

H. A. W. WOOD.
 PRINTING PRESS AND SHEET MANIPULATING MECHANISM THEREFOR.
 APPLICATION FILED JAN. 22, 1906. RENEWED MAR. 7, 1912.

1,042,518.

Patented Oct. 29, 1912.

3 SHEETS—SHEET 1.

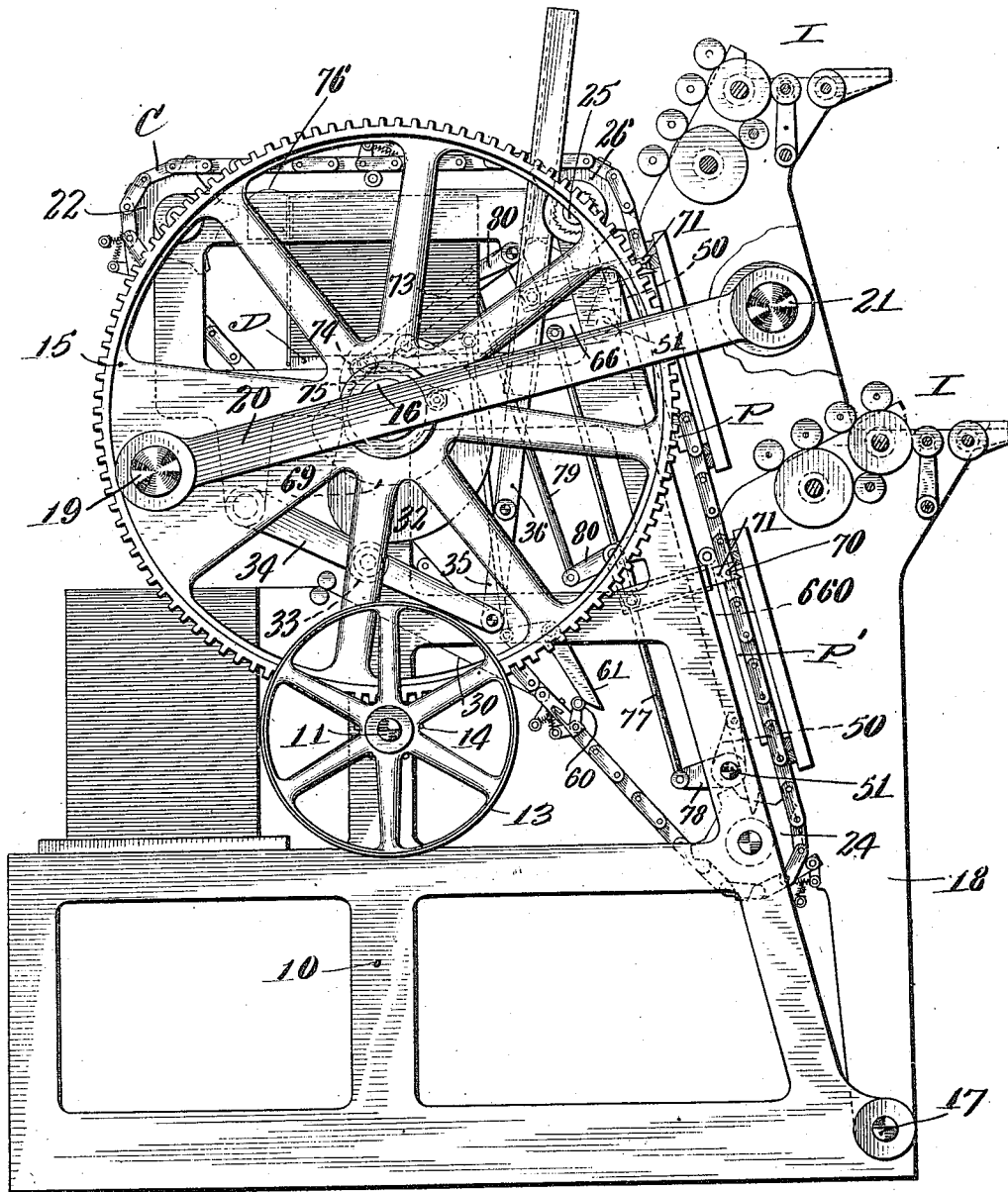


Fig. 1.

WITNESSES:

C. H. Mason
 M. C. Regan

INVENTOR

H. A. Wise Wood.

BY HIS ATTORNEYS

Smith & Smith

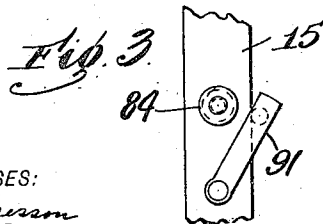
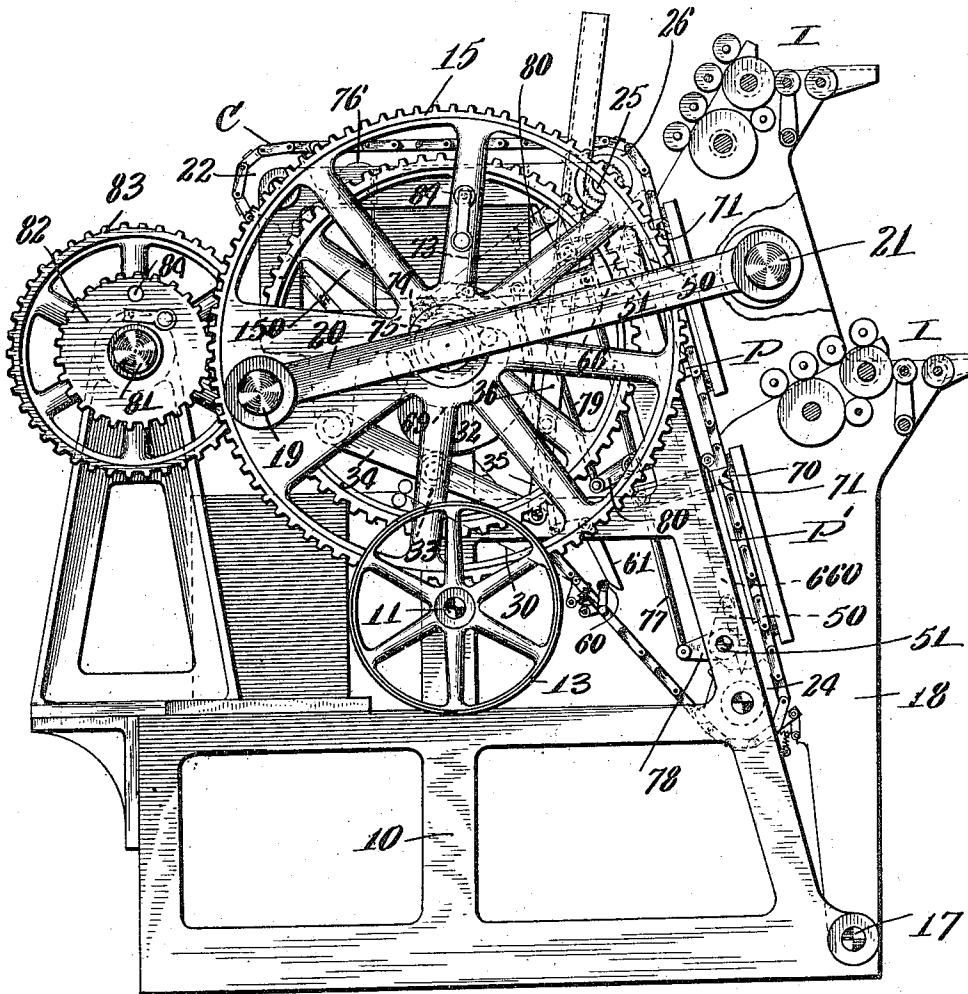
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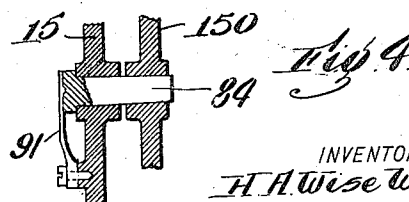
Patented Oct. 29, 1912.

3 SHEETS-SHEET 2.

Fig. 2.



WITNESSES:
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3 SHEETS—SHEET 3.

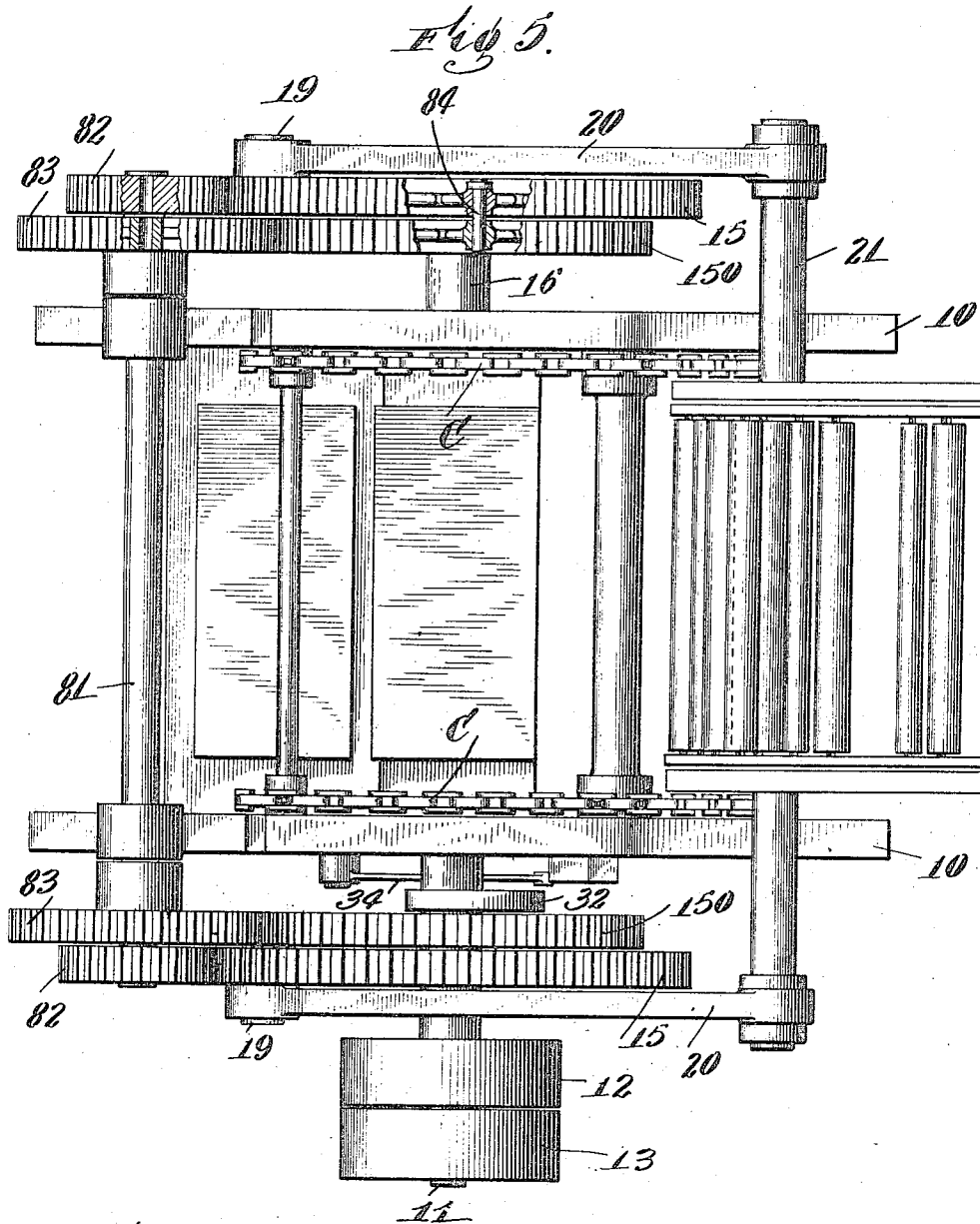
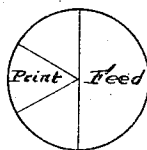


Fig 6.



WITNESSES:
 C. F. Wesson
 M. E. Regan

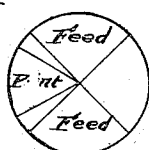


Fig 7.

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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO THE WOOD & NATHAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PRINTING-PRESS AND SHEET-MANIPULATING MECHANISM THEREFOR.

1,042,518.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed January 22, 1906, Serial No. 297,327. Renewed March 7, 1912. Serial No. 682,086.

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Printing-Press and Sheet-Manipulating Mechanism Therefor, of which the following is a specification.

The object of this invention is to provide a new and improved platen press especially adapted for two color work, and also to provide a sheet manipulating mechanism for feeding and delivering the sheets automatically. So far as the sheet-manipulating mechanism is concerned, the same is an improvement in detail on the sheet manipulating mechanism shown, described and claimed in an application filed by me November 15, 1905, Serial No. 287,485.

The invention is illustrated in the accompanying three sheets of drawings forming part of this application for patent.

Referring to said drawings, Figure 1 is a side elevation of a platen press embodying my improvements. Fig. 2 is a view of a modified arrangement thereof. Figs. 3 and 4 are detail views illustrating the locking pin used in the gearing. Fig. 5 is a plan of the mechanism shown in Fig. 2, and Figs. 6 and 7 are small diagrams illustrating the operation of the construction shown in the second and third sheets of the drawings.

In my said application for patent, I have shown a sheet manipulating mechanism made out of two endless chains between which is arranged a series of gripper mechanisms, and means are provided whereby the grippers are opened and closed at the proper times. Means are also provided whereby the grippers are lifted away from the face of the platen as they move over the same, and whereby the grippers are allowed to move back toward the platen when the impression is made. In said application for patent this sheet manipulating mechanism was shown as applied to an ordinary platen press, and as carrying the sheets down from the top over the platen. I have found that this arrangement can be improved by arranging the sheet manipulating mechanism so as to carry the sheets up over the platen, as by this way of leading the sheets the tail or end of the sheets is not so apt to buckle or fly out, and this point is claimed in this application for

patent. I have furthermore found that the said sheet manipulating mechanism can be well applied to a platen press of double capacity so as to print the sheet in two colors if desired, or the parts may be arranged by a construction of gearing hereinafter described so that two sheets may be simultaneously printed.

The invention will be best understood by referring in detail to the drawings.

Referring first to the construction shown in the first sheet of drawings it will be seen that the mechanism is mounted in side frames 10—10 which may be tied together if desired. Journaled in these side frames is a driving shaft 11 on which may be arranged the usual tight and loose pulleys 12—13 for imparting power to the machine. Pinions 14—14 are secured on the driving shaft 11 and mesh with large gears 15—15 arranged on the operating shaft 16 of the machine.

A shaft 17 is fitted in frames, and pivoted on the same are powerful levers or frames 18—18 which carry two sets of the usual chase and furniture so that two forms or two sets of forms can be locked in proper position to cooperate with two platens P and P' which are secured in the frames 10—10.

Inking mechanisms I—I of any of the usual types are arranged to ink the forms.

The large gears 15—15 carry wrist-pins 19—19 which are connected by links or pitmen 20—20 to a shaft 21 carried by the frames 18—18.

The sheet manipulating mechanism consists of chains C—C made up in part of the usual links. These chains are trained over sprockets 22—22, sprockets 24—24, and sprockets 26—26. The sprockets 22—22 and 24—24 may be mounted on shafts journaled in the frames, or upon studs secured therein, and the sprockets 26—26 are arranged on a shaft 25 journaled in the frames. The chains C—C carry a series of gripper mechanisms, there being as many gripper mechanisms as the chains are sheet-lengths in extent. For example, in the drawing shown, the chains are made of a length corresponding to seven sheet lengths plus the necessary clearance between each set of gripper mechanisms, and seven sets of gripper mechanisms are arranged between the chains. The sheets are fed to the gripper mechanisms down a suitable feed-board or guides 30, and

an automatic feeder may be arranged in connection with the machine. The details of the feeding mechanism form no part of the present invention, and therefore, are not illustrated or described at length.

A delivery table D is arranged at the point indicated and the printed sheets will be delivered thereon printed side up. Cams 76 are arranged in the framing to operate the grippers to deliver the sheet. The details of the gripper mechanisms are not shown or described at length in this case, as they are detailed and shown in my previous application for patent. It will be noted that in the present case the sheets are led up over the platen or platens instead of down over the platens as in the mechanism of said previous application for patent.

The chains are given an intermittent movement in the same direction equal to the distance between each set of gripper mechanisms by the following means: A cam 32 is arranged on the operating shaft 16, and engaging the same is a roller 33 secured on an arm 34, which latter is connected by a link 35 to a rack 36 fitted to slide vertically in suitable guides. The rack 36 engages a ratchet mechanism, such as is described in detail in said application for patent, mounted on the shaft 25 on which the sprockets 26—26 are secured. By this arrangement the chains will be intermittently advanced. This mechanism is timed and arranged to operate when the frames 18—18 are retracted from the platens, and so as to give a movement to the chains equal to the distance between two of the sets of gripper mechanisms. The gripper mechanisms are opened at the proper time to receive the sheet by a pivoted lever 61 which can be operated by the mechanism shown and described in said application for patent.

It is desirable to move the gripper mechanisms over the faces of the platens without contact therewith, but to allow the gripper mechanisms to come down to the same plane as the faces of the platens when the impression is to be made. For this purpose the gripper mechanisms are pivoted in the chains before described, and the following mechanism is arranged to turn each gripper mechanism in the chains as it passes over the face of each platen: For this purpose blade cams 660 are arranged at each side of the platens P and P'. These blade cams are carried by levers 50 mounted on shafts 51 journaled in the frames. One of the levers has a projecting arm 78 which is connected by a link 77 to a lever 66 secured on the upper shaft 51. This lever is provided with a roller which rests on a cam 69 secured on the operating shaft 16 of the machine. The blade cams 660 are set in position to cooperate with the rollers 60 of the gripper mechanisms, and the cam 69 is so arranged that

the blade cams 660 will be thrown out relatively to each platen as the gripper mechanisms move up over the same, whereby each gripper mechanism will be moved clear of the face of the platen as it moves over the same, and whereby when the gripper mechanism has moved up over each platen the same can drop to proper position to come substantially in line with, or in the same plane as the face of the platen, whereby an impression can be made on the sheet without any pinching or creasing of the paper. It is also extremely desirable to register the chains as the printing is done. For this purpose the pins 70 which connect the links of the chain at the points where the gripper mechanisms are carried are extended to form registering pins.

Fitted to slide in suitable sockets substantially at the top of each platen are bars 71 which have socketing or tapering mouths. These bars are actuated by pivoted bell-crank levers 80 which are connected together by link 79 and by lever 73 connected to actuate the upper bell-crank lever 80, which lever 73 carries a roller 74 bearing on a cam 75 secured on the shaft 16 of the machine. This cam is so arranged that when the chains come to rest the bars 71 will move out and the notched or tapering mouths of the same will engage the registering pin 70, and will thus register the gripping mechanism, thus above the platen, so that the impression will be made in the proper position on the sheets and so that any irregularities or slack in the chains will be compensated for.

By the mechanism described it will be seen that a sheet will be fed over the lower platen and printed and then advanced up over the upper platen and printed whereby this mechanism is well adapted for two color work.

By lifting the forms off of one printing mechanism, of course, the sheets can be printed in but one color, but this cuts down the capacity of the machine. In some cases where it is desired to do this kind of work, that is to use the machine both for color work and for single printing, the mechanism shown in the second and third sheets of drawings is employed. This mechanism is substantially the same as that previously described, except as hereinafter described as modified. The large gears 15—15 are loosely secured on the operating shaft 16. A supplemental shaft 81 is journaled in the machine in the rear of the operating shaft 16. Running loosely on this shaft are two pairs of gears 82 and 83 arranged as shown. Supplemental gears 150 are arranged on the shaft 16 and are tightly secured thereto. A gear 82 meshes with a gear 15, and a gear 83 meshes with each supplemental gear 150. Each of the gears 15 and 150 are provided

with holes which register with each other. Gears 82 and 83 are also provided with registering holes. Pins 84 are provided and may be inserted in either of the gears 15 and 150 or 82 and 83, as desired. Spring clips 91 are provided on each of the gears 15 and 82 to hold the pins in position. When it is desired to use the machine for two color work as previously described, the pins 84 are inserted in the gears 15 so as to tie the gears 15 and 150 together. By this arrangement the operating shaft 16 will be turned in unison with the gears 15, and the chains will be advanced a sheet's length for each imprint or movement of the printing forms. The time of this operation may be indicated by the diagram shown in Fig. 6. If, however, it is desired to use the press for single printing, the pins 84 are taken out of the gears 15 and are inserted to bind the gears 82 and 83 together. It will now be seen that power is taken from gear 15 to gear 82; from gear 82 to gear 83; and from gear 83 to the supplemental gear 150. The arrangement in this gearing is such that when the pins are disposed in this manner, the speed is doubled, so that for each revolution of the gears 15 the operating shaft 16 will make two revolutions. With this arrangement the speed of the machine is preferably slowed down somewhat, and it will be noted that for each printing movement of the forms that the chains will have two advancing motions, the time of the operation being proportioned as shown in Fig. 7. By this arrangement by putting duplicate or different forms in the frames 18—18, two sheets will be fed forward during each impression, the first sheet being fed to the upper platen P and the next sheet to the lower platen P'. In this way when the machine is set in this manner, its full capacity is utilized.

The details and arrangements herein shown and described may be greatly varied by skilled mechanics without departing from the scope of my invention as expressed in the claims.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a platen printing machine, the combination with two platens and cooperating printing mechanism, of a sheet manipulating mechanism comprising a carrier, a series of gripper mechanisms arranged in the carrier, means for intermittently advancing the carrier to feed the sheets up over the platens so that each sheet will be printed in connection with each platen, and means whereby the parts may be so adjusted that the carrier may be advanced one or two movements between each printing operation.

2. A platen printing press comprising two platens and cooperating printing mechanism, a carrier for conducting the sheets through

the same, and means whereby the parts may be adjusted so that the carrier may be advanced one or two movements between each printing operation as desired, each movement being equivalent to the distance between the centers of the platens, whereby each sheet or each alternate sheet, as desired, may be printed on each platen.

3. The combination of a platen printing machine having two platens and two sets of cooperating printing mechanisms, a carrier for conducting the sheets successively through the mechanism, means for intermittently advancing the carrier to carry the sheets successively over the platens, means for imparting a movement to the carrier substantially equal to a sheet's length, and means whereby one or two of such movements will be imparted to the carrier between successive printing operations.

4. In a platen printing machine, the combination of two platens and two sets of printing mechanisms, a carrier for conducting sheets therethrough, pitmen and rotating crank-wheels for reciprocating the printing mechanism, a shaft for actuating the carrier, and a change gear connection for the operating shaft, whereby the same may be turned at different speeds relatively to the rotation of the crank-wheels.

5. The combination of a platen printing machine having two platens and two sets of printing mechanisms, a carrier for conducting sheets therethrough, a ratchet mechanism for intermittently advancing the carrier, crank-wheels, and pitmen for reciprocating the printing mechanism, means for actuating the ratchet mechanism, and change gear connections for actuating the ratchet mechanism a different number of times relatively to the printing operations.

6. A platen printing machine, having two platens, two sets of printing mechanisms cooperating therewith, crank-gears and pitmen for reciprocating the printing mechanisms, an operating shaft upon which the crank gears are loosely mounted, supplemental gears fixed on said operating shaft, a supplemental shaft, gears of different sizes arranged on the supplemental shaft and meshing with the crank gears and supplemental gears, and means for connecting the crank gears and supplemental gears together or for connecting the gears on the supplemental shaft together.

7. In a platen printing machine, the combination of printing mechanisms, crank gears and pitmen for operating the printing mechanisms, an operating shaft on which said crank-gears are loosely mounted, supplemental gears fixed on said operating shaft, a supplemental shaft, gears of different sizes arranged on said supplemental shaft and meshing with the crank gears and supplemental gears, and means for connect-

ing the crank gears and supplemental gears together, or for connecting the gears on the supplemental shaft together.

8. In a platen printing machine, the combination of a printing mechanism, means for operating the printing mechanism, a carrier for conducting sheets through the printing mechanism, a ratchet mechanism for intermittently advancing the carrier, means for actuating the ratchet mechanism, and change gear connections for operating the ratchet mechanism a different number of times relatively to the printing operations to present each-sheet or every alternate sheet as desired to the printing mechanism.

9. In a platen printing machine, the combination with two platens arranged end to

end and on an inclination so as to support the sheet and cooperating printing mechanism, of a sheet manipulating mechanism comprising a carrier, a series of gripper mechanisms arranged in the carrier, and means for intermittently advancing the carrier to feed the sheets up over the platens in an inclined direction so that each sheet will be printed in connection with each platen.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

H. A. WISE WOOD.

Witnesses:

ANNIE B. WALTERS,

MARY E. McCADDEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."