deep groove, approximately elliptical in form, in which move the shell carrier blocks A, and on both sides of which sets of loading tools may be sta-

tioned. This groove is of a depth sufficient to receive the shell carrier blocks A with their upper ends flush with its surface, but the ends of the cartridge shells, when inserted in such blocks, project above its surface. The interior of the machine table is cut away so as to lighten its weight.

3 is the main power shaft of the machine, and is journaled centrally between the standards of the machine table in cross pieces running between the same.

The shell carrier blocks which move in the groove in the machine table are not fastened together, but are entirely independent of each other, and merely abut one another. In each of the blocks is formed a central cell A′, adapted to receive and hold a cartridge shell, the end of the shell when in position projecting above the surface of the block, and with a recess A^2 in the front end of its inner face at about the middle portion of its height, into which the pawl may be pressed by means of which the shells are given an intermittent forward movement.

The shell carrier blocks are somewhat peculiar in form, in order to enable them to round with ease the curved portions of the groove, and two forms of the same are shown in detail in Fig. 6. On the inner sides of the blocks a portion of the metal is centrally cut away, so as to form a curved recess A^3, and the two corners A^4 of the outer side are each rounded in a corresponding curve. The reason for thus forming the blocks will be apparent when its action is considered in passing around the curved portions of the groove in the machine table. When passing along the straight portions of this groove, the bearing surfaces of the blocks are the ends of its inner face, and the middle of its outer face; but when rounding a curve, the bearing surfaces change, now becoming the curved recess A^3 and the curved ends A^4, thus completely reversing the bearing surfaces. To further enable the blocks to pass around the curve, the inner portion of the front face of the block is cut away at an angle, and recesses A^5 are formed at each end of each block, in which pins 8 (see Fig. 3) are placed.

The shell carrier blocks A merely abut one another when moving in the groove formed in the machine table, and are entirely independent of one another. Any one of them may be removed at any time in case of breakage, or in case a shell becomes jammed in its cell, and another block inserted in its place.

The mechanism for moving forward the shell carrier blocks with an intermittent motion consists of the reciprocating carriage C, and the parts in connection therewith. This carriage is shown in longitudinal section in Fig. 1, and in top plan in Fig. 3. Its manner of support is best shown in Fig. 1. As there shown, it slides between the bottom bearing surface formed by the right angled casting 10, and an upper bearing surface formed by a projecting portion of the machine bed 1, it being so supported that its upper surface is level with the top of the recesses A^2. The general form and operation of this carriage are best shown in Fig. 3. As there shown, the carriage is arranged to reciprocate a distance equal to the length of a single shell carrier block, so that the spring pressed pawl 12, which slides in a groove cut in one side of its upper surface, will engage with the side recess A^2 formed in each of the shell carrier blocks, a portion of the machine bed being cut away to allow for the reciprocation of the said pawl, and the projecting portion of the carriage C which forms a guide therefor. Starting then from the position shown in Fig. 3, when the blocks are in their forward position, it will be seen that as the carriage is moved backward, the spring pressed pawl will be forced out of the recess of the block in which it now is, and at the end of such movement will be forced into a corresponding recess in the next following block; and that on its return forward movement, the carriage C will move the shell carrier blocks forward the length of a single block.

To assist the pawl 12 in locking the blocks in their forward position, a spring pressed pawl 13 is pivoted to the carriage C on the side of such carriage opposite to that where the pawl 12 is situated. This pawl 13, when the carriage is in its forward position, projects through a curved opening formed in the machine bed, and engages with one of the side recesses A^2 in one of the shell carrier blocks A. When the carriage C moves backward, the said pawl is also carried backward, its end moving up the curved recess in the machine table; but when the carriage is in its forward position, this pawl, projecting as it then does into a recess formed in one of the carrier blocks, securely locks the carrier, and renders impossible any movement of the same. If desired, more than one of such locking pawls may be used.

The reciprocating movement of the carriage C is caused by the pin 15 moving in the cam groove C′, cut in the front portion of the carriage C. This pin, on which is mounted a roller 16 to minimize the friction, is formed on top of the short shaft 17, which is supported and held in position by the H-shaped casting 18, shown in Fig. 2, and which is provided on its lower end with a miter gear wheel, which meshes with a corresponding miter gear on the main power shaft. Thus at every revolution of the power shaft, the pin 15 describes a complete circle, and the carriage C is caused to move forward and back.

The movement of the pin 15 in the cam slot C′ is somewhat peculiar, and is important in the operation of the machine. This slot is formed in two portions,—a central portion C^2, whose radius is the diameter of the circle in which the crank pin 15 moves, and end portions C^3 which extend outward at an angle of forty-five degrees to the radius of the

circle. The entire width of the slot is equal to or exceeds the diameter of the circle in which the pin 15 moves. The result of thus forming this cam slot is that the reciprocating carriage dwells or remains stationary for a time in its forward position, as while the crank pin 15 moves through the central portion C^2 of said slot, it has no tendency to move the carriage, and the backward movement of the carriage only commences when the crank pin reaches the portion C^3 of the slot. As the pin now continues its revolution, it carries the carriage back with it until a point is reached diametrically opposite the middle portion of its dwell, when the pin rises into the center of the cam slot, forcing the carriage into its extreme backward position, and then commences its forward movement, carrying the carriage with it.

Having thus considered the movement of the reciprocating carriage C, which actuates the shell carrier, the shell placer, which forms the subject of this application, will be described, it also being operated by the reciprocating carriage C.

The shell placer consists of an oscillating arm 20, pivoted to the machine frame, and having an enlarged outer end in which is formed an aperture D, which is sufficiently large to contain a cartridge shell. The top surface of the shell placer bears against the bottom of the machine table, and a bearing is provided for its bottom surface by the bracket 21, which also forms a guide for the reciprocating plunger 22. The shell placer oscillates from a position under the shell feeding tube D^2 to a position under the shell carrier blocks, an outwardly projecting flange D′ preventing the shells from falling from the shell feeding tube during such movement. When in position under the shell carrier, the plunger 22 forces the shell in the shell placer up into position in one of the shell carrier blocks, where it is held by friction, an aperture in the machine bed formed at this point permitting such upward movement. The plunger 22 is secured to the top of a slotted casting 23, which rides upon the power shaft, and which is given a reciprocating movement by the crank 25, secured to the power shaft, which, during a certain stage of the revolution of the shaft, rides under the angled arm 24, attached to said slotted casting, and forces the entire casting up until it passes under the angled arm. The upward movement of the slotted casting 23, and therefore of the plunger 22, takes place during one-eighth of a revolution of the power shaft, and the descent of the plunger occupies about the same time. The time occupied by this movement can, of course, be varied by changing the form of the angled arm 24.

Two shell feeding tubes are provided with this machine, one inside of the line of travel of the shell carrier, and one outside of the same. The two shell placers are connected together by a rod 26. When in one position, both are under the shell feeding tubes; and when in their other position, both are under the shell carrier blocks.

The shell placers are operated and given an intermittent reciprocating movement by means of a lug 27, which projects from the under side of the reciprocating carriage C, encircles the rod 26, and moves the shell placers into their proper positions by striking against the collars 26′ formed on said rod. The lug 27, being attached to the reciprocating carriage C, remains stationary during the dwell of said carriage in its forward movement, which amounts to two-eighths of a revolution of the power shaft. When the carriage C is stationary, the shell placers are under the shell carrier. They have a further dwell in this position while the lug 27 is moving along the rod 26 previous to striking one of the collars 26′ formed on the same, this additional dwell amounting to one-eighth of a revolution of the power shaft. The total dwell of the shell placers under the shell carrier thus amounts to three-eighths of a revolution of the power shaft. Since the plunger 22 forces the shells into the shell carrier blocks and recedes again during two-eighths of a revolution of the power shaft, the dwell here is abundantly sufficient to give the said plunger time to act. The dwell of the shell placers under the shell feeding tubes lasts while the lug 27 moves from one collar 26′ to the other and thus amounts to one-eighth of a revolution of the power shaft. This affords plenty of time for a shell to drop into the shell placer.

The movement of the shell placer is positive and exact. The dwell afforded in its two operative positions is sufficient to render certain the completion of the function assigned to it. The simplicity of its construction renders it very advantageous for use.

The shell carrier blocks, and the shell carrier actuating mechanism, which are described but not claimed herein, are made the subject of separate applications for Letters Patent, namely, an application for a cartridge loading machine, filed March 1, 1894, Serial No. 501,935, by myself and Elliott S. Rice, an application for a shell carrier block filed March 9, 1894, Serial No. 502,981, and an application for an improved shell carrier actuating mechanism, filed March 12, 1894, Serial No. 503,333, the last two mentioned applications being filed by myself.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cartridge loading machine, the combination with a shell carrier, a shell feeder, and a shell placer, of a plunger rigidly attached to a casting, a suitable guide for said casting, and means for reciprocating said casting and thereby the plunger, substantially as described.

2. In a cartridge loading machine, the combination with a shell carrier, a shell feeder, and a shell placer, of a plunger rigidly attached to a slotted casting, a suitable guide for said casting passing through the slot in the same, and means for reciprocating said casting and thereby the plunger, substantially as described.

3. In a cartridge loading machine, the combination with a shell carrier, a shell feeder, and a shell placer, of a plunger rigidly attached to a slotted casting, a suitable guide for said casting passing through the slot in the same, and a crank operated by the power shaft for reciprocating said casting and thereby the plunger, substantially as described.

4. In a cartridge loading machine, the combination with a shell carrier, a shell feeder, and a shell placer, of a plunger attached to a slotted casting which rides on the power shaft of the machine and is formed at its upper end with an angled casting, and a crank, secured to the power shaft, and riding under said angled casting and thereby reciprocating the plunger, substantially as described.

5. In a cartridge loading machine, the combination with a shell carrier, and a reciprocating carriage, actuated by the power shaft, and having a dwell at the forward part of its movement, for engaging said carrier and imparting an intermittent, forward movement to the same, of a shell feeder, a shell placer, a rod attached thereto and operated by the reciprocating carriage, whereby the shell placer will be so actuated that the dwell of the said carriage will occur at one of its operative positions, and means for forcing the shells from the shell placer into the shell carrier, substantially as described.

6. In a cartridge loading machine, the combination with a shell carrier, and a reciprocating carriage, actuated by the power shaft, and having a dwell at the forward part of its movement, for engaging said carrier and imparting an intermittent forward movement to the same, of a shell feeder, a shell placer, a rod attached thereto operated by a lug on the reciprocating carriage, whereby the shell placer will be so actuated that the dwell of the said carriage will occur at one of its operative positions, and means for forcing the shells from the shell placer into the shell carrier, substantially as described.

7. In a cartridge loading machine, the combination with a shell carrier, and a reciprocating carriage, actuated by the power shaft, and having a dwell at the forward part of its movement, for engaging said carrier and imparting an intermittent forward movement to the same, of a shell feeder, a shell placer having a rod attached thereto with collars formed on the same, a lug on the reciprocating carriage encircling the said rod and operating the same by striking the collars, and means for forcing the shells from the shell placer into the shell carrier, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES S. HISEY.

Witnesses:
J. LOWE WHITE,
JOSEPH D. WOOD.