

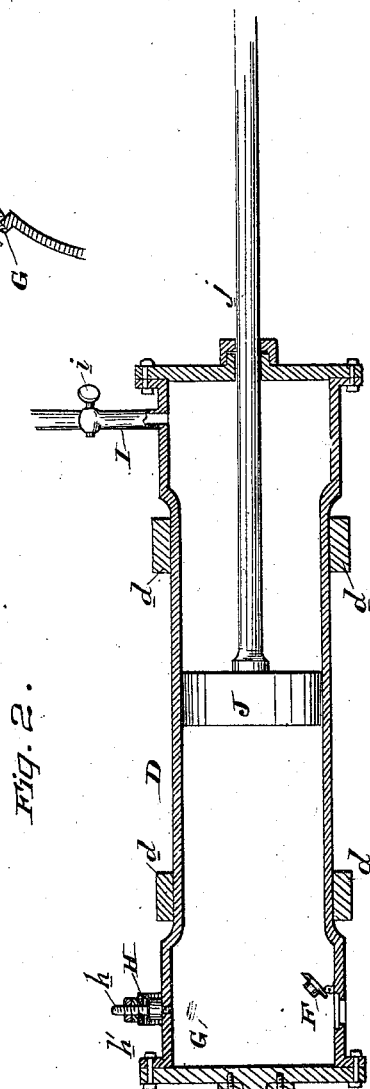
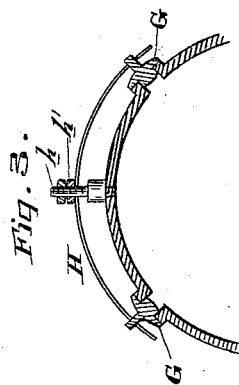
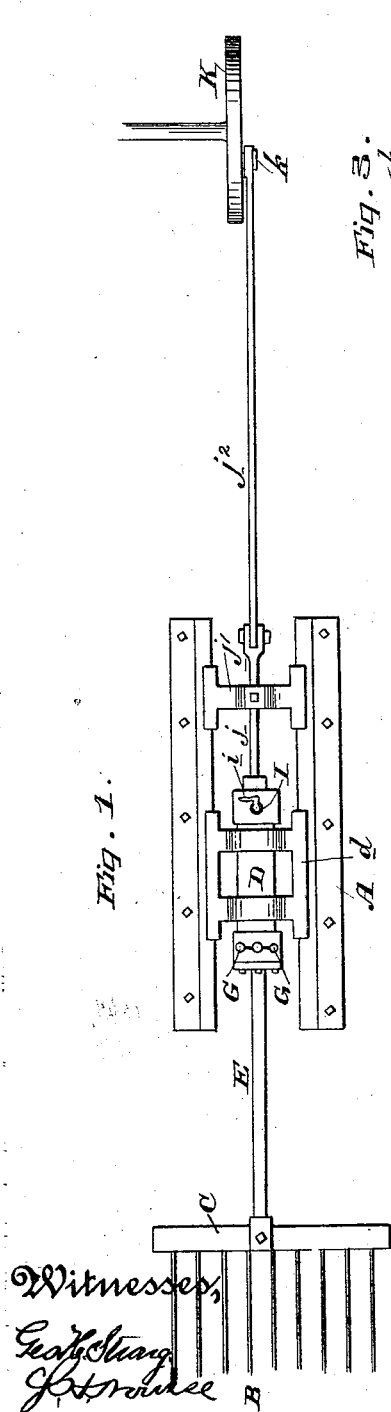
(No Model.)

J. H. READ.

CARTRIDGE LOADING APPARATUS.

No. 382,830.

Patented May 15, 1888.



Witnesses,
Geo. H. King
John H. Read

Inventor
John H. Read.
Dewey & Co.
attys

UNITED STATES PATENT OFFICE.

JOHN H. READ, OF SAN FRANCISCO, CALIFORNIA.

CARTRIDGE-LOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 382,830, dated May 15, 1888.

Application filed October 22, 1887. Serial No. 253,153. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. READ, of the city and county of San Francisco, State of California, have invented an Improvement in Cartridge-Loading Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates, broadly, to the class of packing-machines, and especially to the class of machines used for packing dynamite, nitro-glycerine powders or other pulverulent substances or material into cartridges or cases; and my invention consists in an improved and novel connection between the source of power and the plunger or rammer of the machine, said connection consisting, essentially, of a sliding cylinder connected with the plunger or rammer, and provided with a valve-controlled port for the entrance of the air, and relief-ports controlled by adjustable pressure-valves, and a piston connected with the source of power and working within the cylinder, whereby said cylinder is reciprocated with gradually-diminishing length of stroke though with an equal and elastic pressure, as I shall hereinafter fully describe.

The object of my invention is to provide for applying power in machines of this class in such a way as to obtain an elastic connection between the source of power and the plunger or rammer of the machine; to obtain strokes, which, beginning at the same point, shall gradually diminish in length as the cartridge shells or cases are filled, and, finally, to obtain strokes which shall produce equal pressure on the powder or other material being packed.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a plan of my apparatus. Fig. 2 is a vertical longitudinal section of the cylinder D. Fig. 3 is a detail cross-section showing the relief-ports and adjustable pressure-valves.

Although the present invention may be applied to any form of packing-machine in which a plunger or rammer is employed, I have herein illustrated and described it in connection with the particular plunger or rammer illustrated and described in Patent No. 299,009, May 20, 1884, granted to Quinan, Kimpfel, and Olsen.

I need not describe or illustrate the entire

machine of said patent, it being sufficient to say that B represents the system of parallel rods fastened at one end to the cross-head C, which is adapted to be reciprocated, the rods themselves acting as plungers or rammers passing into a hopper containing the powder to force a small portion of it through opposite apertures into a corresponding row of shells or cases outside of said hopper.

A is a suitable bed-frame, upon which is supported a cylinder, D, by means of a guide-frame, *d*, the ends of which are fitted to the bed-frame and adapted to slide back and forth thereon, so that said cylinder may receive a reciprocating movement.

E is a bar or connecting-rod which joins the cross-head C of the parallel rods B of the machine with the forward end of the cylinder. Near the forward end of the cylinder is made a port which is controlled by an inwardly-swinging check-valve, F, and in this end of the cylinder are made also relief-ports, which are controlled by the outwardly-moving valves G, held to their places by a weight, or, as here shown, by a spring, H, the center of which is fitted on a spindle, *h*, and its tension is adjusted by nuts *h'*. In the rear end of the cylinder is fitted a pipe, I, provided with a controlling cock or valve, *i*.

Within the cylinder is fitted a piston, J, the rod *j* of which extends backwardly in a suitable slide, *j'*, and is connected with a pitman, *j''*, the other end of which is connected with the wrist-pin *k* of the crank K, or other suitable source of power.

The operation of the machine is as follows: As the piston moves back within the cylinder and comes in contact with its rear head, it causes the cylinder to move back also, and thus through the connecting-rod E to draw the series of parallel rammers or rods B back for the beginning of a stroke.

The object of the pipe I, provided with the controlling valve or cock *i* in the rear end of the cylinder, is to allow the escape of the air which is being forced out from behind the piston, but at the same time to wire-draw or impede its escape, so that a cushion is provided for said piston, and its contact with the rear head of the cylinder is gradual and without jar. In this backward movement of the piston it is ap-

parent that air enters the cylinder through the port of the check-valve F at its forward end. Now, when the piston moves forward again, it compresses the air in front of it in the cylinder, thus causing said cylinder to move forward and the rammers to proceed on their forward stroke until, meeting with the resistance of the material at the completion of their work and moving no farther, the confined and compressed air is forced out through the relief-ports of valves G, whereupon the cylinder stops and the stroke is completed. These valves G are of course adjusted by means of their spring H, so that they will not yield until a given pressure has been brought to bear upon them. In this way it will be seen that an elastic connection is obtained between the source of power and the machine, and that, though the strokes of the rods begin at the same point, they grow shorter as the cartridge-cases are filled, and yet a uniform and equal pressure is applied at all times.

By increasing the pressure of the spring H on the relief-valves G the packing of the cartridge-shells can be made very dense, and by lessening the pressure the packing can be made light. The cylinder moves with the rods until a resistance is met, which is sufficient to open the relief-valves, when the stroke ends.

Instead of the valve-controlled exit-pipe I, a suitable buffer may be placed on the inside of the cylinder for the piston to cushion on.

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

1. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, which consists of a sliding cylinder connected with the plunger or rammer and a reciprocating piston connected with the source of power and operating within the cylinder to move it back with itself in one direction and forward through the interposition of the air in front of the piston, substantially as herein described.

2. In a cartridge-loading or powder-packing apparatus, the pneumatic connection for applying power, consisting of a sliding cylinder, a reciprocating piston working therein and moving the cylinder with itself in one direction and in the other direction by the compression of air, and a relief-port in the cylinder controlled by an adjustable pressure-valve, whereby the limit of motion of the cylinder in the latter direction is defined by regulating the pressure of the valve, substantially as herein described.

3. In a cartridge-loading and powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, which consists of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to move it back with itself in one direction and forward by compressing the air in

front, a valve-controlled inlet-port for the air in front, and a valve-controlled relief-port for defining the forward limit of the cylinder's movement, substantially as herein described.

4. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, which consists of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to move it back with itself in one direction and forward by compressing the air in front, a valve-controlled inlet-port for the air in front of the piston, and a relief-port controlled by an adjustable pressure-valve for defining the forward limit of movement of the cylinder, substantially as herein described.

5. In a cartridge-loading and powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, consisting of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to move it back with itself in one direction and forward by compressing the air in front, a valve-controlled inlet-port for the air in front of the piston, a relief-port with a controlling-valve, and an adjustable spring for applying different pressures to said valves, whereby the forward limit of the cylinder's motion is defined, substantially as herein described.

6. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, consisting of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to draw it back with itself in one direction and to force it forward by compressing the air in front, and a cushion in the rear end of the cylinder, against which the piston comes in contact when drawing said cylinder back, substantially as herein described.

7. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, consisting of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to draw it back by itself in one direction and to force it forward by compressing the air in front, a valve-controlled inlet-port for admitting the air in front of the piston, a relief-port controlled by an adjustable pressure-valve for defining the forward movement of said cylinder, and a cushion in the rear end of the cylinder, against which the piston comes in contact when drawing said cylinder back, substantially as herein described.

8. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, consisting of a sliding cylinder

der connected with the plunger or rammer, a
reciprocating piston connected with the source
of power and operating within the cylinder to
move it back with itself in one direction and
5 forward by compressing the air in front, a
valve-controlled inlet-port for admitting air in
front of the piston, a relief-port controlled by
an adjustable pressure-valve for defining the
forward movement of the cylinder, and an exit-
10 pipe from the rear of the cylinder controlled

by a cock or valve, whereby a cushion is provided behind the piston, substantially as herein described.

In witness whereof I have hereunto set my hand.

JOHN H. READ.

Witnesses:

JAMES L. KING,
W. N. KEMPSTON.