R. W. Russell.

Disintegrating Mach.

No. 88,517. Patented Mar. 30, 1869.

Fig: 1.

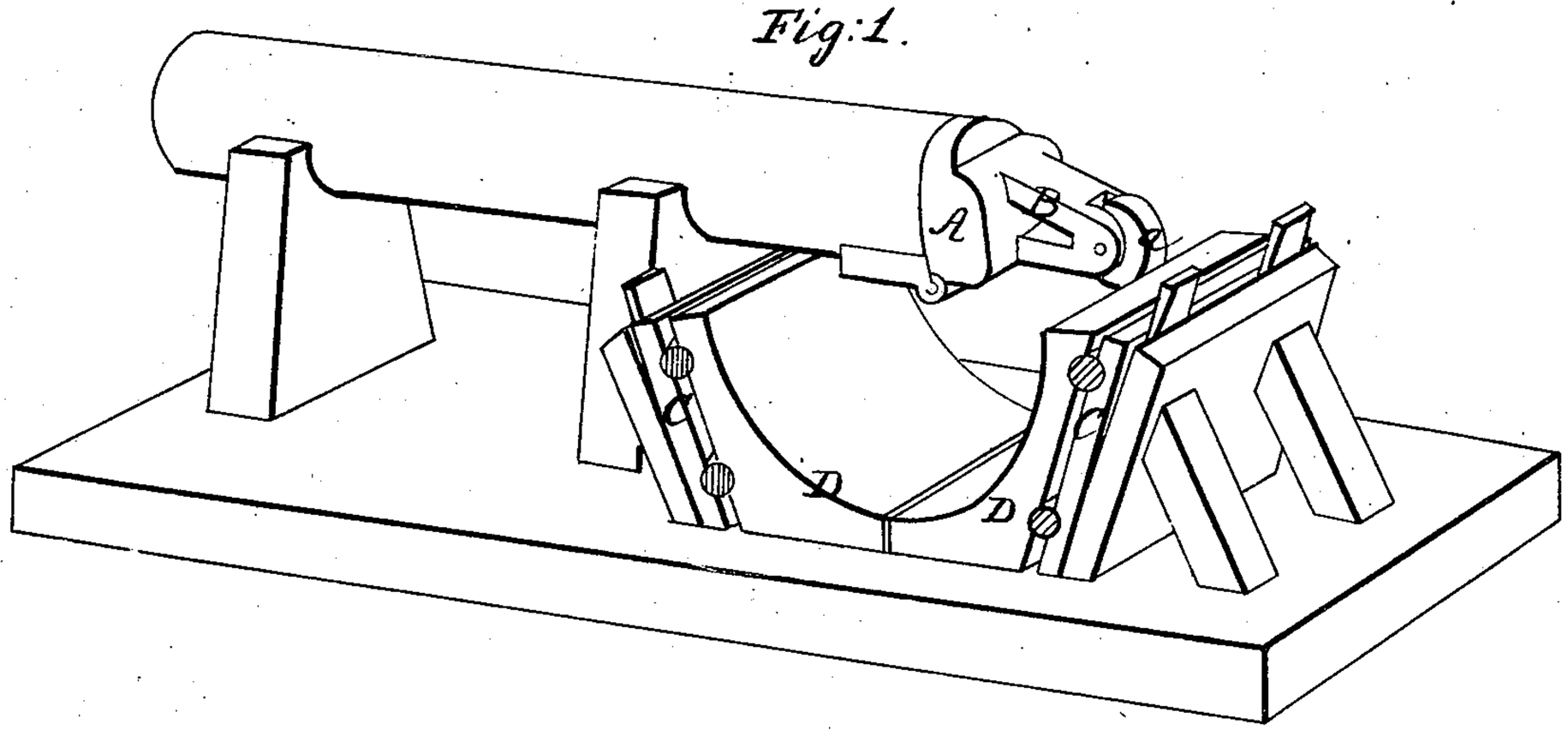
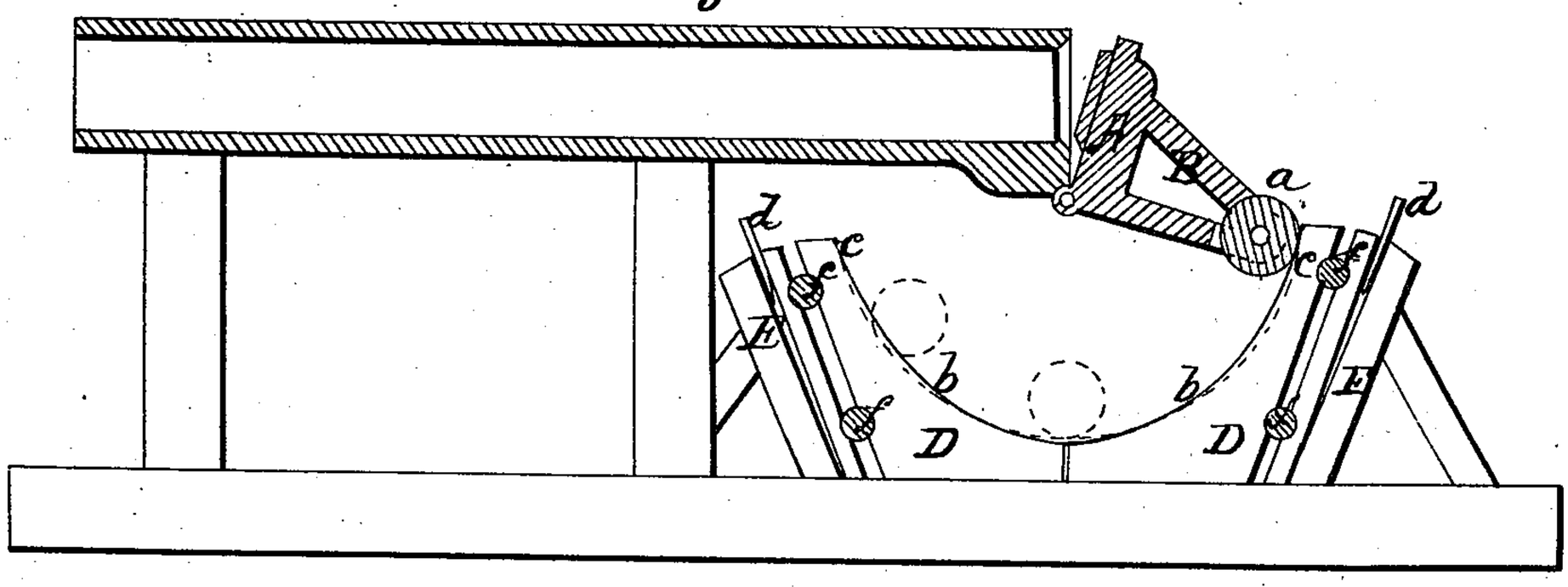


Fig: 2.



Witnesses:
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ROBERT W. RUSSELL, OF NEW YORK, N. Y.

Letters Patent No. 88,517, *dated March* 30, 1869.

IMPROVEMENT IN THE VALVES OF STEAM-FIBRE GUNS.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, ROBERT W. RUSSELL, of the city, county, and State of New York, have invented certain new and useful Improvements in Working the Discharge-Valves of Steam-Fibre Guns; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a steam-gun, with discharge-valve and buffer, arranged in accordance with my invention.

Figure 2 is a longitudinal central section of the same.

The steam-gun for disintegrating fibrous materials, to which my invention relates, is fully described in the patent of A. S. Lyman, dated August 3, 1858, and in the patent of Horatio Allen, assignor to American Fibre Company, dated March 2, 1869, and need not, therefore, be here again described.

In the last-mentioned patent, a method is specified of bringing to rest the discharge-valve, when the same is unlocked and driven back by the explosion, by means of an elastic, or yielding buffer, which offers a yielding and gradually-increasing resistance to the movement of the valve.

My invention has reference, mainly, to this method, and is designed to effect certain modifications in the construction and arrangement of both the buffer and the valve, by which they may be the better adapted for use in certain cases, as, for instance, when a valve of great weight is employed, or when other circumstances render the use of the ordinary valve and buffer impracticable, or inconvenient.

In lieu of the special arrangement shown in the patent of Allen, above referred to, I attach to the back of the discharge-valve A of the gun, an arm, or projecting frame, B, upon the apex of which I prefer to mount a roller, *a*, which impinges upon the surface of a curved buffer. The roller is only employed to reduce the friction, and may be dispensed with, if desired.

The buffer, in the present invention, is constructed as follows:

A movable wood frame, C C, holds what may be termed the semicircular divided buffer D, the flat base of which rests on the bed of the machine. The buffer, however, is not a true semicircle, as it gains slightly between the points *b c*, on each side, so as to offer, between these points, a yielding resistance to the roller *a*. That portion of the buffer included between the points *b b* is not intended to bear with any force against the roller, and is shaped to this end, as represented in fig. 2, the red lines indicating the path of the roller. The buffer should be sheathed with iron, which can be replaced from time to time, as it becomes worn.

Between the movable frame C and the buffer, are inserted balls, or strips, *f*, of rubber, or other elastic material, which will allow either part of the buffer to yield as the roller passes over it. The buffer is held up in position to receive the roller by wedges, *d*, driven between the movable frame C and the immovable frame, or posts E, by which said frame is upheld. Instead of these wedges, screws, or other ordinary or suitable devices for the purpose, may be employed.

The roller attached to the arm of the discharge-valve, when the said valve is unlocked and driven back by the force of the explosion, runs upon the curved surface of the buffer, and the movement of the valve is arrested before the roller reaches the termination of the semicircle, under the gun, whereby the force of the discharge is taken up easily and gradually by friction upon the semicircular elastic buffer, and much concussion of the gun is avoided, and strain upon the hinge of the valve diminished. A similar yielding curved buffer, or cushion, set over the gun, instead of being under it, to receive the discharge-valve, may be substituted for the above arrangement.

A stiff spring may be used instead of the India-rubber balls, or strips, in using the buffer, to receive the direct blow of the discharge-valve.

When the valve has terminated its movement, and arrives under the gun, the wedges may be knocked away, or the other devices which hold the buffer up in place may be drawn back, so as to admit of the two sections of the buffer moving apart, thus allowing the valve to be again swung up into place.

The same effect, viz, the diminution of the concussion, on the discharge of the gun, may also be obtained, by dispensing with the hinge-arrangement described in said Allen's patent, and substituting for the same a discharge-valve disconnected from the gun, or a valve carried into, or against the mouth of the gun, and held there by means of a rod, mounted upon a piston, or other suitable device, and suddenly withdrawn when it is desired to blow out the contents of the gun.

In case a piston is employed, it should be placed in a small cylinder, into which steam, air, or water is forced, when the valve is to be brought up against the mouth of the gun. By affording escape for such air, water, or steam, at the proper moment, the valve will be liberated, and, consequently, forced back by the pressure of the steam within the gun; or, the discharge-valve may be applied to the mouth of the gun, and held in its place by latches, which are liberated by a lever, or trigger, to effect the discharge. The valve is attached to a rod, or chain, fastened to a frame-work near the gun, and, when discharged, is caught by any suitable means, and brought back to the gun.

The same effect may also be obtained as follows:

The gun is swung, or made movable, instead of being fastened down firmly, and, when charged, is moved by suitable machinery up against a valve, or disk, by which contact the escape of steam from the discharge-aperture of the gun is prevented, the valve being held up in place by suitable means. When it

is desired to discharge the gun, it is drawn back from the valve, or disk, which, at the same moment, is drawn away from the mouth of the gun.

Having now described my invention, and the manner in which the same is, or may be carried into effect,

What I claim, and desire to secure by Letters Patent, is—

1. The working of the discharge-valve of the steam-gun, used for disintegrating fibrous materials, so as to prevent or diminish concussion, substantially in the manner above described.

2. The combination, with the hinged discharge-valve and its projecting arm, whether provided or not with a friction-roller, of the elastic, or yielding curved and divided buffer, or cushion, under the arrangement and operation substantially as set forth.

In testimony whereof, I have signed my name to this specification, before two subscribing witnesses.

R. W. RUSSELL.

Witnesses:

M. BAILEY,

WM. H. MCCABE.