

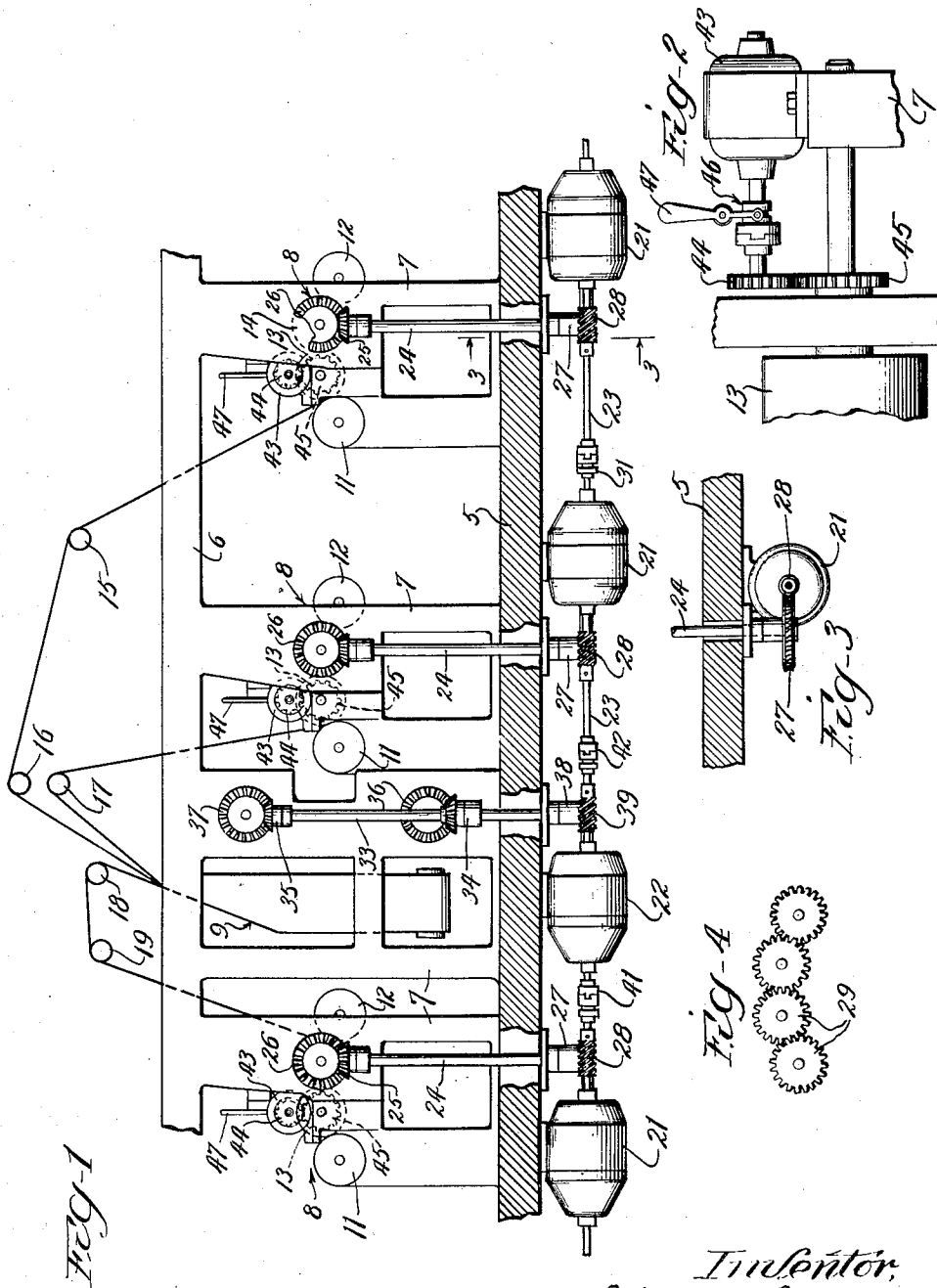
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INCHING MECHANISM FOR PRINTING PRESSES

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In Witness Whereof,
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By: Carl S. Lloyd
Attly.

UNITED STATES PATENT OFFICE

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INCHING MECHANISM FOR PRINTING PRESSES

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This invention relates to printing presses and particularly to the so-called unit type press having the individual printing units arranged in a line or row with the folders interspersed at regular intervals along the line of printing units.

In presses of this type it has heretofore been the practice in making the units ready for a printing operation to inch the entire press as a single unit by using either the regular press drive motor, or an auxiliary slow speed motor to slowly turn over the cylinders of the several printing units.

An important object of my invention is to provide separate inching motors for the several printing units, the motor for each unit being independent of the motors for the other units to permit inching of the units individually. The use of the individual inching motors is particularly desirable in that it eliminates the necessity of turning over the entire press in order to prepare a single unit for a printing operation.

Further objects and advantages of the invention will be apparent as I proceed with my specification, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Fig. 1 is a broken side elevational view of a unit type press provided with separate inching motors for each of the printing units.

Fig. 2 is a broken elevational view showing the connection between the inching motor and the associated printing unit;

Fig. 3 is a detail section taken on the line 3—3 of Fig. 1; and

Fig. 4 is a detail view showing the drive connections between the individual couples of the printing units.

Referring to the drawings, the press frame consists of a horizontal base 5, a top frame member 6 which extends parallel to the base 5, and a series of column members 7 positioned on the opposite sides of the frame and extending vertically between the base 5 and the top frame member 6.

The portion of the press shown in the drawings includes three printing units supported between the columns 7 and indicated gener-

ally by the numeral 8, and a folder 9 positioned between the two printing units located at the left in Fig. 1. In the embodiment shown the printing units 8 include two separate printing couples, the plate cylinders of which are indicated by the numerals 11 and 12, the corresponding impression cylinders being indicated by the numerals 13 and 14. One side of the sheet is printed as the web passes between the cylinders 12 and 14 and the other side of the sheet is printed as the web passes between the cylinders 11 and 13. After passing through the printing units the several webs are taken over guide rollers 15, 16, 17, 18 and 19 to the folder 9 where they are assembled and folded in the desired relation.

The printing units 8 and the folder 9 may either be driven by a single large motor and a main line shaft connecting with the individual units, or by separate motors which are individualized to the separate printing units and the folder. In the embodiment shown in the drawings I have illustrated a press provided with separate motors 21 for driving the printing units 8, and a separate folder motor 22 for driving the folder 9, these motors being connected by an equalizing shaft 23 to give synchronous operation for the several units of the series. The use of motors which are individualized to the printing units and the folders is shown in United States Patent No. 1,734,077 issued to Allan J. Cline November 5, 1929.

Each of the motors 21 is connected to its corresponding printing unit by a vertical shaft 24 which is provided at its upper end with a bevel pinion 25 meshing with a bevel gear wheel 26 carried by the spindle of the impression cylinder 14. The lower end of the shaft 24 carries a worm wheel 27 which meshes with a worm gear 28 carried on the armature shaft of the motor 21. The couples of each printing unit are geared together as indicated in Fig. 4, the spindle of each cylinder being provided with a gear wheel 29 which meshes with the corresponding gear on the spindle of the adjacent cylinder to provide a driving connection between the two couples. The armature shaft of each of the motors 21 extends through the motor and is

provided with a clutch member 31 for connecting the motor into the equalizing shaft 23. By disconnecting the clutch members 31 the printing units may be operated independently of the other units of the series.

The folder 9 is driven from the folder motor 22 through a vertical shaft 33 carrying bevel pinions 34 and 35 which mesh with corresponding bevel gear wheels 36 and 37 which in turn are operatively connected with the rollers of the folder. The lower end of the shaft 33 carries a worm wheel 38 which meshes with a worm gear 39 carried on the armature shaft of the motor 22. A clutch 41 connects the motor 22 into the equalizing shaft 23. The shaft 23 is also provided with clutch members 42 to allow said shaft to be divided in accordance with the particular grouping of the units selected for any given run of the press.

According to my invention, each of the printing units 8 is provided with a separate inching motor 43 to permit plating up of the individual printing units independently of the other units of the series. The motors 43 are supported upon the press columns 7 adjacent the impression cylinders 13. The armature shaft of each of the motors 43 carries a spur gear 44 which meshes with a spur gear 45 carried by the spindle of the impression cylinder 13. Direct driving connection is thus provided between the inching motor and both couples of the printing unit, the couples being geared together as indicated in Fig. 4. A clutch 46 is provided in the armature shaft of each of the motors 43 to disconnect the motor from the impression cylinder 13. The clutches 46 include operating handles 47 which are positioned on the press at a point which may be conveniently reached by the pressmen. It will be understood that the inching motors are merely used for making ready the printing units. When the press is plated up and ready for a run the inching motors are disconnected by the clutches 46. When the inching motors are in use the clutch members 31 are disconnected to allow independent operation of the corresponding printing units.

If a single large motor is used to drive the press instead of the individual motors 21 and 22 the shafts which connect the printing units with the main power transmission shaft are provided with clutches for disconnecting the several printing units from the main line shaft. The use of such clutches allows the separate inching motors 43 to drive their corresponding printing units without driving the other units of the series.

In the embodiment shown in the drawings the couples of each printing unit are geared together and a single inching motor is provided for each printing unit. If the couples are not geared together, as is sometimes the case in color presses, a separate inching motor

may be provided for each couple of the printing unit.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

What I regard as new and desire to secure by Letters Patent is:

1. A printing press comprising, a plurality of associated printing units, and a separate inching motor for each of said printing units.

2. A printing press comprising, a plurality of associated printing units, drive means for operating said units, means for disconnecting each of said printing units from the other units of the press, and a separate inching motor for each of said printing units.

3. A printing press comprising, a plurality of associated printing units, drive means for operating said units, means for disconnecting each of said printing units from the other units of the press, a separate inching motor for each of said printing units, and means for disconnecting said inching motors from the printing units.

4. A printing press comprising, a printing unit, a folder, drive means for operating said printing unit and the folder, means for disconnecting said printing unit and the folder, and a separate inching motor for said printing unit.

5. A printing press comprising, a printing unit, a folder, drive means for operating said printing unit and the folder, means for disconnecting said printing unit and the folder, a separate inching motor for said printing unit, and means for disconnecting said inching motor from the printing unit.

6. A printing press comprising, a plurality of associated printing units, a folder, drive means for operating said printing units and the folder, means for disconnecting said folder and the printing units from the other units of the press, and a separate inching motor for each of said printing units.

7. A printing press comprising, a plurality of associated printing units, a folder, drive means for operating said printing units and the folder, means for disconnecting said folder and the printing units from the other units of the press, a separate inching motor for each of said printing units, and means for disconnecting said inching motors from the printing units.

8. A printing press comprising, a printing unit, a motor drive individualized to said unit, a folder, an individual motor drive for said folder, and a separate inching motor for said printing unit.

9. A printing press comprising, a printing unit, a motor drive individualized to said unit, a folder, an individual motor drive for said folder, a separate inching motor for said

printing unit, and means for disconnecting said inching motor from the printing unit.

10. A printing press comprising, a plurality of associated printing units, a separate motor drive for each of said units, and a separate inching motor for each of said units.

11. A printing press comprising, a plurality of associated printing units, a separate motor drive for each of said units, a folder, an individual motor drive for said folder, and a separate inching motor for each of said printing units.

12. A printing press comprising, a plurality of associated printing units, a separate motor drive for each of said units, means for disconnecting said units from the other units of the press, and a separate inching motor for each of said printing units.

13. A printing press comprising, a plurality of associated printing units, a separate motor drive for each of said units, means for disconnecting said units from the other units of the press, a separate inching motor for each of said printing units, and means for disconnecting said inching motors from the printing units.

14. A printing press comprising, a plurality of associated printing units, a separate motor drive for each of said units, a folder, an individual motor drive for said folder, means for disconnecting said printing units and the folder from the other units of the press, and a separate inching motor for each of said printing units.

15. A printing press comprising, a plurality of associated printing units, a separate motor drive for each of said units, a folder, an individual motor drive for said folder, means for disconnecting said printing units and the folder from the other units of the press, a separate inching motor for each of said printing units, and means for disconnecting said inching motors from the printing units.

16. A unit type printing press comprising a series of associated printing units, an individual main drive for each of said units, comprising a motor and driving connections therefrom to the press, means for disconnecting the individual units from other units of the press, an individual inching motor for each of said units for driving the same at slow speed, said inching motor being independent of the said individual main drive for the unit, and means for disconnecting said inching motors from the printing units to permit the latter to be driven at high speed from said main drives.

In witness whereof, I hereunto subscribe my name to this specification.

HAROLD L. McCLEERY.