No. 707,100. Patented Aug. 19, 1902.

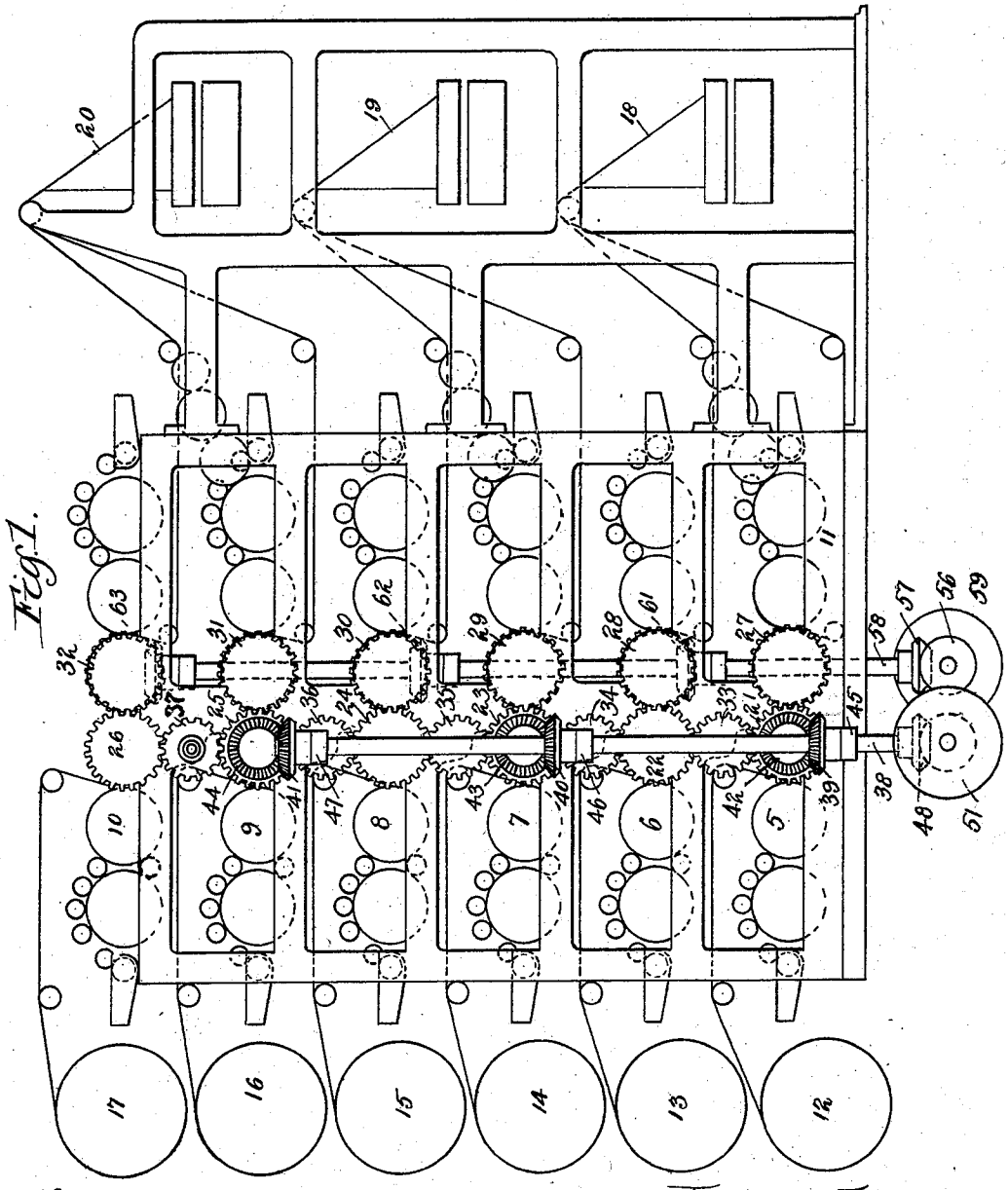
S. G. GOSS.

PRINTING MACHINERY.

(Application filed Jan. 16, 1897.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



Witnesses.

Wm. H. Rhem.

Wm. F. Fleming

Inventor.

Samuel G. Goss,

By Benedict Thurston Pierce & Jackson.

Atty's.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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(No Model.) 3 Sheets—Sheet 2.

Fig. 4.

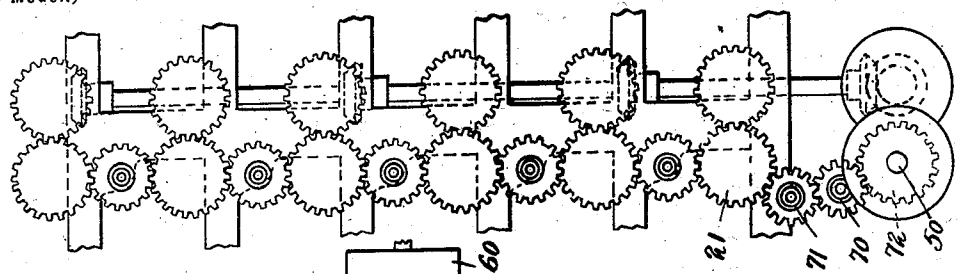


Fig. 3.

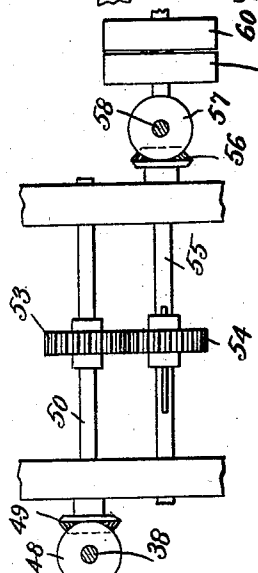
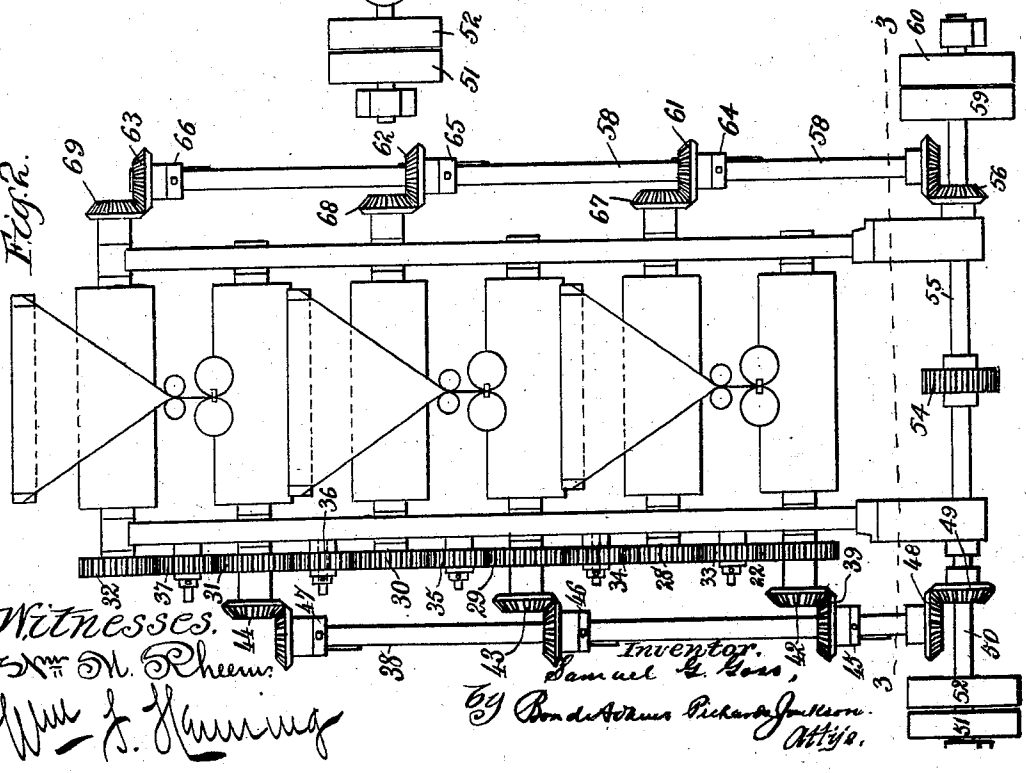


Fig. 2.



Witnesses.

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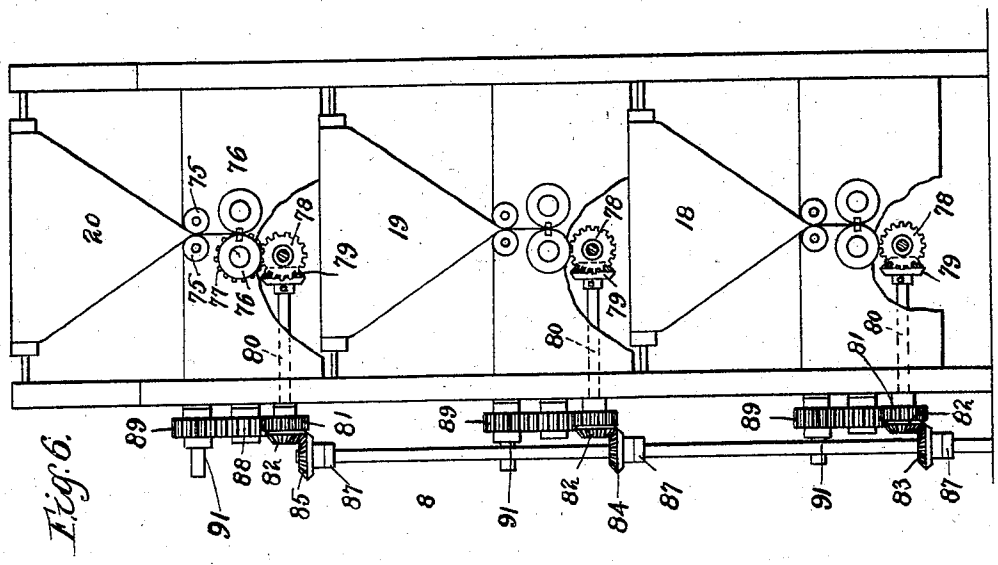


Fig. 6.

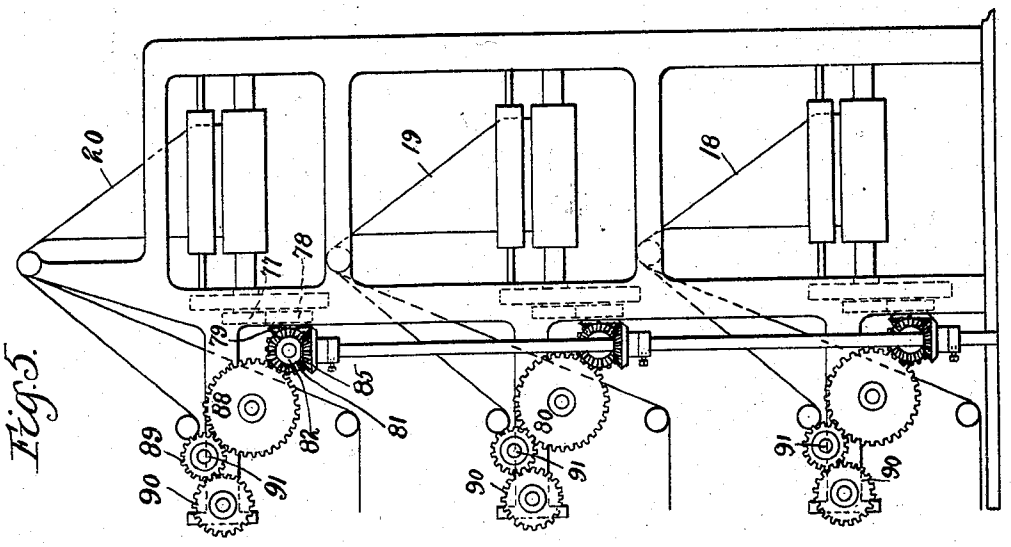


Fig. 5.

Witnesses.
Wm. M. Rheems
Wm. L. Fleming

Inventor
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SAMUEL G. GOSS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GOSS PRINTING PRESS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PRINTING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 707,100, dated August 19, 1902.

Application filed January 16, 1897. Serial No. 619,423. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL G. GOSS, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Printing Machinery, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a diagrammatic side elevation. Fig. 2 is an end elevation. Fig. 3 is a horizontal section on line 3 3 of Fig. 2, showing part of the driving mechanism. Fig. 4 is a partial side elevation showing a modification. Figs. 5 and 6 are elevations showing the folding mechanism.

My invention relates to printing machinery, and has to do more particularly with perfecting-presses of the type shown in my pending application, Serial No. 633,421, filed April 23, 1897, wherein there are a plurality of sets of printing mechanism which are not only capable of operation as distinct presses, but are capable of being coupled together and the sets of printing mechanisms so coupled together operated as a single press with a plurality of sets of cylinders, the operation of the press so coupled together being independent of the other sets of printing mechanism belonging to the machine as a whole.

While in my pending application above referred to I have claimed my improved press broadly, the embodiment of my invention as shown in my said application, Serial No. 633,421, contains a single driving device, which is arranged to drive all the different sets of printing mechanism, such sets of printing mechanism being thrown into and out of operation by means of coupling devices, by which they are connected to and disconnected from the source of power. In my present application, however, I have arranged to drive the different sets of printing mechanism independently by providing a plurality of independent driving mechanisms with means for connecting said driving mechanisms to the different sets of printing mechanism. I have also provided means whereby the two sets of driving mechanism may be coupled together in order to provide for different arrangements and operations of the press. My present application therefore is subsidiary to my said application, Serial No. 633,421, to which reference is made for a more full description of my invention in its broadest form.

In the drawings I have shown two forms of driving mechanism for securing the results stated; but I wish it to be understood that I do not limit my invention to the specific details shown and described, as various modifications may be made without departing from my invention.

In the drawings, 5 6 7 8 9 10 indicate six sets of printing mechanism arranged one above another in a suitable frame 11.

12 13 14 15 16 17 indicate six rolls of paper, the webs from which pass through the different sets of printing mechanism.

18 19 20 indicate three formers arranged to receive the webs from the printing mechanisms in the usual manner.

21 22 23 24 25 26 indicate a series of gears mounted upon the shafts of the first impression-cylinders of the different sets of printing mechanism.

27 28 29 30 31 32 indicate a second set of gears mounted upon the shaft of the second impression-cylinder of each set of printing mechanism and meshing with the gears 21 22 23 24 25 26 in the usual way.

33 indicates a pinion which is mounted on a stud between the gears 21 22 and is adapted to be moved on said stud into and out of mesh with said gears, as indicated in Fig. 2.

34 35 36 37 indicate a series of pinions similar to the pinion 33 and arranged similarly between the different gears of the sets of printing mechanism. By this construction when the pinions 33 34 35 36 37 are in mesh with their respective gears the movement of any set of printing mechanism will be communicated to all the others in the press. By moving any one of said pinions out of mesh with their adjacent gears, where the power is furnished from below the press, all the sets of printing mechanism above such pinion will under some circumstances be silenced.

38 indicates a driving-shaft arranged vertically in suitable bearings and carrying in the construction shown three bevel-gears 39

40 41, respectively, which mesh, espectively, with bevel-gears 42 43 44, which are arranged to rotate with the gears 21 23 25, respectively, as shown in Figs. 1 and 2. By this construction when the shaft 38 is rotated the power will be applied to the press at three different points—to wit, the beveled gears 42 43 44. The bevel-gears 39 40 41 are vertically adjustable upon the shaft 38, being supported by suitable collars 45 46 47, respectively, so that they may move down out of mesh with the gears 42 43 44, if desired. As shown in Fig. 1, the shaft 38 carries at its lower end a bevel-pinion 48, which meshes with a bevel-pinion 49, mounted on a driving-shaft 50.

51 52 indicate pulleys mounted upon the shaft 50.

53 indicates a gear also carried by the shaft 50 and adapted to mesh with a gear 54, mounted upon a second shaft 55 and adjustable longitudinally thereon, so that it may be moved into and out of mesh with the gear 53, as shown in Fig. 3. The shaft 55 carries a bevel-gear 56, which meshes with a bevel-gear 57, mounted upon a vertical shaft 58, arranged at the opposite side of the press from the shaft 38 and in line with the second set of impression-cylinders, as shown in Fig. 1. The shaft 55 also carries pulleys 59 60, as shown in Fig. 3.

61 62 63 indicate bevel-gears, which are mounted upon the shaft 58 and are vertically adjustable thereupon, being supported by collars 64 65 66, as shown in Fig. 2. The gears 61 62 63 mesh, respectively, with the bevel-gears 67 68 69, which are mounted, respectively, upon the shafts of the second impression-cylinders of sets 6 8 10 of printing mechanism. Thus it will be noted that the bevel-gears 39 40 41 and the bevel-gears 61 62 63 mesh with alternate sets of printing mechanism.

The operation is as follows: If it be desired to use all the sets of printing mechanism, they may all be driven from the shaft 38 by moving the pinions 33 34 35 36 37 into mesh with their respective gears, the gear 54 for this purpose being moved out of mesh with the gear 53. If, however, it is desired to drive from both shafts 50 55, the gear 54 is moved into mesh with the gear 53, when the power of both said shafts will be transmitted to the shaft 38, or, if desired, the power may be applied through the shaft 58 also by moving the pinions 61 62 63 into mesh with their respective pinions 67 68 69. If only four of the sets of printing mechanism are to be used—as, for instance, the lower two and the upper two—power will be transmitted to the lower two through the shaft 38, bevel-pinions 39 42, the pinion 33 being in mesh with the adjacent gear-wheels and the pinion 34 being moved out of mesh with the adjacent gears. The bevel-pinions 40 41 would also be moved out of mesh with the corresponding bevel-pinions. The upper printing mechanisms would be driven through the shaft 58, bevel-pinions 63 69, and pinion 37, the pinion 36 being moved out of mesh with the adjacent pinions. The two intermediate printing mechanisms would therefore remain idle, and the press would, in fact, operate as two separate presses. In like manner various other adjustments or connections may be made, so that any set of printing mechanism may be cut out or such combinations be made as the operator may desire. As such adjustments will be apparent to one skilled in the art, I do not consider it necessary to specify them more particularly herein.

In Fig. 4 I have illustrated an arrangement whereby the shaft 38 may be dispensed with while retaining in the press many of the improvements hereinbefore pointed out. In the construction shown in Fig. 4, in lieu of the shaft 38, I provide pinions 70 71, the pinion 70 meshing with a gear 72, mounted upon the shaft 50, in lieu of the bevel-gear 49, the various parts being otherwise the same as those already described. While, as I have stated, this modification retains many of the improved features above pointed out, inasmuch as to drive any set of printing mechanism from the shaft 50 it is necessary that all the intermediate printing mechanisms be driven, I do not consider this construction as desirable as that shown in Figs. 1 and 2.

While I have shown six sets of printing mechanism, it should be understood that my invention is not restricted to the use of that number of sets, as the number may be varied as desired. Furthermore, I have shown the shafts 50 55 as arranged below the press; but they may be arranged elsewhere, if desired.

In Figs. 5 and 6 the numerals 18 19 20 indicate the formers, having nipping-rollers 75 at their apex. 76 indicates cutting-cylinders which carry gears 77, only one of which is shown. One of the gears 77 of each pair of cutting-cylinders meshes with a gear 78, which in turn meshes with a gear 79, mounted upon a shaft 80, said shaft carrying near its outer end a gear 81 and a beveled gear 82, as shown in Fig. 6. The gears 79 are adjustable upon the shafts 80, so that they may be moved into and out of engagement with the gears 78. The beveled gears 82 of the respective folders 18 19 20 mesh, respectively, with beveled gears 83 84 85, mounted upon a vertical shaft 86, as shown in Fig. 6. The beveled gears 83 84 85 are vertically adjustable upon the shaft 86 and are held in place by collars 87. The various shafts 80 are driven by gears 88, which mesh with the gears 81, the gears 88 being driven through the instrumentality of gears 89 90, which are geared to the printing mechanisms, as indicated diagrammatically in Fig. 1. One of the gears 88, 89, or 90 of each set is adjustable to move out of mesh with the other intermeshing gears in order that the driving mechanism of each folder may be cut off from the printing mechanism by which it is arranged to be directly driven. In the drawings the gears 89 are shown as being arranged to be moved out of mesh with

the gears 88 90. The studs 91, upon which said gears are mounted, are prolonged sufficiently for that purpose.

The advantage of the above-described construction is that any one of the folding devices may be driven from any desired set of printing mechanism or each pair of sets of printing mechanism may be arranged to drive a single folder, and consequently the whole apparatus may be operated in the form shown in the drawings as three separate presses. In case it be desired, for instance, to drive the upper folder from the lower set of printing mechanism the gear 89 of the upper folder would be moved out of mesh with the gears 88 90, so that said folder would not be driven from the upper set of printing mechanism. The bevel-gear 83 would be moved into mesh with its corresponding beveled gear 82, and consequently all the folders could be driven by the lower set of printing mechanism, or, if desired, by moving the beveled pinion 79 of the lower folder out of mesh with its corresponding beveled pinion and moving the beveled pinion 84 out of mesh with its beveled pinion 82 the upper folder only could be driven. In this arrangement the middle folder may be driven from the lower set of printing mechanism. The driving mechanism for the folding devices is so arranged that said folding devices may be operated independently of each other and in connection with any set or sets of printing mechanism.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms operable independently of each other to drive the same set or sets of printing mechanism, substantially as described.

2. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of independent driving mechanisms adapted to operate independently to drive the same set or sets of printing mechanism, and means for coupling said driving mechanisms together, substantially as described.

3. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another in a common frame, of a plurality of independent driving mechanisms, and means for driving certain of said sets of printing mechanism by one of said driving mechanisms and certain of the same sets of printing mechanism by another of said driving mechanisms, substantially as described.

4. In a printing-press the combination with a plurality of sets of printing mechanism arranged one above another in a common frame, of a plurality of independent driving mechanisms, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and one of the same sets of printing mechanism by another of said driving mechanisms and means for coupling said driving mechanisms together, substantially as described.

5. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms independent of each other, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and certain other of said sets of printing mechanism by another of said driving mechanisms, and means whereby the different sets of printing mechanism may be connected to the different driving mechanisms or disconnected therefrom, as may be desired, substantially as and for the purpose specified.

6. In a printing-press the combination with a plurality of sets of printing mechanism, of a plurality of independent driving mechanisms adapted to operate independently to drive the same set or sets of printing mechanism, means for coupling said driving mechanisms together, and folding devices adapted to operate in connection with the different sets of printing mechanism, substantially as described.

7. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms independent of each other, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and certain other of said sets of printing mechanism by another of said driving mechanisms, and means for driving all of said sets of printing mechanism by one of said driving mechanisms, substantially as described.

8. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms operable independently of each other to drive the same set or sets of printing mechanism and a plurality of folding devices adapted to operate independently or together and in connection with one or more of the sets of printing mechanism, substantially as described.

9. In a printing-press the combination with a plurality of sets of printing mechanism, of driving devices at each side of the press and independent driving-shafts for driving the same set or sets of printing mechanisms from opposite sides of the press, substantially as described.

10. In a printing-press, the combination with a plurality of sets of printing mechanism, of driving-gears located at opposite sides of the press for driving said sets of printing mechanism from either side of the press and independent driving-shafts for communicating power to the driving-gears at the opposite sides of the press, substantially as described.

11. In a printing-press, the combination with three or more sets of printing mechanism, of means whereby said sets of printing mechanism may be connected together or discon-

nected from one another, beveled gears carried by alternate sets of printing mechanism at opposite sides of the press, and independent driving-shafts geared with said beveled gears, whereby the gears at each side of the press may be rotated at will, substantially as and for the purpose specified.

12. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms operable independently of each other, and means for driving one or more of said sets of printing mechanism by either of said driving mechanisms independently of the operation of the other set or sets of printing mechanism, substantially as described.

13. In a printing-press, the combination with three or more sets of printing mechanism, and means whereby said sets of printing mechanism may be connected together or disconnected from one another, of a pair of driving-shafts, and means carried by said shafts and engaging alternate sets of printing mechanism for driving said sets of printing mechanism, substantially as described.

14. In a printing-press, the combination with three or more sets of printing mechanism, and means whereby said sets of printing mechanism may be connected together or disconnected from one another, of a pair of driving-shafts, means carried by said shafts and engaging alternate sets of printing mechanism for driving said sets of printing mechanism, and means for driving said driving-shafts from a common source of power, substantially as described.

15. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms operable independently of each other, and means for driving any one of said sets of printing mechanism by either of said driving mechanisms independently, substantially as described.

16. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of independently-operable driving-shafts, means for driving the same set or sets of printing mechanism from either of said driving-shafts, and coupling devices for coupling said shafts together, substantially as described.

17. In a printing-press the combination of two sets of printing mechanism, two driving mechanisms and connections between each of said driving mechanisms and both sets of printing mechanism, the two driving mechanisms being independent of each other whereby either driving mechanism may be employed independently of the other to drive said sets of printing mechanism, substantially as described.

18. In a printing-press the combination of two sets of printing mechanism arranged one above the other in a common frame, two independent driving mechanisms and means for driving one of said sets of printing mechanism by one of said driving mechanisms and the other of said sets of printing mechanism by the other driving mechanism and means for driving both sets of printing mechanism by one of said driving mechanisms, substantially as described.

19. In a printing-press the combination with a plurality of sets of printing mechanism mounted in a common frame, of a plurality of driving mechanisms independent of each other, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and certain of the same sets of printing mechanism by another of said driving mechanisms and a plurality of folding mechanisms, substantially as described.

20. In a printing-press the combination with a plurality of sets of printing mechanism mounted in a common frame, of a plurality of independent driving mechanisms adapted to operate independently of each other, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and certain of the same sets of printing mechanism by another of said driving mechanisms, means for coupling said driving mechanisms together so that they will operate jointly to drive said sets of printing mechanism and a plurality of folding mechanisms adapted to receive webs from said sets of printing mechanism, substantially as described.

21. In a printing-press, the combination with three or more sets of printing mechanism, and means whereby said sets of printing mechanism may be connected together or disconnected from one another, of two driving-shafts arranged substantially as described for driving said sets of printing mechanism, and means for connecting said shafts with common driving mechanism or for disconnecting them, substantially as described.

SAMUEL G. GOSS.

Witnesses:
JOHN L. JACKSON,
ALBERT H. ADAMS.