

B. F. UPHAM.

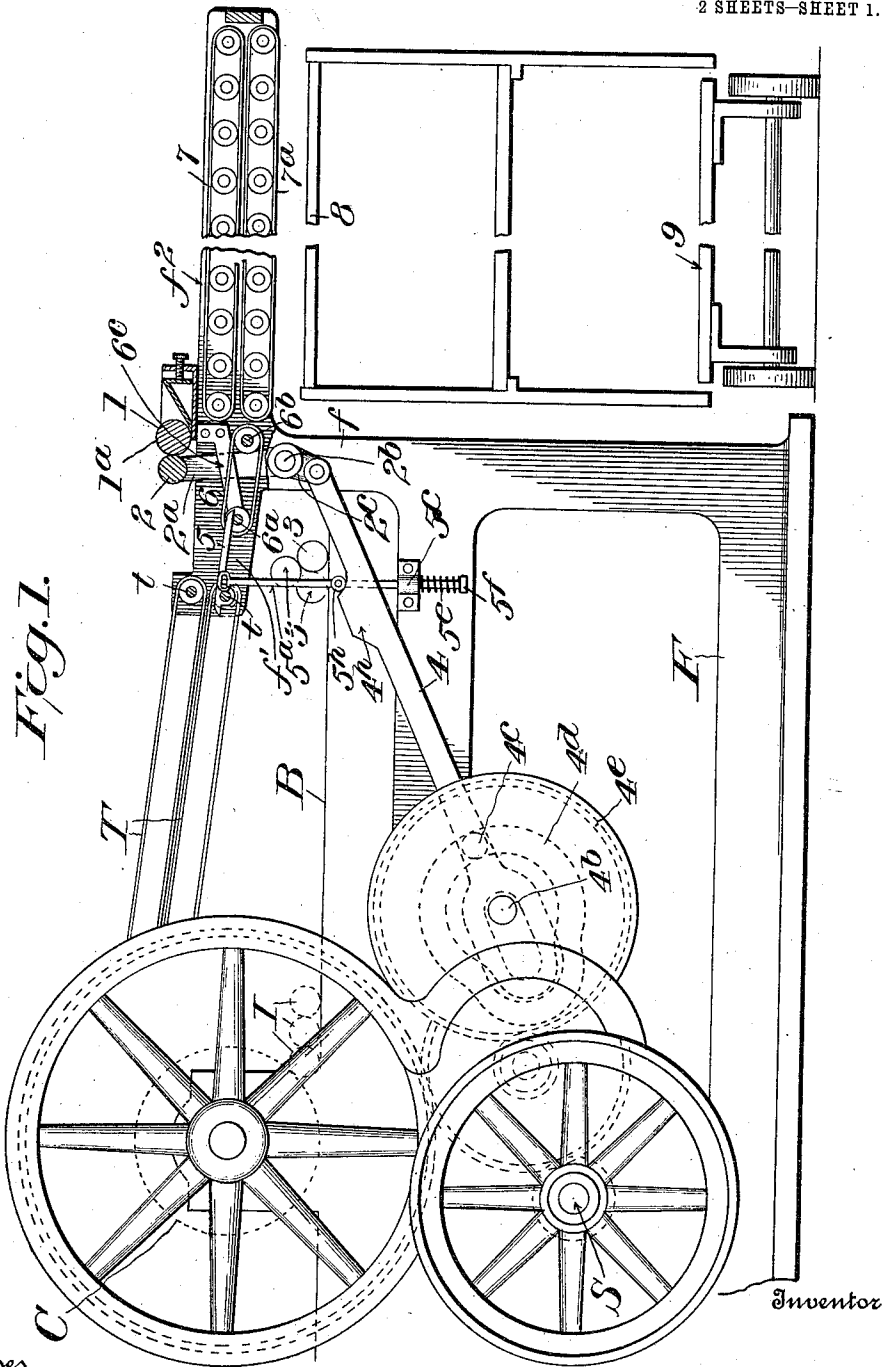
INKING MECHANISM FOR FLAT BED SHEET PRINTING PRESSES.

APPLICATION FILED FEB. 10, 1911. RENEWED APR. 8, 1912.

1,046,904.

Patented Dec. 10, 1912.

2 SHEETS-SHEET 1.



Witnesses
C. M. Barker
James F. Mansfield

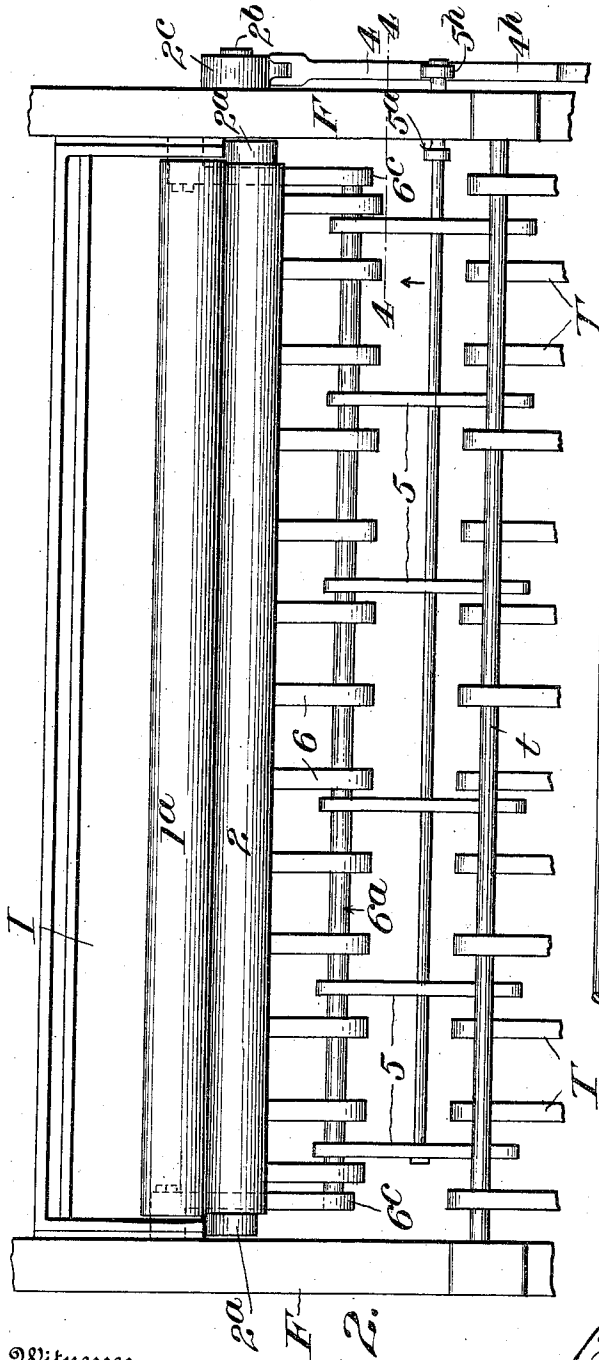
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UNITED STATES PATENT OFFICE.

BURT F. UPHAM, OF EVANSTON, ILLINOIS.

INKING MECHANISM FOR FLAT-BED SHEET-PRINTING PRESSES.

1,046,904.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed February 10, 1911, Serial No. 607,856. Renewed April 8, 1912. Serial No. 689,408.

To all whom it may concern:

Be it known that I, BURT F. UPHAM, of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Inking Mechanism for Flat-Bed Sheet-Printing Presses; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to sheet printing presses of that type commonly known as flat bed cylinder presses, in which the forms or printing surface is carried upon a reciprocating bed, and impressions are taken therefrom by means of a rotating impression cylinder.

The invention has particular reference to machines of this class, such as the well known "Miehle" presses; but it is also applicable to many other makes of presses of this class.

One of the principal features of the invention is locating the ink fountain—or supply mechanism above the type-bed and delivering mechanism instead of below the same, as heretofore, so that the printed sheets of paper can be delivered below the ink fountain. In such an arrangement of inking mechanism it is necessary to transfer ink from the fountain roll to the form inking rollers across the path of travel of the printed sheets; but this is accomplished in the simple and novel manner hereinafter explained and results in a great many practical advantages in connection with such machines.

Some of the advantages of my invention are that the ink fountain being placed above the path of the sheet it is less liable to be clogged with paper dust or cuttings from the sheets; it is conveniently accessible to the pressman at all times, so that the ink supply can be readily replenished, and the feed thereof adjusted and regulated very readily by the pressman. Other advantages are that the press can be considerably shortened over all, thus economizing floor space; and the sheets can be delivered directly upon removable tables which can be directly lowered upon receiving trucks; so that the sheets can be stacked and removed with very much less manual handling than is required with the present types of such presses.

I will describe the invention with reference to the accompanying drawings which

illustrate one novel arrangement of inking mechanism embodying the invention, and will enable those familiar with this class of machines to readily construct and apply such an inking mechanism thereto.

In said drawings: Figure 1 is a side elevation and part sectional elevation of a portion of a sheet printing press with my improved inking mechanism. Fig. 2 is an enlarged detail top plan view of such press. Fig. 3 is a detail section showing the position of parts when the ductor is down. Fig. 4 is a section on line 4—4, Fig. 2.

F is the frame of the press; B the reciprocating type bed; C the impression cylinder; T the usual tapes which receive printed sheets from the cylinder and carry them to the delivery. The cylinder may be operated by gearing from the drive shaft S; all these parts may be of any well known construction, such as in the well known "Miehle" flat bed sheet printing press, with the exception that the frame F is or may be much shorter than is at present possible in such machines.

In the press shown the ink fountain 1 is supported above the path of the printed sheets upon brackets *f* attached to the frame F as usual; said brackets have inwardly projecting portions *f'* in which are journaled the shafts *t* carrying the pulleys upon which the tapes T are supported as usual in the Miehle press; and these brackets have rearwardly extending portions *f''* in which the delivery devices are supported. Adjacent the brackets *f* but above the path of bed B are a set of ink distributing rollers 3 from which the ink is supplied to the form-rollers in any usual or desired manner; the invention is not restricted to any particular construction or arrangement of rollers for supplying or transferring ink from the upper roller 3 to the forms on the bed B, and I have simply conventionally indicated such devices in the drawings.

In order to transfer ink from the fountain roll 1^a, above the path of the sheet, to the distributing roller 3, below the path of the sheet; a reciprocating ductor 2 may be used. This ductor may be operated in various ways, but is shown as supported in arms 2^a attached to a rock shaft 2^b journaled in the standards *f*, and the rock shaft has a crank arm 2^c on its outer end connected to a rod 4 which is adapted to be reciprocated by means of a suitable cam. As shown the

lower end of rod 4 is slotted over a shaft 4^b and has a roller 4^c engaging a race-cam 4^d secured to a gear 4^e which may be rotatably mounted upon said shaft 4^b, and which is geared to rotate once for each two rotations of the cylinder C, so that the ductor roller 2 will make one reciprocation from the fountain roll 1^a to the roller 3 and return for each reciprocation of the type bed. These parts may be so timed and adjusted that the ductor 2 will be reciprocated in the interval between the printing of some two successive sheets; or at the time when no printed sheet is passing the lower or outer ends of the tapes T which are adjacent the path traversed by the ductor 2. Owing to the movement of the ductor 2 across the path of the sheets a gap may be formed in the path of the sheet sufficiently wide to permit the ductor to pass.

As shown the sheet may be conducted across such gap when the ductor is raised by means of a series of fingers 5 which may be pivoted upon the shaft 4 of the lower set of tape rollers, and which fingers are connected together; and one of these fingers may be pivotally connected to the upper end of a rod 5^a guided in eyes or loops 5^c on the frame: and this rod may carry a roller 5^b adapted to engage a cam 4^h on the rod 4 which cam is so constructed and arranged that as rod 4 moves in a direction to lower the ductor roller 2, cam 4^h engages roller 5^b and quickly throws fingers 5 upward, to the position shown in Fig. 4, out of the path of the ductor 2 and will hold these fingers so raised until the ductor has returned above the tapes. A spring 5^e may be strung on rod 5 between a collar 5^f thereon and one of the guides 5^c so as to hold roller 5^b in contact with roller 4^h and lower the fingers when the cam permits.

As shown fingers 5 direct the sheet from the tapes T onto a second set of short tapes 6 running over tape rollers mounted on shafts 6^a, 6^b, supported in the brackets f, the shaft 6^a being journaled in brackets 6^c attached to the brackets f so as to permit the swinging movements of arms 2^a past the end of said shaft. The tapes 6 may form part of any well known delivery, or direct sheets into any well known delivery. As shown the tapes 6 direct the sheets between sets of marginal delivery tapes 7, 7^a which may be constructed and operated as described in Carl Henderson's Patents 973,428 of October 18, 1910 and 974,062 of October 25, 1910; which tapes are adapted to suspend a sheet by its outermost margins and carry same to the point of deposit and there release it.

As shown the sheets can be dropped upon a receiving table 8 of any suitable construction, which table may be lowered upon a truck 9, such as is commonly used. The sheet receiving tables and trucks may be of

any desired construction and are simply conventionally illustrated in the drawings.

It will be observed that in a press provided with my invention the fountain is always accessible to the operator; the sheets can be delivered upon removable tables without manual handling and the truck can be run in beneath the delivery mechanism from the end or sides of the machine. The pressman can always see the condition of his ink fountains, and can readily adjust and set same. Many other practical advantages of the invention will be seen and appreciated by those familiar with the art.

The invention can be embodied in many different constructions its issential feature being the locating of the ink supply above the path of the printed sheets, and preferably intermediate the cylinder and the delivery,—and conveying ink therefrom above the path of the sheets to ink distributing means below the path of the sheets; the ductor roller crossing the path of the sheet. In the arrangement shown the ductor roller makes one reciprocation during each reciprocation of the bed; but makes this reciprocation during one quarter of the time required for a reciprocation of the bed; and it may be caused to reciprocate in even less time; but it is only necessary that the ductor roller shall make the reciprocation in such time or at such times that it will not interfere with the passage of a sheet from the press tapes T to the delivery tapes or devices. But the ductor could be arranged to reciprocate at such intervals as will best suit the design or type of press to which the invention is applied.

What I claim is:

1. In combination, a printing couple adapted to print sheets, and means for transferring the printed sheets from said couple to the point of deposit; with an ink supply located at one side of the sheet transferring means, form inking rollers located at the opposite side of said sheet transferring means, and means for transferring ink from the supply to the form rollers.

2. In combination with a printing couple adapted to print sheets, a receiving table, and means for delivering printed sheets from the printing couple to the receiving table, a fountain located at one side of the path of the sheet intermediate the printing couple and the table, form inking rollers at the opposite side of the path of the sheet, and means for transferring ink from the fountain to the form inking rollers across the path of the sheet carried by said sheet delivery devices.

3. In combination with a printing couple adapted to print sheets, a receiving table, tapes for transferring printed sheets from the printing couple to the point of deposit on the receiving table; with an ink supply

located above the tapes, form inking rollers located below the tapes, and means for transferring ink from the supply to the form rollers across the path of the sheets carried by said tapes between the passage of sheets.

4. In combination with a printing couple adapted to print sheets, a receiving table, tapes for transferring printed sheets from the printing couple to the point of deposit on the receiving table, a fountain located above the tapes, form inking rollers located below the tapes, a ductor roller for transferring ink from the fountain to the form inking rollers, and means for moving said ductor roller across the path of the sheets carried by said tapes.

5. In combination, a reciprocating bed, a rotary cylinder, an ink supply above the path of the printed sheet, form inking devices below the path of the sheet, and means for transferring ink from the supply to the form inking devices.

6. In combination, a reciprocating bed and rotary cylinder, an ink fountain above the path of the printed sheet, form inking devices below the path of the sheet, and means for transferring ink from the fountain to the form inking devices across the path of the sheet and between successive sheets.

7. In combination, a reciprocating bed and rotary cylinder, an ink supply above the path of the printed sheet and intermediate the cylinder and point of deposit of the sheets, and form inking devices below the path of the sheet, and means for transferring ink from the supply to the form inking devices.

8. In combination, a reciprocating bed and rotary cylinder, an ink fountain above the path of the printed sheet and intermediate the cylinder and point of deposit of the sheet, form inking devices below the path of the sheet, and means for transferring ink from the fountain to the form inking devices across the path of the sheet and between successive sheets.

9. In combination, a reciprocating bed, a rotary cylinder co-acting therewith, sheet delivery mechanism, an ink supply above the path of the printed sheet delivered from the cylinder, form inking devices below the path of the sheet, and means for transferring ink from the supply to the form inking devices between the passages of successive sheets.

10. In combination, a reciprocating bed and rotary cylinder adapted to print sheets, and means for transferring printed sheets from the cylinder to the point of deposit; with inking mechanism comprising a fountain located above the path of the sheet, and inking rollers below the path of the sheet, and means for intermittently transferring ink from the fountain to the rollers.

11. In combination, a reciprocating bed, a rotary cylinder, and means for transferring printed sheets from the cylinder to the point of deposit; with an ink fountain located above the path of the sheet, and inking rollers below the path of the sheet, and means for intermittently transferring ink from the fountain to the rollers across the path of the sheet at intervals between the passage of successive sheets.

12. In combination, a reciprocating bed, a rotary cylinder co-acting therewith, and means for transferring a printed sheet from the cylinder to the point of deposit; with a fountain located above the path of the sheet, inking rollers below the path of the sheet, a ductor roller for transferring ink from the fountain to the rollers, and means for moving said ductor rollers across the path of the sheet.

13. In combination, a bed and cylinder press, a delivery mechanism at one end of the press, and tapes for transferring sheets from the cylinder to said delivery mechanism; with an ink fountain above the delivery mechanism, form inking rollers below the tapes, and means for transferring ink from the fountain to the form inking rollers.

14. In combination, a bed and cylinder press, a delivery mechanism at one end of the press, and tapes for transferring sheets from the cylinder to said delivery mechanism; with an ink fountain above the delivery mechanism, form inking rollers below the tapes, a ductor roller for transferring ink from the fountain to the form rollers, and means for moving the ductor roller across the path of the sheet, intermediate the tapes and the delivery mechanism.

15. In a sheet printing press, the combination of a cylinder, a reciprocating bed, devices for inking the forms on the bed, a delivery mechanism at one end of the press, and means for transferring printed sheets from the cylinder to said delivery mechanism; with a fountain located above the delivery mechanism; and means adapted to transfer ink from the fountain to the form inking devices at a point intermediate said transfer and delivery devices.

16. In a sheet printing press, the combination of a cylinder, a reciprocating bed, devices for inking the forms on the bed, a delivery mechanism at one end of the press, and tapes for transferring printed sheets from the cylinder to said delivery mechanism; with a fountain located above the delivery mechanism, a ductor roller adapted to transfer ink from the fountain to the form inking devices, and means for reciprocating said ductor intermediate the adjacent ends of said tapes and said delivery devices.

17. In combination, a cylinder, a reciprocating bed, devices for inking the forms on the bed, a delivery mechanism, and means

for transferring printed sheets from the cylinder to said delivery mechanism, a fountain located above the path of the sheets, a ductor roller adapted to transfer ink from the fountain to the form inking devices, means for reciprocating said roller intermediate the said transferring devices and said delivery mechanism, and devices for directing the sheets across the path of the ductor, and means for moving said devices out of the way of the ductor when the latter is reciprocated.

18. In a sheet printing press, the combination of a cylinder, a reciprocating bed, devices for inking the forms on the bed, a delivery mechanism at one end of the press, and means for transferring printed sheets from the cylinder to said delivery mechanism; with a fountain located above the delivery mechanism, a ductor roller adapted to transfer ink from the fountain to the form inking devices, means for reciprocating said roller intermediate the adjacent ends of said transferring and said delivery devices; devices for directing the sheets from the tapes to the said delivery devices, and means for moving said devices out of the way of the ductor roller when the latter is reciprocated.

19. In a bed and cylinder sheet printing press, the combination of a cylinder, a delivery mechanism at one end of the press, and means for transferring printed sheets from the cylinder to said delivery mechanism; with form inking rollers below the tapes, a fountain above the path of the sheet,

and a vibrating ductor for transferring ink from the fountain to the form inking rollers, and means for operating said ductor to move it between the tapes and delivery across the path of the sheet in the intervals between the passage of sheets; devices for directing the sheets across the path of the ductor, and means for moving said devices out of the path of the ductor when the latter is reciprocated.

20. In a bed and cylinder sheet printing press, the combination of a reciprocating type bed, a cylinder co-acting therewith, a delivery mechanism at one end of the press, and tapes for carrying printed sheets from the cylinder to said delivery mechanism; with form inking rollers below the tapes, a fountain above the tapes, a vibrating ductor for transferring ink from the fountain to the form inking rollers, means for operating said ductor to move it between the tapes and delivery across the path of the sheet in the intervals between the passage of sheets; a set of fingers for directing the sheets across the path of the ductor from the tapes to the delivery devices, and means for moving said fingers out of the path of the ductor when the latter is reciprocated.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

BURT F. UPHAM.

Witnesses:

J. A. HUMPHREYS,
PERCY G. SHAW.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."