

(No Model.)

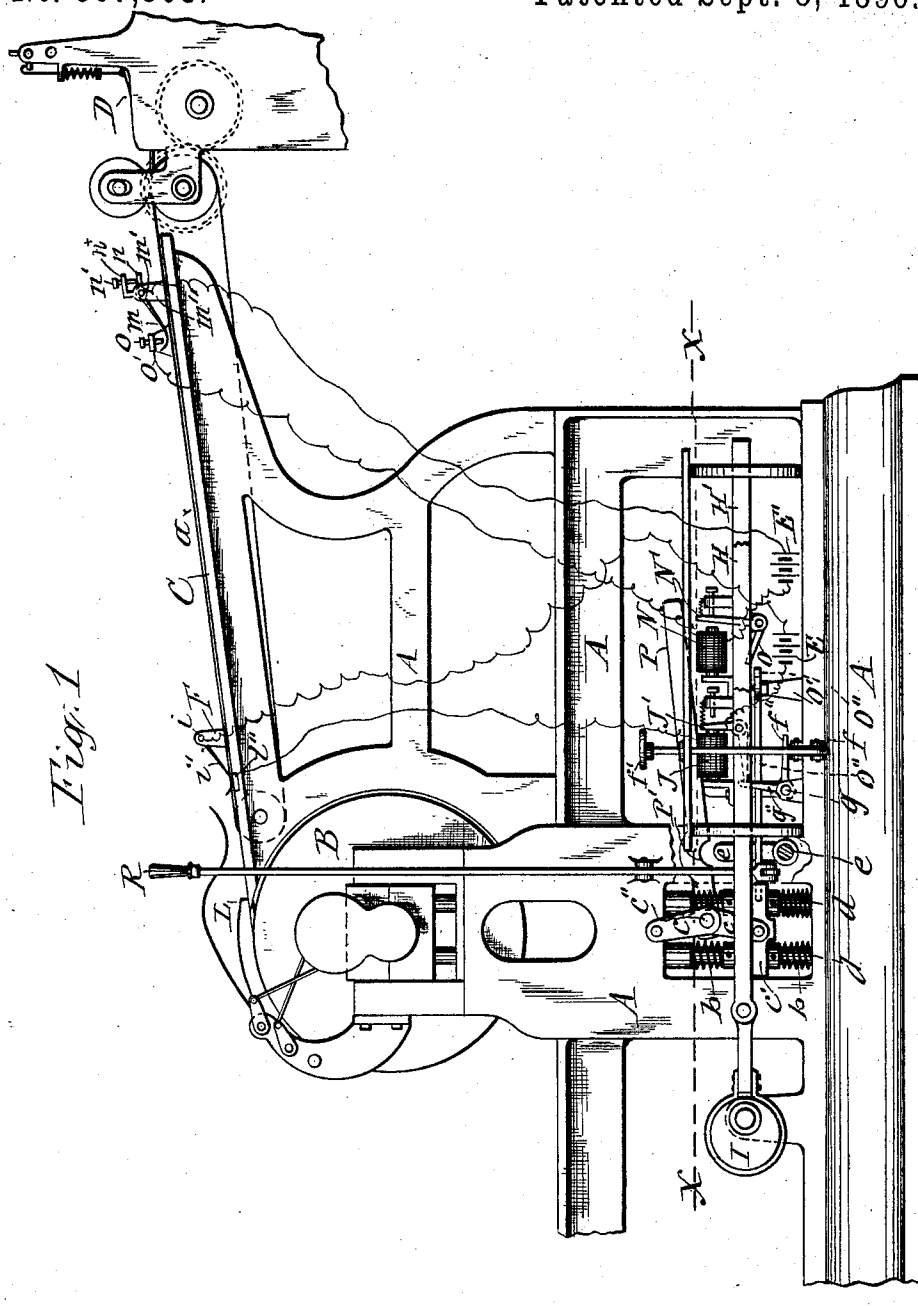
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T. C. DEXTER.

STOP MECHANISM FOR PRINTING PRESSES.

No. 567,303.

Patented Sept. 8, 1896.



WITNESSES.

C. L. Bendixson
E. Hamilton

INVENTOR

Talbot C. Dexter
By *E. Laess*
his ATTORNEY

(No Model.)

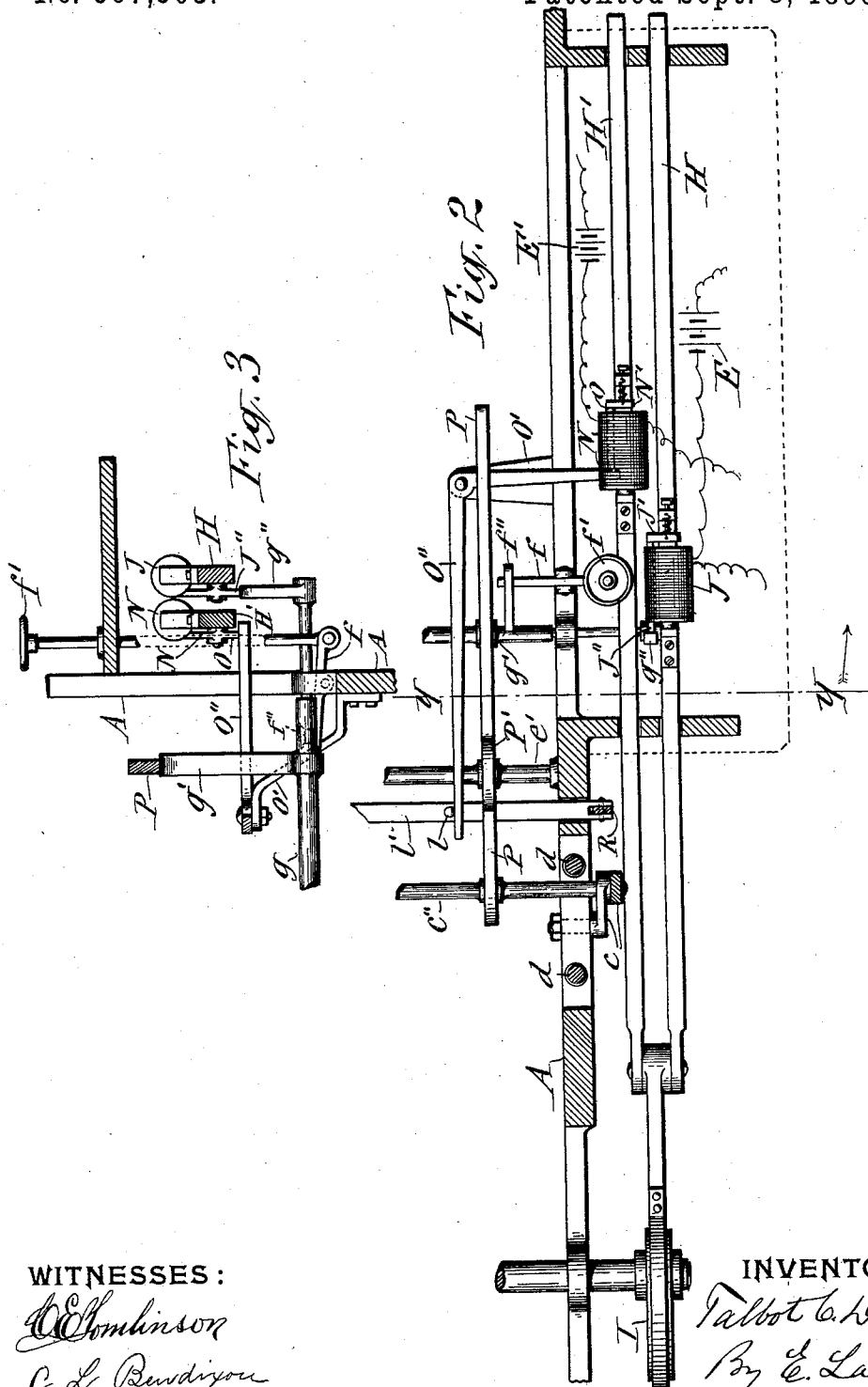
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T. C. DEXTER.

STOP MECHANISM FOR PRINTING PRESSES.

No. 567,303.

Patented Sept. 8, 1896.



WITNESSES:

C. Robinson

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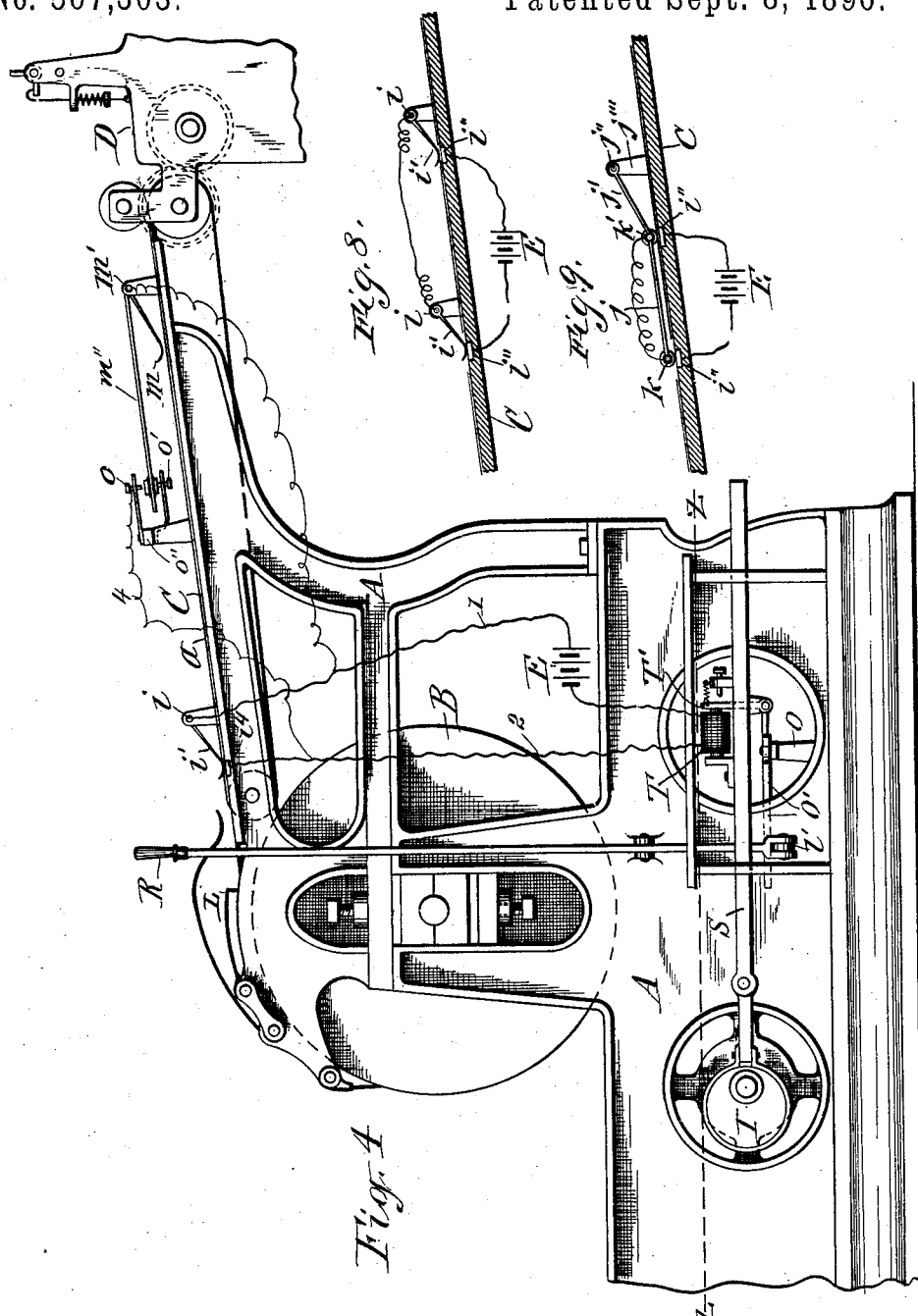
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T. C. DEXTER.

STOP MECHANISM FOR PRINTING PRESSES.

No. 567,303.

Patented Sept. 8, 1896.



WITNESSES:

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INVENTOR:

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(No Model.)

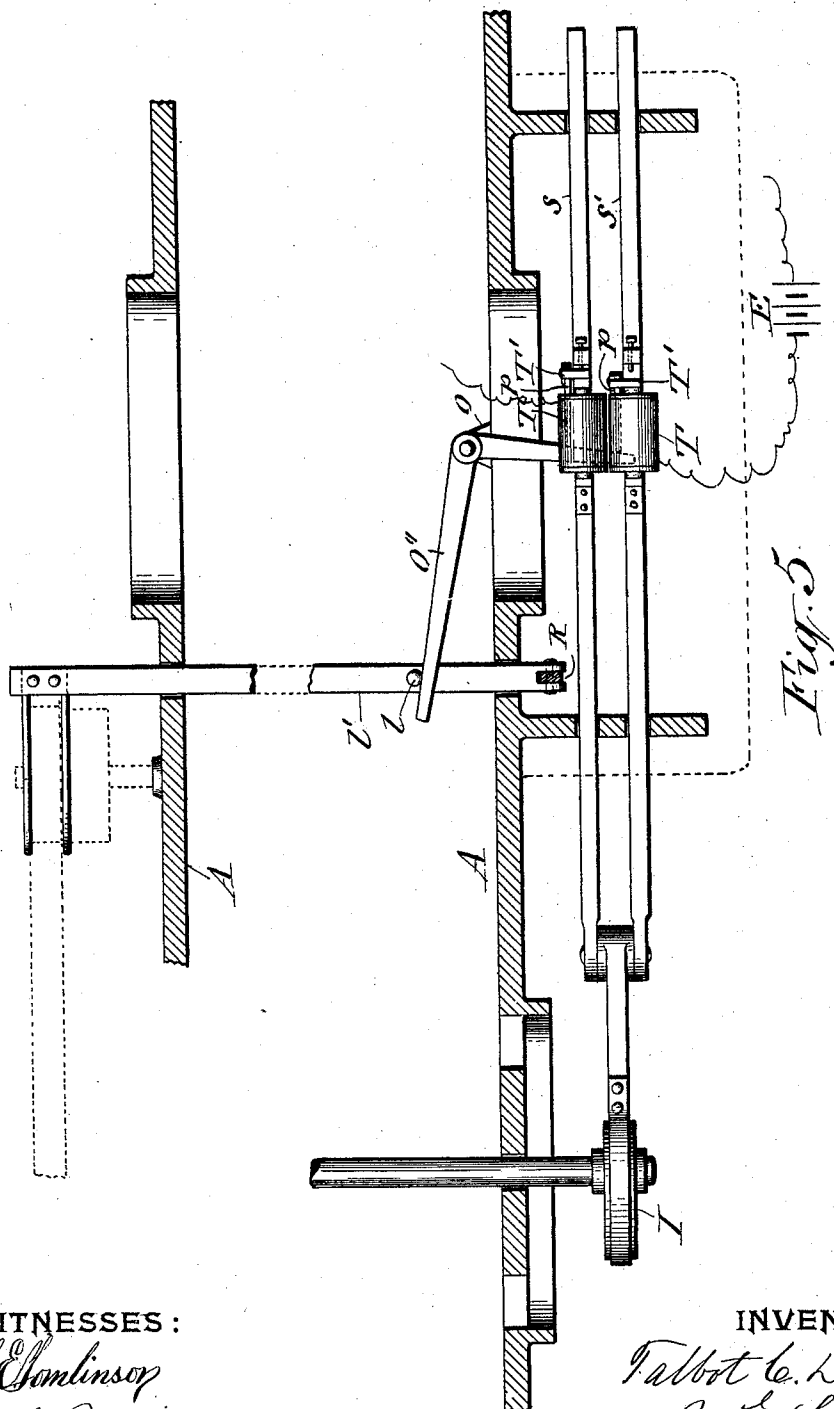
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T. C. DEXTER.

STOP MECHANISM FOR PRINTING PRESSES.

No. 567,303.

Patented Sept. 8, 1896.



WITNESSES:

W. H. Lincoln
C. L. Bendixen

INVENTOR:

Tabbot C. Dexter
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(No Model.)

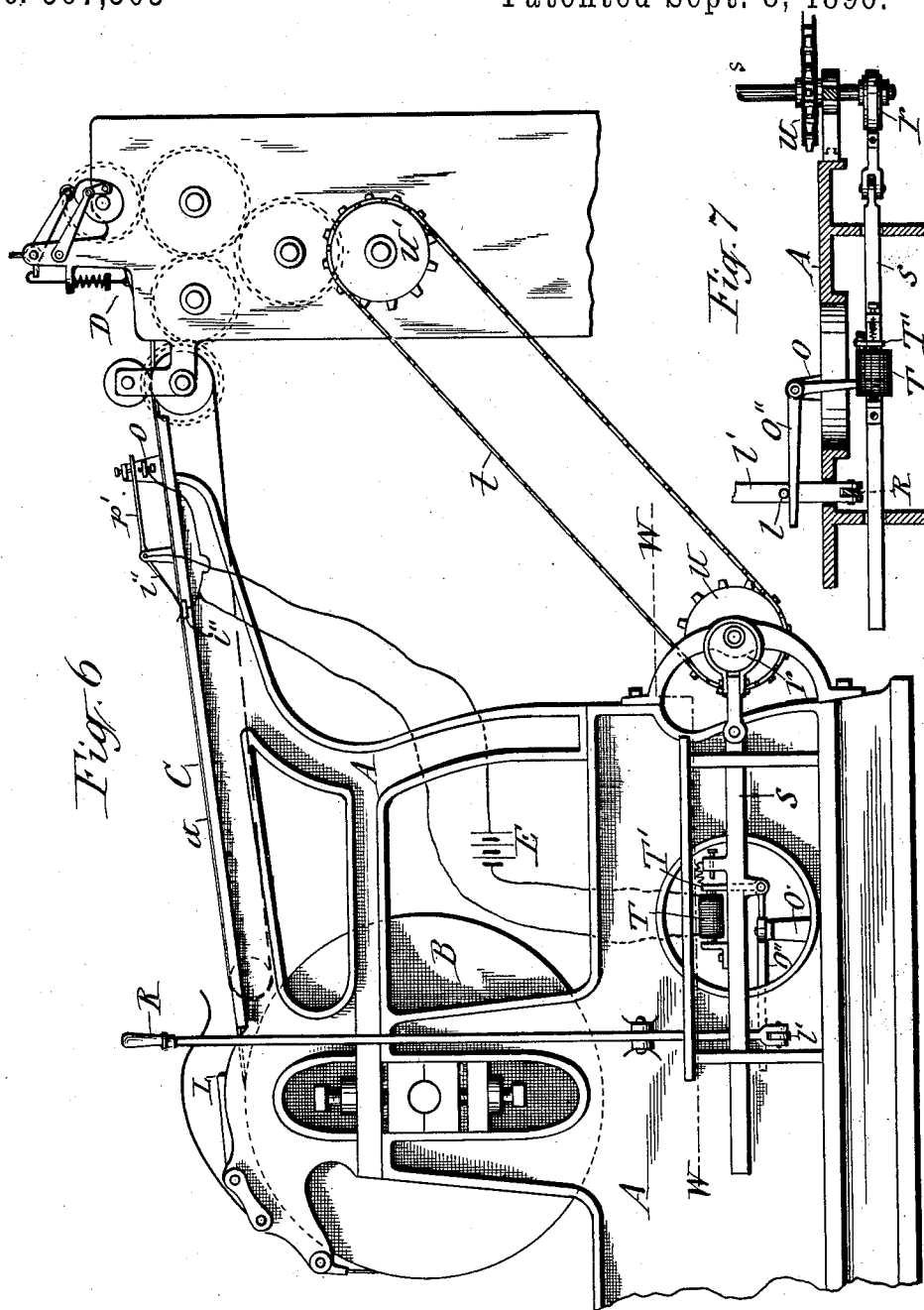
5 Sheets—Sheet 5.

T. C. DEXTER.

STOP MECHANISM FOR PRINTING PRESSES.

No. 567,303

Patented Sept. 8, 1896.



WITNESSES:

C. L. Burdison

C. L. Burdison

INVENTOR:

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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK.

STOP MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 567,303, dated September 8, 1896.

Application filed April 15, 1895. Serial No. 545,713. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, of Pearl River, in the county of Rockland, in the State of New York, have invented new and useful Improvements in Automatic Stop Mechanism for Printing-Presses, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention is designed more particularly for printing-presses which are equipped with automatic paper-feeding machines.

The object of the invention is to guard against two injurious effects in the operation of the press, viz: first, the soiling of the bare surfaces of the impression-cylinder by coming in contact with the inked faces of the forms on the type-bed in case the feeding-machine fails to supply a sheet of paper at the required time to make the impression on said sheet, and, secondly, the straining and injury to the press mechanism in case two or more sheets of paper are fed simultaneously to the press.

To attain the aforesaid object, I employ an automatic stop mechanism controlled by the paper in transit to the printing-press and preventing the action of the impression-cylinder upon the forms on the type-bed in case no sheet is fed to the printing-press, or two or more sheets are fed simultaneously thereto, as hereinafter more fully described and set forth in the claims.

In the annexed drawings, Figure 1 is a side elevation of that portion of a two-revolution printing-press to which my invention is applied. Fig. 2 is an enlarged horizontal transverse section on line X X in Fig. 1, presenting only those parts which pertain to my invention. Fig. 3 is a vertical transverse section on line Y Y in Fig. 2. Fig. 4 is a side elevation of my invention applied to a drum-press. Fig. 5 is an enlarged horizontal transverse section on line Z Z in Fig. 4. Fig. 6 is a side elevation showing the stop mechanism driven from the actuating-gears of the feeding-machine. Fig. 7 is a horizontal transverse section on line W W in Fig. 6, and Figs. 8 and 9 illustrate duplex circuit makers and breakers arranged to prevent the closing of the circuit by the bare spaces on the feed-board between the successive sheets.

Similar letters and figures of reference indicate corresponding parts.

A represents the press-frame, which may be of any shape, according to the style of the press. B denotes the impression-cylinder; C, the feed-board, and D the paper-feeding machine from whence the paper is conveyed over the feed-board to the impression-cylinder by means of the traveling endless tapes *a a*.

To guard against the injurious results of allowing the impression-cylinder to come in contact with the inked surfaces of the forms on the type-bed of the press, I employ the following automatic and electrically-controlled stop mechanism:

On a so-called "two-revolution press," as represented in Figs. 1 and 2 of the drawings, the impression-cylinder B is usually lifted from the type-bed by means of springs *b b* and intermittently depressed by means of a pitman P, attached at one end to a transverse shaft C', which forms by opposite ends the couplings of the two sets of toggle-levers *c c* at opposite sides of the press. One arm of each set of said levers is connected to the press-frame and the other to a yoke C', which is fastened to the rods *d d*, supporting one of the journal-boxes of the impression-cylinder, said pitman receiving motion from an arm *e*, projecting from a rock-shaft *e'*. To allow the pressman to trip the impression-cylinder so as to prevent it from receiving the impression of the forms on the type-bed when desired, the pitman is made detachable from the rock-arm *e*, for which purpose the connection of said parts is made by a notch P' in the under side of the pitman, by which notch the pitman rides on the end of the rock-arm. To permit this disconnection to be effected by the pressman, a shaft *g*, parallel to the rock-shaft *e'*, is pivoted to the frame A and has projecting from it a lever *g'*, which, by the turning of the shaft *g*, pries up the pitman P. Another lever *f* is usually fulcrumed on the frame A and has one end extending under an arm *f''*, affixed to the side of the shaft *g*, as more clearly shown in Figs. 2 and 3 of the drawings. The opposite or outer end of the lever *f* has connected to it a treadle *f'* to allow said end to be depressed by the foot of the pressman, by which opera-

tion the shaft *g* is turned so as to cause the lever *g'* to pry up the pitman *P*. This constitutes the primary stop mechanism. To effect this automatically in case the feeding-machine *D* fails to supply a sheet of paper to the printing-press, I employ in connection with the aforesaid primary stop mechanism a supplemental or auxiliary stop mechanism controlled automatically and electrically by the transit of the paper to be fed to the printing-press, which auxiliary stop mechanism is susceptible of many modifications in the details of its construction and obviously must vary with the different styles of printing-presses to which my present invention is applied.

The automatic auxiliary stop mechanism shown in Figs. 1 and 2 of the drawings consists of a pitman *H*, receiving motion from either a cam or an eccentric *I*, by which said pitman is caused to move in unison with the press mechanism.

Upon the pitman *H*, I mount the electromagnet *J*, which is connected with the battery *E*. The armature *J'* of this magnet is pivoted to the pitman and formed with the pawl *J''*. From the shaft *g* projects a second lever *g''*, which the aforesaid pawl engages when the armature is attracted by the magnet, and thus the movement of the pitman *H* in one direction causes the shaft *g* to be turned so as to lift the pitman *P* from the rock-arm *e* by the lever *g'* on said shaft, which operation deprives the impression-cylinder of the means for depressing it so as to receive the impression from the inked form.

To control this auxiliary stop mechanism automatically by the transit of the paper to be fed to the press, I secure to the sides of the feed-board *C* suitable standards *F*, in which I pivot the ends of a bar *i*, extending transversely over the feed-board and a proper distance therefrom, to obviate interference with the movement of the paper on the feed-board. Said bar is insulated from the standard for the purpose hereinafter explained. To the central portion of this bar I fasten a feeler consisting of a metallic finger *i'*, which constitutes one of the terminals of a circuit maker and breaker, and rests normally upon the companion terminal *i''*, consisting of an iron or steel plate set in the feed-board so as to be flush with the top thereof. Said terminals are in circuit with the magnet *J*, which circuit is normally closed by the feeler or finger *i'* resting upon the metal plate *i''*, as shown in Fig. 1 of the drawings.

The movement of the feeding mechanism is so timed with the press mechanism and the aforesaid circuit-maker is placed at such a distance from the gages *L* of the printing-press that during the time in which the sheet of paper passes to said gages the circuit is broken by the sheet passing between the terminals *i'* and *i''*, and thus the press-cylinder receives its usual vertical movement from the press mechanism hereinbefore described.

Should, however, the feeding-machine fail to feed a sheet at the requisite time, the feeler or terminal *i'* is allowed to rest upon the terminal *i''*, and the resultant closing of the circuit energizes the magnet *J* and causes the armature thereof to hold the pawl *J''* in a position to engage the lever *g''* during the movement of the pitman *H*, and thereby turn the shaft *g*, so as to lift by its lever *g'* the pitman *P* out of engagement with the rock-arm *e*. This serves to automatically trip the impression-cylinder so as to prevent its bare surface from receiving the impression from the inked forms.

To more effectually guard against untimely or premature closing of the circuit by the feeler or terminal *i'* being allowed to drop onto the terminal *i''* by the spaces between the successive sheets, the circuit makers and breakers *i'* and *i''* may be arranged one back of the other and a proper distance apart to cause one feeler *i'* to be lifted out of contact with the terminal *i''* by one sheet while the other feeler is allowed to drop on the subjacent terminal by the other sheet having passed from under said feeler, as illustrated in Figs. 8 and 9 of the drawings. Both of said circuit makers and breakers are connected with the battery *E*. In one of these duplex circuit makers and breakers the feelers consist of rollers *K* and *K'*, pivoted to a coupling *j*, which allows them to rise and fall independent of each other. They are confined in their positions in relation to the subjacent terminals *i''* by a rod *j'*, connected to the end of the aforesaid coupling and to a cross-bar *j''*, supported on standards *j'''*, secured to the sides of the feed-board.

To prevent the paper from entering the printing-press in case two or more sheets are accidentally fed simultaneously from the feeding-machine *D*, I employ an automatic auxiliary stop mechanism for throwing the press out of gear or shipping the driving-belt from the tight pulley to the loose pulley. This I preferably accomplish on a two-revolution press by the following mechanism, viz: A secondary pitman *H'*, moving in unison with the press mechanism and preferably actuated by the eccentric *I*, hereinbefore referred to, has mounted on it an electromagnet *N*, as more clearly shown in Figs. 2 and 3 of the drawings. To the side of this pitman is pivoted the armature *N'*, which is formed with the pawl *O*. To a suitable support *O'* on the frame *A* is pivoted the bell-crank or two-armed lever *O''*, one arm of which is in the path of the aforesaid pawl. The other arm of said lever bears against the side of a pin or lug *l*, secured to the belt-slipper bar *l'*, which is of the usual and well-known form. Over the center of the feed-board *C*, I place a circuit maker and breaker consisting of a metallic finger *m*, secured to a cross-bar *m'*, which is pivoted and insulated from supports *m''*, mounted on the sides of the feed-board. A lug *n* projects from the rear of said cross-

bar adjacent to the support m'' , and over this lug is a set-screw n' , adjustably connected to a bracket n^x attached to said support. Said lug normally rests on the lower end of the set-screw, by which latter the free end of the finger m is supported above the feed-board a distance exactly equal to the thickness of a single sheet of paper designed to be fed to the printing-press. By the adjustment of the set-screw the finger m can be regulated to the varying thickness of different qualities of paper that may be required to be printed. The finger m constitutes one of the electric terminals, and over the same is the other terminal o , consisting of a set-screw adjustably connected to a cross-bar o' , supported on the sides of the feed-board. The set-screw o is to be so adjusted as to cause the finger m to come in contact therewith and thus close the circuit by the lifting of the said finger by two sheets of paper passing simultaneously under the finger. Said circuit maker and breaker is connected with the magnet N and battery E' . By closing this circuit in the manner aforesaid the armature N' is attracted by the magnet N and causes the pawl O to come in contact with the lever O' during the movement of the pitman H' in one direction. Said lever is thereby turned on its pivot so as to push the belt-shipping bar l' to ship the driving-belt of the printing-press from the tight pulley onto the loose pulley. This gives the pressman the opportunity to remove the misfed sheets from the feed-board. After this the pressman can again start the printing-press by means of the usual belt-shipping lever R .

When my invention is to be applied to a so-called "drum printing-press," or a press on which the impression-cylinder is not arranged to move vertically toward and from the type-bed, I employ my automatic stop mechanism solely for shipping the driving-belt as aforesaid. This may be effected either with two pitmen S and S' , as shown in Fig. 5 of the drawings, or a single pitman S , as represented in Figs. 6 and 7 of the drawings. In either case, however, two circuit makers and breakers are employed, one of which is to be arranged to close the circuit when no sheet is fed to the press and the other to close the circuit when more than one sheet is fed simultaneously.

When two pitmen S S' are employed, I mount on each a separate electromagnet T , the armature T' of which is pivoted to the pitman and is formed with the pawl p , by which to engage the elbow-lever O'' , which moves the belt-shipping bar l' in the manner hereinbefore described. Both of said magnets are designed to be used and are in the same circuit, so that in case the armature of one is broken or disabled the other magnet may be relied on to produce the desired effect. In connection with these magnets I prefer to employ two independently operating circuit makers and breakers, as shown in Fig.

4 of the drawings. One of said circuit makers and breakers consists of the metallic finger i' , secured to a transverse bar i , which is supported on and insulated from suitable brackets secured to the top of the frame A at opposite sides of the feed-board C . One of the circuit-wires 1 is connected to the bar i . Said finger rests with its free end normally upon a metallic plate i'' , which has the circuit wire 2 connected to it and constitutes the stationary electric terminal, while the aforesaid finger is the movable terminal. The purpose of this circuit maker and breaker is to close the circuit and energize the magnets T when no paper passes to the printing-press. The other circuit maker and breaker consists of the metallic finger m , attached to a metallic cross-bar m' , which is pivoted in and insulated from brackets mounted on the feed-board near the side edges thereof. A wire 3 is extended from the bar m' to the wire 1. Either to the finger m or to the bar m' is rigidly secured another bar m'' , extending therefrom and resting with its free end upon an insulated set-screw o' , connected to a cross-bar o'' , which is supported at opposite ends on suitably-insulated posts mounted on the feed-board. The free end of the bar m'' constitutes one of the electrical terminals, and over this is the stationary terminal o , consisting of a set-screw adjustably connected to an arm projecting from the bar o'' . A wire 4 connects said terminal with the wire 2. The lower set-screw o' is so adjusted as to cause the overlying bar m'' to sustain the finger m in such a position as to leave between the free end of said finger and surface of the feed-board a space exactly equal to the thickness of a single sheet of paper to be fed to the printing-press and cause said finger to be lifted when two sheets pass simultaneously under the finger. Said lifting of the finger causes the free end of the bar m'' to come in contact with the terminal o , and thus closes the circuit and causes the magnets T to be energized, the result of which latter has already been herein described. The same effect, however, may be obtained by a single pitman S , with the magnet T mounted thereon and the armature T' pivoted to the pitman, as shown in Figs. 6 and 7 of the drawings, which also shows my preferred means of transmitting motion to the pitman, *i. e.*, a sprocket-wheel U , attached to a shaft S , mounted in suitable supports on the frame A , is connected by a sprocket-chain t to a sprocket-wheel U' , which is geared to the driving mechanism of the feeding-machine. A cam or an eccentric r , secured to the shaft s , imparts reciprocating motion to the pitman S .

The means for electrically controlling the automatic stop mechanism may also be simplified by combining the two circuit makers and breakers, as shown in Fig. 6 of the drawings, in which case the feeler or terminal i' of the normally closed circuit is formed with

a rearwardly-extending finger p' , constituting one of the terminals of the normally broken circuit, beneath which is the set-screw or companion terminal o . All of said terminals are in the same circuit. The operation of the said two combined circuit makers and breakers is as follows: In case no paper is fed to the printing-press, the feeler i' rests upon the terminal i'' and thus closes the circuit. If a single sheet is fed, it breaks the circuit by passing between the two terminals i' and i'' , but does not lift the feeler i' sufficiently to bring the finger p' in contact with the set-screw or terminal o . If, however, two or more sheets pass simultaneously between the terminals i' and i'' the feeler i' is lifted sufficiently to bring the finger p' in contact with the terminal o , and thereby closes the circuit.

The effect of opening and closing the circuit with the magnet T in said circuit and mechanism controlled thereby is substantially the same as hereinbefore described.

In each of the described electrically-controlled stop mechanisms the usual spring or weight which draws the armature from the magnet causes the pawl attached to said armature to be thrown into a position to prevent its engagement with the lever which actuates the stop motion.

What I claim as my invention is—

1. The combination with a printing-press, paper-feeding machine, intervening feed-board, and tapes conveying the paper over said feed-board, of a vertically-movable feeler disposed over said feed-board and lifted by the paper forced under it by the tapes, an electric circuit, a circuit maker and breaker actuated by the aforesaid feeler, a primary stop mechanism for throwing the impression-cylinder out of operation upon the type-forms, an auxiliary stop mechanism moving in unison with the press mechanism, an electromagnet in the aforesaid circuit and traveling with one of said stop mechanisms and the armature of said magnet provided with a catch for engaging and releasing the other of said stop mechanisms as set forth.

2. The combination with a printing-press, paper-feeding machine, intervening feed-board, and tapes conveying the paper over said feed-board, of a vertically-yielding feeler over the feed-board and lifted by the paper forced under it by the tapes, an electric circuit, and a circuit maker and breaker actuated by said feeler, mechanism actuated by the press mechanism and moving the impression-cylinder to and from the type-forms, stop mechanism for arresting the said cylinder-moving mechanism and actuated independent of the press mechanism, and an electromag-

net having its armature movable to and from a position to transmit motion from said stop mechanism to the aforesaid cylinder-moving mechanism as set forth.

3. The combination with a printing-press, paper-feeding machine and intervening feed-board, of an electric circuit, a circuit maker and breaker actuated by a feeler over the feed-board and yielding vertically to the contact with the paper in transit, mechanism operated by the press mechanism and moving the impression-cylinder to and from the type-forms, a lever disconnecting said mechanisms independently of the press mechanism, a pitman moving in unison with the latter mechanism, and an electromagnet mounted on said pitman and having its armature movable to and from a position for transmitting motion from the pitman to the aforesaid lever as set forth.

4. In combination, with a vertically-movable impression-cylinder, paper-feeding machine, intervening feed-board, toggle-levers for lifting said cylinder, a rock-arm actuated by the press mechanism and a pitman connected to the toggle-levers and provided with a catch for engaging and releasing the aforesaid rock-arm, a lever movable independent of the press mechanism, and adapted to release said pitman from the rock-arm, a pitman moving in unison with the press mechanism, an electric circuit, an electromagnet in said circuit mounted on the latter pitman, the armature of said magnet provided with a catch for engaging and releasing said lever, and a circuit maker and breaker controlled by the transit of the paper over the feed-board as set forth and shown.

5. In combination with a printing-press, having a vertically-movable impression-cylinder, paper-feeding machine, intervening feed-board, mechanism for raising and lowering the impression-cylinder and detachably connected to the press mechanism, a lever for effecting said disconnection, and a tripping mechanism operating said lever independent of the press mechanism, an electric circuit, an electromagnet in said circuit and having its armature provided with a pawl to engage and release the tripping mechanism, and a circuit maker and breaker having one terminal within the plane of the feed-board and the other terminal movable vertically over the first-named terminal and normally in contact therewith as set forth.

In testimony whereof I have hereunto signed my name this 4th day of April, 1895.

TALBOT C. DEXTER. [L.S.]

Witnesses:

JAS. F. WHITLOCK,
M. E. MORRISON.