H. Underhill. Sheet 1. 2 Sheets.

Printing Press

No. 10,717. Patented Mar. 28, 1854.

Fig. 1.

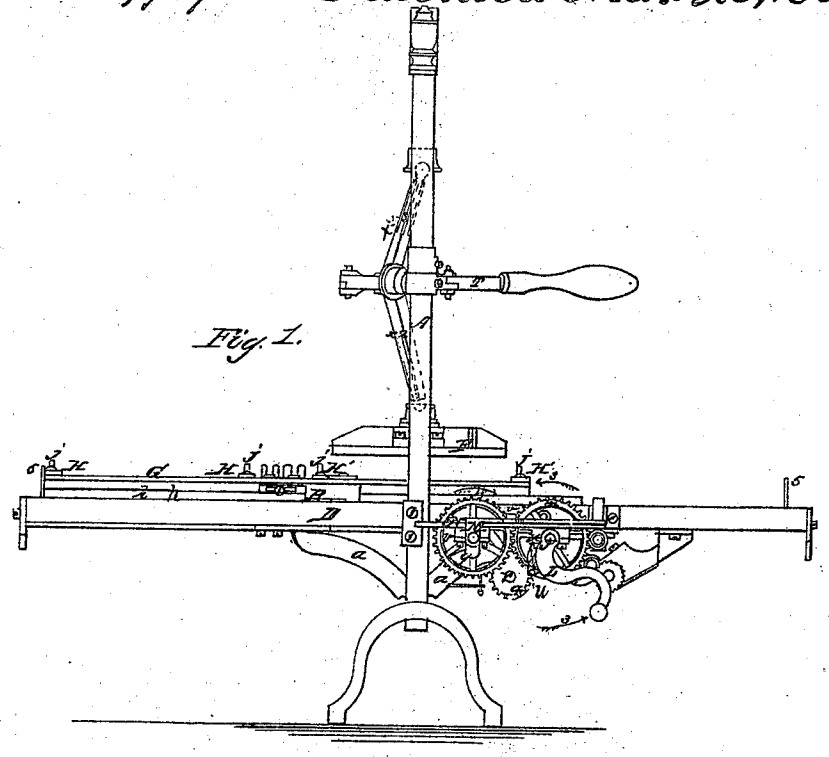
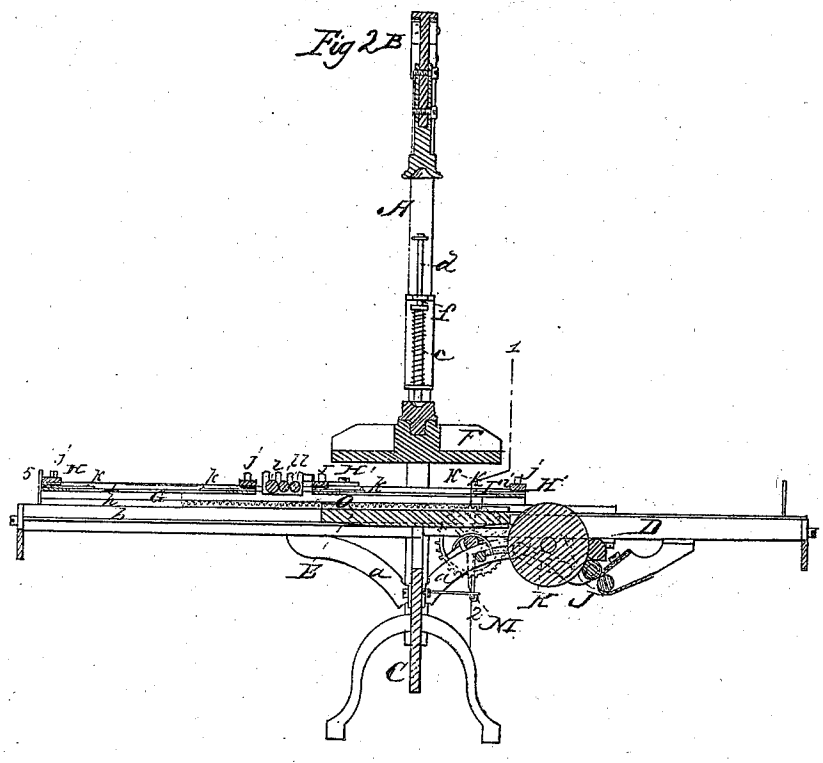


Fig 2.



H. Underhill. Sheet 2, 2 Sheets.

Printing Press.

No. 10,717. Patented Mar. 28, 1854.

Fig. 3.

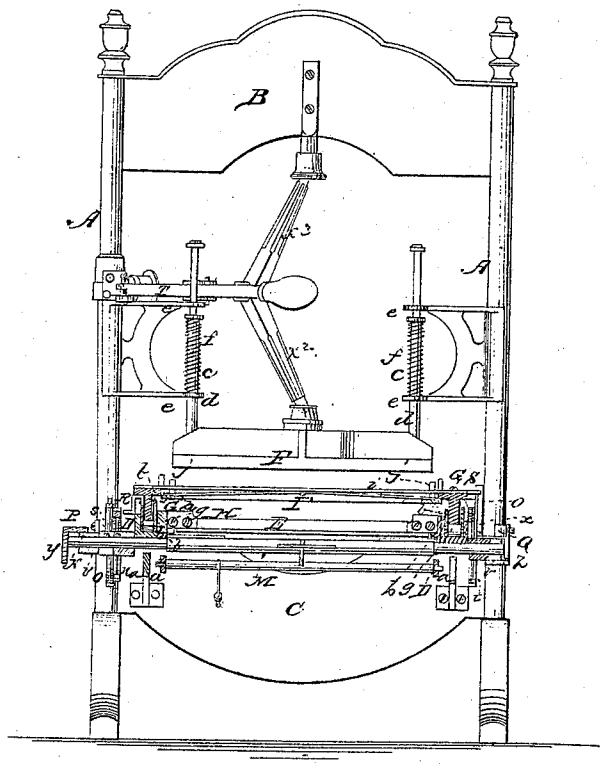
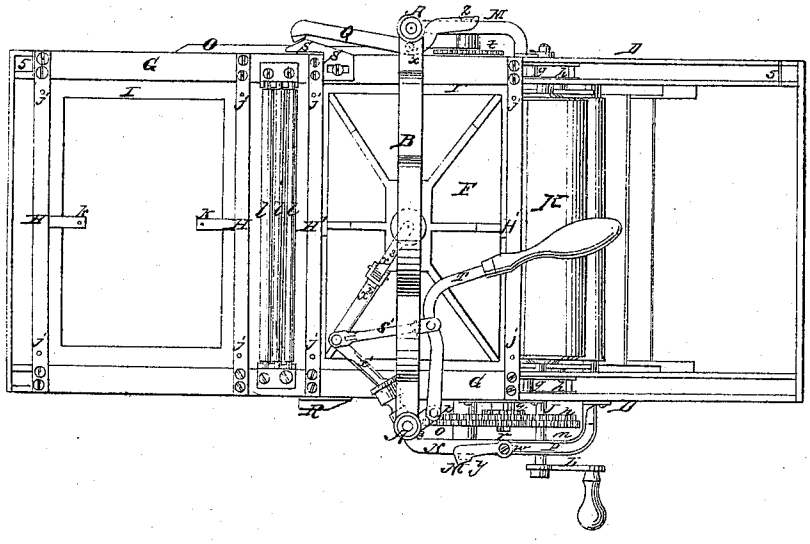


Fig. 4.



UNITED STATES PATENT OFFICE.

HENRY UNDERHILL, OF CANANDAIGUA, NEW YORK.

HAND PRINTING-PRESS.

Specification of Letters Patent No. 10,717, dated March 28, 1854.

To all whom it may concern:

Be it known that I, HENRY UNDERHILL, of Canandaigua, in the county of Ontario and State of New York, have invented certain new and useful Improvements in Hand Printing-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which forms part of this specification, and in which—

Figure 1 represents a side elevation of my improved printing press; Fig. 2 a longitudinal vertical section of the same, taken through or near the center; Fig. 3 a transverse vertical section through the line 1, 2, of Fig. 2; and Fig. 4 a top view or plan.

In printing rapidly by power, it frequently happens with the different presses in use that irregularities occur in the supply of the sheets to receive the impression; these irregularities produce much injury and inconvenience, as for instance the type or form is jammed so as to deface the letters by the descent of the platen on it without an intervening sheet of paper to receive the impression, and break the concussion.

My invention has for its object the remedy of this defect by making the action of the platen dependent upon the volition of the attendant, so that, while the general evolutions of the press continue, the platen will only act when the attendant pulls the lever that puts it in operation, and this he will of course do only when there is a blank sheet in the press ready to be imprinted.

The frame of the press consists of uprights (A) united by suitable cross pieces (B and C). The lower (C) of these cross pieces supports a horizontal frame (D) the two sides of which consist of bars having rectangular rabbets or channels extending along their top; the frame (D) is united by stays (*a*) to the cross piece (C); inside each side bar of the frame (D) a rib (*b*) extends from one end to a little beyond the center for the purpose of supporting the bed (E) upon which the form of type is placed; this bed (E) is stationary. The platen (F) under which the type bed (E) is placed, when not depressed by the toggle levers, is held up by two springs (*c*) which are coiled around rods (*d*) secured to it, the said springs resting upon the lower arms of guides (*e*) attached to the uprights (A), and the upper end of each spring bearing under a collar (*f*) on each rod. The sheets to be printed are transferred along the top of the press by means of a carriage which consists of two longitudinal bars (G) of T shape in their transverse section and united by cross pieces (H and H′); the bars (G) run on friction rollers (*g*) which rest at the bottom of the rabbets in the bars of the frame (D). The carriage is furnished with a frisket (I) placed under the bar (H), and with another frisket (I′) at the opposite end under the bar (H′), both friskets being attached to the respective bars of the carriage by springs (*i*) which tend to hold them nearly close up to the said bars (H and H′); the friskets (I and I′) are also provided with guide pins (*j*) which work through holes in the bars (H, H′) and are further fitted with pointers or register pins (*k*) to hold the sheets. The carriage has a reciprocating action given to it lengthwise of the frame, for the purpose of bringing the two friskets alternately between the type bed and the platen, to produce the impression on the sheets held by them, the printed sheet being removed from one frisket, and a new sheet put in its place during the time the other is being moved to the form and printed. The form is inked by rollers (*l*) hung in bearings upon the reciprocating carriage, and communicating during the motion of the carriage toward one end with an appropriate inking apparatus.

The carriage is operated by means of the following devices: Below the frame (D) a shaft (J) is hung in bearings (*u*): this shaft carries the distributing roller (K), two spur wheels (*m*, *n*) of different diameters, and a winch handle (L) for turning the shaft; the spur wheel (*m*) gears into a wheel (*o*) which is loose upon its shaft (M) which also carries a further but smaller loose wheel (*p*) meshing into a pinion (*q*) on a separate axis and gearing into the wheel (*n*), thus causing the wheels (*n*, and *p*) to revolve in the same direction; though the wheels (*o* and *p*) are loose on their shaft, either of them can be separately coupled with it by a slight movement of the shaft longitudinally, which causes a feather on the shaft to enter recesses in either wheel according to the degree of longitudinal movement given the shaft; a spur wheel (*t*) is fast to the opposite or back end of the shaft (M); this wheel gears into a

toothed rack (O) attached to the carriage for the purpose of moving it longitudinally in either direction accordingly as the wheel (*o* or *p*) is thrown into gear with the shaft (M) which is moved as described to uncouple it from one wheel and couple it with the other, at the end of each movement of the carriage to reverse the motion thereof, by means of two levers (P and Q) and two inclines (R and S) the latter being attached to the side of the carriage; the lever (P) moves on a fulcrum (*w*) and the end of it (*y*) is bent over so as to lie close against the front end of the shaft (M) while its opposite end is turned upward so as to make the inclined piece (R) at the close of the movement of the carriage to the right hand, come in contact with it and throw it forward—which causes the other end of the lever to push the shaft (M) back and uncouple it from the wheel (*o*) and couple it with the other wheel (*p*); the lever (*v*) works on a fulcrum (*x*) in a similar manner and serves to throw the shaft (M) in the opposite direction for the purpose of uncoupling the wheel (*p*) and coupling the wheel (*o*), this occurs as the incline (*s*) strikes it when the carriage has arrived at the end of its left hand movement. This self acting reversing gear thus serves to turn the shaft (M) in opposite directions, though the main shaft (J) revolves only in one direction, and as the wheel (*t*) which works into the rack of the carriage, is fast to the shaft (M), the carriage containing the friskets will receive its reciprocating action, a pause being produced in the movement of the carriage to give the requisite time for the impression, by constructing the feather on the shaft (M) so that it has to pass through a space free of and between the wheels (*o* and *p*) in coupling and uncoupling them separately with the shaft. The inking apparatus of which the distributer (*k*) forms part, does not differ materially from others in common use.

Pressure is applied to the platen (F) by a hand lever (T) attached by a rod (*s'*) to a compound series of levers (x', x^2, x^3,) which, as the handle of the lever (T) is pulled by the operator toward him, causes the platen to descend and produce the impression on the sheet carried by either frisket as it arrives, by the reciprocating action of the carriage, over the form, the springs (*c*) elevating the platen and throwing the lever (T) back when the impression is produced, and the operator releases his hold of the lever (T); any other arrangement of rods and levers, connected with a separate hand lever (T) may be used for depressing the platen.

The feed of the blank sheets and removal of the printed ones is effected at either end alternately, during the pause which occurs in taking the impression, by attendants stationed at those parts, either frisket (I or I') alternately arriving over the form during the reciprocating action of the carriage while the other frisket is situated at the end of the press; thus a successive feed and delivery takes place from either end alternately by the continuous turning of the handle (L) which the pressman works, and, as the blank sheets from either end alternately arrives over the form, he draws toward him the handle (T) which brings down the platen and produces the impression, which when made, he releases his hold of the handle which immediately flies back and the platen ascends by the elevating action of the spring (*c*). Now it will be observed that this action of the platen is altogether distinct from that of the reciprocating carriage, so that should a failure occur in the timely removal of a printed sheet or supply of a fresh blank, the pressman observing it, omits to depress the platen, over the already printed sheet or empty frisket as the case may be while he continues turning the handle L so that only one end of the press remains idle, the other proceeding as usual and without stopping the machine, the other end may soon be put again in active operation.

As the release or rising of the platen is self acting by means of the spring (*c*) and requires no exertion on the part of the pressman he can arrest the descent of the platen instantaneously almost at the last moment, should he, during the rapid progress of the work, be late in detecting the cause that renders its stoppage necessary or desirable, his release of the hold of the handle (T) being sufficient; whereas were the movement of the platen automatic, or dependent upon the motion of the carriage as has hitherto been the case, with automatic carriages in presses the momentum of the press would not admit of this immediate arrest, which in rapid printing causes frequent damage to the form by the descent of the platen upon it, without an intervening sheet of paper; so that a double acting press, printing at either end alternately, while it performs twice the duty, will by the arrangement of operating the platen, be as free from liability to accidents as the ordinary single acting press.

Having thus described my improvement in printing presses, what I claim as new therein and desire to secure by Letters Patent, is—

The method of operating the platen by hand intermittently in connection with a reciprocating double frisket carriage whose movement is derived from a continuous rotary motion whether produced by hand or power, so that as the carriage brings the

frisket of each end alternately under the platen, the latter may be made to descend at the will of the attendant and independently of the movement of the carriage, so that its depression may be omitted if a blank sheet is not placed over the form, substantially as described.

In testimony whereof I have hereunto subscribed my name

HENRY UNDERHILL.

Witnesses:
T. D. HERBERT,
H. METCALF.