(No Model.) 3 Sheets—Sheet 1.

C. S. HISEY.

SHELL CARRIER ACTUATING MECHANISM FOR CARTRIDGE LOADING MACHINES.

No. 528,094. Patented Oct. 23, 1894.

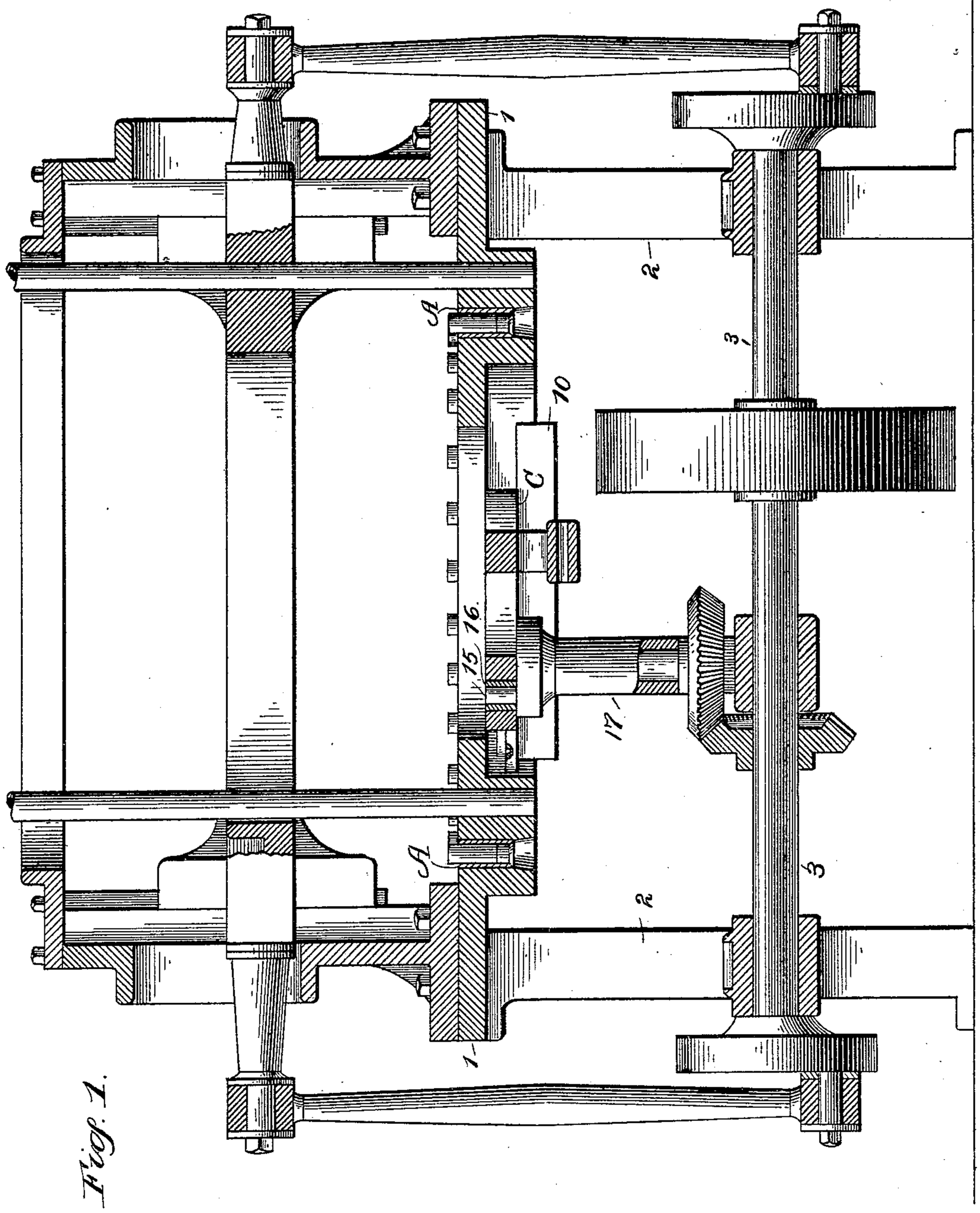

Fig. 1.

Witnesses
Victor J. Evans.
L. M. Marble

Inventor
Charles S. Hisey.
by E. M. Marble & Son
Attorneys

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Fig. 2.

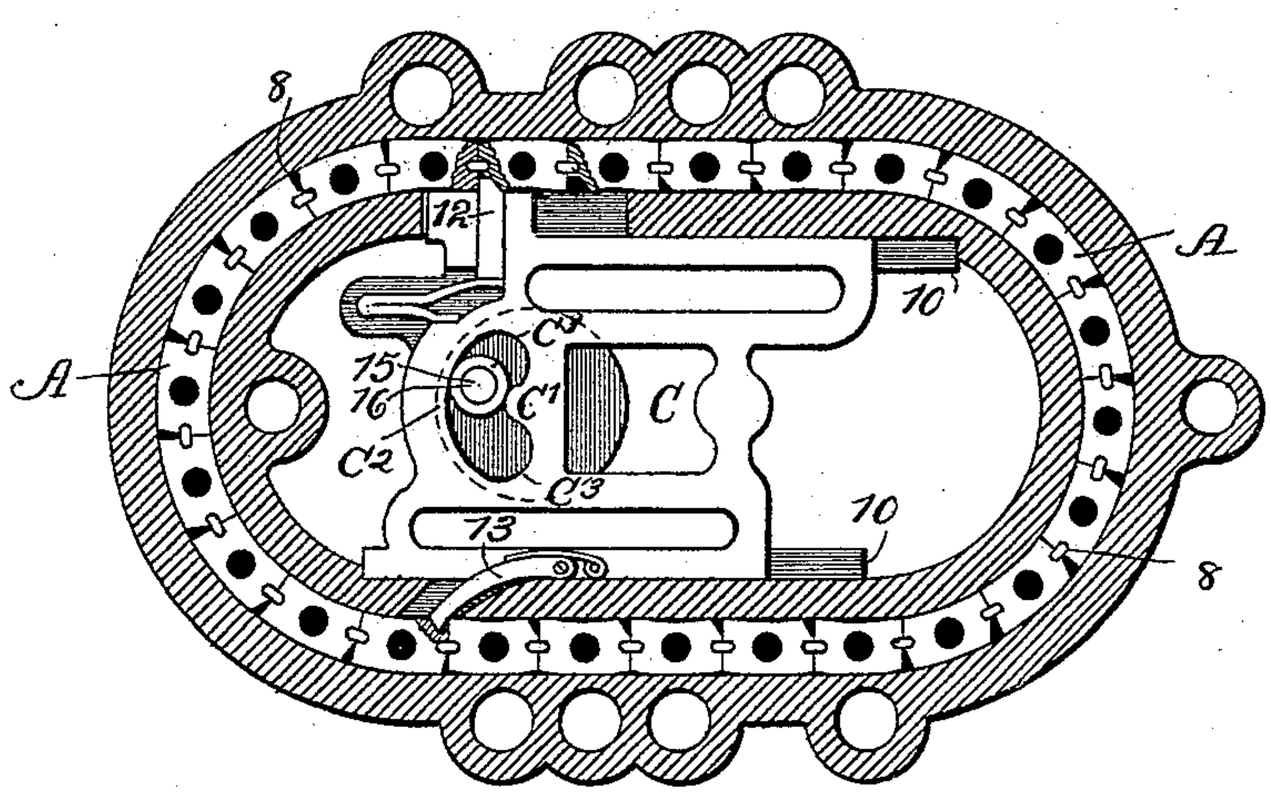
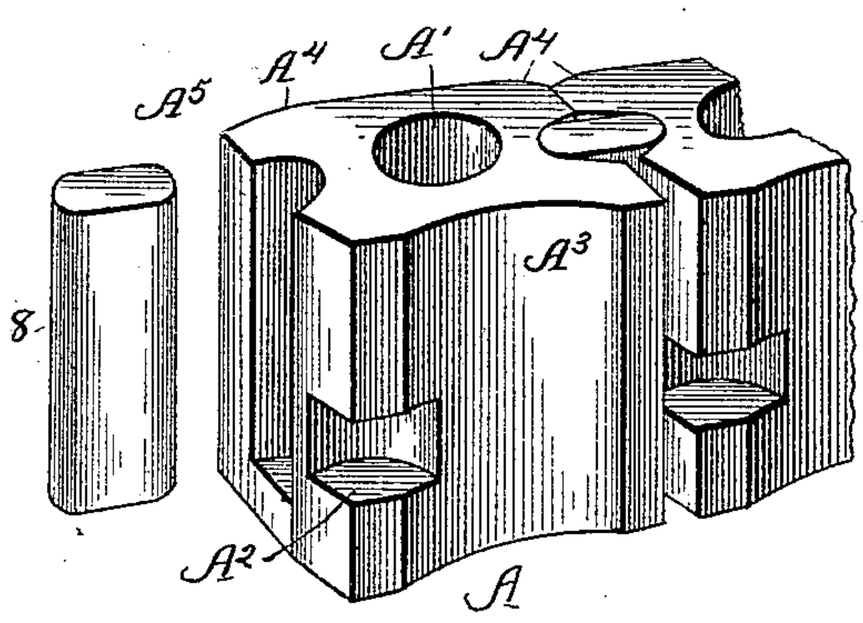
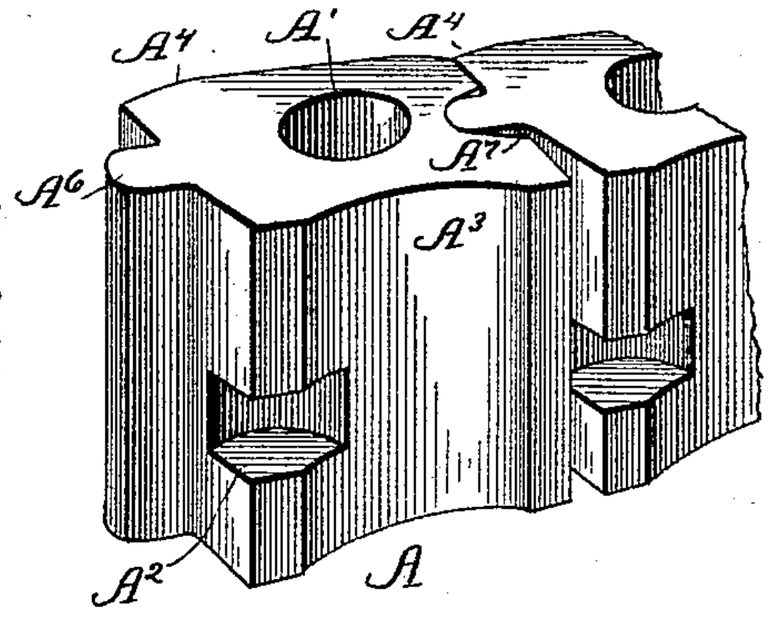


Fig. 4.





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Victor J. Evans.
L. M. Marble

Inventor
Charles S. Hisey.
by E. M. Marble & Son
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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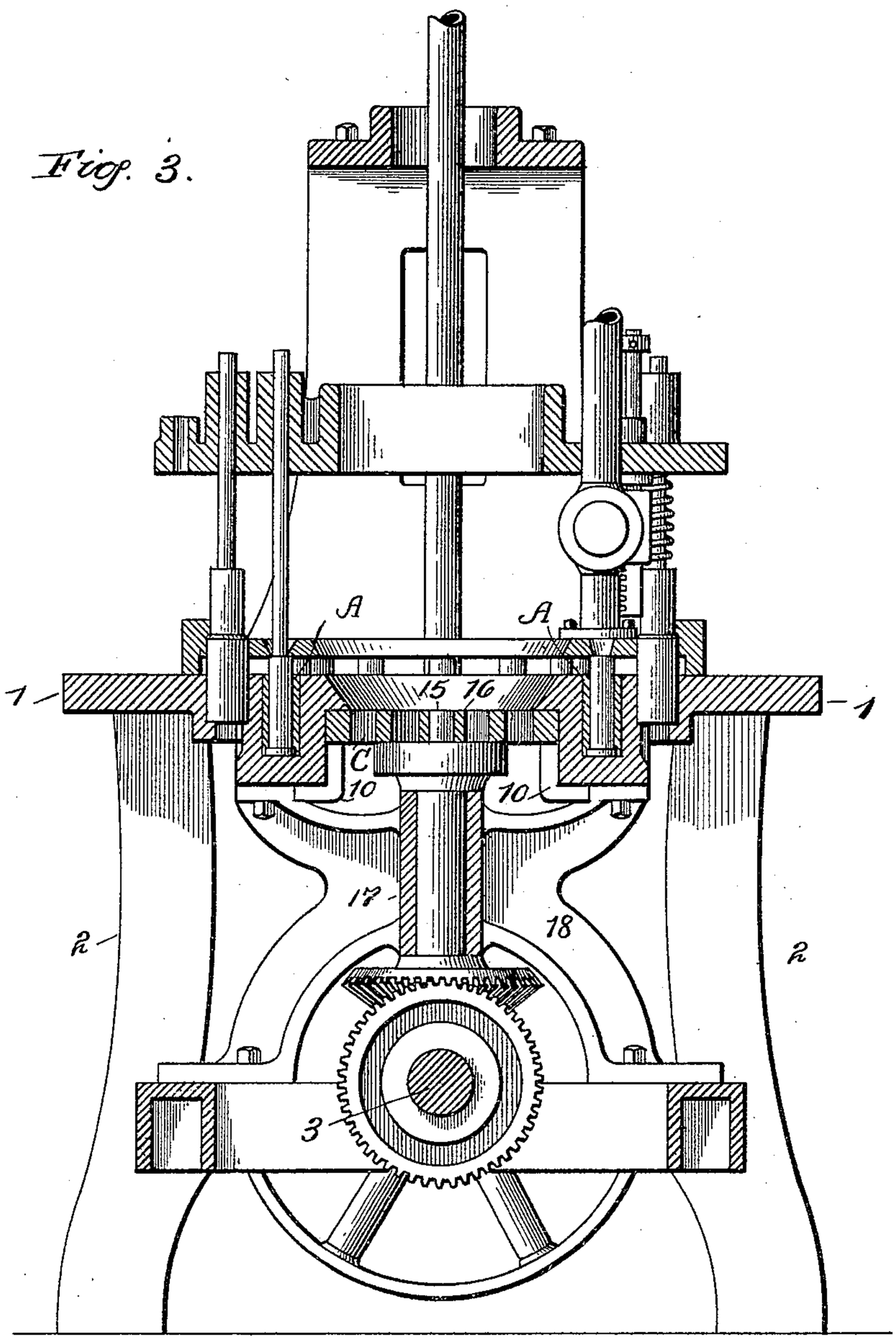
Fig. 3.



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Victor J. Evans.
L. M. Marble

Inventor
Charles S. Hisey.
by E. M. Marble & Son
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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

SHELL-CARRIER-ACTUATING MECHANISM FOR CARTRIDGE-LOADING MACHINES.

SPECIFICATION forming part of Letters Patent No. 528,094, dated October 23, 1894.

Application filed March 12, 1894. Serial No. 503,333. (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-Carrier-Actuating Mechanism; 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 improvements in 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 mechanism for actuating the shell carrier of such a machine, which will be hereinafter fully described and particularly pointed out in the claim.

In automatic cartridge loading machines, it is necessary that the intermittent movement of the shell carrier be exceedingly uniform and exact, as upon the accuracy of this movement the successful working of the machine depends.

The object of my present invention is to provide simple, positive and direct means for actuating the shell carrier of a cartridge loading machine, and to operate these means from the power shaft as thereby a better distribution of the applied power is obtained than if these means were operated by the reciprocating cross head.

I accomplish the objects of my invention by the use of a reciprocating carriage, sliding in guides formed in the machine frame, provided with means for engaging the shell carrier in such a manner as to move it forward the distance between two loading stations at each intermittent forward movement of the said carriage and provided with independent means on said carriage for locking the shell carrier during the dwell of the reciprocating carriage in its forward position.

The actuating mechanism for the shell carrier which forms the subject of this application is especially adapted for use on the cartridge loading machine described and claimed in the companion application filed by myself and Elliott S. Rice on March 1, 1894, Serial No. 501,935, but it may be used on other machines, and, while I describe it only in connection with a single machine, I do not limit myself to its use thereon.

My invention is fully described in the drawings accompanying and forming a part of this application, in which the same reference numerals and letters refer to the same or corresponding parts, and in which—

Figure 1 is a longitudinal section of a cartridge loading machine in which my shell carrier blocks are used, showing particularly the means of actuating the same from the main power shaft. Fig. 2 is a plan section of the machine table, showing particularly the reciprocating carriage by means of which the movement of the shell carrier is produced. Fig. 3 is a transverse section of Fig. 1, illustrating the manner of support of the reciprocating carriage, which intermittently moves the shell carrier. Fig. 4 is a perspective view of a shell carrier block, two different constructions of the same being shown.

Referring 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, having straight sides and rounded ends, in which move the shell carrier blocks A, and on both sides of which sets of loading tools may be stationed. 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.

Before proceeding to a consideration of the mechanism for actuating the shell carrier, attention will first be called to the form and operation of the shell carrier blocks, as an understanding of the movement of these blocks is a necessary preliminary to an understanding of the means which I have provided for actuating 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 blocks 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. 4. 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 this groove. 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. 2) are placed; or the blocks may be formed in the manner shown in the second form illustrated in Fig. 4, namely, with a curved projection A^6 in one end of each block, and a corresponding recess A^7, (which should be made on a larger circle than the projection A^6 to give the necessary play in passing around a curve,) at the other end of each block. The former construction is preferable, for when the blocks become worn and the recesses cut in the ends of the same get out of shape, the recesses may be slightly enlarged, a larger pin inserted, and the same blocks still used.

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.

Attention is now called to the shell carrier operating mechanism. This mechanism consists of the reciprocating carriage C, and the parts in connection therewith. The carriage C is shown in longitudinal section in Fig. 1, in top plan in Fig. 2, and in transverse section in Fig. 3. Its manner of support is best shown in Fig. 3. 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, and is so held that its upper surface is level with the top of the side recesses A^2 formed in the carrier blocks. Its general form and operation, however, are best shown in Fig. 2. 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. 2, 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 the side recess formed in one of the carrier blocks, securely locks the carrier, and renders impossible any movement of the blocks. 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. 3, 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 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. The 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 C with it, and moving forward the shell carrier the length of one of the blocks composing the same.

The mechanism which I have herein described is marked by the simplicity and directness of its action. The amount of power required to operate it is small, and there is no danger of its getting out of order, or failing to perform its function.

The shell carrier blocks, which are described but not claimed herein, are claimed in separate applications for Letters Patent, namely, an application by myself and Elliott S. Rice for improvements in cartridge loading machines, filed March 1, 1894, Serial No. 501,935, and an application by myself for a shell carrier block, filed March 8, 1894, Serial No. 502,981.

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

In a cartridge loading machine, the combination with a shell carrier, of a reciprocating carriage actuated intermediately by the power shaft, and adapted to have a dwell at the forward part of its movement, for engaging said carrier and imparting an intermittent forward movement to the same, and independent means on said carriage for locking the shell carrier during the dwell of the reciprocating carriage, 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.