

June 8, 1926.

W. H. GRANGER

1,587,772

PRINTING PRESS

Filed Jan. 21, 1925

Fig. 3.

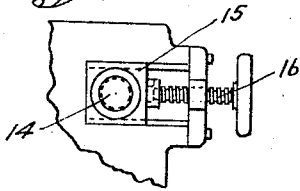


Fig. 11.

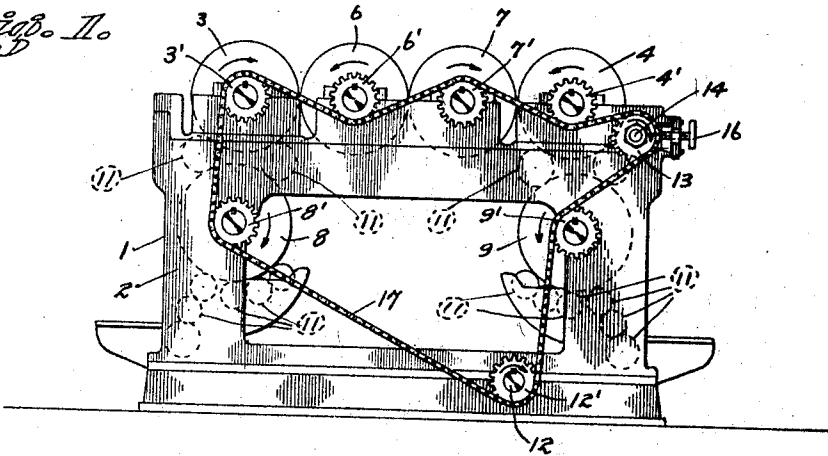
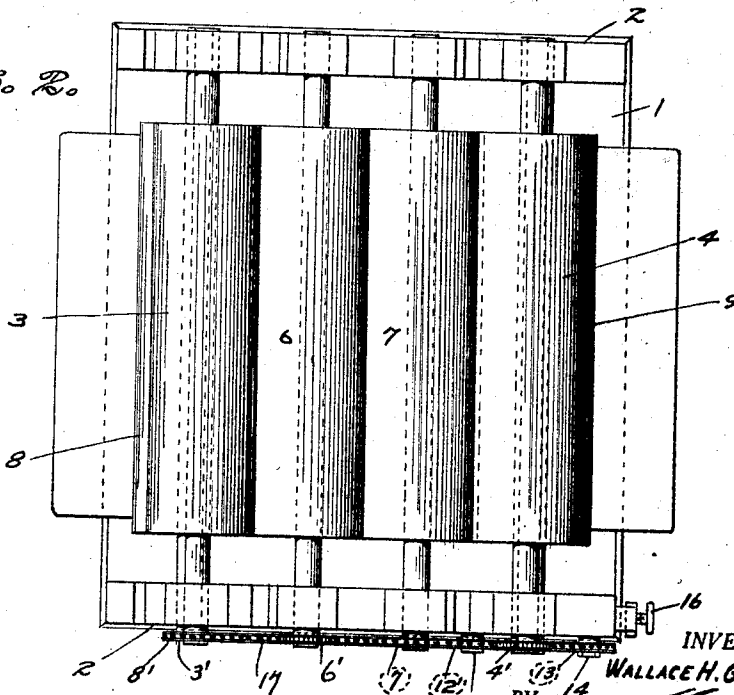


Fig. 2.



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PRINTING PRESS.

Application filed January 21, 1925. Serial No. 3,843.

The present invention relates to improvements in printing presses, and has particular reference to an improved drive for a printing press unit now on the market. In this unit four rolls are disposed alongside of one another in parallel relation and two other rolls are disposed below the two outer rolls in spaced relation thereto while a drive shaft is arranged below the lower set of rolls between the two vertical planes thereof and somewhat closer to the vertical plane of one of the rolls than to that of the other. At the present time motion is imparted to the various rolls from the drive shaft by means of a large number of gear wheels. I have discovered that the drive for the various rolls can be simplified considerably by the use of a chain, the rolls being so arranged and revolving in such directions that a single chain may be passed around all the rolls so as to turn each of them in its proper direction, it only being necessary for this purpose to introduce one idler allowing any slack in the chain to be taken up while, at the same time, serving to so guide the chain that the latter will properly revolve two of the rolls which otherwise could not be operated by the chain.

Further objects and advantages of my invention will appear as the specification proceeds.

The preferred form of my invention is illustrated in the accompanying drawing, in which—

Figure 1 shows an end view of a printing press unit having my chain drive incorporated therein.

Figure 2 a top plan view of the same, and Figure 3 an enlarged section detail view taken along line III—III of Figure 2.

While I have shown only the preferred form of the invention, it should be understood that various changes or modifications may be made within the scope of the claims hereto attached without departing from the spirit of the invention.

Except for the drive, the printing press unit 1 shown in the drawings is of conventional form and comprises a frame 2 in which are mounted the two type rolls 3 and 4 in spaced and parallel relation in a horizontal plane with two impression rolls 6 and 7 mounted between the two type rolls for pressing the paper to be printed upon the same. Below the type rolls 3 and 4 and spaced therefrom so as to leave a clearance

are the two ink distributing rolls 8 and 9, a plurality of other rolls 11 of similar diameter serving various functions in effecting a proper inking of the type roll. The drive shaft 12 is disposed in the lower part of the frame at a considerable vertical distance from the horizontal plane of the two lower rolls and between the two vertical planes of the same but arranged so as to be considerably nearer the vertical plane of the right hand roll than to that of the left hand roll.

The organization of elements thus far described is found in a printing press unit now manufactured and sold and no novelty is claimed for this arrangement.

The present invention refers principally to the drive of the various rolls. It will be noted that each of the rolls has to revolve in a certain direction, that is, if the first roll 3 revolves clockwise, its impression roll 6 must revolve counter-clockwise, while the distributing roll 8 also travels clockwise. The second type roll 4, in this instance, will travel counter-clockwise and its ink distributing roll 9 also counter-clockwise. The drive shaft 12 revolves clockwise. For the purpose of my invention, each of the rolls is provided with a sprocket, the latter being numbered 3', 4', 6', 7', 8', 9', and 12' respectively, all the sprockets lying in one vertical plane. To effect a drive in the proper direction of all the sprockets and rolls by means of a single chain 17, it is necessary to provide an idler sprocket 13 mounted on the shaft 14 which latter revolves in a bearing 15, the position of which may be adjusted by means of a screw 16 for securing the proper tension on the chain as well as for the purpose of allowing the chain to be drawn between the sprockets 4' and 9' so as to revolve the latter two in the proper direction.

With the aid of this idler, the chain 17 may be guided in such a manner as to revolve all the sprockets and the rolls actuated thereby in their predetermined directions. For this purpose the chain passes underneath the sprockets 12', on the outside of the two sprockets 8' and 3', below the sprocket 6', above the sprocket 7', underneath the sprocket 4' to be guided around the idler 13 and from there over the sprocket 9' back to its point of beginning.

It will be noted that in this manner the various rolls are revolved in the directions

previously outlined and that it is necessary for this purpose to utilize an idler which allows the chain to be drawn outwardly through the space between the sprockets 4' and 9' so as to allow the latter sprockets to be engaged by the chain for rotation in the proper direction. It will further be noted that the idler 13 performs two functions, namely, that of taking up any slack in the chain as well as that of allowing the same to be properly guided for effecting rotation of the rolls in the desired direction. It should further be noted that this double function of the idler necessitates its being arranged in a definite place, namely, to the right of the two sprockets 4' and 9' and preferably between the horizontal planes thereof. It should also be observed that the idler should be arranged on the same side as the drive wheel since its place on the arrangement must be such that the sprocket 9' forces the chain out of a straight line which would not be possible if the sprocket 12' were disposed on the other side of the machine for instance.

As a further advantage of my chain drive, I might mention the easy solution of a problem met with in the proper arrangement of the rolls. It will be noticed that the rolls may be divided in two groups of three each, each group comprising a printing roll, an impression roll and an ink distributing roll. The two impression rolls 6 and 7 which are mounted alongside of one another, are covered with blankets made to slightly yield to the characters on the printing rolls and should therefore, be spaced from one another in order to prevent frictional engagement of the two blankets between one another. Where a direct gear drive is used between the two impression rolls, a spacing of the latter results in imperfect engagement between the gears and it has been found necessary to complicate the arrangement by providing individual gear drives for the two impression rolls in order to allow the same to be spaced. My chain drive allows of an easy solution of this problem because it permits the two rolls to be spaced at liberty without increasing the difficulty of a common drive.

I claim:

1. In a printing press, four rolls disposed in a horizontal plane from left to right in parallel relation, two rolls below the outer rolls and spaced therefrom, a drive shaft below the outer rolls between the vertical planes thereof and closer to the plane of the right roll than that of the left roll, an idler outside the vertical plane of the right rolls and between their horizontal planes, sprockets on the rolls, the drive shaft and the idler in one vertical plane, and a chain passing over the sprockets and arranged to revolve the two left rolls in the

same direction as the drive shaft, the second upper roll in an opposite direction, the third upper roll in the same direction and the two right hand rolls in the opposite direction.

2. In a printing press, four rolls disposed in a horizontal plane from left to right in parallel relation, two rolls below the outer rolls and spaced therefrom, a drive shaft below the outer rolls between the vertical planes thereof and closer to the plane of the right roll than that of the left roll, an idler outside the vertical plane of the right rolls and between their horizontal planes, sprockets on the rolls, the drive shaft and the idler in one vertical plane and a single chain engaging all the sprockets for revolving all the rolls in timed relation.

3. In a printing press, four rolls disposed in a horizontal plane from left to right in parallel relation, two rolls below the outer rolls and spaced therefrom, a drive shaft below the outer rolls between the vertical planes thereof and closer to the plane of the right roll than that of the left roll, an idler outside the vertical plane of the right rolls and between their horizontal planes, sprockets on the rolls, the drive shaft and the idler in one vertical plane and a single chain engaging all the sprockets for revolving all the rolls in timed relation, the chain passing underneath the drive shaft sprocket, on the outside of the lower and upper left sprockets, underneath the second upper sprocket, above the third upper sprocket, below the upper right sprocket, around the idler sprocket and above the lower right sprocket.

4. In a printing press unit of the character described, six rolls arranged to revolve in unison in predetermined directions, a drive shaft and a single chain having relatively small links engaging the drive shaft and the six rolls for effecting the desired rotation of the rolls, said chain having a serpentine path for effecting opposite rotation of certain adjacent rolls.

5. In a printing press unit of the character described, two similar groups of rolls of three each arranged to revolve in unison in predetermined directions, a drive shaft and a single chain having relatively small links for effecting the desired rotation of the rolls allowing the two groups to be spaced from one another, said chain having a serpentine path for effecting opposite rotation of certain adjacent rolls.

6. In a printing press unit of the character described, two similar groups of rolls of three each arranged to revolve in unison in predetermined directions, a drive shaft and a single chain having relatively small links for effecting the desired rotation of the rolls allowing the two groups to be spaced from one another and comprising a chain operatively engaging the drive shaft and all

the rolls, said chain having a serpentine path for effecting opposite rotation of certain adjacent rolls.

5 7. In a printing press unit of the character described, a plurality of rolls arranged to revolve in unison in predetermined directions, a drive shaft and a single chain having relatively small links engaging the drive shaft and the rolls for effecting the desired
10 rotation of the rolls, said chain having a serpentine path for effecting opposite rotation of certain adjacent rolls.

8. In a printing press unit of the character described, two similar groups of rolls arranged to revolve in unison in predetermined directions, a drive shaft and a single chain having relatively small links for effecting the desired rotation of the rolls allowing the two groups to be spaced from one another, said chain having a serpentine path for effecting opposite rotation of certain adjacent rolls. 15 20

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