9445X

# I. Adams.

## Printing Press.

No.

Patented Mar. 2. 1836

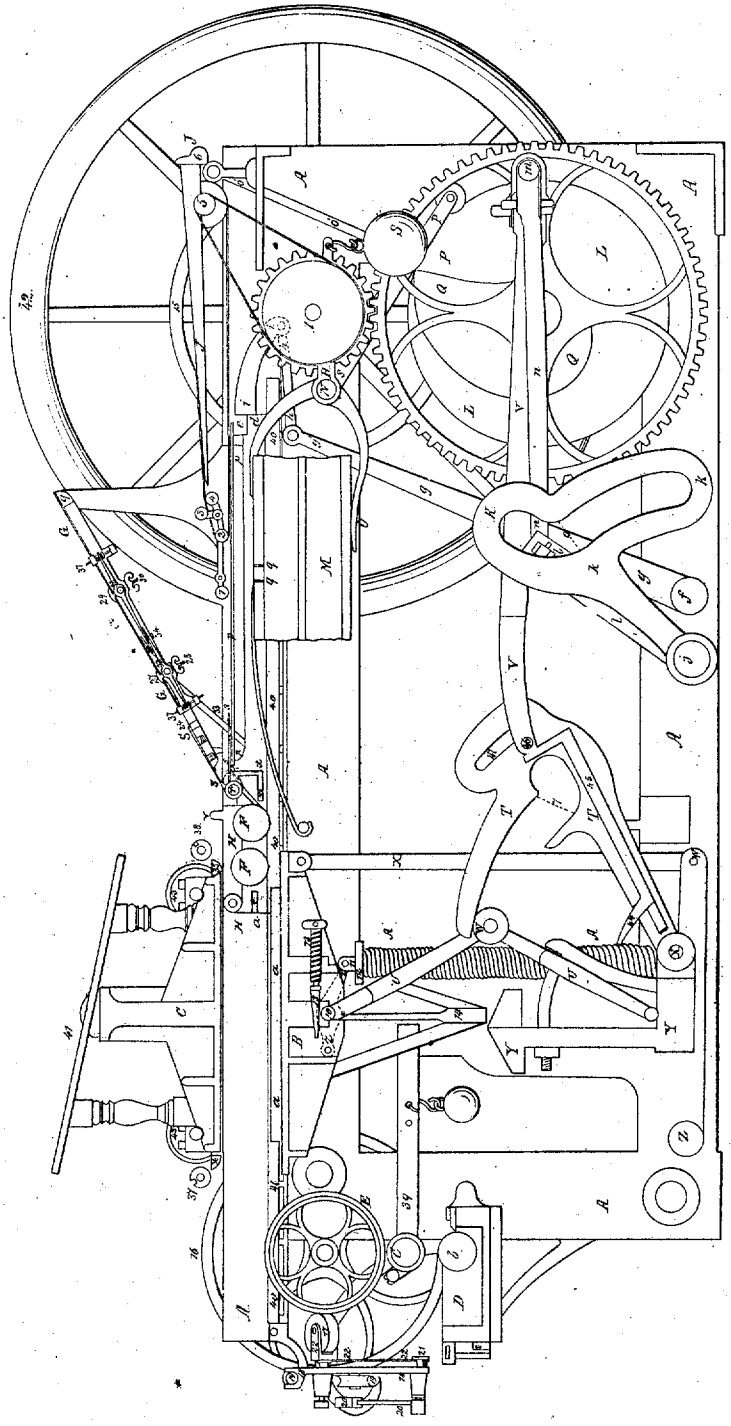


Fig. 1.

9445 X1 Re-issued, 15 Mar. 2. 1836 1.

Isaac Adams of Boston Massachusetts

# Letters Patent

"The Schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said Isaac Adams himself of his improvement in Hand Power Printing Press

To all to whom these presents may come, Be it known that I Isaac Adams Machinist of Boston in the County of Suffolk and State of Massachusetts, have invented a new and useful improvement in the Hand Power Printing Machine, and the following is a full and true Specification thereof. Drawing No 1. is an elevation of the machine the front side of the frame being removed in order to show the interior and operating parts AAAAAA is the opposite side of the frame. B is a section of the bed. a a the form of type C. is a section of the platten. D is a section of the ink fountain. b the fountain Roller. c. is a composition faced Roller that conveys the ink from the fountain roller to the cylinder (E) upon which it is distributed. E.E. are the rollers which distribute the ink on the type. They are suspended in the slide frame d,d, d, on pivots in the usual way c c are sections of two iron bars which connect the two side pieces of the slide frame together. The frame is the carriage for the Rollers E.E. and the mirror S.S. and the pinion x x. it runs in the grooved railways ff. ff. ff. ff. ff. and motion is given to it in the following manner. f is a section of a vertical shaft which runs in bearings on the sides of the frame, and has an arm or lever at each end as, g g. g. These arms are connected to the sliding frame by means of pitmans (h h) in the manner shown at h h i. J is another vertical shaft on which is what I have named an alternater. k k k the arm (l) also proceeds from this shaft and motion is communicated to it and the alternator from the crank m. by means of the pitman n. n. The alternator moves the arms and consequently the slide frame, by means of a roller which projects from the inner side

Extended for seven years from 2nd March 1828

of the screw on the rear end of the shaft F. into a recessed opening exactly in the upper part of the alternator. As the machine is now delineated the roller last named would be in the upper part of the opening in the alternator. now it is quite evident that when the alternator begins to move the roller together with the arms (y) and all attached to them will be moved by it, and the Roller will descend in the opening until it arrives at O. where the opening begin to be on a circle with the shaft (F.) at this moment the Slide frame will have arrived at the place where it would rest until the impression is given. the alternator however continues to move on. but the remaining part of the opening being on a circle with the shaft it merely keeps the roller and all attached to it from moving while the impression is being given. A completion of the revolution of the crank nr. will of course bring the alternator and consequently the carriage or slide frame back to where they now are. Thus, by the means of the crank nr. and the alternator the necessary reciprocating periodical movement is obtained for the parts above described. C.C. is a stationary bympan upon which the sheets to be printed are to be laid and printed. The bympan is hung on pivots at y. to two standards, one arising from each side of the frame. After a sheet has been printed it is taken from the bympan, and carried in between the bed and the platten by nippers on the rod r. which extends across from one side to the other of the slide frame. S, S, S, S. is a section of the two parts of the nippers as they appear when open at the moment before they close to seize the sheet. The two parts (SSSS) of the nippers are made of thin plates of ~~brass~~ steel about four inches wide and are fastened to other pieces of steel on the rod r. which are put together in the manner of the joint of a hinge on the pin that holds it together on the pieces that the under lips of the nippers are fastened to are projections (L) forming a sort of hook. The nippers are constantly drawn together by means of spiral springs, around around the rod r. one end of each being attached to the rod and the other

to the under half of the nippers. At one end of the roll (o) is a piece projecting at a right angle, from it, about two and a half inches long on the outside of this projection, near to it is a small roller which runs in a groove formed on the side of the frame for the purpose of spreading the nippers. The manner of their operation is as follows. The machine to be in motion and the nippers, (after an impression has been given) to be just emerging from under the platten. At this moment the roller on the end of the rod n: enters the before named groove, which being acted forces the roller downwards and causes the rod n. to turn. Now the upper half of the nippers being so fixed to the rod that they cannot turn on it, will be elevated as they are caused towards the tympan high enough to be just come on over the edge of the sheet of paper as it lays on the tympan. When they get near to the tympan they are made to descend by an oblique bend or crook in the groove above named until they come down hard on the sheet and the edge of the tympan which secures the sheet from moving from its place until the under halfs of the nippers are brought up. and rising the rod n. will at this moment have struck against projections on the frame and stopped but the slide frame continues to move on until the holders are disengaged which allows the under part of the nippers to be drawn up by the spiral springs against the upper parts. Then the sheet is seized by the nippers. H. H. is one of the two small cylinders one of which is secured by a pin through its end to each side of the slide frame within these cylinders are spiral springs, and in their ends are pistons or slides (ll) which are kept out by the springs. they enter the slots in which the rod n. is placed and press it firmly against the oblique pearls, so when the rod is stopped by the projections as above named the pistons will be pressed into the cylinders and when the slide frame moves back the rod will be forced back into its place by the expansion of the springs. when it is necessary to take out the rod and nip

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pers. the shades (A) may be drawn back by pressing against the studs V. which proceed from them. The cylinders can then be raised and the rod and nippers removed. W is a section of a bar that is hung in the slide frame as at x. the use of which is to prevent the under part of the nippers from moving up when the upper part does. . . . Now the sheet having been seized by the nippers, as described above. The frames are made to descend to the surface of the tympans. . . . and the slide frame begins to move towards the platten in order to carry the sheet on over the tympan, as it moves along the before named groove, operates on the roller on the end of the rod r. and causes the nippers gradually to descend until they come to a horizontal position, at which position they are brought about the time they enter under the edge of the platten. The sheet as it is drawn from the tympans falls on to the frame el. 1. 2. 3. 4. are rollers which extend from side to side of the machine, and there are seven or eight tapes bands (the number of tapes requisite depends on the size of the press) that run on and over the rollers 1. 3. and also eight narrow bands which intervene, on the rollers 2. 4 and on to pulleys on the shaft 5. these are all turned by means of a band from a pulley (I) on the fly wheel shaft. F.F. is a section of a fly frame, constructed in the manner shown in the drawing. No 2. The fingers, IIIIIIIIII are covered with thin cloth in front, except the two outer ones, and when they lay horizontally come between the bands and pulleys named above. The fly is hung to the front side of the machine by the shaft K K and is operated in the following manner viz. in the drawing No 2. is a small bell crank on the shaft K K. and W. is a rack on the end of a rod O. which goes into it this rack is connected at the further end to a lever O. O. (Drawing No 1.) by a short pitman on the end of the lever is a roller P. which is operated on by a cam on the side of the wheel F.F. Note when the machine is in operation the cams operate the lever O C which moves the

A.C. (Drawing No 2) which by means of the toothed wheel on Comp. the fly down to a horizontal position as shown in the drawing when it is held a short space of time until a quick turn or flirt off on the cam b raises the lever (C D) from upon which a spiral spring (P drawing No 2.) on the shaft K.K. causes it to turn and carry the fly over on to the table that stands ready for the purpose A continued movement of the cam b. will turn the fly back, and so on alternately. M is a section of a bellows which extends from side to side of the machine nearly but not quite. g.g. are two openings which extends the whole length of the bellows. The Bellows is operated as follows. N is a shaft sustained in bearings on the sides of the machine. O.C. is one of two levers, or arms, which extend out from the shaft under the Bellows. P.P. is a lever on the same shaft with a Roller at its end that is operated on by the cam b Q. This Roller should now be in contact with the cam b, but I have drawn it in its present position in order to allow the Bellows to be represented open. R is another arm extending from the same shaft with the weight (S) suspended from its end. when the machine is in operation the cam b operates on the Roller on the end of the lever P.P. and raises the weight S and draws down the arm C.C. which allows the bellows to open but when the highest part of the cam b passes the roller the weight throws up the arms C.C. and closes the Bellows and forces the wind out through the opening g.g. The object of the Bellows pulleys, tapes, Bands, and Bellows just described is to take the sheets of paper from the finished after they have been printed, and lay them on a table prepared for the purpose. after a sheet has received an impression it is carried from under the platten on the finished and tapes along under the Tympan and Roller I. K. at the moment the edge of the finished has been carried as far as the Roller K. the highest part of the cam Q will pass the roller on the lever P. which allows the weight S to operate the bellows and blow the air swiftly through the openings g.g. The current of air

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then obtained whether the under side of the wheel and carries its edge up against the lapes on the Rollers 1. 3. The Rollers and Lapes being in motion. and the wheel also continuing to advance with the frisket. the edge of the wheel is quickly brought between the roller 2. and the lapes on the Rollers 1. 3. The wheel thus seized continues to be carried along on the lapes that come over the Rollers 2 & 4. and the pulleys on the shaft S. until its edge strikes the upper edge of the main bar (6). on back boner of the fly. which takes place about the time that the most prominent part of the cam on the wheel L is just leaves the roller on the lever O.C. which allows the spiral spring on the shaft K K to throw the fly over and lay the sheet on the table above named. The Bed is raised and the impression given in the following manner. T T is an alternator similar in principle to that described for giving motion to the frisket frame U U are the toggle joints W. is a roller placed in a recess for the purpose in the middle of the toggle joints, and on the pin in their connecting joint. The alternator is made to operate the toggle joints by means of the crank and pitman V V m.

Now suppose the machine to be situated as shown in the drawing. When it begins to move, the crank pin (m) on the cog wheel, will move in a downward direction. this by means of the two pitmans will carry the two alternators forward K K will carry the arms g g. along until the frisket is brought to the place where the impression must be given. but a little before the frisket has stopped the point 7. on the alternator T T will have come in contact with the Roller W. it may now be perceived that this part of the alternator forms an inclined plane in the side of a lever of the second class X being the fulcrum and that as it continues to advance the Roller W. will roll up on the inclined plain until the alternator has received a certain motion in that direction at which time the toggle joints will have been forced up nearly to a perpendicular line which causes the types up firmly against the paper and platten and presses

the impression. A completion of a revolution of the crank and cog wheel will of course bring all the parts to where they now are. YY is a section of what I term the bottom bar. it contains the impression and is connected to the platten by a two inch round bolt at each end. Z is a rocker shaft suspended in bearings to the two sides of the machine, it has two arms extending from it to W. from the end of each of these arms arises a rod X and connects with the bed, on each of these arms is placed a spiral spring A A to assist in raising the bed. 2 2. is one of two levers that the pin 10 passes through, to connect the togle joints to the bed. these levers are connected at 11. to a bar 12. that rests on the spiral springs A A. 13 13. are sections of a wedge and screw. by means of which the impression is increased or diminished. The Bed is kept steady in sliding and falling by means of a guide (14) at each end of the bed which runs in grooves on the inner sides of the frame, and also by the two rods X which keep it from canting endwise. The inke is distributed in the usual way viz by Rolling together the Rollers and cylinders. The cylinder is carried by a band from a pulley on the fly wheel shaft to a pulley (16) on the shaft of the cylinder 17 17. is a steel roller which distributes the inke laterally on the cylinder, it is connected to a small frame or carriage 18. 18. which runs in rods 19. 19. it is made to travel by being placed obliquely against the cylinder. 20. 20 is a weight and lever connected to the steel spindle 21. This spindle has a cam piece on the end from one end of which arises the rod (22) and connects with the little frame 23. which the Roller runs in. This last named frame is connected to the carriage (18 18) by a spindle. Now when the Roller has arrived at one end of the cylinder a projection from the lower part of the steel which sustains the rods 19. 19. comes in contact with the lever 20 (and the Roller continuing to advance) turns it in the opposite direction. this by means of the little connecting rod

(2.2) reverses the obliquely of the Roller which causes it to communicate it's forming the other way. and so on alternately. The fountain is constructed in the usual way excepting that the quantity of ink is regulated by means of a rod that runs the whole length of the fountain, and is made wedging at each end, the pieces which forms the bearings for the fountain Roller: bear against those parts of the Rod which are wedging. so that moving the Rod one way or the other enlarges or diminishes the space between the Roller and scraper for the ink to pass through. the wedge is moved by means of a screw which screws into a little stud on the rod. and is attached to a similar stud on the fountain. Another way I have of to use a round rod made eccentric at each end where the pieces forming the bearings of the fountain Roller come against it. This rod is placed in fixed bearings on the ends of the fountain. and holes are made through one end of it so that by means of a small lever it may be moved on it's axis. which has the same effect as moving the edge endwise. The pivots or gudgeons of the Rollers which distribute the ink over the the types are fixed into smooth holes in the ends of the Rollers and are kept end by means of springs fixed inside of the Rollers. the object of this is that the gudgeons may be pressed into the body of the Rollers, and consequently be drawn out of the holes that form their bearings so that the rollers may be handily removed from their places without having moveable cases over their bearings; another way to construct the nippers is, shown at figures 1.2. drawing No 2. a. a. a Fig 1 is a frame suspended to the finishel frame by the pivots b.b. to this is fixed another frame c.c. d the ends c.c. of which are fitted in grooves in the ends of the frame a.a.a. The frame c.c.d. is kept out in it's present place by a spring e.e Fig 2. is a section of the frames above named with the nippers f. The nippers are secured to the side (d Fig 1.) of the frame c.c.d. by means of screws g Fig 2. The nippers are closed by means of the Rod h. in the following manner. The Rod is secured to the frame d. by means of pins or screws (k) which pass through holes made in a diagonal direction through it, and it's end is fixed to the end piece of the frame a.a.a. in the manner of a nail

Now first before the nippers parts of the nippers are brought on the edge of the sheet of paper and lympan as described of the nippers before named. the lower part of the frame e e d is brought against projections on the sides of the machine which stop it, but the other frame a a a continues to move, consequently its end piece a i is made to operate in the manner of a wedge against the end of the Rod b which slips along on the frame d and the Rods being diagonal as above named arises also, and closes the nippers on the sheet. When the sheet has been carried nearly to the place where it is to receive the impression as above described. the end of the Rod b is brought against an inclined plane which presses it back and leaves the nippers free to open again A is a roller on the frame a a a by means of which the nippers are operated in the manner described of the first named nippers.
The lympan is a frame of wood covered with sheet iron on its upper side as far down as 24-25.4.26. are two small holes made in the end piece, at the further end of the lympan, these are for the purpose of receiving the end of the Rod. which it is necessary to put across from end to end of the lympan. when the paper is broad in order to keep its edge from bending down. The near end of the rod is kept in its place by passing a pin through the end piece of the lympan into a hole drilled for the purpose in the end of the Rod. The pin is made so as to be easily drawn out with the fingers. so that the rod may be quickly shifted from one place to the other. The pieces on the lympan that are colored yellow in the drawing are secured in their places by means of the little bolts and nuts 27. 28. 29. 30. points 31. 31. are put through little projections, on their ends and are caused to project beyond the face of the lympan . . . and to fall back (so as to allow the sheet to be drawn off.) by means of the little levers 32. 32. The ends of these levers come together and are attached to the end of one other lever 33. 33. at the centre of the lympan 34. This last named lever runs diagonally from the centre of the lympan about seven or eight inches at which being suspended in a direction corresponding of the machine which it reaches the further part of the lympan. it then runs at right

nights in the direction 33. 33. it is operated as follows. On the slide frame is a little camb. so situated that when the slide frame moves along the camb comes under the end of the lever and raises it up, which thrusts the points out as they are shewn in the drawing. and on the side of the machine is fixed a spring. that will when the end of the lever is raised as above named spring out under it and hold it up. Now when the time comes for the points to be drawn in, another little camb on the side of the slide frame presses off the spring and disengages the lever, which will then by its own weight drop down, and draw in the points. It is sometimes necessary that the points should be placed so as to range with each other lengthwise of the sheet and sometimes crosswise. It is therefore necessary that the points should be so fixed that their situation may be easily changed, for this purpose there are two circular slots cut in the face of the tympan. the common centre of which is the screw or pin which connects the two levers that operate the points to the end of the lever 33. 38. The bolts 29. 29. are put through these slots so that by loosening the nuts on them the pieces to which the points are attached may be moved round and secured at any point that may be required on getting register. The upper half of the impression are a little longer than the lower halfs. so that their ends may reach on to the edge of the tympan (or the rod before named to confine the sheet before the under half flys up. There must be a number of pairs of impressions of impressions of different lengths on account of the forms of type being of various widths. 35. V 36. are sections of the two side cards of the parchment tympan frame, this is screwed by two slide bolts on the platten near 36. — 37. 38 are rollers to which tympan sheet is screwed. a long sheet is procured for this purpose (it may be made by pasting common sheets together) and Rolled up on one of the Rollers. ils. and is then passed under the platten. and screwed to the other Roller which is turned until the sheet is drawn smooth under the face of the platten. both Rollers are then secured from turning by Palls being dropped into a ratchet wheel on the end of each Roller. The ends of the sheet are screwed to these Rollers by

pulling them into grooves, along the side of the Rollers, and then pressing a rod into the groove on the paper. One or both of these Rollers should be hung on Springs, so as to continually drain on the paper to take up whatever dirt may adhere. Now it is plain that when one place on the sheet has been soiled by turning the Rollers, a clean place may be drawn instead of it. The fountain Roller is turned in the usual way by means of a pall and ratchet wheel. The pall is attached to one of the levers (39) which sustains the feed Roller (C.). 41. is the table upon which the sheets of paper to be printed is placed. 42. is the fly wheel. 43. 43. are rollers which sustain the platten, moved on Railways, formed by the top edges of the frame. When a form is to be put on to the bed the tympan and the frame and Rollers, 1. 2. 3. 4. are turned up and fastened by a Hook, the platten may then be moved off from over the bed. The form is then taken out, and the form put on in the usual way. 44. 46. is a slide attached to the side of the platten, for the purpose of causing the pitman or that the pin 46. may go into the respective 47. in order to prevent any impression. This is effected by a lever one end of which is placed under the curved rail (44) of the slide, and the other end in a convenient place for the person who prints to put the foot on when an impression is to be presented. The levers to which the feed roller is suspended are operated by means of projections on the guides (44) of the bed. The cylinder for the distribution of ink may be made of wood or metal. The best way I think is to make it of metal and and make it hollow and light so as to be capable of holding water or steam. Then through a hole in the end (that may be stopped with a cock, a plug or valve) there may be hot water introduced in cold weather or cold water in hot weather, in order to regulate the temperature of the ink and rollers, or there may be a hole in the shaft of the cylinder and a pipe adapted to it through which steam or steam may be introduced for the same purpose. Another convenient way of keeping the paper after it has been printed on the second side is

to connect a drying cylinder to the end of the machine at which the paper is taken off. Drying cylinders are constructed in a similar or a dissimilar manner to the metallic cylinder above described for the distribution of the ink only they are made considerably larger and have a cloth (made into a band by sewing the ends together) which runs on Rollers and against the side of the cylinder so that the paper may enter between the cylinder and cloth band on one side, and come out round at the other. The cylinder being continually heated by means of steam, or water as above named or otherwise. In order to keep the paper as it comes from the press with an appearance of dry cold, the fly frame for throwing off the paper may be removed, and the cylinder and cloth band placed so near to the pulley on the shaft 3. that as the sheets are carried along over the Rollers 2. 4. and the tapes bands as above described they will be received on the cloth band and be carried between it and the cylinder and be brought out at the opposite side dried. where they may be taken and disposed of by a person for the purpose. The groove on the side of the machine described above for the operation of the nippers may instead of being made stationary be made in the end of a lever attached to the side of the frame, which may be operated by a cam on the fly wheel shaft. which I believe to be the best way when accurate register is required by all the nippers parts of the nippers may be brought down on the sheet after the nippers have stopped. as this way the sheet is less liable to be displaced before it is fastened on by the nippers. I claim the combination with printing presses of the modifications above described for the purposes above set forth. I claim the combination with printing presses, of the apparatus above described for pulling on drawing and changing the tympan sheet. I claim the combination with printing presses, of nippers constructed on the principles of those above described for taking the paper from the tympan. I claim the combination of nippers for seizing holding and drawing the paper into the press with printing presses in which vibrating arms, or levers are used to move the Rollers over the type or to move the sheet or to move the

I claime the combination of the impressg with the Sliding frame instead of with the finishers I claim the combination above described of those parts which are essential to the perfect operation of the impressg. I claim the combination of impressg for moving the paper into the press as above described with printing presses in which the ink is distributed in the following manner. That distributes it over the types by means of cylinders or Rollers instead of tables or plane surfaces. I claim the combination of wedges and tubes or recesses with the ink fountains for altering the space between the roller and scraper. I claim the combination above described of those parts which constitute the stationary type and the various parts connected with it which are essential to the operation of the penny and to facilitate the taking of the sheet by the impressg. I claime the combination of vibrating arms, or levers, for moving the Rollers over the forms, for moving the finisher, or for moving both Rollers and finisher with printing presses in which a crank is used to operate the legs or joints which produce the impression. I claim the combination of stationary points (that is points which never come between the bed and platten) with printing presses in which vibrating arms or levers which move vertically are used for moving the Rollers that pass over the types, for moving the finisher or for moving them both. I claime the combination of a crank which moves vertically to operate the legs or joints which produce the impression in the printing presses in which the Rollers are passed between the bed and platten to ink the types. I claim the combination of the wedge for altering the impression with the beveled instead of the bottom bar. Numerous modifications of various kinds may be used for raising the sheets from the finisher as above described, as for instance that Below the axis of the vibrating or revolving arms, and these may be used to raise the sheet by drawing air into holes just over the sheet of paper, or they may be used as above described to pounce the sheet up by producing a current of air against the under side. I claime the combination of the pneumatic apparatus with printing presses for raising the sheet of paper from the finisher. I claime the combination of Rollers as above described, and bands, and fingers with printing presses for removing the sheet from the finisher. I claime the combination of the fly frame with the Rollers and with the

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feelings and with the bands, as above specified for the purpose of conveying the sheets after they have received an impression to a table or other convenience. I claim the mode or manner of constructing the tympan and the frisket connected with the pointers for the more easily changing the points and gelling register. I claim the combination of the Rollers which have moveable gudgeons and springs as described above with printing presses. The rollers referred to in this claim are those that distribute the ink over the types. I claim the combination of drying cylinders with printing presses for the purpose of drying the paper after it has been printed as above set forth. I claim the combination of metallic distributing cylinders as above named with printing presses. This last claim is confined exclusively to the cylinders which transmit the ink to the Rollers that pass over the types and also distributes it on them. I would also state that this claim does not refer to fountain Rollers. There may be two small cylinders instead of one marked E in drawing No 1. The claim last above will however, in this respect, not to extend to cylinder printing machines. The above is a brief specification of my said invention, so far as I have made some mistake or forgot something,

Wit. Witnesses
1836 H. O. Walker
James Williams

Isaac Adams

(624 words)
Claim alone 858 words

(Granted March 2. 1836.)

Ellsworth