

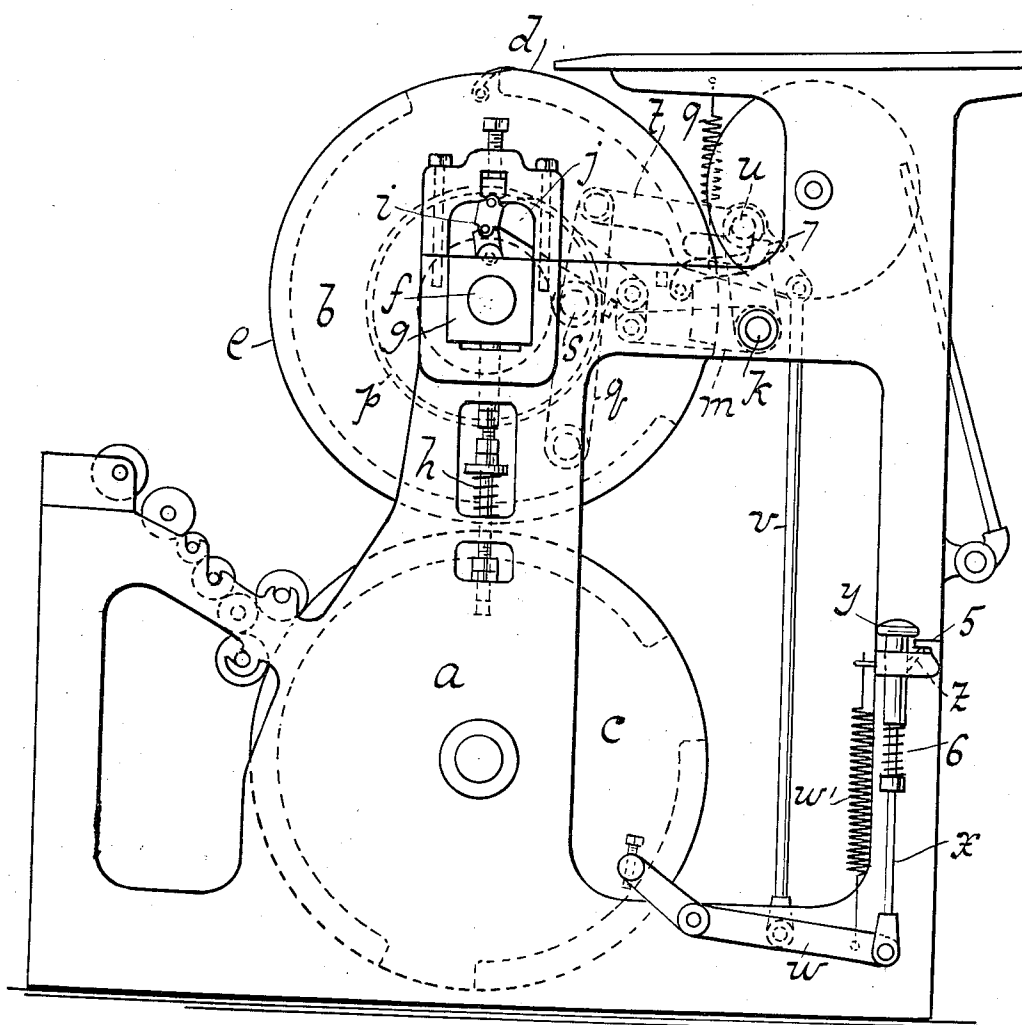
1,095,833.

G. P. FENNER.
PRINTING PRESS.
APPLICATION FILED FEB. 26, 1913.

Patented May 5, 1914.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
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Chris. H. Almstead

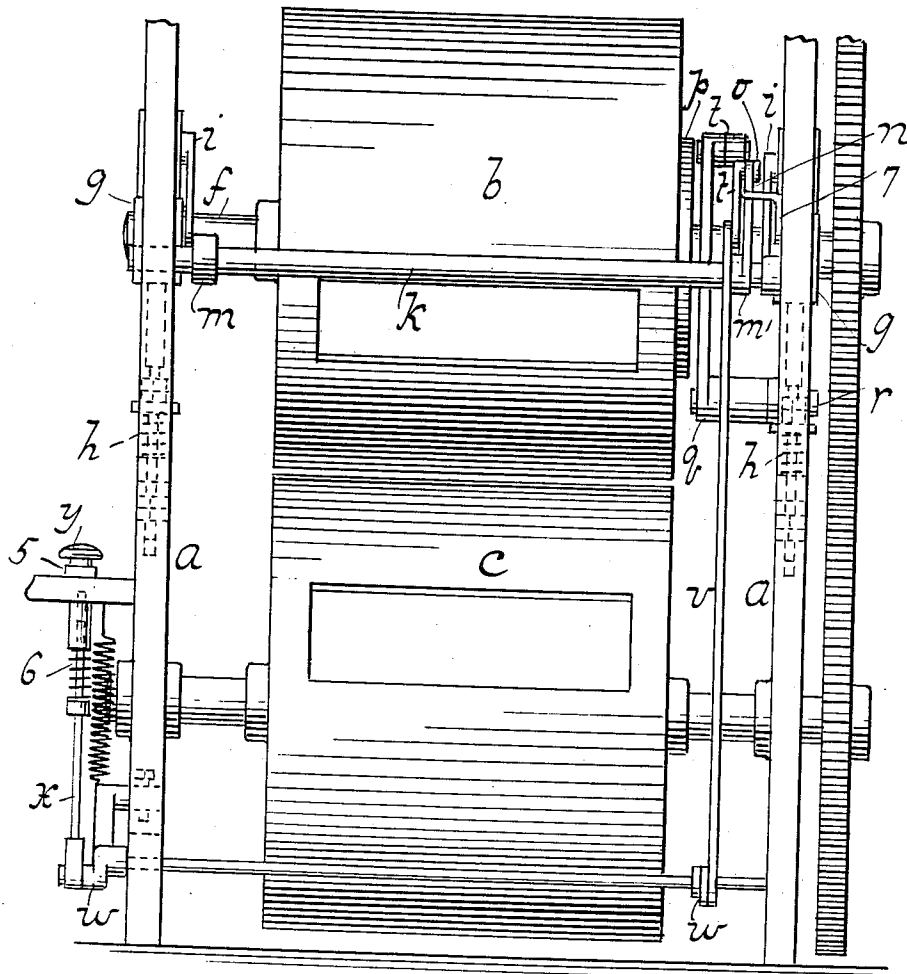
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4 SHEETS—SHEET 2.

Fig. 2.



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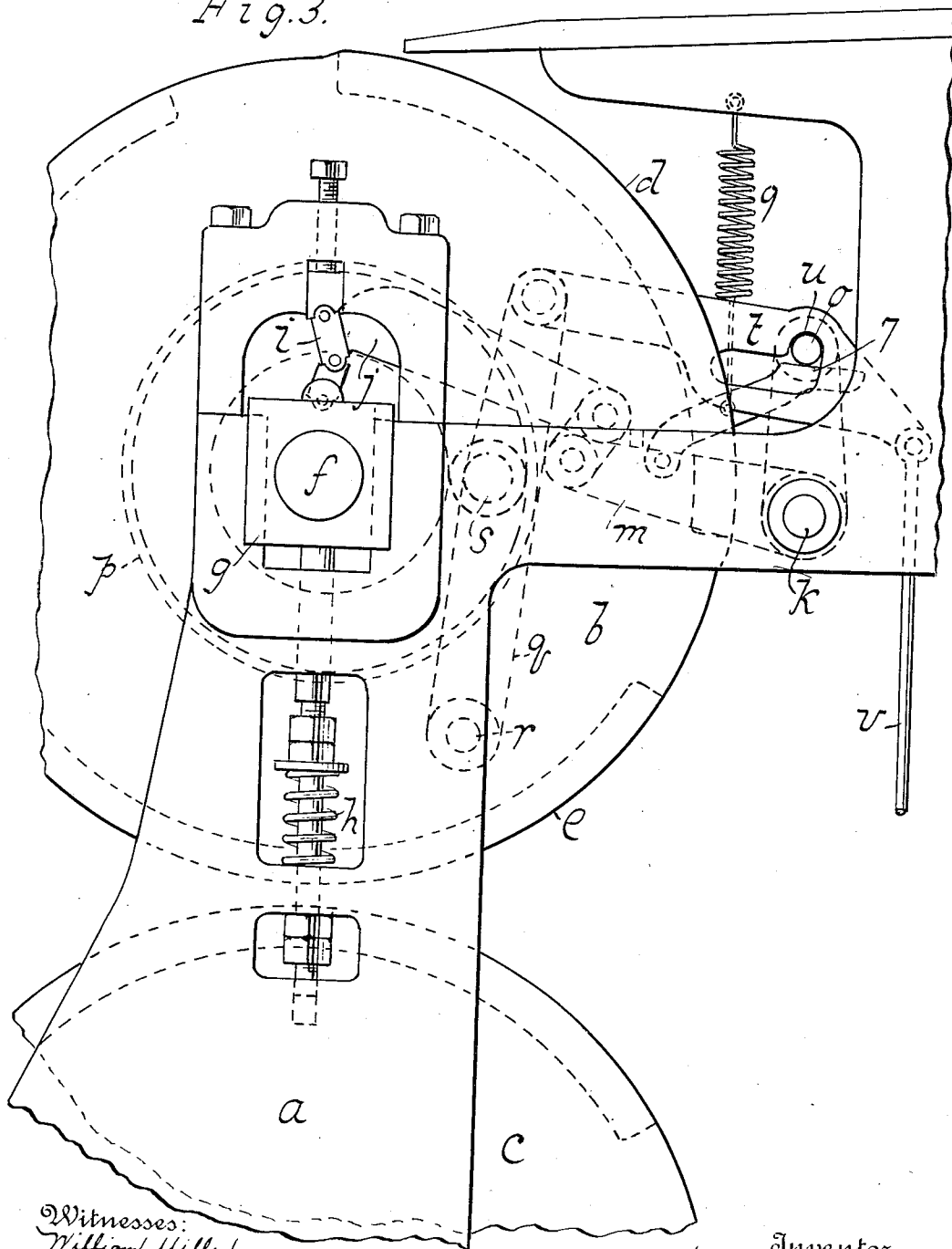
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4 SHEETS-SHEET 3.

Fig. 3.



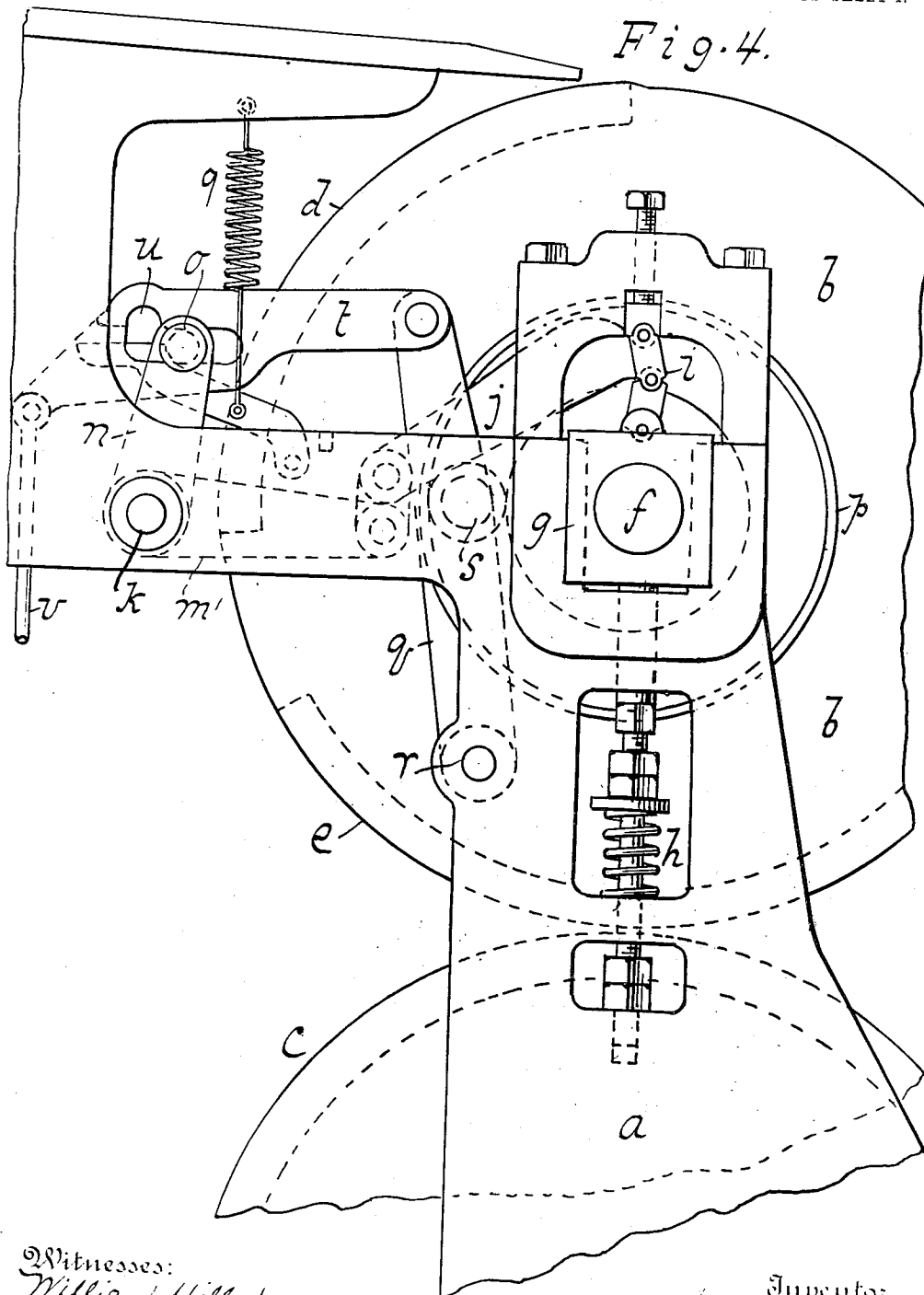
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

GEORGE P. FENNER, OF NEW LONDON, CONNECTICUT.

PRINTING-PRESS.

1,095,833.

Specification of Letters Patent.

Patented May 5, 1914.

Application filed February 26, 1913. Serial No. 750,733.

To all whom it may concern:

Be it known that I, GEORGE P. FENNER, a citizen of the United States, residing at New London, county of New London, State of Connecticut, have invented new and useful Improvements in Printing-Presses, of which the following is a specification.

This invention relates essentially to that class of printing presses whereby a sheet is printed at each revolution of the impression cylinder, and the invention refers particularly to the mechanism for tripping or throwing off the impression cylinder.

It is a common practice to have a throw off on a two revolution printing press, such machines having a device for lifting the cylinder after it has printed the sheet to allow the bed to make the return stroke. In a press of this kind the cylinder rises and falls at every impression, and when it is desired to trip the cylinder the rising and falling mechanism is thrown out of action and the cylinder is allowed to remain in its vertical position, and such presses always take the sheet from the feed board when the cylinder is in its vertical position.

A one revolution printing press prints at each rotation of the impression cylinder, and the cylinder has a raised or elevated and depressed periphery, the raised portion being the impression surface and the depression is adapted to allow return of the bed without hitting the cylinder. But such presses have not been heretofore equipped with the impression throw off, that is, an arrangement for lifting the cylinder so that the impression surface of the cylinder should not come in contact with the type on the bed at the option of the operator. With this trip or throw off arrangement, the cylinder is never lifted except when it is desired to throw off the impression, in which case the cylinder moves up and down at each revolution.

In this invention the cylinder always takes the sheet when it is lowered and when the tripping means is thrown out of action, and when the cylinder is tripped it at once begins to rise and fall. That is to say, it rises to prevent taking the impression and falls preparatory to taking the sheet and this action continues while the cylinder is tripped, but when the cylinder is thrown into action to print steadily it remains at rest and does not rise and fall at all, which is a marked saving of wear and tear on the ma-

chine and economy in power, and the machine is less liable to get out of order.

The device consists of toggle levers connected to the impression cylinder journal bearings, and these levers are actuated to elevate and lower the cylinder by means of a cam carried by the impression cylinder. Coiled springs located under the journal bearings serve as auxiliaries to lift the cylinder.

The invention is more fully described in the following specification and claims and illustrated in the accompanying drawings, in which:

Figure 1 represents a side elevation of a printing press, showing the cylinder lowered and tripped. Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation on a larger scale, showing the cylinder lifted and tripped. Fig. 4 is a similar view looking toward the opposite side of the press, the gears having been removed, and showing the cylinder lowered and untripped.

The drawings show a rotary press in which the type is carried on a cylinder instead of on a flat bed. But the present invention includes any type of press, flat bed or otherwise in which the impression cylinder makes only one revolution for each impression.

In these drawings the letter *a* designates a frame on which is mounted an impression cylinder *b* and a type cylinder or bed *c*. The impression cylinder has a raised surface *d* and a depressed surface *e*. An impression cylinder with a periphery of two diameters does not have to be raised on a reciprocating flat bed press to allow the bed to make the return stroke because the depressed surface of the cylinder allows the bed to pass under the cylinder without touching its surface. This type of flat bed press is well known and need not be described at length. But with the tripping mechanism as shown in the drawings, it is easy to see that the lifting of the cylinder is not necessary in order to keep the impression surface of the cylinder from coming in contact with the type at the wrong time; hence the trip need only be constructed to allow the bed and cylinder to move together during the printing stroke without having the surface come in contact.

The impression cylinder is provided with a shaft *f* which is journaled in slides *g* located at each side of the press and adapted

to move vertically in the side frames. A coiled spring *k* coacts with the lower portion of each of the slides and these springs tend to push the cylinder upward. At the upper portion of each slide is connected a toggle lever *i* each toggle having an arm *j* fixed to the upper part of a toggle. A rocker shaft *h* extends across the press between the frames and it has fulcrumed to it levers *m* and *m'* connected to the arm *j* of the toggle levers. The arm *m'* on one side of the press is provided with an upwardly extending arm *n* constituting a bell crank lever and having a stud *o* fixed to its upper end the function of which will be hereinafter described.

The gear side of the press is provided with a cam *p* best seen in Fig. 2, which is secured to the cylinder or shaft. A lever *q* is pivoted at *r* to the inner side of the frame; and this lever has mounted on it an antifriction roller *s* adapted to engage the groove of the cam. To the upper end of lever *q* is pivoted a reciprocating hook member *t* having an angular slot *u* which coacts with the stud *o* on the upwardly extending arm *n* mentioned above. A rod *v* is pivoted to one end of the hook member *t* while the lower end of this rod is pivoted to a lever *w*. A treadle *x* is connected to one end of the lever *w*. The head *y* of this treadle can slide on the stem of the treadle and this head is provided with a pin *z* for engagement with a projection 5 fixed to the frame. A spring *w'* is adapted to hold in an upward position the said lever *w* and thus holding hook *t* in a position to reciprocate to and fro and not move the lever *n*; that is, the spring *w'* holds the trip out of action except when the treadle *y* is depressed by the foot of the operator. When it is so depressed and held by the foot of the operator a spring 6 overcomes spring *w'*, but if the operator wishes to leave the trip in action and the impression cylinder out of action, it can be accomplished by moving the treadle sidewise with the foot, and thus, putting the projection or hook on the side of the treadle under the projection 5 on the side frame. When this is accomplished it is apparent that lever *w* will have a small amount of vertical motion caused by the swinging action of the lever *n* as it moves to and fro carried by the slot *u*. That is, when the cylinder is thrown out of action and held out permanently by the treadle, the treadle *x* has a little vertical motion every time the cam on the cylinder moves the lever *q*, and the spring 6 is simply to admit of this vertical action without straining the parts. Spring 6 must be stiff enough to overcome the spring *w'* when the treadle is depressed.

If it is desired to leave the impression trip in action the treadle is simply pushed into the position shown in Fig. 1, and the pin *z* on the head of the treadle hooks under the projecting portion of the side frame, thus

holding the cylinder trip until the operator is inclined to throw it out again.

A latch or detent 7 is pivoted to the frame, and this latch is held in contact with the stud *o* on the bell crank lever by means of a spring 9 connected to the frame. The function of this latch is to hold the rock shaft *h* at predetermined times in a fixed position.

When the reciprocating member *t* is in the position shown in Figs. 1 and 3 with the stud *o* of the bell crank lever positioned in the angular portion of the slot the lever will be actuated through the medium of the cam and its connections and the toggle levers will move the cylinder vertically up or down.

As indicated in Fig. 4 the cylinder is untripped or lowered thus being in a position to print and there is no vertical movement to the cylinder. As a result, the cam simply actuates the lever *q* and the reciprocating member *t* moves to and fro, the stud *o* being located in the straight portion of the slot, the bell crank lever will remain stationary and no movement is imparted to the toggle levers.

I claim:

1. In a printing press the combination with an impression cylinder and a type cylinder, of a cam carried by the impression cylinder, a lever actuated by the cam, a reciprocating member pivoted to the lever, toggle levers operated by the reciprocating member for elevating and lowering the impression cylinder, devices for positioning the reciprocating member, and a latch for preventing accidental throw of the elevating and lowering devices.

2. In a printing press the combination with an impression cylinder and a type cylinder, of a cam carried by the impression cylinder, a lever actuated by the cam, a reciprocating slot member pivoted to the lever, toggle levers connected to the slot member for elevating and lowering the impression cylinder, devices for positioning the slot member to throw the impression cylinder in or out of action, and a latch for preventing accidental throw of the elevating and lowering devices.

3. In a printing press the combination with an impression cylinder and a type cylinder, of a cam carried by the impression cylinder, a lever actuated by the cam, a reciprocating slot member pivoted to the lever, toggle levers connected to the slot member for elevating and lowering the cylinder, devices for positioning the slot member to trip or untrip the impression cylinder, and a spring controlled latch for preventing accidental throw of the elevating and lowering devices.

4. In a printing press the combination with an impression cylinder and a type cyl-

inder, of a cam carried by the impression cylinder, a lever actuated by the cam, a reciprocating member pivoted to the lever and having a slot provided with an angular 5 portion, a bell crank lever pivoted to the slot, toggle levers linked to the bell crank lever and connected above the axis of the impression cylinder to raise and lower the cylinder, and a spring controlled latch for 10 preventing accidental throw of the elevating and lowering devices.

3. In a single revolution printing press the combination with an impression cylinder and a type carrying cylinder or bed, of a 15 cam carried by the impression cylinder, a lever actuated by the cam, a slotted reciprocating member pivoted to the lever, a bell

crank lever operated by the slot member, toggle levers pivoted to the journal bearings of the impression cylinder and connected to 20 the bell crank lever for elevating and lowering the impression cylinder, devices for positioning the slot member to trip or untrip the impression cylinder, and a latch for automatically locking the bell crank lever. 25

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE P. FENNER.

Witnesses:

ANNA O'RASMUSSEN,
W. D. WELLS.