

(No Model.)

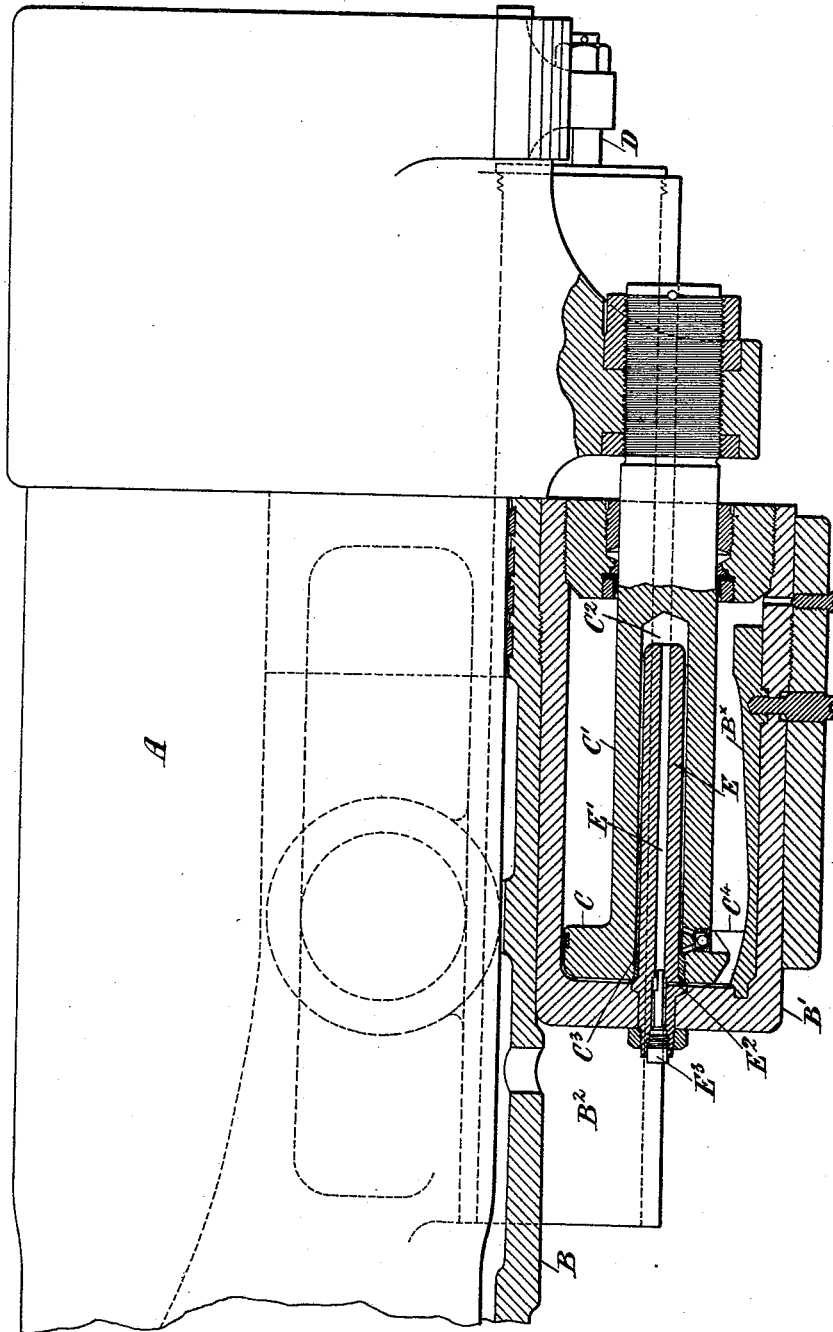
2 Sheets—Sheet 1.

A. NOBLE & R. T. BRANKSTON.  
RECOIL PRESS FOR GUN CARRIAGES.

No. 524,605.

Patented Aug. 14, 1894.

Fig. 1.



Witnesses.  
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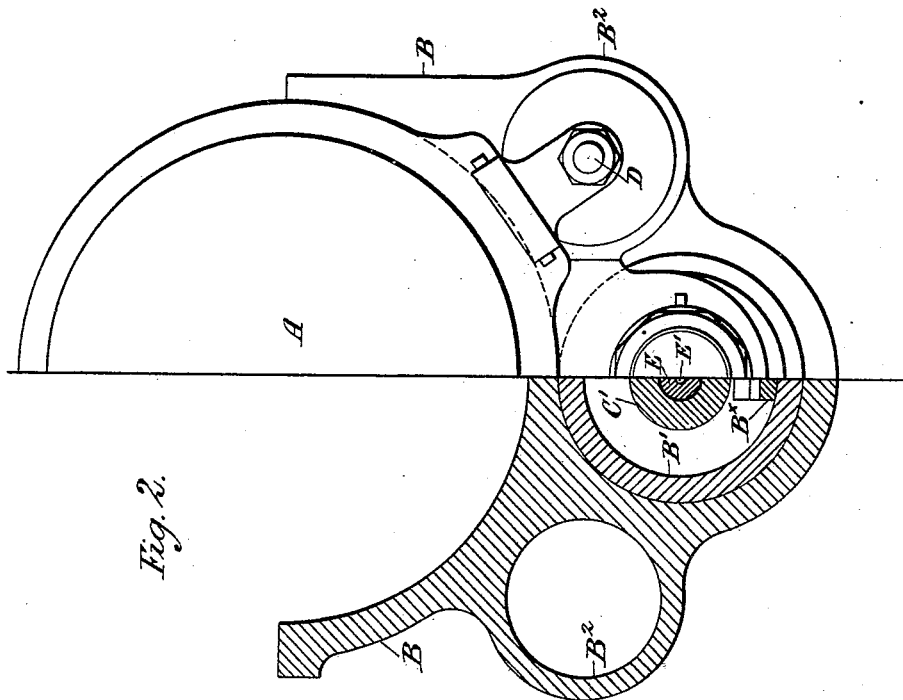
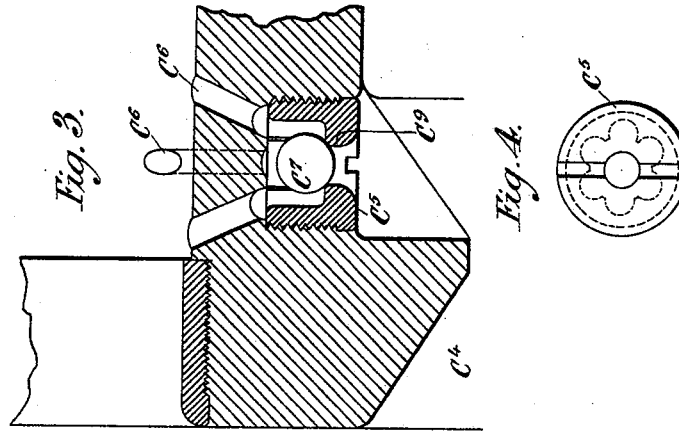
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By their Atty.  
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# UNITED STATES PATENT OFFICE.

ANDREW NOBLE AND RALPH THEW BRANKSTON, OF NEWCASTLE-UPON-TYNE, ENGLAND, ASSIGNORS TO SIR W. G. ARMSTRONG, MITCHELL & CO., LIMITED, OF SAME PLACE.

## RECOIL-PRESS FOR GUN-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 524,605, dated August 14, 1894.

Application filed May 14, 1894. Serial No. 511,200. (No model.)

*To all whom it may concern:*

Be it known that we, ANDREW NOBLE, residing at Jesmond Dene House, and RALPH THEW BRANKSTON, engineer, residing at Elswick Works, Newcastle-upon-Tyne, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Recoil-Presses for Gun-Carriages, of which the following is a specification.

10 The invention is applicable to recoil presses in which the running out of the gun after recoil is controlled by a controlling ram passing into a longitudinal hole in the piston rod of the recoil cylinder piston. The piston rod  
15 we provide with a valve opening inward to admit liquid freely from the recoil cylinder to the hole in the piston rod. It is preferred to use a ball valve held in by means of a  
20 used. The hole in the piston rod is bored larger than the ram and the hole is contracted to fit the ram at the entering end. The action of the valve is as follows: When the gun is fired a water pressure is set up in the  
25 recoil press, the pressure opens the valve and forces liquid into the hole in the piston rod and completely fills the empty space formed by the piston rod moving away from the ram. The length of the ram is made such that it  
30 never leaves the contracted part of the piston rod hole, the consequence is that at the termination of the recoil the space originally occupied by the controlling ram is completely full of liquid and immediately the gun attempts to return into the firing position the  
35 valve closes and locks in the liquid which has then to escape down the center of the controlling ram and out by the small valve into the press, this valve can be adjusted to regulate  
40 the speed of the gun in running up into the firing position.

45 In the drawings annexed we have shown the invention applied to a gun mounted in a gun cradle furnished with springs which are compressed when the recoil takes place and subsequently effect the running out of the gun in a well known manner—but the invention might be applied to gun mountings in

which the running out is effected in other ways.

Figure 1 is a side elevation partly in section of the cradle and gun. Fig. 2 is a rear end view of the same one half being in section. Fig. 3 is a section on a larger scale of a portion of the piston of the recoil cylinder  
55 and the valve carried by it. Fig. 4 is an under side view of the valve.

A is the rear end portion of the gun, B the rear end of the cradle in which the gun can slide backward and forward, B' is the cylinder for controlling the recoil secured to the under side of the cradle and B<sup>2</sup> B<sup>2</sup> are two cylinders also forming part of the cradle and each containing springs for running out the gun  
65 in the ordinary way.

C is a piston in the cylinder B' the piston rod C' is secured to the rear end of the gun as shown in Fig. 1. Other rods D D also secured to the rear end of the gun pass into the cylinders B<sup>2</sup> and have disks or pistons at their  
70 forward ends which bear against the forward end of coiled springs contained in these cylinders in the ordinary way.

C<sup>2</sup> is a hole bored into the piston rod from its forward end.

E is a ram fixed to the forward end of the cylinder B' and passing into the hole bored in the piston rod. C<sup>3</sup> is a bush screwed into the mouth of the hole and fitting to the piston rod.  
80

E' is a hole bored lengthwise through the ram E.

E<sup>2</sup> is a hole bored through the side of the forward end of the ram and opening into the hole E'.  
85

E<sup>3</sup> is a valve screwed into the forward end of the hole E, its rear end passes beyond the hole E<sup>2</sup> and limits the passage from the hole E' to the hole E<sup>2</sup> to regulate the speed at which the gun is run out.  
90

C<sup>4</sup> is a slot cut through the piston at one point of its circumference, B<sup>x</sup> is a metal rod fixed to the side of the cylinder B' and passing through this slot, the rod is shaped as usual to more or less close the passage through  
95 the slot C<sup>4</sup> and so control the speed of recoil.

C<sup>5</sup> is a screw plug screwed into a recess bored radially into the piston from the slot C<sup>4</sup>.

C<sup>6</sup> are holes bored through from the bottom of this recess into the hole C<sup>2</sup> in the piston rod.

C<sup>7</sup> is a ball valve contained in the interior of the screw plug C<sup>5</sup>. In one position the ball closes the passage C<sup>9</sup> formed through the plug, in the other position of the ball the passage is open and liquid can pass freely through the passage C<sup>9</sup> and holes C<sup>6</sup> to the hole C<sup>2</sup> in the piston rod.

When the gun recoils the speed of recoil is checked as usual by the speed at which liquid in the cylinder B' can pass through the slot C<sup>4</sup> from the rear to the front of the piston C at the same time the valve C<sup>7</sup> opens and liquid can pass freely to the hole C<sup>2</sup> and fill this hole as the piston rod goes back. When the recoil is ended and the springs in the cylinders B<sup>2</sup> commence to run the gun out again the valve C<sup>7</sup> closes and the liquid with which the hole C<sup>2</sup> is filled can only escape from it through the hole E' and small hole E<sup>2</sup> bored in the ram.

What we claim is—

1. A recoil press for gun carriages composed of a fixed recoil cylinder a piston fitting this cylinder and having its rod secured to the rear end of the gun, means for controlling the passage of liquid contained in the cylinder

from one side of the piston to the other, a hole bored into the piston rod from its forward end, a ram fixed to the forward end of the cylinder entering this hole, the contracted mouth of the hole fitting around the ram, a small passage leading from the hole in the ram to the interior of the cylinder, an opening fitted with a valve formed through the piston rod to allow liquid to pass freely from the cylinder into the hole in the piston rod but not in the reverse direction.

2. The combination of fixed recoil cylinder B', piston C fitting therein, piston rod C' fixed to rear end of gun, passage C<sup>4</sup> formed through piston and rod B' fixed to the cylinder and passing through this passage to control the speed of recoil, hole C<sup>2</sup> bored into piston rod from its front end, valve C<sup>7</sup> which allows liquid to pass freely from the cylinder into the hole C<sup>2</sup> but obstructs passage of liquid in the opposite direction, a ram E fixed to the forward end of the cylinder entering the hole C<sup>2</sup>, the contracted mouth of this hole fitting to the ram, a hole E bored lengthwise into the ram, and small passage E<sup>2</sup> from the hole E' to the interior of the cylinder.

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