

Sept. 8, 1936.

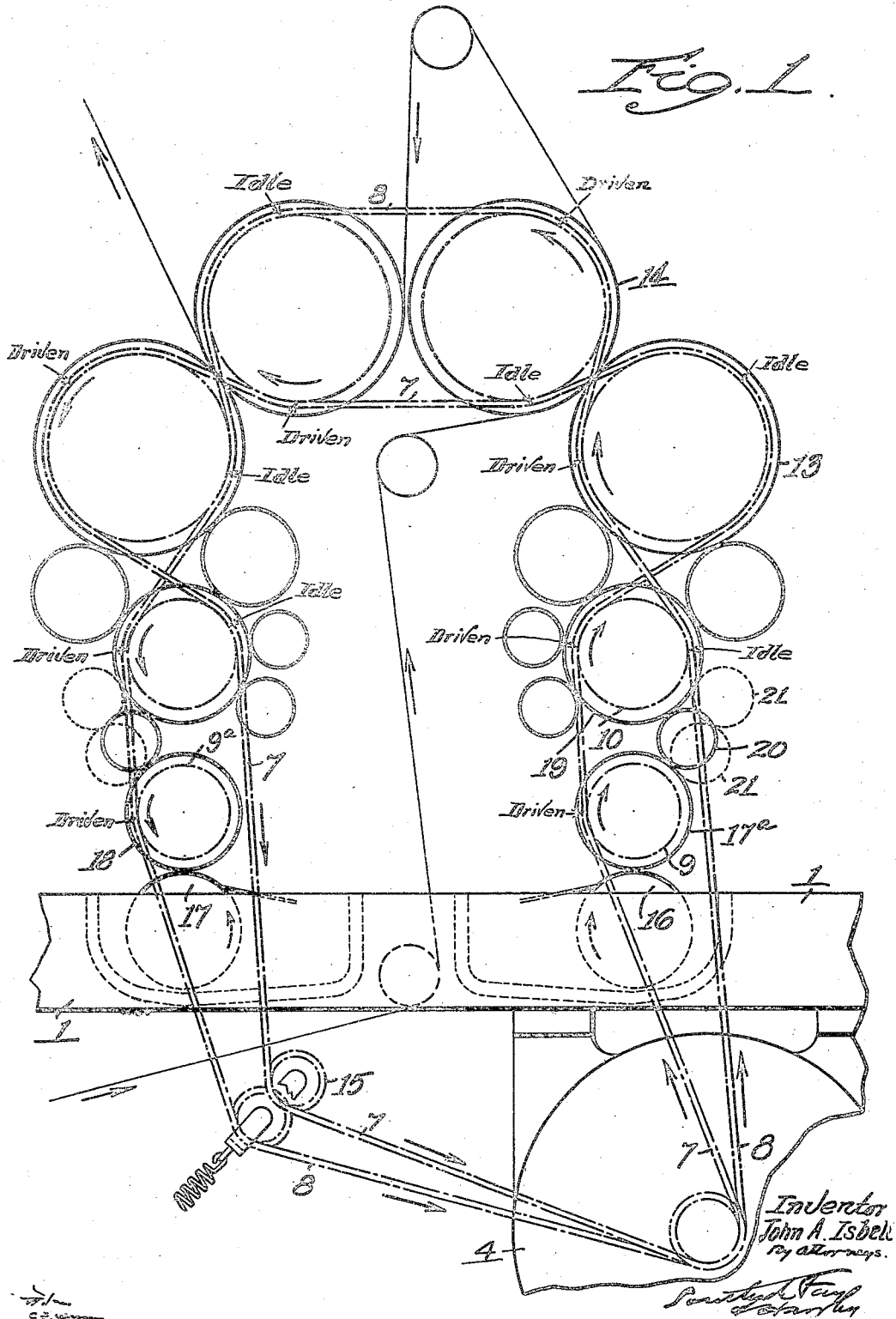
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2,053,958

PRINTING PRESS DRIVE

Filed July 7, 1932

3 Sheets-Sheet 1



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PRINTING PRESS DRIVE

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3 Sheets-Sheet 2

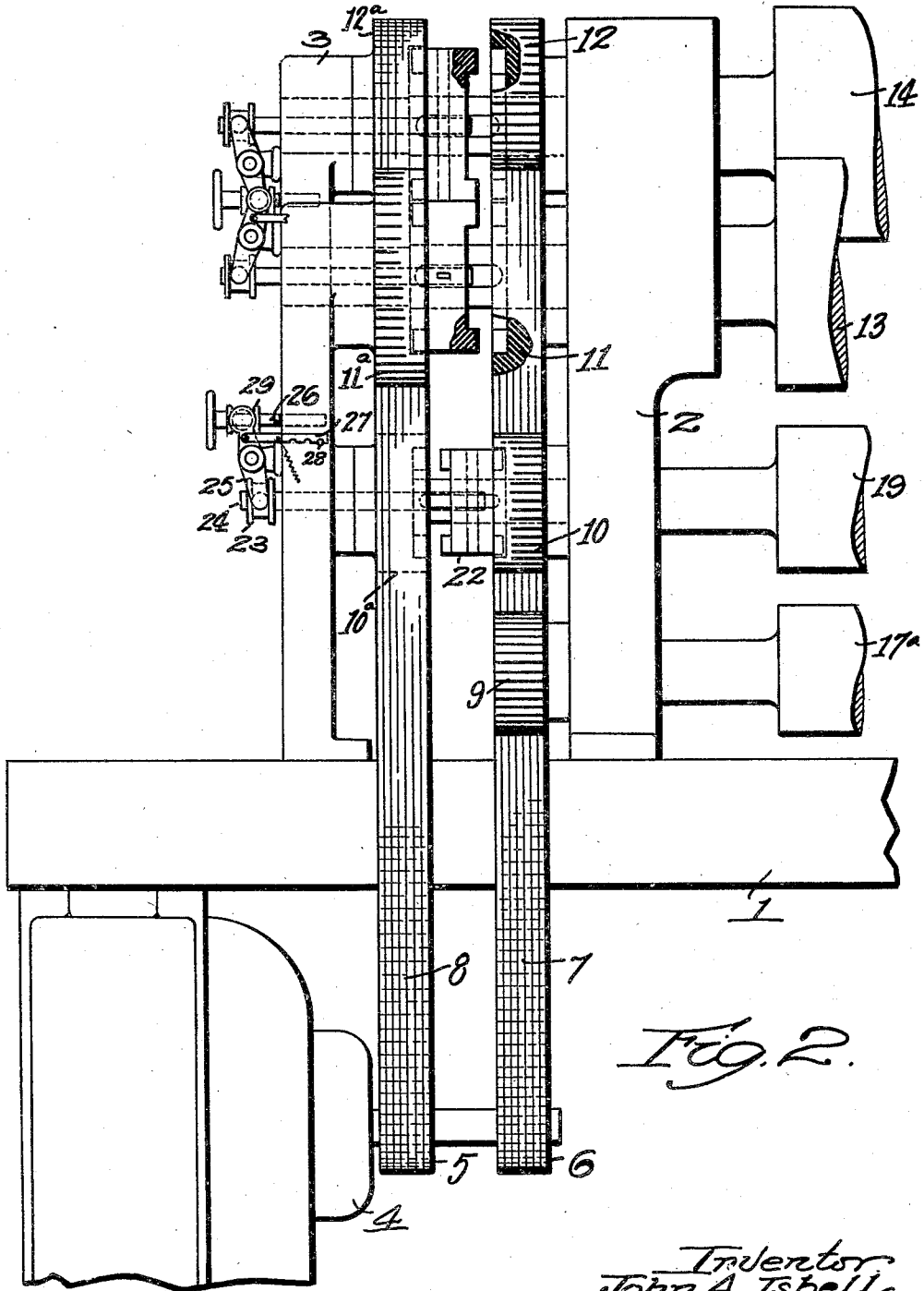


Fig. 2.

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3 Sheets-Sheet 3

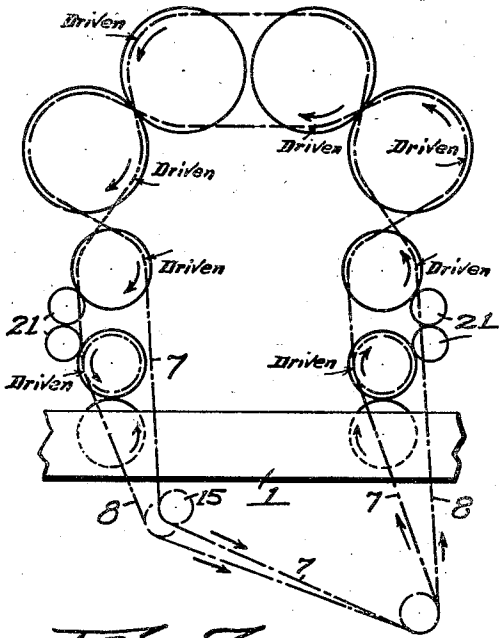


Fig. 3.

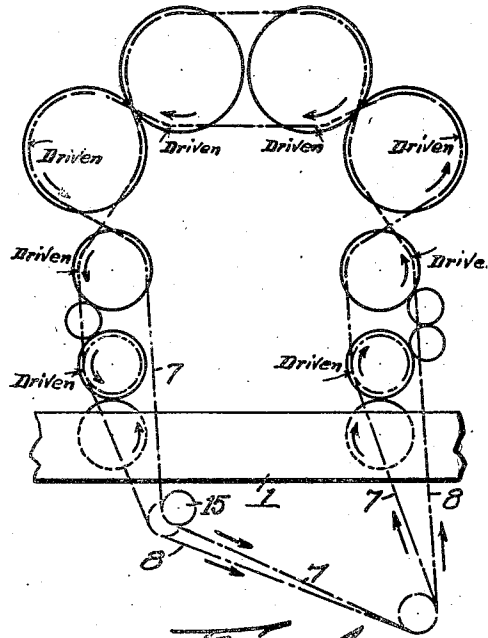


Fig. 4.

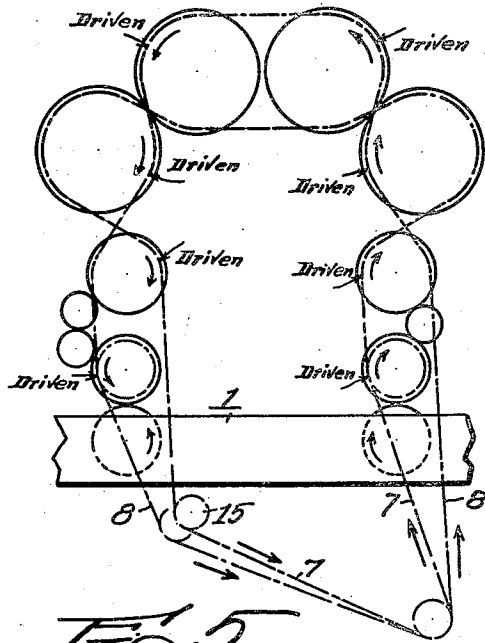


Fig. 5.

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UNITED STATES PATENT OFFICE

2,053,958

PRINTING PRESS DRIVE

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Newspaper Machinery Corporation, New York,
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Application July 7, 1932, Serial No. 621,208

8 Claims. (Cl. 101—220)

The principal objects of this invention are to provide a drive for a printing press of such a flexible character that the press can be driven in a plurality of ways to permit a unit, which ordinarily would print in black only, to be changed readily and in a simple manner so that it will be possible to print in more than one color on the same side of the sheet; to provide this driving means adapted for the so-called unit drive press; to construct the flexible drive by the use of two driving chains driven by a single shaft, interlacing them around the sprockets carried on the ends of the cylinders, and to provide the changes in drive by merely reversing the connections of the chains with certain of the sprockets so that the cylinders on which these sprockets are carried can be driven first in one direction and then in another without, of course, reversing the motor or other driving means connected therewith, thus operating the ink supply constantly in one direction.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is an end view, mainly diagrammatic, of a driving means for a unit drive press, arranged in accordance with this invention and showing normal operation for black and white printing;

Fig. 2 is an elevation, partly in section, showing the clutching and reversing means;

Fig. 3 is a diagrammatic view of the drive showing the press completely reversed from the drive shown in Fig. 1;

Fig. 4 is a similar diagrammatic sketch showing the left-hand couple running in the normal upfed direction with the right-hand couple downfed, and

Fig. 5 is a similar view showing the right-hand couple running in the normal upward direction with the left-hand couple reversed.

With the advent of color in the newspaper printing field it becomes increasingly important that press units be built in such a flexible manner that a variety of drives may be obtained permitting the use of the unit for ordinary black and white printing as well as adaptation for printing in more than one color on the same side of the sheet.

This particular invention shows a unique manner of driving which permits a flexibility of drive giving practically any combination desired and is especially adapted to the so-called unit drive which is so popular at the present time. The means for obtaining this flexibility is the use of

two driving chains driven by a single motor, these chains being interlaced around sprockets carried on the ends of each of the cylinders to be driven at paper speed. The chains, therefore, partake of serpentine paths in such a manner that by clutching either one sprocket or the other of the two sprockets carried on any reversible cylinder, that particular cylinder may be driven first in one direction and then in the other.

Referring to the drawings, it will be seen that the bed plate 1 provides a support for side frame 2 and a similar side frame (not shown) carrying bearings for the opposite ends of the cylinders. An auxiliary frame 3 is provided to support outboard bearings for the sprockets and double clutching arrangement shown between frames 2 and 3. A driving motor 4 is secured to the bed plate 1 and carries sprockets 5 and 6 mounted on its drive shaft with which cooperate chains 7 and 8 respectively. By tracing chain 7 in Fig. 1 it will be seen to contact with sprocket 9 which is securely attached to the pick-up roller shaft, sprocket 10 clutchably carried on the ink drum shaft, sprockets 11 and 12 clutchably mounted on a plate cylinder 13 and impression cylinder 14 respectively. By continuing the tracing of chain 7 it will be seen to wrap around sprockets on the left hand couple in a similar manner passing back over a spring pressed idler 15 to sprocket 6 of motor 4.

Chain 8 may be traced in a similar manner engaging the sprockets 9^a, 10^a, 11^a, 12^a shown on the left hand side of the clutching members according to Fig. 2. The sprockets 10^a, 11^a and 12^a are connected respectively to the similar cylinders as the sprockets 10, 11 and 12. It will be noticed that fountain rolls 16 and 17, the drive of which is not shown here, as well as pick-up rolls 17^a and 18 travel in predetermined directions regardless of what direction the couple is running. This is desirable since it is necessary to carry only one ink fountain blade per fountain for regulating the flow of ink up on the fountain rolls and thence to the pick-up rolls. The reversing of the ink motion between pick-up roll 17^a and ink drum 19 is accomplished through the use of a single soft roller 20 when the couple is running as shown in Fig. 1 or with two soft rollers 21 when the couple is running reversed, as shown in Fig. 3.

Carried on a slidable feather attached to each reversible cylinder, 10, 13, and 14 on each side, is a clutch member 22 which has clutch teeth for engaging with one of two sprockets placed on opposite sides. In each case the clutch teeth nearest the cylinder carry the chain 7 while those fur-

ther away carry the chain 8. This clutch member 22 in each case is operated by a spool 23, carried on a shaft extension 24 of the clutch. In the spool fits one end of a lever 25, the other end being
 5 adjustably movable by a double collar arrangement 29 carried on an adjusting screw 26. A spring-pressed pivotally mounted detent 27 is attached to the lever 25 and cooperates with a pin
 10 28 mounted in the frame 3 so that when pin 28 engages in any one of the three notches shown therein, the clutch is in engagement with one or the other sprocket or is in the neutral position.

Similar clutch shifting arrangements are provided for the plate and impression cylinders and
 15 the other ink drum. It is, of course, well within the scope of this invention that these clutches on each couple be shifted simultaneously or by one lever motion.

Fig. 4 shows the left-hand couple running in the normal upfed direction with the right hand couple being downfed. This arrangement permits the printing of two colors on the same side
 20 of a web.

Fig. 5 shows the right hand couple being run in the normal upfed direction with the left hand couple being reversed also permitting two colors to be put on one side of the sheet by running in the opposite direction to that shown in Fig. 4.

What this invention provides is a simple means
 30 for driving a printing press which eliminates bevel gears and shafts and provides for reversing different parts of the unit in such a manner as to give the desirous flexible drive needed in printing a web on both sides or in printing in a plurality of
 35 colors on the same side of the web. Both couples are intended to run simultaneously but it would be possible to disconnect one couple down as far as the ink drum 19. The pick-up roller is positively geared and has no disconnecting clutch, as
 40 shown.

Although I have illustrated and described one form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the
 45 scope of the invention as expressed in the claims. Therefore I do not wish to be limited in this respect otherwise than as set forth in the claims but what I claim is:—

1. In a printing press, the combination with
 50 a motor having a pair of driving wheels connected with its shaft, of a pair of flexible driving connections, one associated with and driven by each of said wheels, said driving connections being associated with certain cylinders of the press so that
 55 one will drive the cylinders in one direction or the other in the other direction, and means for connecting either of said flexible connections with the cylinders and disconnecting the other drive for reversing the direction of rotation of the cylinders.
 60

2. In a printing press, the combination with a source of power comprising a shaft, a pair of wheels fixed to said shaft, flexible driving connections independently associated with the two
 65 wheels, a plurality of cylinders constituting a part of the printing press, certain of said cylinders having each two wheels on their respective shafts connected independently with the respective driving connections, the flexible driving connections being threaded around the respective wheels which they drive in opposite directions, and means whereby certain of those cylinders can be operatively connected with one driving member while others are connected with the other so
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that the two sets of cylinders can be driven in opposite directions.

3. In a printing press, the combination with a source of power comprising a shaft, a pair of wheels fixed to said shaft, flexible driving connections associated with the two wheels, a plurality of cylinders constituting a part of the printing press, certain of said cylinders having two wheels loose on their shafts each connected with one of the respective driving connections, the flexible driving connections being threaded around the respective wheels which they drive in opposite directions, and means for operatively connecting one set of wheels on certain cylinders with those cylinders, and means for connecting the other set of wheels on the other cylinders with the other cylinders at the same time, whereby those two sets of cylinders will be driven in opposite directions simultaneously.
 5 10 15

4. In a printing press, the combination of a driving shaft, a pair of sprocket wheels fixed with respect to the shaft, a pair of sprocket chains passing around the respective sprocket wheels, a series of cylinders constituting a part of the printing press, each having on its shaft two sprocket wheels, each sprocket wheel engaging one of said sprocket chains, a double clutch associated with each pair of sprocket wheels on a cylinder, which clutches can be thrown in either direction so that all the cylinders can be driven from either chain, or those driving one couple of the press can be driven by one chain and those driving the other couple of the press can be driven by the other chain, said chains being arranged to pass around opposite sides of the sprocket wheels of the cylinders which they drive so that either set of cylinders can be reversed.
 20 25 30 35

5. In a printing press comprising two printing couples and two ink pick-up rolls, the combination of a driving shaft, a pair of sprocket wheels fixed to the shaft, a pair of sprocket chains passing around the sprocket wheels, the printing cylinders of the two couples each having two sprocket wheels, each sprocket wheel engaging one of said sprocket chains, a double clutch associated with each pair of sprocket wheels, means whereby these clutches can be thrown in either direction so that all the cylinders can be driven from either chain or one couple can be driven by one chain and another couple by the other chain, said chains being arranged to pass around opposite sides of the sprocket wheels of the cylinders so that they can be reversed, one of said chains only being connected with the pick-up rolls of the ink mechanism for driving them, whereby the two pick-up rolls will not be reversed.
 40 45 50 55

6. In a printing press, the combination with two printing couples, of two flexible driving means therefor, means for operating each flexible driving means constantly in the same direction, and means whereby either of the flexible driving means can be connected with either of the individual cylinders and the other disconnected therefrom to change the direction of rotation thereof while the flexible driving means are operating in the same direction.
 60 65

7. The combination with a printing press comprising two plate and impression cylinders, of two sprockets loose on the shafts of said cylinders, two chains, each in driving engagement with one sprocket on each shaft, and clutches for connecting either of each pair of sprockets to its shaft, said chains being located on oppo-
 70 75

site sides of the two sprockets of each pair, and means for driving each chain always in the same direction, whereby the cylinders can be driven in either direction.

5 8. The combination with a printing press comprising two plate and impression cylinders, two ink drums and two pick-up rolls, of two sprockets loose on the shafts of each of said cylinders, one sprocket on the shaft of each pick-up roll, two

chains, each in driving engagement with one sprocket on each shaft, and clutches for connecting either of each pair of sprockets to its shaft, said chains being located on opposite sides of the two sprockets of each pair, and means for driving each chain always in the same direction, whereby the cylinders can be driven in either direction. 5

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