Jan. 11, 1938. E. W. DEAN 2,104,737

NEWSPAPER PRINTING PRESS

Original Filed June 4, 1934 3 Sheets-Sheet 1

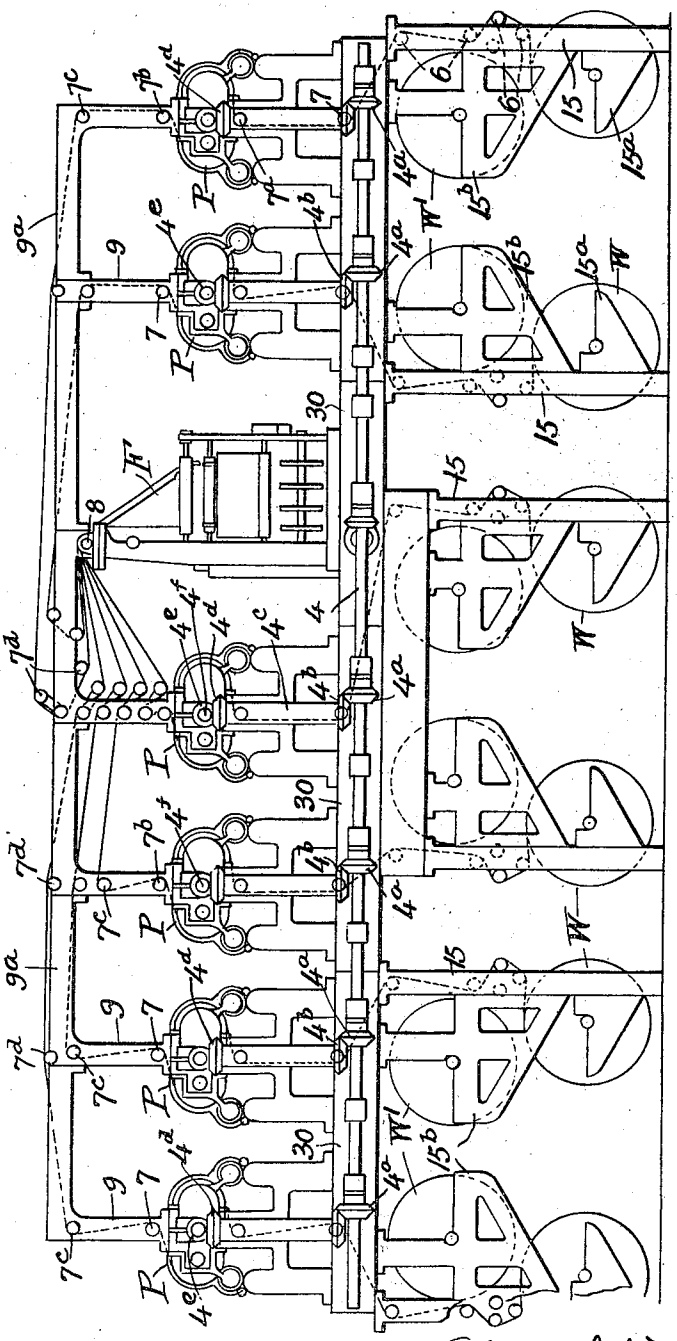


Fig. 1.

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Fig. 2.

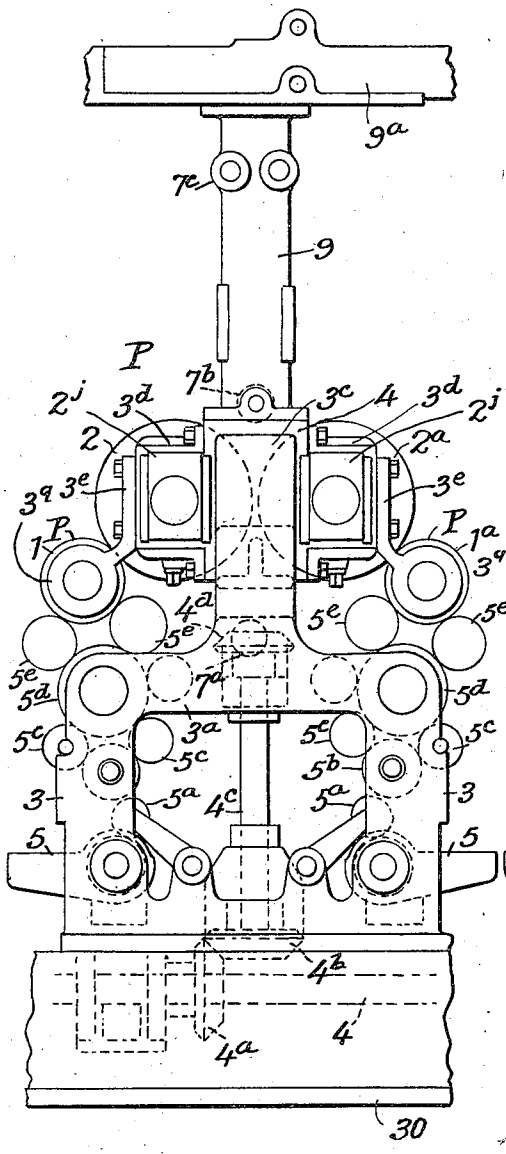
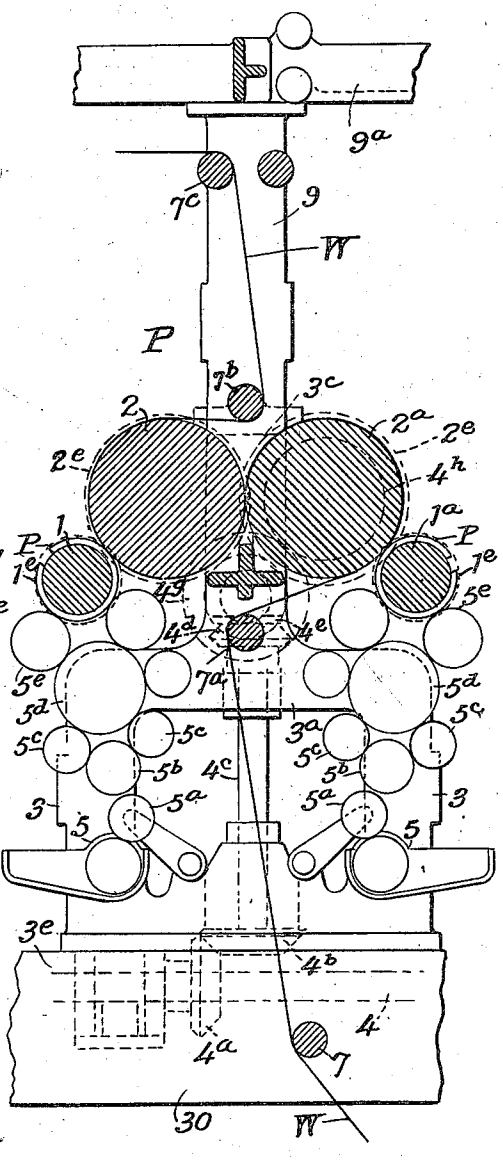


Fig. 3.



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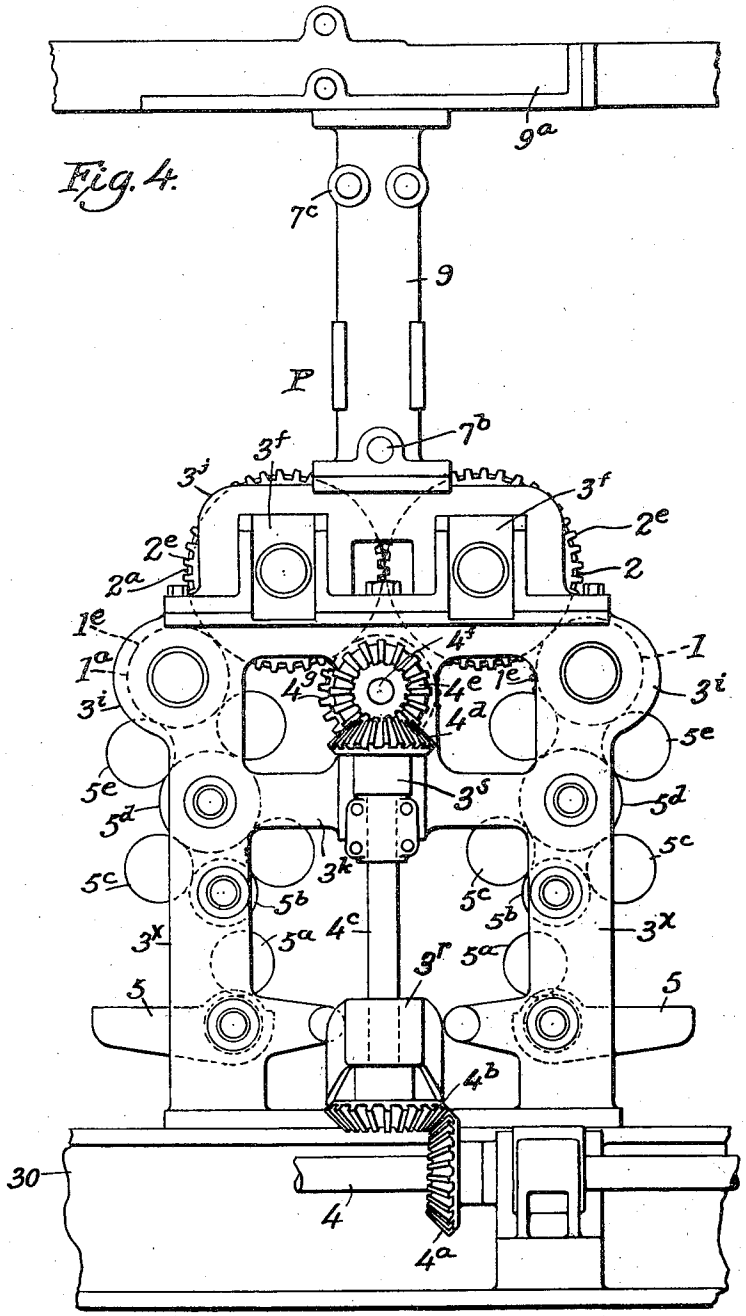
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Fig. 4.



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UNITED STATES PATENT OFFICE

2,104,737

NEWSPAPER PRINTING PRESS

Edmund W. Dean, Battle Creek, Mich., assignor to Duplex Printing Press Company, Battle Creek, Mich., a corporation of Michigan

Original application June 4, 1934, Serial No. 729,013. Divided and this application April 5, 1935, Serial No. 14,910

7 Claims. (Cl. 101—220)

This invention is an improvement in printing presses of the so-called tubular plate type such as originally disclosed in Bechman's Patent No. 867,230 dated October 1, 1907. The present application is a division of my copending application Serial No. 729,013, filed June 4, 1934.

The invention provides a multi-unit tubular plate press and folder, said press having a plurality of interchangeable printing units and a folder unit or units; which units can be arranged in any desired relation in a line. Any desired number of units may be employed to produce a straight line, straight run paper or papers of any desired size or number of pages.

The object of the invention is to provide a simple and attractive press for newspaper publishers who desire increased production and prefer the tubular plate economies and efficiencies and which press will conserve and retain all the advantages of single tubular plate press production and operation, with greatly increased net production speed; and in which any unit may be put into or out of operation as desired.

In the accompanying drawings I have illustrated one embodiment of the invention in a newspaper printing press; and will describe the same in detail with reference to said drawings, and summarize in the claims the essentials of the invention and novel combinations and construction of parts for which protection is desired.

In said drawings:

Fig. 1 is a diagrammatic side elevation of a multi-unit tubular plate printing press and folder.

Fig. 2 is an enlarged view of the plating side of one printing unit.

Fig. 3 is a vertical section through Fig. 2.

Fig. 4 is a view of the gear side of the unit.

Each printing unit comprises a perfecting printing mechanism including two tubular-plate cylinders 1, 1*a* and coacting impression cylinders 2, 2*a*; mounted in a unit frame. Each plate cylinder is adapted to carry two (or more) single-page-tubular plates such as described in the aforesaid patent.

Each printing unit frame comprises a plating side member 3 (see Fig. 2) and a drive or gear side member 3*x* (see Figs. 3 and 4). The side member 3 has a centrally disposed upwardly extending standard 3*c* at its top to opposite sides of which are bolted castings 3*d*, in which are mounted the boxes 2*j* in which the adjacent trunnions of the cylinders 2 and 2*a* are journaled. To the outer side of these boxes are fastened castings 3*e* having depending projections provided with annular heads 3*q* in which the adjacent trunnions of the cylinders 1 and 1*a* are journaled. The heads 3*q* are of slightly less diameter than the cylinders 1, 1*a*, so that the tubular plates P can be slid endwise onto or off of the cylinders over the heads 3*q* in the manner described in the said Bechman patent.

The gear-side member 3*x* of the frame is formed with integral bearings 3*i* in which the adjacent trunnions of the plate cylinders 1, 1*a* are journaled, and on the top of this frame is bolted a casting 3*j* which contains the boxes in which the adjacent trunnions of the impression cylinders 2, 2*a* are journaled, the top of casting 3*j* is practically level with the top of the standard 3*c* of frame member 3. The frame member 3*x* also has a transverse bar 3*k* which supports the upper bearing for the unit-drive shaft 4 hereinafter referred to.

Each plate cylinder 1, 1*a* is adapted to carry tubular plates P, each of which will print one newspaper page of matter. The plates receive ink from suitable inking mechanism. In the construction shown (Figs. 2–4) the form rollers 5*e* are supplied with ink from a drum 5*d*, on which ink is distributed by rollers 5*c*, that receive ink from a roller 5*b*, to which ink is supplied by ductor 5*a*, from a fountain 5. The said inking devices are mounted in the usual manner on and between the side members 3, 3*x* of the unit frame.

The frame members 3, 3*x* are mounted upon a base 30. As shown, there are one or two perfecting printing units, such as above described, on each base. The bases 30 are made of uniform size, and are adapted to be securely bolted together when the units are in the proper relative positions.

Each printing unit of the press is constructed alike and in the drawings each unit is two plates wide and will print four pages, so six units would produce 24 pages, the equivalent of a semi-cylindrical sextuple in straight run production; for a 32 page machine two more units would be employed.

Any number of perfecting units may be employed, arranged in line, side by side with the cylinders parallel according to desired capacity of the press. In the example shown in Fig. 1 there are six perfecting units; and one folder unit F, which is also mounted on base 30 that can be secured to and between any two adjacent printing unit bases 30, and in line therewith.

The folder unit F may have folding mechanism as usual of any suitable construction, and needs no detailed description or illustration herein.

In the example shown in Fig. 1 the press has

two perfecting units at one side of the folder unit, and four perfecting units at the other side of the folder. Such press would produce 24 pages, if the plate cylinders are two pages long, or a 48 page press if the plate cylinders were four pages long.

The press and folder units are preferably driven by means of a sectional main drive shaft, composed of sections 4 mounted on the drive side of each base 30, as indicated in Fig. 1, the ends of the adjacent sections being suitably coupled together. On the drive shaft section of each printing unit, is a bevel gear 4a meshing with a beveled gear 4b on a vertical shaft 4c journaled in bearings 3r and 3s on the side frame 3x. On the upper end of shaft 4c is a bevel gear 4d meshing with a bevel gear 4e on a stub shaft 4f carrying on its inner end a spur 4g that meshes with the gear 2e on the impression cylinder 2a (Fig. 4). The impression cylinders 2, 2a, have intermeshing gears 2e, so that one is driven from the other; and the gears 2e mesh with gears 1e (Fig. 3) on the plate cylinders 1, 1a, and drive the latter.

The inking mechanism may also be driven by suitable gearing (not shown) from the shaft 4c, or from the gears 1e on the plate cylinders.

The gears 4a may be made slidable into or out of engagement with the gears 4b, so that any printing unit can be put out of, or into, operative condition as desired; or suitable clutch devices may be provided whereby any gear 4a may be locked to or freed from the shaft 4 for the purpose of throwing the related unit into or out of operation. Such devices being well known are not illustrated.

Preferably in order to enhance the productivity of the press the units are supported on a substructure in which the web supply rolls are located in such position that "flying pasters" can be made from one roll to another with the press in operation, and new rolls can be placed in position so that practically continuous running to any required ultimate production is obtainable. This sub-structure is also so designed that should it be desired to put in an automatic roll change, or a revolving or swinging frame commonly called a "reel", in place of the paper roll supports shown in Fig. 1, it is entirely practical so to do. In some cases however the web supplies can be arranged at the ends or above the press, according to the conditions and size of the room in which the press is located.

A web guiding super-structure such as indicated in Fig. 1 may be provided. For this purpose standards 9 are mounted upon the frames 3 and 3x as shown and upon these members are mounted horizontal members 9a adapted to support the guide rollers as conventionally illustrated in Fig. 1 by which the several webs after being printed are led to the assembly roller 8 at the top of the former of the folder.

In the construction shown in Fig. 1 the bases of the units are supported on a suitable substructure, which as shown includes vertical members 15, on which are mounted roll supports 15a and 15b, a set of such web supports being arranged below and related to each printing unit. As shown the web may be led from a web roll W on support 15a at the right hand end of the press over a set of suitably disposed guide rollers 6 in the sub-structure, to and over a guide roller 7 in the overlying printing unit, and thence up over a guide 7a to and between cylinders 1a, 2a, down between the cylinders 1, 2; then between the cylinders 1 and 2, up over cylinder 2 to a guide 7b; thence up to and over a guide 7c and over other suitably arranged guides as shown to the roller 8 at the top of the former where the several webs are assembled and passed together to and through the folder.

In Fig. 1 I have shown the web supplies as arranged below the press which arrangement I prefer where there is sufficient room; if however there is not room, the web supplies could be arranged on the same level as the printing unit at one end, or both ends, of the press and the webs led from the supplies underneath the floor to the respective units, each web after being printed being directed to the folder substantially as described. In some cases if desired the web supplies could be arranged over the printing mechanisms.

In Fig. 1 I have shown an arrangement of units printing four units at one side of the folder and two units at the other side, but the invention is not limited to any particular number of units arranged in line; nor to the particular arrangement of folder and units shown in Fig. 1; and their number and arrangement would vary according to the maximum size of paper desired.

I claim:—

1. In a printing press unit of the character specified, a supporting frame having a plating side member provided with a standard on its top, castings attached to opposite sides of said standard, journal boxes in said castings, and impression cylinders journaled in said boxes, plate cylinders, and castings attached to the first mentioned castings and having depending portions with enlarged circular heads in which the adjacent trunnions of the plate cylinders are journaled.

2. In a printing press unit of the character specified, a supporting frame having a plating side member provided with a standard on its top, plate and impression cylinders; and castings attached to opposite sides of said standard carrying the bearings for the adjacent trunnions of the impression cylinders, and other castings attached to the first mentioned casting and having depending portions provided with enlarged circular heads in which the adjacent trunnions of the plate cylinders are journaled.

3. In a printing press unit of the character specified, a supporting frame having side members, plate and impression cylinders mounted between said members, one of said members having integral bearings for the journals of the adjacent trunnions of the plate cylinders, and castings mounted on said side member and confining the boxes in which the adjacent trunnions of the impression cylinders are journaled.

4. A perfecting printing press unit of the character specified; comprising a frame having a plating side member and a drive side member, plate and impression cylinders mounted on said members; the plating side member of said frame having a standard on its top, castings attached to opposite sides of said standard and carrying the boxes in which the adjacent trunnions of the impression cylinders are journaled, castings attached to the aforesaid castings in which the adjacent journals of the plate cylinders are journaled; the drive side member of the frame having integral bearings for the journals of the adjacent trunnions of the plate cylinders; and a casting mounted on said drive side member and confining the boxes in which the adjacent

trunnions of the impression cylinders are journaled.

5. A perfecting printing press unit of the character specified; comprising plate cylinders and impression cylinders; a frame having a plating side member and a drive side member; the plating side member of said frame having a standard on its top extending upwardly between the journal boxes of the impression cylinders; castings attached to opposite sides of said standard carrying the boxes in which the adjacent trunnions of the impression cylinders are journaled, and other castings attached to the aforesaid castings and in which the adjacent journals of the plate cylinders are mounted; the drive side member of the frame having integral bearings for the journals of the adjacent trunnions of the plate cylinders, and a casting mounted on said drive side member and confining the boxes in which the adjacent trunnions of the impression cylinders are journaled.

6. A perfecting printing press unit of the character specified; comprising plate cylinders and impression cylinders; a frame having a plating side member and a drive side member; the plating side member of said frame having a standard on its top extending upwardly between the journal boxes of the impression cylinders, castings attached to opposite sides of said standard carrying the boxes in which the adjacent trunnions of the impression cylinders are journaled, and other castings attached to the aforesaid castings and in which the adjacent journals of the plate cylinders are mounted; the drive side member of the frame having integral bearings for the journals of the adjacent trunnions of the plate cylinders, and a casting mounted on said drive side member and confining the boxes in which the adjacent trunnions of the impression cylinders are journaled.

7. A perfecting printing press unit of the character specified; comprising plate cylinders and impression cylinders; a frame having a plating side member and a drive side member, the plating side member of said frame having a standard on its top extending upwardly between the journal boxes of the impression cylinders, castings attached to opposite sides of said standard carrying the boxes in which the adjacent trunnions of the impression cylinders are journaled, and other castings attached to the aforesaid castings and in which the adjacent journals of the plate cylinders are mounted; the drive side member of the frame having integral bearings for the journals of the adjacent trunnions of the plate cylinders, a casting mounted on said drive side member and confining the boxes in which the adjacent trunnions of the impression cylinders are journaled, guides journaled between said frame members for directing webs to and from the cylinders, and inking mechanisms mounted in and between said frame members below the cylinders.

EDMUND W. DEAN.