

E. R. RICHARDS.
COUNTING ATTACHMENT FOR PRINTING PRESSES.
APPLICATION FILED SEPT. 9, 1912.

1,064,772.

Patented June 17, 1913.

2 SHEETS—SHEET 1.

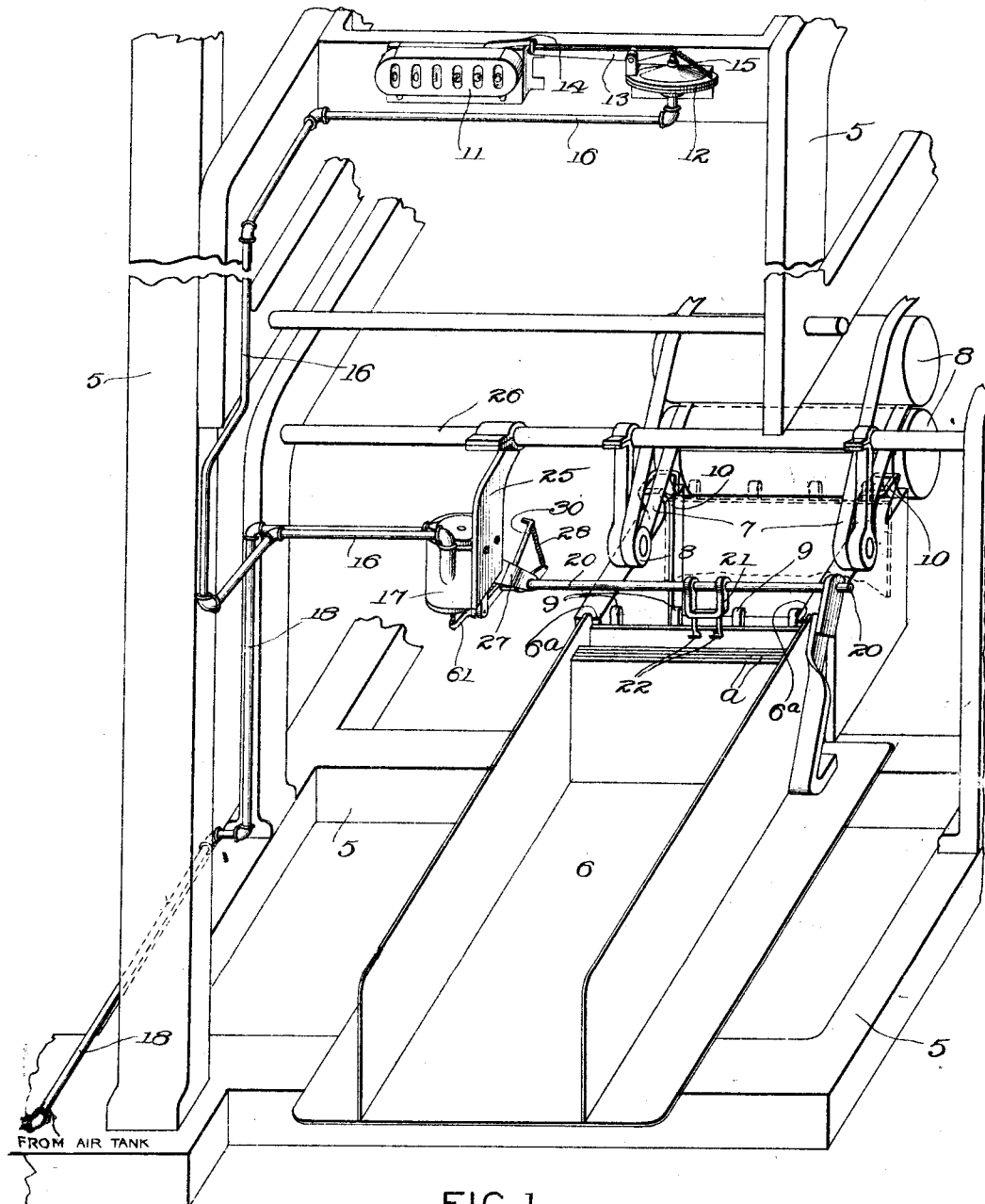


FIG. 1

Witnesses:

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C. Paul Parker

Inventor:

E. R. Richards.

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att.

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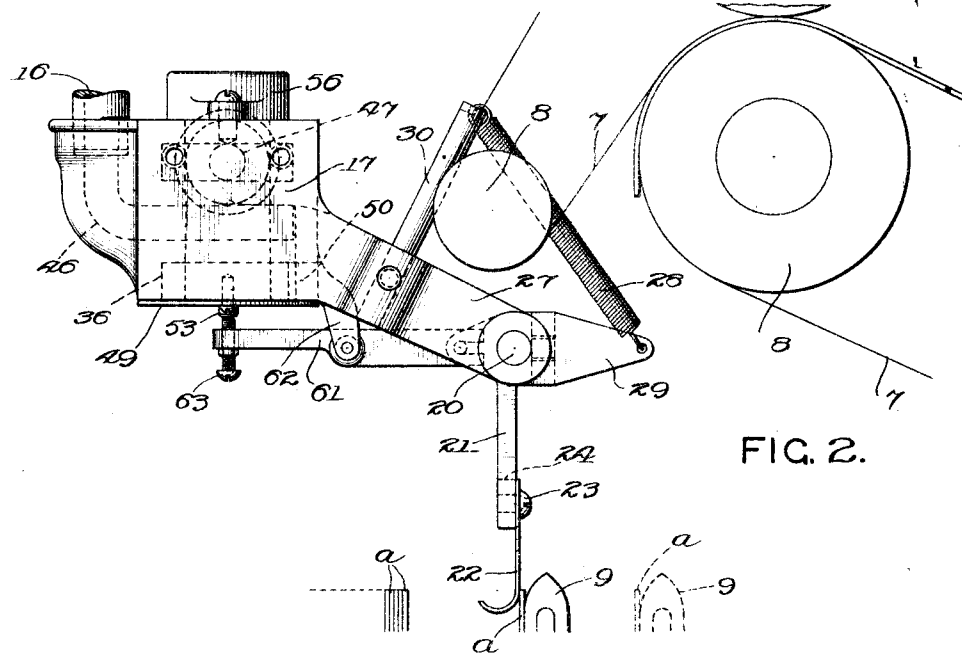


FIG. 2.

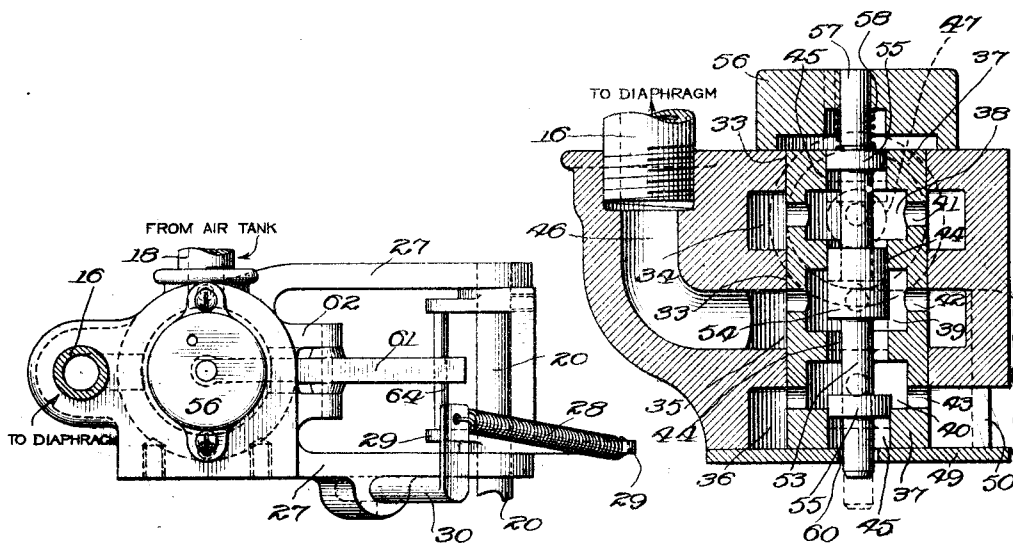


FIG. 3.

FIG. 4.

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UNITED STATES PATENT OFFICE.

ERNST R. RICHARDS, OF CHICAGO, ILLINOIS, ASSIGNOR TO SEARS, ROEBUCK AND CO.,
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COUNTING ATTACHMENT FOR PRINTING-PRESSES.

1,064,772.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed September 9, 1912. Serial No. 719,278.

To all whom it may concern:

Be it known that I, ERNST R. RICHARDS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Counting Attachments for Printing-Presses, of which the following is a specification.

This invention relates to counting mechanism and refers more particularly to an attachment for printing presses adapted to count the material passing through the machine.

Some of the attachments of this character which have been heretofore produced have been continuously driven from some running part of the press so that the register proper was actuated once in each cycle of the press regardless of whether or not material was being operated upon. With such devices it is necessary for the operator to throw the device out of action when material is not being fed to the press and to again throw the counting device into operation when the feeding is resumed. Thus the device depends for its accuracy to a material extent upon the memory and action of the operator.

It is one of the objects of my invention to produce a counting attachment which will be actuated only when material is being operated upon by the press. This object I accomplish in the present embodiment of my invention by providing a portion of the device which is arranged to be engaged by the signatures, said portion controlling the actuation of the register.

Another object is to produce an improved counting attachment which is arranged to be operated by elastic fluid such as compressed air.

As a secondary object, it is the aim of the invention to provide an attachment which is simple in construction and cheap to manufacture and which is durable and not likely to become deranged.

In the accompanying drawings, Figure 1 is a fragmental perspective view of a printing press equipped with a counting attachment embodying features of my invention. Fig. 2 is a fragmentary side elevational view. Fig. 3 is a top plan view of some of the parts shown in Fig. 2, and Fig. 4 is a vertical sectional view through the valve device.

The form of printing press herein shown by way of example comprises a framework 5 upon which is supported a packer box 6 which receives the signatures *a* from the press. These signatures are delivered by endless tapes 7 running over a suitable number of rolls 8. As the signatures are discharged from between the two tapes they descend into throat ways 10 in front of a suitable number of upright fingers 9 which are arranged for reciprocation and which advance the signatures into the packer box 6. The latter is provided with a pair of shoulders 6* past which the signatures are moved and which engage the edges of the signatures and prevent them from falling backward.

The counting device is arranged to be actuated by each signature as it is moved into the packer box 6. Said device comprises a register 11 mounted upon a suitable portion of the framework 5 of the press. A diaphragm structure 12 which may be of ordinary form is mounted alongside the register 11, the movable diaphragm of the structure being arranged to operate a lever 13 which is attached to the actuating lever 14 of the register. A coiled spring 15 returns the lever 13 to its normal position. Pressure fluid is supplied to the lower side of the diaphragm structure through a pipe 16, said pipe communicating with a valve device 17 which controls the flow of the pressure fluid to the diaphragm structure 12. A pipe 18 leads from the valve 17 to the source of air pressure.

The means for actuating the valve device 17 to control the operation of the register 11 comprises a rock shaft 20 having fixed thereon a depending arm 21 positioned between the side walls of the packer box 6. To the lower end of this arm is secured a pair of fingers 22. Preferably the fingers are secured to the arm by a screw 23 passing through a slot 24 in the arm so that the fingers 22 may be vertically adjusted. These fingers are positioned between two of the upright pusher fingers 9, and in case no signature is engaged by the pusher fingers, said fingers will slide idly past the depending fingers 22 and the counting attachment will not be actuated. When, however, a signature is advanced by the pusher fingers 9, the upper edge of the signature engages

the depending fingers 22 and rocks the shaft 20.

The casing of the valve device 17 is fixed to a plate 25 which is supported by a cross rod 26 of the framework of the press. Said casing has a pair of arms 27, in the outer ends of which the rock shaft 20 is rotatably mounted. A coiled spring 28 attached at one end to an arm 29 fixed on said rock shaft and at its other end to a pin 30 carried by one of the arms 27 holds the depending arm 21 and fingers 22 in their normal position in which they will be engaged by the signatures as they are moved along.

The form of valve device which I have herein shown comprises a casing having a central vertical opening 33 therethrough and having three annular chambers 34, 35 and 36. A sleeve 37 is adapted to fit snugly within the opening 33 in the casing, the interior of said sleeve providing three annular chambers 38, 39 and 40, which are connected with the respective chambers 34, 35 and 36 in the outer casing by means of a suitable number of ports 41, 42, and 43. Said sleeve 37 also has a pair of valve cylinders 44 and a pair of guiding cylinders 45 in its interior. A port 46 leading from the central chamber 35 communicates with the pipe 16 leading to the diaphragm structure 12. Another port 47 communicates with the upper annular chamber 34 and with the pipe 18 which runs to the pressure fluid supply. The bottom of the valve structure is closed by a suitable plate 49. The lower chamber 36 is in communication at all times with the atmosphere through an opening 50 in the side of the casing. A valve member 53 in the sleeve 37 has a valve head 54 adapted to fit slidably in the valve cylinders 44, and also two guiding plungers 55 fitting in the guide cylinders 45. A cap 56 fixed upon the upper face of the outer casing has a pin 57 mounted therein, against which the upper end of the valve member 53 is arranged to abut to determine the upper limit of movement of said valve member. A coiled spring 58 surrounding the pin 57 bears against the upper end of said valve member and tends to move it downwardly. The lower end of said valve member projects loosely through an opening 60 in the bottom plate 49. A lever 61 pivoted between two ears 62 on the outer casing carries an adjusting screw 63 at one end which is arranged to engage the projecting lower end of the valve member 53. The opposite end of the lever 61 is slotted to receive a pin 64 carried by the arm 29.

In operation when a signature is advanced by the pusher fingers 9 the fingers 22 are swung to rock the shaft 20. The arm 29 is thereby swung against the action of the spring 28 to swing the lever 61 in the direction to withdraw the set screw 63 from the

lower end of the valve member 53. The coiled spring 58 now acts to force the valve member 53 downwardly into the position shown in dotted lines, in which position the central valve head 54 will close the lower valve cylinder 44 and open the upper one to permit pressure fluid to flow from the supply pipe 18 through the chamber 34, ports 41 and chamber 38 into the chamber 39, through ports 42, through chamber 35 and port 46 into the pipe 16 leading to the diaphragm structure 12. The diaphragm will thus be raised to actuate the register 11. After the signature has passed the fingers 22, the coiled spring 28 will act to return said fingers to the normal position and raise the lever 61 to force the valve member 53 upwardly into its normal position, closing the upper valve cylinder 44 and opening the lower one. The pressure fluid in the lower portion of the diaphragm casing and the pipe 16 will now exhaust through the port 46, chamber 35, ports 42, chamber 39, lower valve cylinder 44, chamber 40 and ports 43 into the lower chamber 36 and thence through the opening 50 to the atmosphere. It will thus be seen that each time a signature is carried past the fingers 22 the register 11 will be actuated and that if the pusher fingers do not advance a signature the register will not be actuated.

While I have herein shown and described in detail one embodiment of my invention, I recognize that various modifications within the scope of my invention will be apparent to persons skilled in this art. Therefore, I do not limit my invention to the structure herein disclosed.

I claim as my invention:

1. The combination of a register; a member arranged to be operated by the articles to be counted; fluid-pressure-operated means for actuating said register; and a valve device operable by said member for controlling the actuation of said fluid-pressure means.

2. The combination of a register; a fluid-pressure-actuated device for operating said register; a valve for controlling the flow of pressure fluid to said device; and means operable when material is being acted upon for operating said valve.

3. The combination of a register; a diaphragm structure operatively connected with said register; pipes for conveying pressure fluid to said diaphragm structure; a valve device in said pipes for controlling the flow of pressure fluid; and means actuated by the articles to be counted for controlling said valve device.

4. In a printing press, the combination with means for pushing signatures, of a register, fluid-pressure-actuated means for operating said register; a valve device controlling the flow of pressure fluid to said

fluid-pressure-actuated means; and means for operating said valve device, including a part adjacent to said pushing means adapted to be engaged by each signature as it is advanced.

5. In a printing press, the combination with means for pushing signatures of a register, fluid-pressure-actuated means adapted to operate said register; a valve controlling the flow of pressure fluid to said fluid-actuated means; a rock shaft mounted adjacent to said pushing means and operatively connected to said valve device; and a member on said rock shaft adapted to be engaged by the signatures for rocking said shaft.

6. The combination with a machine of a member along which articles to be counted are moved, of means adapted to be moved by the articles; a valve device controlled by said means; a register; and fluid-pressure-actuated means controlled by said valve device for operating said register.

7. In a printing press, the combination with a series of upright fingers adapted to advance signatures; of a rock shaft mounted above said fingers; depending fingers fixed on said rock shaft and arranged to be swung by a signature, two of said pusher fingers passing by said depending fingers when no signature is advanced by said pusher fingers; a register; fluid-pressure-actuated means for operating said register; and a valve device controlled by movement of said rock shaft, said valve device controlling the

flow of pressure fluid to said fluid-actuated means.

8. In a counting attachment, the combination of a rock shaft, an arm fixed on said shaft and arranged to be moved by the articles to be counted, a valve casing, a valve member mounted therein, a lever device operable by said rock shaft and engaging said valve member, a register, a fluid pressure device arranged to operate said register, and pipes for supplying fluid pressure to said device, said valve casing being connected with said pipes, and said valve member controlling the flow of pressure fluid therethrough.

9. In a counting attachment, the combination of a register, a fluid pressure device having a chamber and a member movable therein and operatively connected with said register, a valve casing, piping for supplying pressure fluid to said valve casing and for connecting said casing to said chamber, a valve member in said casing, and means operable by the article to be counted for moving said valve member into position to permit the flow of pressure fluid to said chamber, said valve member normally occupying the position to cut off such flow of pressure fluid.

In testimony whereof I affix my signature in the presence of two witnesses.

ERNST R. RICHARDS.

Witnesses:

B. A. KUGEMANN,
R. H. HAUPE.