

No. 639,893.

E. FISCHER.

Patented Dec. 26, 1899.

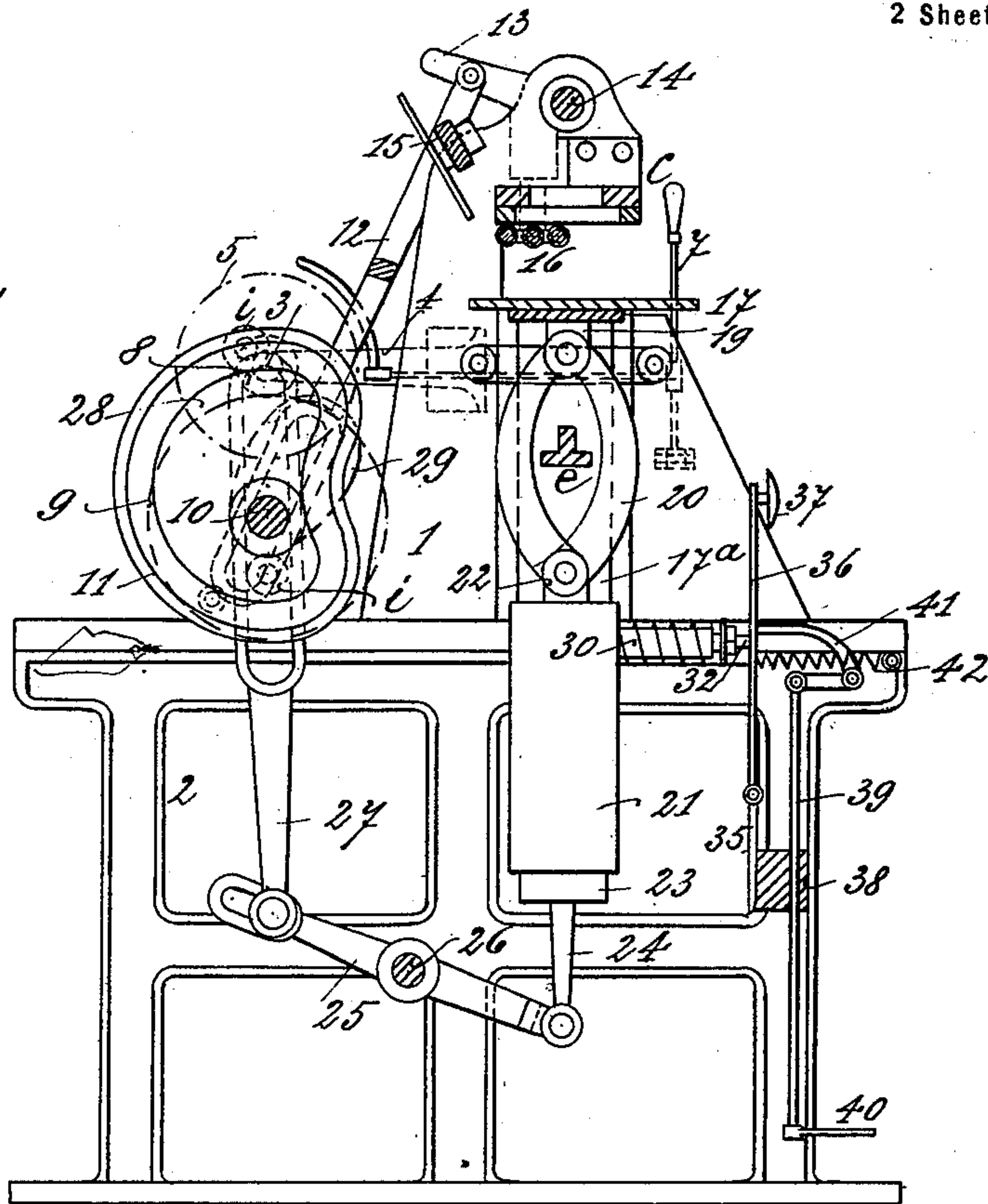
PLATE PRINTING MACHINE.

(Application filed Mar. 11, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1



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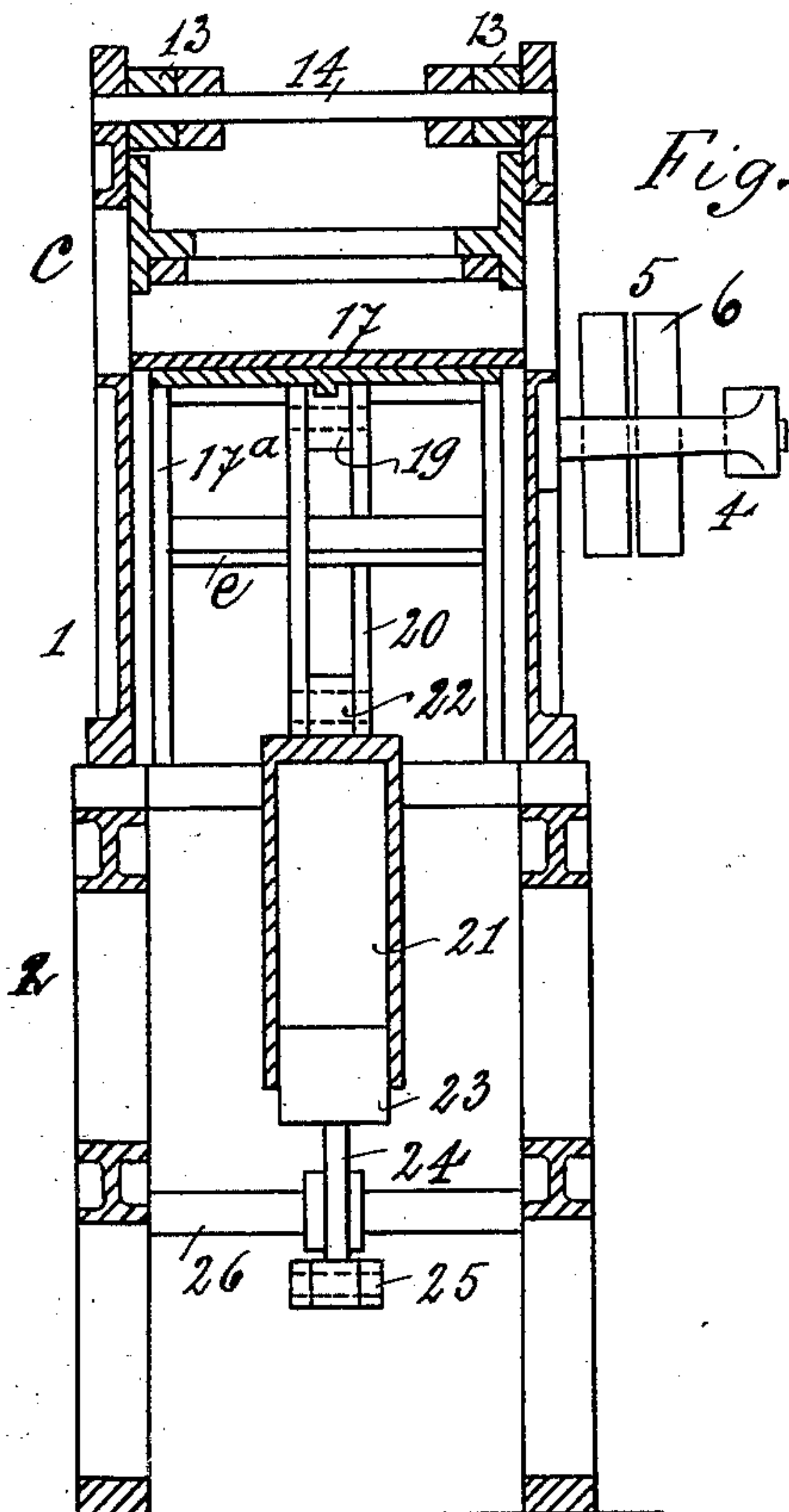


Fig. 2

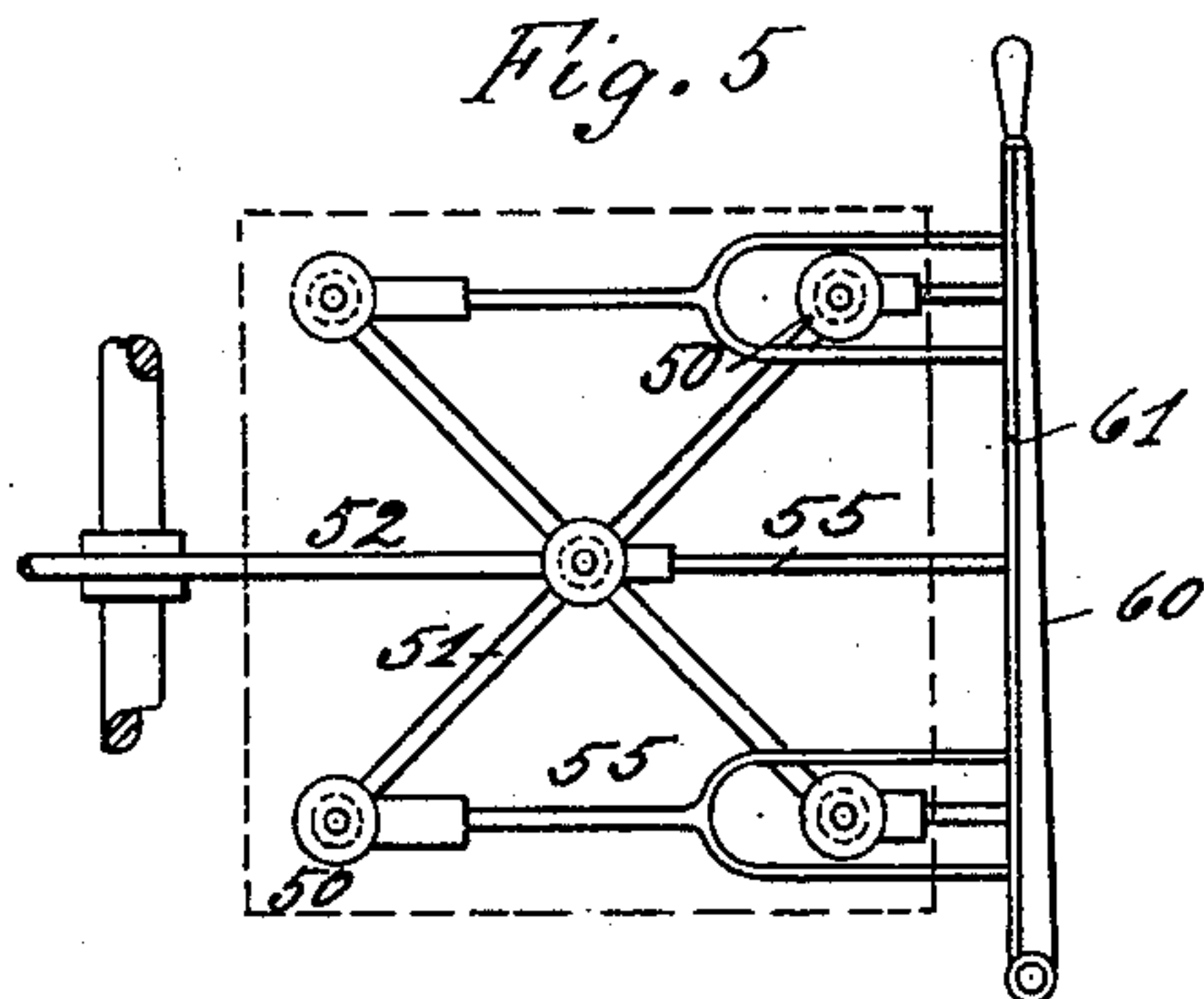


Fig. 5

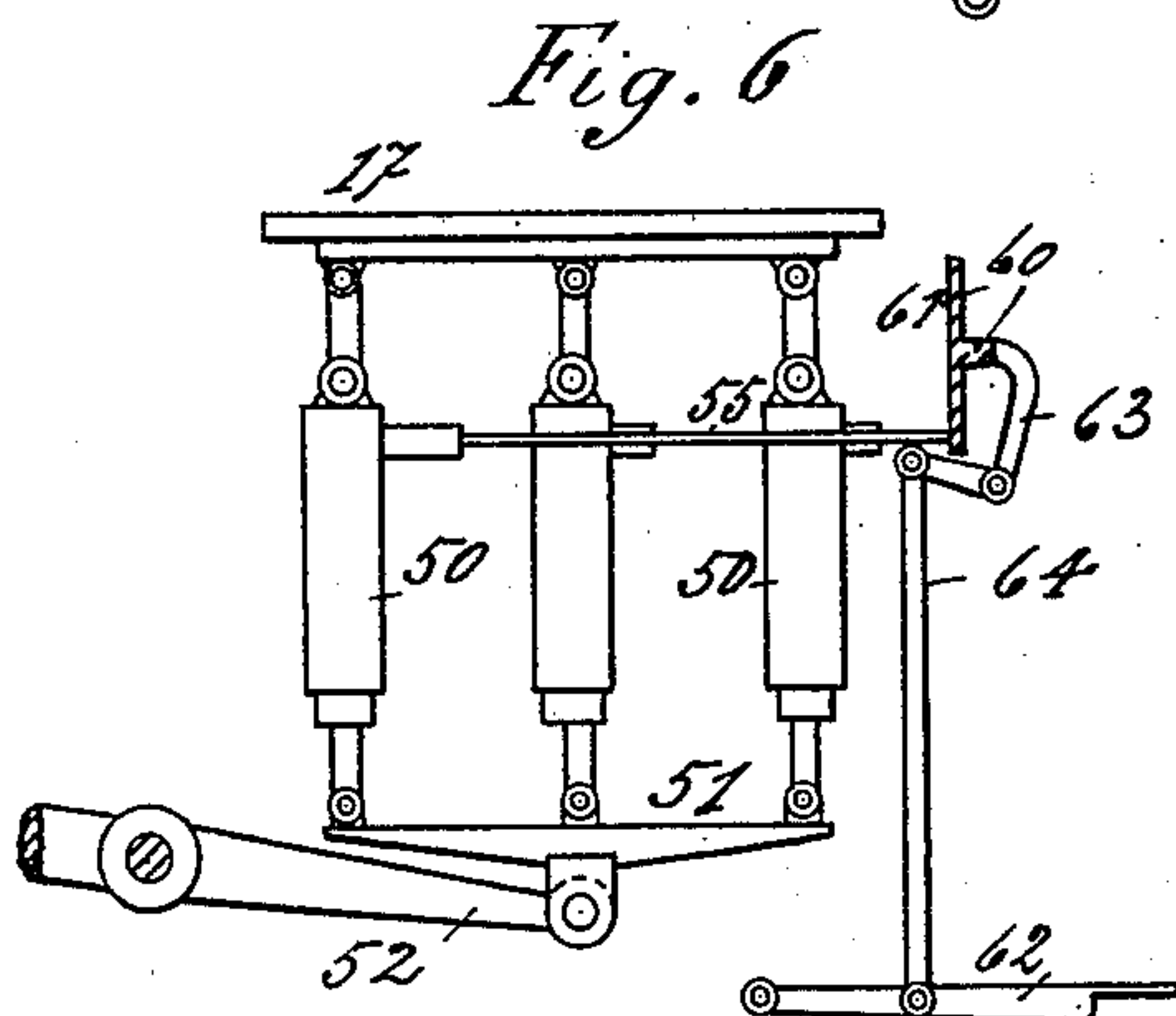


Fig. 6

Fig. 4

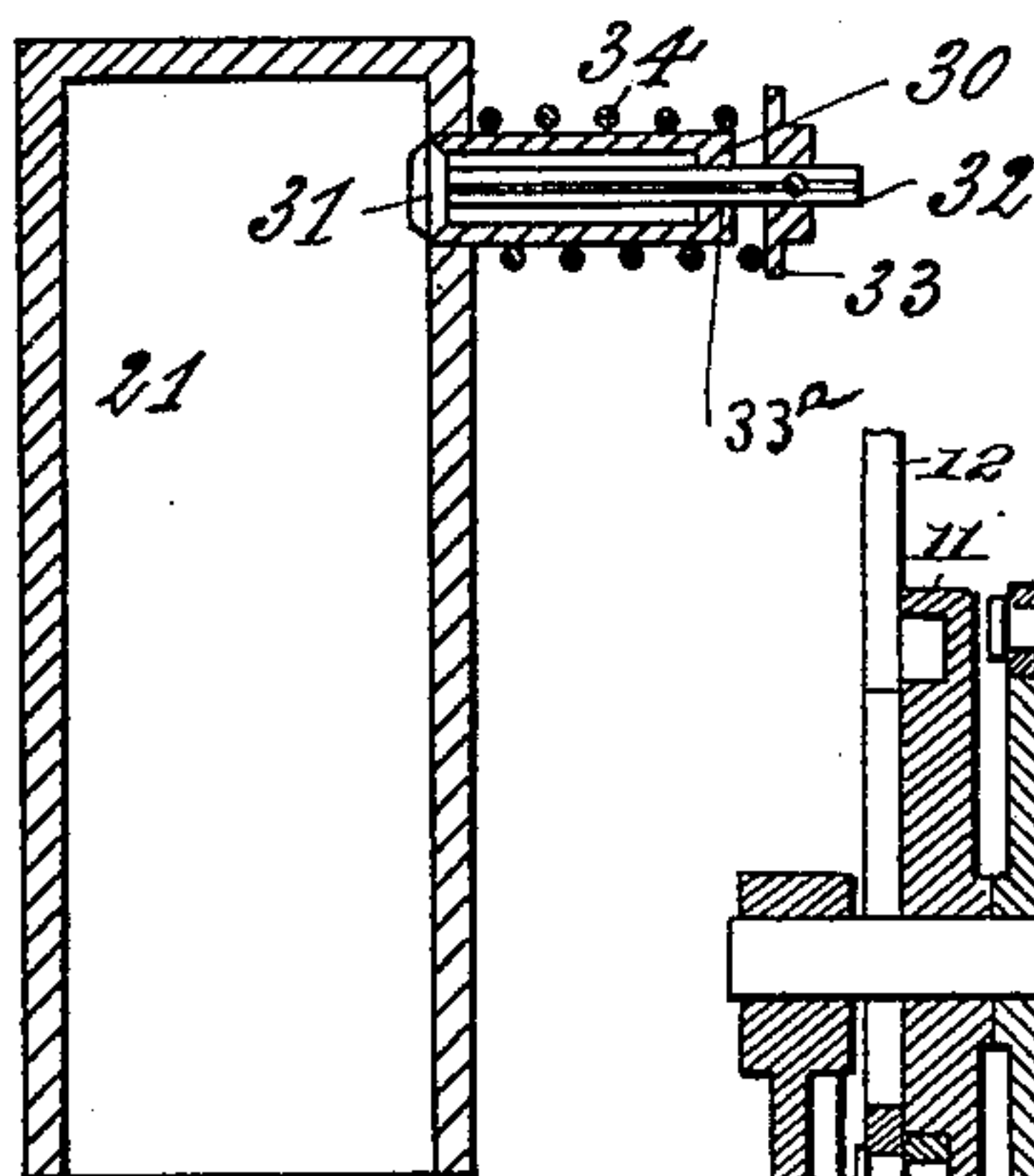
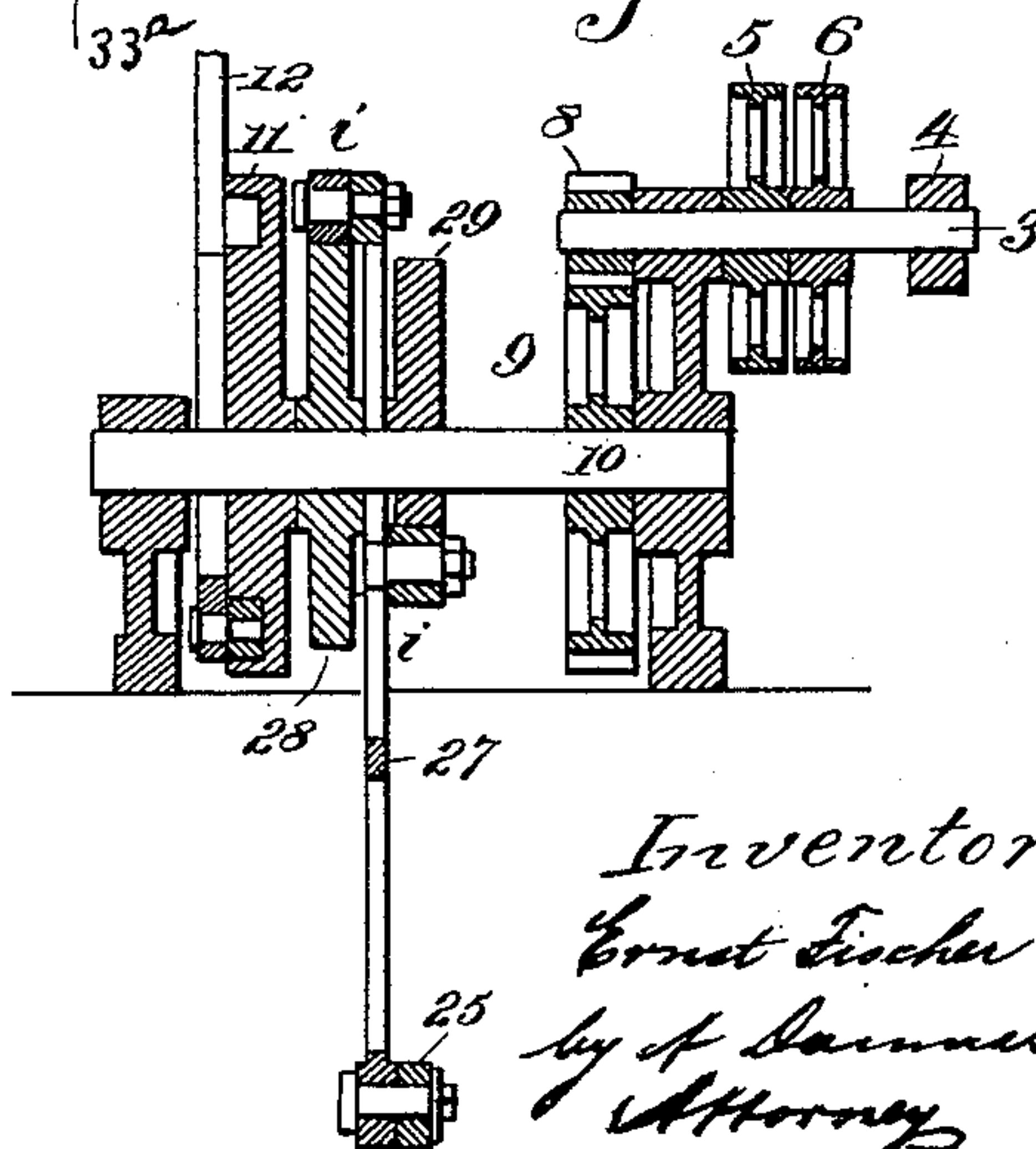


Fig. 3



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# UNITED STATES PATENT OFFICE.

ERNST FISCHER, OF BARMEN, GERMANY.

## PLATE-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 639,893, dated December 26, 1899.

Application filed March-11, 1899. Serial No. 708,719. (No model.)

*To all whom it may concern:*

Be it known that I, ERNST FISCHER, a subject of the Emperor of Germany, residing at Barmen, in the Province of Rhenish Prussia, Germany, have invented a new and useful Printing-Machine, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

This invention relates to that class of printing-presses in which a single blank is fed or a pile of blanks is placed on a platen which is mechanically raised and pressed against the types.

The object of my invention is to provide improved mechanism whereby the platen is raised and lowered, said mechanism including as a member a pneumatic cylinder linked to the platen, the piston of the cylinder being worked in such a manner that compressed air is produced in it which lifts the platen and by expanding allows it to go down. The platen may be set in and out of work by letting off the compressed air by means of a hand or foot worked shipping device without stopping the motion of the printing-machine.

The particular features in which my invention consists will be hereinafter more fully described, and pointed out in the claims at the end of this specification.

Figure 1 is a vertical section through the complete printing-machine. Fig. 2 is a vertical section taken on a right angle of Fig. 1. Fig. 3 is a vertical section at a right angle of Fig. 2. Fig. 4 is an enlarged detail chiefly to show the pneumatic cylinder and its fittings. Figs. 5 and 6 show a modification of my invention.

Similar characters designate the same parts in all the figures.

Referring to the drawings, the framework 1 of the machine, of suitable shape to contain the working parts, is mounted on stands or legs 2. It has bearings and a supporting-arm 4 for the shaft 3, which is fitted with a loose and fast pulley 5 6 in order to be set in and out of motion by a shipping device 7.

To the shaft 3 is keyed a pinion 8, cooperating with a toothed wheel 9 on a shaft 10, which is journaled in the frame 1. The shaft 10 has a cam 11, which is instrumental in operating a forked lever 12, the two arms of which en-

gage levers 13, that are fulcrumed to a shaft 14, securely mounted in the head of frame 1. To the frame is turnably fixed in a slanting position the ink-table 15, of circular form, which is driven by a ratchet and pawl, the latter being not shown in the drawings. The levers 13 are provided with the inking-rollers 16, which by means of cam 11 and lever 12 are alternately brought in contact with the ink-plate 15 and the type-bed, which is fastened to the bottom face C of the head in a usual manner. Underneath the type-bed is horizontally located the platen 17, having downwardly-extending guide-arms 17<sup>a</sup>, by which it is vertically guided in a corresponding groove at the inner sides of the machine-frame.

So far the machine is old and well known. The new and characteristic features are the means by which I undertake the vertical motion of the platen 17. For this purpose to the lower face of the platen is cast an eye 19, having a bolt connection to bars 20, which are arranged from both sides of the crossing rib *e*. To the bottom ends of bars 20 is hinged, by means of an eye 22 and a bolt, a cylinder 21, being closed at its top end, but open at its bottom, so that a piston 23 may enter the cylinder. The rod 24 of this piston is coupled to the inner arm of a double-armed lever 25, which is fulcrumed to a shaft 26. The outer part of lever 25 has a connection to a rod 27, which by means of a slot surrounds the shaft 10. Said shaft carries two differently-shaped cams 28 29, each of them being engaged by lever 27 by means of rollers *i*, so that one cam makes the lever 27 to travel up and the other down and to move correspondingly the piston 23. The cylinder 21 is provided with an extending box 30, containing the seat for a valve 31, the stem 32 of which, of square shape, being guided in said box, carries a disk 33, forming the air-inlet 33<sup>a</sup>, between which and the cylinder-wall a coiled spring 34 is inserted. This spring keeps the valve 31 always in a closed position.

In front of the spindle 32 is hinged to a support 35 a vertical flat bar 36, which is provided with a knob 37 and takes hold on said spindle 32. In a traverse 38 of the legs 2 is vertically guided a rod 39, having at its rear end a treadle 40, while its upper end is cou-



pled to a bell-crank lever 41, which rests upon the bar 36. A spring 42 draws the bar 36 against lever 41.

Having thus described the construction of the machine, I shall now proceed to explain its working.

The printing-press is set in motion by the shipping device 7. Cam 11 operates, by means of levers 12 and 13, the inking-rollers 16, which travel from the intermittently-rotated inking-plate 15 to the type-bed and provides the latter with ink. Lever 27, being lowered by means of 29, pushes the piston 23 upward, which first produces in the cylinder 21 a quantity of compressed air and then, together with this air, raises the cylinder 21 and the platen 17, hinged thereto, so that the blanks, either a single one or a pile, resting on said platen are pressed against the type-bed and printed. The lever 25 in going down with its inner ends lowers the piston, allowing the air to expand and correspondingly the cylinder to go down with the platen. Now I am able to vary the pressure which is exerted by the platen by adjusting the rod 27 on the slotted end of lever 25, the latter being then more or less oscillated and the pressure more or less strong. By this means always a sharp and clear print may be obtained, as the compressed air in the cylinder 21 actuates like an elastic cushion on the platen, so that its pressure is always the same, even if a pile of blanks is successively diminished.

The motion of the platen may be stopped without stopping the machine. This is done either by hand or by foot in operating the knob 37 or the treadle 40. In both cases the bar 36 is pushed forward and the valve 31 lifted from its seat, so that air may escape and the cylinder, with the platen, go down. It remains in this position until the knob 37 or treadle 40 is released, so that the valve 31 may be closed by the spring 34, and the piston, which during this time traveled up and down ineffectually, again compresses the

air, which acts on the platen, as before described.

The printed blanks are delivered either by hand or mechanically.

My invention is also applicable to large printing-presses with a corresponding heavy platen. In such a case I arrange a plurality of pneumatic cylinders 50, Figs. 5 and 6, which I attach in the manner to the platen as before described. The pistons 49 are practically coupled to a common bridge 51, which is actuated in the same way as before by one or more levers 52. The valve-spindles 55 are simultaneously operated by a horizontal lever 60, fitted with plates 61. The lever 60 may be operated by the treadle-lever 62, rod 64, and angle-lever 63.

I claim—

1. In a printing-machine a horizontal platen a pneumatic cylinder hinged thereto, a piston engaging said cylinder and means to reciprocate the piston for the purpose specified.

2. In a printing-machine a horizontal platen a pneumatic cylinder hinged thereto a piston engaging said cylinder and means to reciprocate the piston, a valve fitted to the cylinder and closed automatically and means to open the valve for the purpose as illustrated and set forth.

3. In a printing-machine a horizontal platen a plurality of pneumatic cylinders hinged thereto a bridge or other suitable means engaging all pistons of said cylinders means to reciprocate the bridge and means to operate all valves of the cylinders simultaneously substantially as set forth and for the purpose described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ERNST FISCHER.

Witnesses:

OTTO KÖNIG,  
A. DAUMAS.