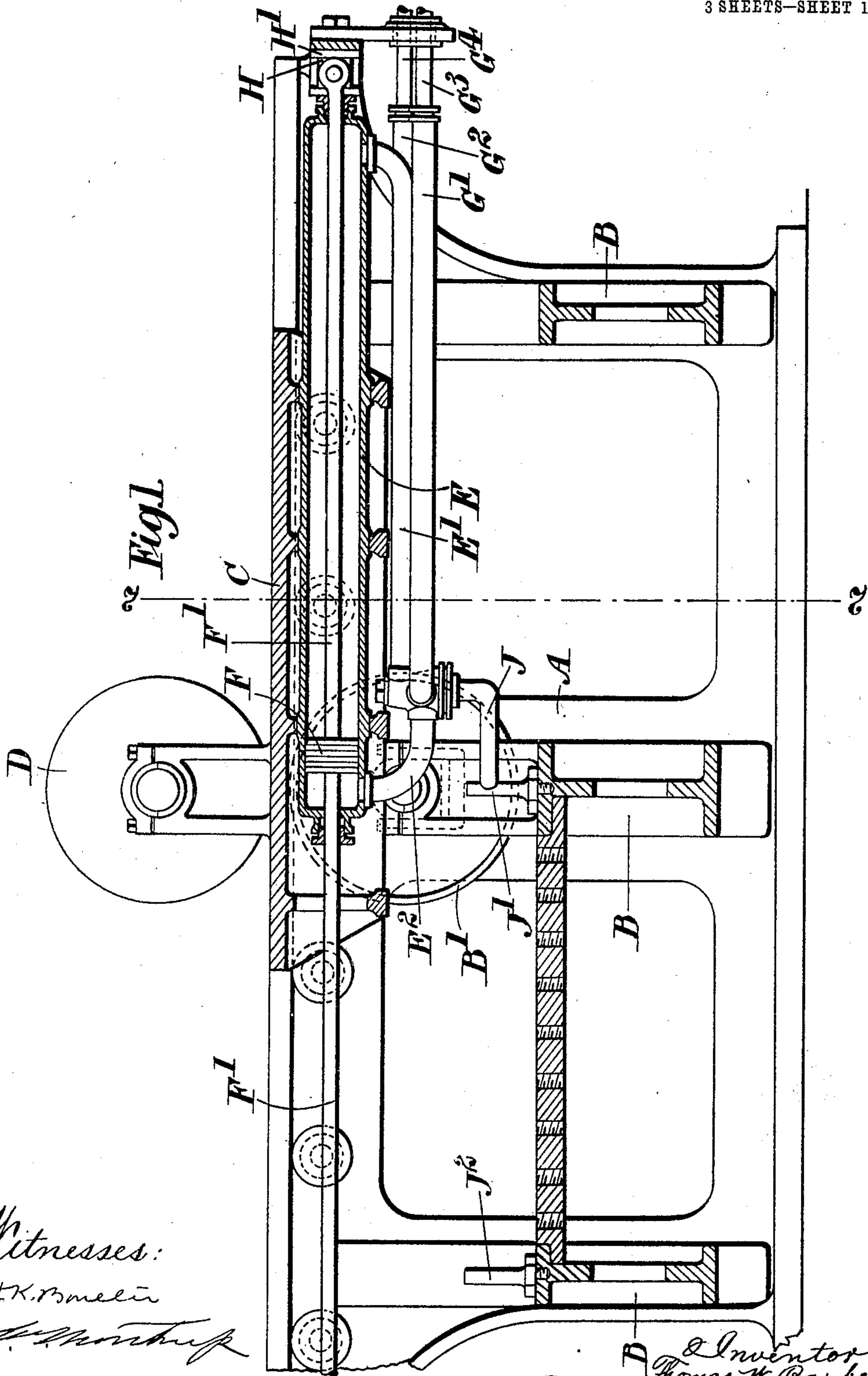


No. 795,785.

PATENTED JULY 25, 1905.

T. W. BARBER.
PRINTING PRESS.
APPLICATION FILED AUG. 12, 1903.

3 SHEETS—SHEET 1.



Witnesses:

H. K. Boller

W. L. Northrup

Inventor
Thomas W. Barber.
By W. E. Bouelter, attorney

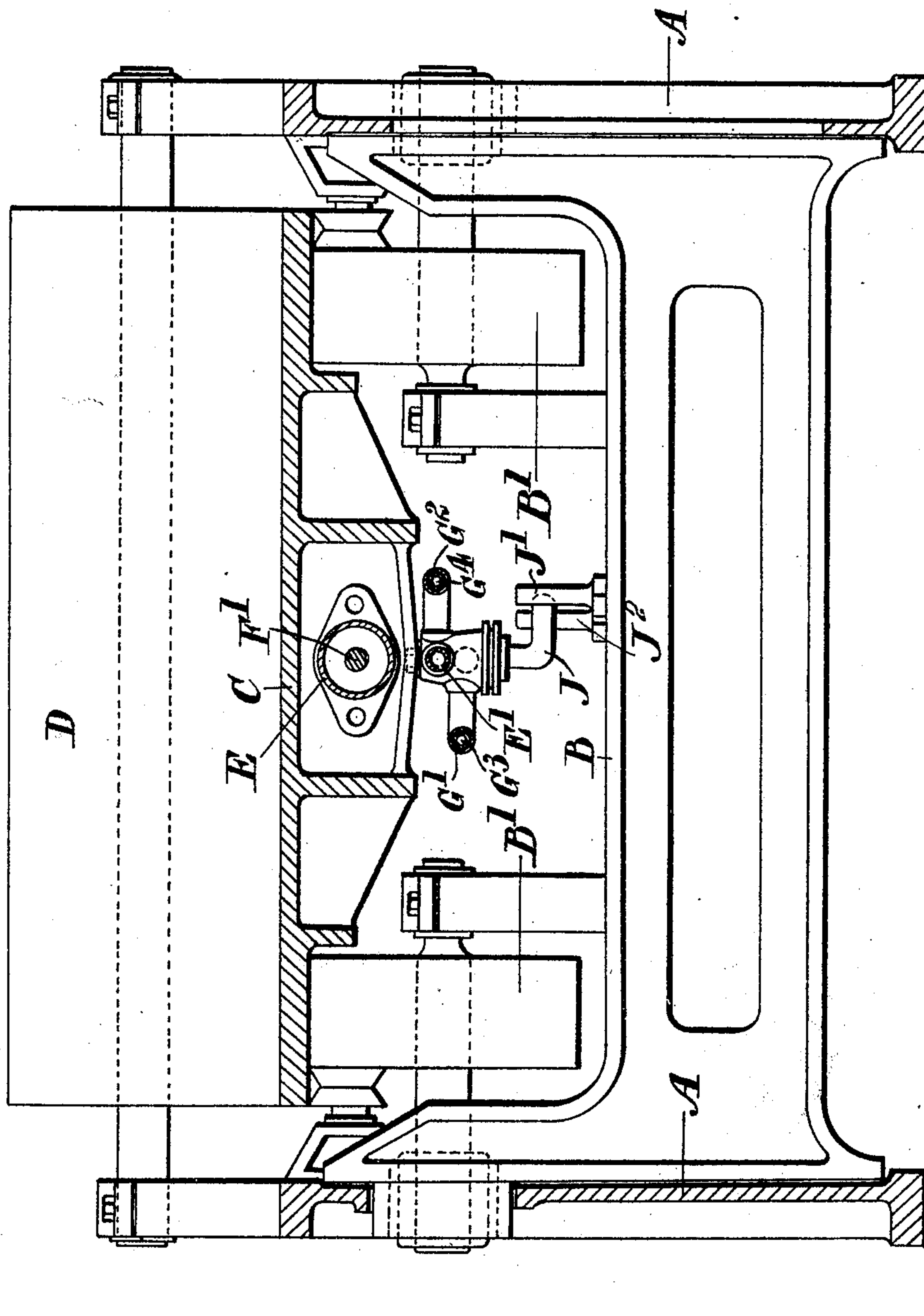
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
W. K. Butler
J. H. Thompson

Inventor
Thomas W. Barber
By Wm. E. Boulter
Attorney

No. 795,785.

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3 SHEETS—SHEET 3.



Witnesses:

W. K. Boulter

A. Chorthrup

Inventor:

Thomas W. Barber

By W. K. Boulter,
attorney

UNITED STATES PATENT OFFICE.

THOMAS WALTER BARBER, OF LONDON, ENGLAND, ASSIGNOR OF ONE-HALF TO HAROLD M. DUNCAN, OF LONDON, ENGLAND.

PRINTING-PRESS.

No. 795,785.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed August 12, 1903. Serial No. 169,275.

To all whom it may concern:

Be it known that I, THOMAS WALTER BARBER, a citizen of the United States, residing at Westminster, London, England, have invented a certain new and useful Printing-Press, of which the following is a specification.

This invention relates to printing-presses of the type in which a carriage carrying a platen is reciprocated beneath the cylinder, and has for its object to provide means for reciprocating the carriage without the use of complicated gearing and at a high speed and with great smoothness and uniformity, provision being made for vertical adjustment, so that the operative parts will always maintain their proper relative positions.

In the accompanying drawings, which illustrate one method of carrying out this invention, Figure 1 is a longitudinal section of the printing-press. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1, and Fig. 3 is an under side view of a detail.

Like letters indicate like parts throughout the drawings.

The frame comprises two longitudinal members A, connected by suitable cross members B. Mounted on the frame are rollers B', which support a reciprocating carriage C and are situated beneath a cylinder D, mounted in bearings secured to the side frame members A, all of which is usual in this type of press.

In the majority of presses at present in use the carriage is reciprocated by means of gearing and connecting-rods which render it difficult for the length of travel of the carriage to be varied without stopping the press, and, moreover, this mechanism restricts the speed at which the press can be worked. According to this invention a cylinder E is attached to the under side of the carriage C and provided with a piston F, having piston-rods F', which extend out beyond the cylinder in opposite directions. The free ends of the piston-rods are pivoted to blocks H, free to slide in vertical guides H' on the frame of the machine.

Secured to the under side of the cylinder E is a conduit, the ends of which communicate with the opposite ends of the cylinder. This conduit is controlled by a cock G, which divides the conduit into two parts E' E², respectively. With the cock G communicate

two other conduits G' and G². The conduits G' and G² slide with the cylinder upon the fixed conduits G³ and G⁴, communicating with the steam supply and exhaust, respectively. It will thus be seen that the conduits G' G³ constitute a telescopic conduit and the conduits G² G⁴ a second telescopic conduit. The cock G is a four-way cock and carries an arm J, which projects in the path of the pins J' J², situated on the transverse frame members B. The operation of this device is as follows: When the cock is in the position shown in the drawings, steam is admitted by the conduits G³ G' E² to the left-hand end of the cylinder E, as shown in Fig. 1. At the same time the other two ways of the cock put the opposite end of the cylinder into communication with the conduits E', G², and G⁴ for exhausting. This will cause the carriage to be reciprocated from right to left of the figure until the arm J of the cock strikes the pin J², when the cock is turned and the operation of the cylinder reversed in a known manner.

This form of apparatus allows the carriage to be reciprocated at the high speed required to work with the high-speed feed devices now upon the market, and perfectly smooth running may be obtained by so setting the pins which operate the cock G that steam is cut off and the exhaust from the opposite side of the piston is closed before the end of the stroke, whereby a cushioning is secured, resulting in the avoidance of all jar and strain. This also allows the travel of the carriage to be varied, as by varying the position of the pins, which may readily be done, the carriage may be reversed at half-stroke or any other portion of its whole travel required. By mounting the carriage directly upon the cylinder there is no tendency of the former to tilt, as would occur were the power applied to the carriage at the wrong place, as by connecting the piston-rods to brackets attached to the ends of the carriage. Such tilting would destroy alinement, the exactness and permanency of which constitute the first essential of a successful printing-press. Furthermore, by mounting the carriage directly upon the cylinder the power and the cushioning are transmitted to the table direct. Then, too, by reason of the fact that the cylinder slides over a fixed piston, and as the cylinder can move practically up to each fixed end of the piston-rod, a long travel of the carriage

is secured without making the machine excessively long. The carriage being reciprocated by a double-acting cylinder moving over a centrally-fixed piston, a balanced action is obtained, the piston-rods being continually in tension.

The object of pivoting the ends of the piston-rods F' to the sliding blocks H is to allow vertical adjustment, so that the cylinder and its piston-rods may automatically be kept in alinement notwithstanding irregular movement of the carriage C due to the great pressure to which it is subjected during the process of printing.

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

1. The combination with a printing-press having a reciprocating carriage, of a fluid-pressure cylinder secured to the carriage, a piston within such cylinder, a rod or rods secured to such piston, means for securely attaching the rod or rods to the frame to prevent longitudinal motion but permit vertical motion of the piston and its rod or rods relative to the frame, and means for supplying fluid under pressure alternately to opposite ends of said cylinder.

2. The combination with a printing-press having a reciprocating carriage, of a fluid-pressure cylinder and a piston within such cylinder, one being connected to the carriage and the other to the press-frame, means for

supplying fluid under pressure to either end of said cylinder, and means for automatically maintaining alinement between the cylinder and piston as the carriage is displaced by downward pressure.

3. The combination with a printing-press having a reciprocating carriage, of a fluid-pressure cylinder rigidly secured to the carriage, a piston within such cylinder, a rod secured to the piston, a block to which the end of the piston-rod is secured, a vertical stationary guide for said block, and means for supplying fluid under pressure to either end of the cylinder.

4. The combination with a printing-press having a reciprocating carriage, of a fluid-pressure cylinder rigidly secured to the carriage, a piston within such cylinder, piston-rods projecting through opposite ends of the cylinder, blocks to which the outer ends of the piston-rods are secured, stationary vertical guides for said blocks, and means for supplying fluid under pressure to either end of the cylinder.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS WALTER BARBER.

Witnesses:

C. ROSE,

A. M. HAYWARD.