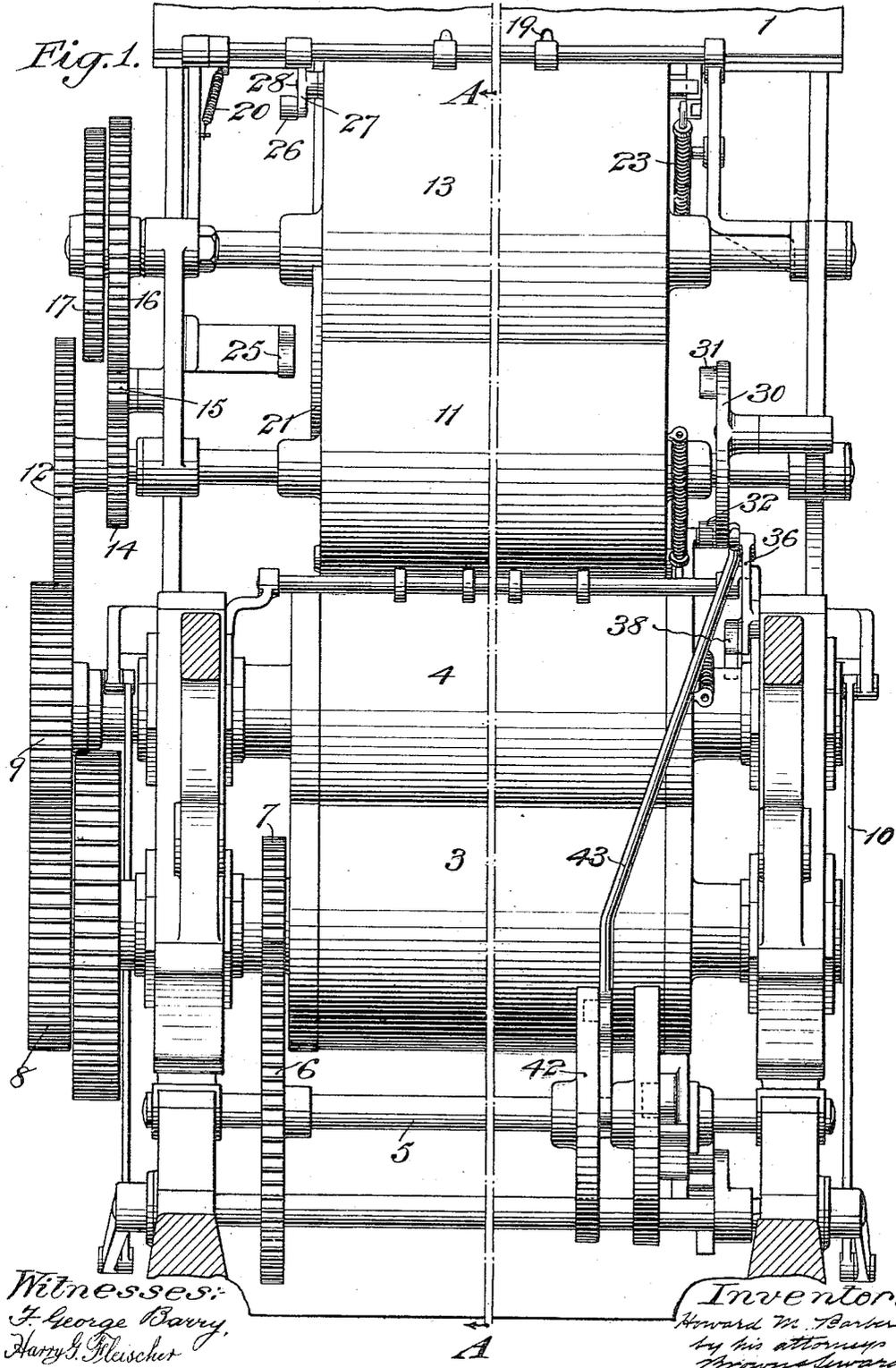


H. M. BARBER.
SHEET FEEDING MECHANISM FOR PRINTING PRESSES.
APPLICATION FILED OCT. 3, 1912.

1,265,726.

Patented May 14, 1918.

3 SHEETS—SHEET 1.



Witnesses:
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Inventor:
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by his attorney
Howard Howard

UNITED STATES PATENT OFFICE.

HOWARD M. BARBER, OF STONINGTON, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO C. B. COTTRELL & SONS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

SHEET-FEEDING MECHANISM FOR PRINTING-PRESSES.

1,265,726.

Specification of Letters Patent.

Patented May 14, 1918.

Application filed October 3, 1912. Serial No. 723,731.

To all whom it may concern:

Be it known that I, HOWARD M. BARBER, a citizen of the United States, and resident of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Sheet-Feeding Mechanism for Printing-Presses, of which the following is a specification.

This invention relates to sheet feeding mechanism for printing presses and has for its object to provide means for successfully feeding sheets in register to a high speed rotary printing machine.

In those machines where the sheets are fed directly to the impression cylinder of a high speed rotary printing machine, it is practically impossible to properly register the sheets owing to the abrupt starting of the sheets at high speed after they have been engaged by the impression cylinder grippers.

In order to overcome this very objectionable feature, I have devised means whereby the sheets to be printed may be taken from any suitable source of sheet supply such as a sheet feeding table and carried into the machine in absolute register, said means comprising a sheet feeding cylinder driven at irregular speeds whereby the sheets may be taken from the source of sheet supply while the cylinder is traveling at a very low speed and fed while the sheet feeding cylinder is traveling at a high speed as, for instance, at the same surface speed as the printing cylinders.

To facilitate the feeding of the sheets in accurate register, I preferably interpose a transfer cylinder traveling at the same surface speed as the printing cylinders, between the printing cylinders and the sheet feeding cylinders, said transfer cylinder being arranged to take the sheets from the sheet feeding cylinder.

I have shown this invention applied to a two revolution rotary printing machine.

In the accompanying drawings,

Figure 1 represents in transverse vertical section so much of a two revolution rotary printing machine with my invention applied

thereto, as will give a clear understanding of the same,

Fig. 2 is a detail view in side elevation of the machine,

Fig. 3 is a face view of the cam which controls the cams which operate the grippers on the impression cylinder and transfer cylinder, and

Fig. 4 is a longitudinal vertical section taken in the plane of the line A—A of Fig. 1.

The source of sheet supply is herein shown as a sheet feeding table 1. The printed sheet delivery mechanism is denoted by 2 and may be of any well known or approved construction. The form cylinder is denoted by 3 and the impression cylinder which coacts therewith by 4.

The form cylinder may be driven from the rotary cam shaft 5 through gears 6, 7, and the impression cylinder 4 may be driven from the form cylinder 3 through gears 8, 9. The impression cylinder 4 may be brought into and out of its coaction with the form cylinder 3 by the mechanism 10, of well known or approved form, controlled from the cam shaft 5.

A transfer cylinder 11 is driven at the surface speed of the impression cylinder 4 through a gear 12 which meshes with the gear 9.

A sheet feeding cylinder 13 is interposed between the transfer cylinder 11 and the sheet feeding table 1. This sheet feeding cylinder 13 is driven from the transfer cylinder 11 through a geared connection comprising the gears 14, 15, 16, 17 and 18. The gears 14, 15 and 16 are regular circular gears and the gears 17 and 18 are irregular gears, in the present instance elliptic gears. The geared ratio between the transfer cylinder 11 and the sheet feeding cylinder 13 is such that the sheet feeding cylinder 13 travels one revolution for every two revolutions of the transfer cylinder 11 and the irregular gears 17 and 18 are so arranged that the sheet feeding cylinder 13 will be caused to travel at a very low speed at its sheet receiving point and at a higher speed or at the surface speed of the transfer cylin-

der 11 and thereby the surface speed of the printing cylinders 3 and 4 at the point where the sheets are delivered from the sheet feeding cylinder 13 to the transfer cylinder 11.

A sheet registering stop 19 is located at the sheet receiving point on the sheet feeding cylinder 13, which stop is brought into and out of its operative position by means of a spring 20 and a cam 21.

The opening and closing of the grippers 22 of the sheet feeding cylinder at the sheet receiving point may be controlled by the well known pin actuated tumbler mechanism 23.

The opening and closing of the grippers 22 of the sheet feeding cylinder 13 at the point where they deliver the sheet to the transfer cylinder grippers 24, is controlled by a stationary cam 25 which is arranged to engage the roller 26 on the arm 27 fixed to the gripper rod 28.

The transfer cylinder grippers 24 are operated every second revolution to receive the sheet from the sheet feeding cylinder grippers 22 and transfer the sheet to the impression cylinder grippers 29 by a cam lever 30 bearing cam surfaces 31, 32, arranged to engage the roller 33 on the arm 34 fixed to the gripper rod 35.

The impression cylinder grippers 29 are operated every second revolution to receive the sheet from the transfer cylinder grippers 24 and deliver the printed sheet to the delivery mechanism 2 by a cam lever 36 bearing cam surfaces 37, 38, arranged to engage the roller 39 on the arm 40 fixed to the gripper shaft 41. These two cam levers 30, 36, are connected and are operated from a cam 42 on the cam shaft 5 through a rod 43.

It will be seen that by the use of the mechanism substantially as herein shown and described, sheets may be taken from the source of sheet supply at such a low speed as to insure an absolute register of the sheets and may then be transferred at the speed of the press thus insuring a high character of work in a high speed press.

What I claim is:—

1. In a sheet feed rotary printing machine, high speed printing cylinders, a source of sheet supply and mechanism for insuring increased speed with accurate sheet register, comprising continuously moving means arranged to take the sheets from the source of sheet supply at a low speed and feed them to the printing cylinders at a high speed.

2. In a sheet feed rotary printing machine, high speed printing cylinders, a source of sheet supply and mechanism for insuring increased speed with accurate sheet register, comprising continuously moving means arranged to take the sheets from the

source of sheet supply at a low speed and feed them to the printing cylinders at the surface speed thereof.

3. In a sheet feed rotary printing machine, high speed printing cylinders, a source of sheet supply and mechanism for insuring increased speed with accurate sheet register, comprising a sheet feeding cylinder arranged to feed the sheets from the source of sheet supply to the printing cylinders and continuously driven irregular gears for driving the cylinder at a low speed at the sheet receiving point and at a high speed at the sheet delivery point.

4. In a rotary printing machine, printing cylinders, a source of sheet supply, a transfer cylinder arranged to travel at the surface speed of the printing cylinders and continuously moving means arranged to take the sheets from the source of sheet supply at a low speed and feed them to the transfer cylinder at the surface speed thereof.

5. In a rotary printing machine, printing cylinders, a sheet feeding table, a transfer cylinder arranged to travel at the surface speed of the printing cylinders and continuously moving means arranged to take the sheets from the table at a low speed and feed them to the transfer cylinder at the surface speed thereof.

6. In a rotary printing machine, printing cylinders, a source of sheet supply, a transfer cylinder arranged to travel at the surface speed of the printing cylinders and a continuously rotating sheet feeding cylinder arranged to take the sheets from the source of sheet supply at a low speed and feed them to the transfer cylinder at the surface speed thereof.

7. In a rotary printing machine, printing cylinders, a sheet feeding table, a transfer cylinder arranged to travel at the surface speed of the printing cylinders and a continuously rotating sheet feeding cylinder arranged to take the sheets from the table at a low speed and feed them to the transfer cylinder at the surface speed thereof.

8. In a rotary printing machine, printing cylinders, a sheet transfer cylinder arranged to travel at the surface speed of the printing cylinders, a source of sheet supply, a sheet feeding cylinder arranged to feed the sheets from the source of sheet supply to the transfer cylinder and continuously driven irregular gears for driving the sheet feeding cylinder at a low speed at the sheet receiving point and at the surface speed of the transfer cylinder at the sheet delivery point.

9. In a rotary printing machine, printing cylinders, a sheet transfer cylinder arranged to travel at the surface speed of the printing cylinders, a sheet feeding table, a sheet feeding cylinder arranged to feed the sheets from the table to the transfer cylinder and

continuously driven irregular gears for driving the sheet feeding cylinder at a low speed at the sheet receiving point and at the surface speed of the transfer cylinder at the sheet delivery point.

10. In a rotary printing machine, printing cylinders, a source of sheet supply and means for feeding sheets therefrom to the printing cylinders comprising a sheet feeding cylinder, a transfer cylinder and a geared connection including irregular gears between the transfer and sheet feeding cylinders.

11. In a rotary printing machine, printing cylinders, a sheet feeding table and

means for feeding sheets therefrom to the printing cylinders comprising a sheet feeding cylinder, a transfer cylinder and a geared connection including irregular gears between the transfer and sheet feeding cylinders.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this first day of October, A. D. 1912.

HOWARD M. BARBER.

Witnesses:

A. R. STILLMAN.

E. M. GRANT.

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