





**No. 704,344.**

**Patented July 8, 1902.**

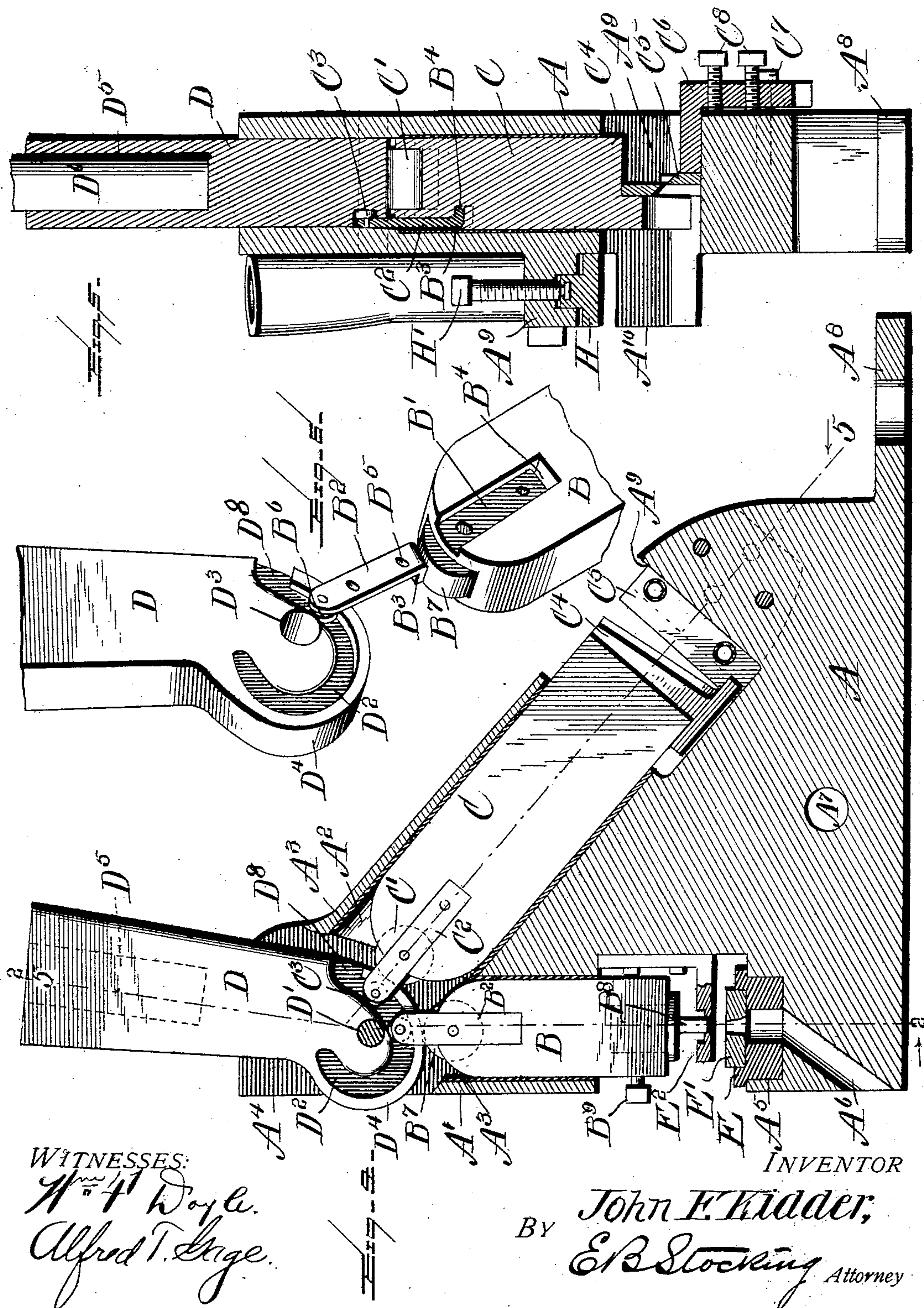
**J. F. KIDDER.**

**COMBINED PUNCH AND SHEARS.**

(Application filed Feb. 15, 1902.)

(No Model.)

**2 Sheets—Sheet 2.**



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN F. KIDDER, OF WINOOSKI, VERMONT.

## COMBINED PUNCH AND SHEARS.

SPECIFICATION forming part of Letters Patent No. 704,344, dated July 8, 1902.

Application filed February 15, 1902. Serial No. 94,317. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. KIDDER, a citizen of the United States, residing at Winooski, in the county of Chittenden, State of Vermont, have invented certain new and useful Improvements in a Combined Punch and Shears, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to a combined punch and shears, and particularly to a structure adapted to support and contain a punching and shearing mechanism upon a single device.

The invention has for an object to produce 15 an improved construction of parts for operating by a single lever a punching and shearing piston and to so construct these parts as to secure the minimum of friction in operation, thereby requiring but a small amount of 20 power to operate the different mechanisms.

A further object of the invention is to provide a novel form of casting adapted to receive and contain the several mechanisms in an operative relation to an actuating-cam.

25 Another object of the invention is to provide an improved adjustment of the fixed blade of the shearing mechanism.

Other and further objects and advantages of the invention will be hereinafter set forth, 30 and the novel features thereof will be specifically defined by the appended claims.

In the drawings, Figure 1 is a perspective of the device; Fig. 2, a vertical section on the line 2 2 of Fig. 4; Fig. 3, a group of material 35 adapted to be formed upon the device; Fig. 4, a vertical longitudinal section on the line 4 4 of Fig. 2; Fig. 5, a vertical section on the line 5 5 of Fig. 4; Fig. 6, a detail perspective of the connection between the actuating-cam 40 and one of the pistons, and Fig. 7 is a detail section of the shear-blade adjustment.

Like letters of reference indicate like parts throughout the several figures of the drawings.

45 The letter A designates an improved casting, which is provided at one end with a vertical channel or recess A', adapted to receive a punching-piston B, and also with a recess A<sup>2</sup>, preferably disposed diagonally to the recess A' and adapted to receive a shearing- 50 piston C. Each of these channels may, if desired, be lined with Babbitt metal, as shown.

At the upper portion of the casting, above the pistons, pivoting-ears A<sup>4</sup> are provided at opposite sides, between which an actuating-lever D may be pivotally supported by means 55 of a removable pin D', entering said ears at its opposite ends. The base of the casting is provided at the forward portion with a seat or recess A<sup>5</sup>, adapted to receive a die-block E, 60 carrying a die E', while extending diagonally outward from the recess A<sup>5</sup> is a discharge-passage A<sup>6</sup>, through which the punchings from the die may pass. The base of the casting is also provided with a socket A<sup>7</sup>, adapted to re- 65 ceive a former F for the purpose of bending curved outlines thereon, while at the rear of the base an apertured securing-flange A<sup>8</sup> is formed. At one side of the casting a flange A<sup>9</sup> is extended laterally and parallel there- 70 with a flange A<sup>10</sup> beneath the same and adapted to form the holding means for the bending mechanism.

The punching-piston B is provided upon one side with a recess B', adapted to receive 75 a connector B<sup>2</sup>, which at its lower end is provided with a hooked portion B<sup>3</sup>, adapted to enter a recess B<sup>4</sup> in the piston to retain the connector against longitudinal movement, while the connector may be held against lat- 80 eral movement away from the piston by any desired securing means passed through the aperture B<sup>5</sup> therein and entering the piston. The free end of the connector is provided with a friction-roller B<sup>6</sup>, journaled thereon and 85 adapted to travel in the cam track or way D<sup>2</sup>, which extends around the pivoting-aperture D<sup>3</sup> of the actuating-lever D, and beyond this track or way the cam-face D<sup>4</sup> is provided, which bears against the upper portion of the 90 piston for forcing the same downward, while the piston is retracted or raised by the travel of the roller B<sup>6</sup> in the track. For the purpose of preventing friction between the cam-face D<sup>4</sup> and the upper end of the piston a roller 95 B<sup>7</sup> is pivotally mounted upon the piston and adapted to travel in contact with the cam-face D<sup>4</sup>. The cam-face of the actuating-lever is not extended to the end of the track or way, and an opening D<sup>8</sup> is provided, through 100 which the roller B<sup>6</sup> may be removed, as hereinafter described. The lower end of the piston B is provided with a punch B<sup>8</sup>, held in position by any desired means—for instance,



a set-screw B<sup>9</sup>. This punch passes through a clearer E<sup>2</sup>, supported from the casting, so as to strip therefrom material which may adhere to the punch in its rising movement.

5 The shearing-piston C is provided at its upper end with a friction-roller C', similar in construction to the roller B<sup>7</sup>, and with a connector C<sup>2</sup>, carrying at its upper end a roller C<sup>3</sup>, traveling in the track or way D<sup>2</sup>, as before  
10 described. The upper end of the piston C is substantially identical in construction with that of the piston B, and the rollers upon the connector from each piston travel in the same track or way, while the contact-rollers at the  
15 upper ends of the pistons are successively acted upon by contact with the face D<sup>4</sup> of the lever D. This lever is provided with a socket D<sup>5</sup>, adapted to receive any suitable form of handle D<sup>6</sup>. The lower end of the shearing-  
20 piston is provided with a blade C<sup>4</sup>, secured thereto, while upon the casting A a fixed blade C<sup>5</sup> is adjustably mounted by means of the angle-iron C<sup>6</sup>, which is laterally movable upon the base of the casting, at the opening A<sup>9</sup>  
25 therein. This mounting of the fixed shearing-blade C<sup>5</sup> permits the same to be oscillated from its base toward and from the movable shearing-blade C<sup>4</sup>, so as to adapt the same for  
30 cutting different character of material, as is found desirable in many instances. For this purpose a screw C<sup>7</sup> is passed through an enlarged slot in the iron C<sup>6</sup> and threaded into the body of the casting A, while threaded  
35 into this iron and bearing against the face of the casting are set-screws C<sup>8</sup>, which can be adjusted to maintain the blade in a level position, as shown in Fig. 5, or tilted at any de-  
40 sired angle toward or from the movable blade—for instance, as shown in Fig. 7. The bender G is pivotally mounted upon the casting, as at G', and provided at its up-  
45 per portion with a handle-socket G<sup>2</sup>, while opposite the pivot a bearing-roller G<sup>3</sup> is pivotally mounted in the bender and adapted to contact with the material to be bent, which  
50 is passed between the holding-flanges A<sup>9</sup> and A<sup>10</sup>, projecting from the side of the casting, as indicated by dotted lines in Fig. 1. For the purpose of adjusting this holder for different thicknesses of material a movable plate  
55 H is provided upon the lower face of the flange A<sup>9</sup>, and in this plate the lower ends of adjusting-screws H' are suitably swiveled, so as to bring the plate into contact with the material to be placed therein.

In the operation of the invention it will be seen that in the movement of the cam-lever D in the direction indicated by the arrow in Fig. 4 and the cam-face D<sup>4</sup> first depresses the  
60 punching-piston to perform the punching action in the usual manner, and the continued movement of the lever toward the left depresses the shearing-piston for the purpose of cutting any desired substance. It will be  
65 seen that if only the punch is to be used it is not necessary to continue the movement of the lever to an extent sufficient to operate the

shear-blade. These shear-blades are remov-  
ably mounted, so as to be taken off for sharp-  
ening or substitution when necessary. For  
70 the purpose of retracting the pistons in the movement of the lever D toward the right into the position shown in Fig. 4 the track or  
way D<sup>2</sup> is provided, which by means of the connection of the two pistons raises the same  
75 in this movement of the lever. When it is desired to remove either of the pistons from the casting, the same can be accomplished by swinging the lever into such a position that  
80 the contact-roller will pass out of the track or way, through the opening D<sup>8</sup> therein, when the pivoting-bolt D' of the lever may be removed and the punch-piston lifted directly  
85 outward from its socket, while the shear-piston can also be directly removed from its socket if the blade C<sup>4</sup> has been detached. In performing the bending function—for in-  
stance, as shown in the group of work at Fig. 3—the material may be placed between the  
90 flanges A<sup>9</sup> and A<sup>10</sup> and the roller upon the pivoted bender brought in contact with the face H<sup>2</sup> of the flange A<sup>10</sup>, thus bending the material upon the angle of said flange. In  
95 the connection of the shearing-blades the fixed blade is capable of adjustment for different classes of material, as hereinbefore set forth, and the roller-bearing between the cam-  
lever and the pistons is so arranged as to pre-  
100 sent the medium of friction in the operation of parts and permit the positive driving and retraction of these pistons. Furthermore, the casting, as described, presents a single, sim-  
ple, and efficient device, which can be eco-  
105 nomically constructed and is adapted to perform all of the usual punching, shearing, and bending actions necessary in work on light  
metallic articles, and thus providing a most convenient and essential tool for practical work.

It will be obvious that changes may be made  
110 in the details of construction and configuration without departing from the spirit of the invention as defined by the appended claims.

Having described my invention and set forth its merits, what I claim, and desire to  
115 secure by Letters Patent, is—

1. In a device of the class described, a body having recesses therein, plunger and shear-  
ing pistons located in said recesses, and a  
120 pivoted lever having a cam-face adapted to successively bear upon said pistons; substantially as specified.

2. In a device of the class described, a body having recesses therein, plunger and shear-  
ing pistons located in said recesses, a pivoted  
125 lever having a cam-face adapted to successively bear upon said pistons and a track or way in said lever, and connectors extending from said pistons to said track; substantially  
as specified.

3. In a device of the class described, a body having recesses therein, plunger and shear-  
ing pistons located in said recesses, a pivoted  
130 lever having a cam-face adapted to succes-



sively bear upon said pistons and a track or way in said lever, connectors extending from said pistons to said track, a bearing-roller carried by said connectors and disposed in  
5 said track, and a bearing-roller upon the upper contact end of each piston; substantially as specified.

4. In a device of the class described, a body portion, a reciprocating piston, a contact-roller pivoted at the upper end thereof, an operating-cam pivotally mounted in said body, a connector disposed within a recess upon one  
10 face of said piston, a track or way in said cam provided with an outlet-opening at one end thereof, and a projection from said connector  
15 extending into said track or way and carrying a contact-roller opposite the roller upon the piston; substantially as specified.

5. In a device of the class described, a body  
20 portion, a reciprocating piston mounted thereon, an operating-cam pivotally mounted in said body and having a track or way provided with an outlet-opening at one end thereof, and a connector adapted to enter  
25 said track through said opening and at its opposite end secured to said piston; substantially as specified.

6. In a device of the class described, a body portion, a reciprocating punching-piston  
30 mounted therein, a punch carried thereby, a die-seat in said body beneath said punch provided with a discharge-channel extending outwardly therefrom, a die located upon said seat, a clearer disposed above said die, an  
35 operating-cam above said punch provided with a cam-face for engaging the same and with a retracting groove or way having an outlet-opening at one end, and a connector extending from said piston to said groove or  
40 way; substantially as specified.

7. In a device of the class described, a reciprocating shearing-piston, means for operating the same, a blade carried by said piston, and a blade adjustable upon its base by  
45 oscillation relative to the blade carried by said piston; substantially as specified.

8. In a device of the class described, a reciprocating shearing-piston, means for operating the same, a blade carried by said piston, a stationary blade having a bearing at  
50 its base beneath said piston-blade, an angle-iron for oscillating said stationary blade, a screw extending through an enlarged aperture in said angle-iron into the body, and adjustable set-screws mounted in said angle-  
55

iron for the purpose of varying the relative relation of said blades by oscillating the fixed blade; substantially as specified.

9. In a device of the class described, a casting having a vertical piston-channel, a piston-  
60 channel disposed obliquely thereto, pivoting-ears at the upper end of said channels, transverse openings at the lower portions thereof disposed within vertical and inclined faces, pistons located in said channels, and an operating-cam pivoted between said ears and  
65 connected to both of said pistons; substantially as specified.

10. In a device of the class described, a casting having a vertical piston-channel, a piston-  
70 channel disposed obliquely thereto, pivoting-ears at the upper end of said channels, transverse openings at the lower portions thereof, pistons located in said channels, and an operating-cam pivoted between said ears  
75 and connected to both of said pistons, substantially as specified.

11. In a device of the class described, a casting having a vertical piston-channel, a piston-  
80 channel disposed obliquely thereto, pivoting-ears at the upper end of said channels, transverse openings at the lower portions thereof, pistons located in said channels, an operating-cam pivoted between said ears and connected to both of said pistons, and a die-  
85 receiving recess beneath said vertical channel and provided with a discharge-channel leading obliquely outward therefrom; substantially as specified.

12. In a device of the class described, a casting having a vertical piston-channel, a piston-  
90 channel disposed obliquely thereto, pivoting-ears at the upper end of said channels, transverse openings at the lower portions thereof, pistons located in said channels, an operating-cam pivoted between said ears and connected to both of said pistons, a die-receiving recess beneath said vertical channel and provided with a discharge-channel leading obliquely outward therefrom, and an adjustable-blade holder mounted upon the lower  
95 face of the recess at the bottom of the obliquely-inclined piston-channel; substantially as specified.

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

JOHN F. KIDDER.

Witnesses:

HENRY CONLIN,  
FRANK E. BIGNORD.