

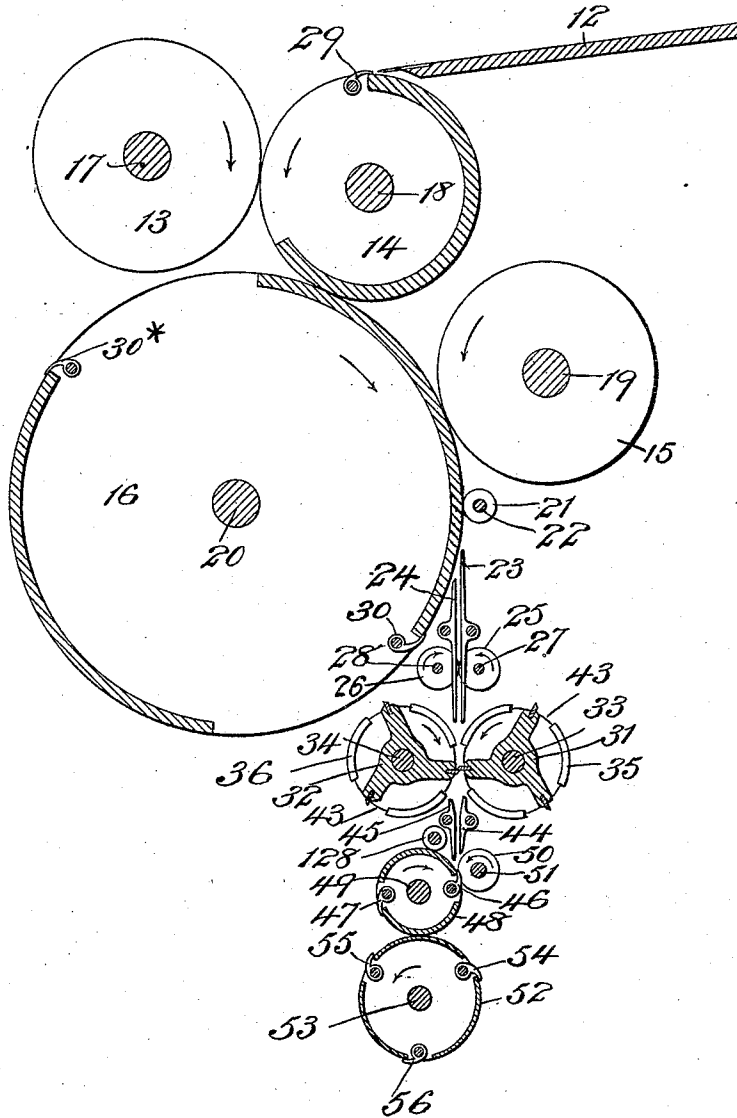
H. M. BARBER.
 ROTARY PRINTING PRESS.
 APPLICATION FILED JAN. 19, 1907.

929,538.

Patented July 27, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:-

F. George Barry.

Henry Thorne.

Inventor:-

Howard M. Barber
 by his attorneys
 Brown & Ward

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3 SHEETS—SHEET 2.

Fig. 2.

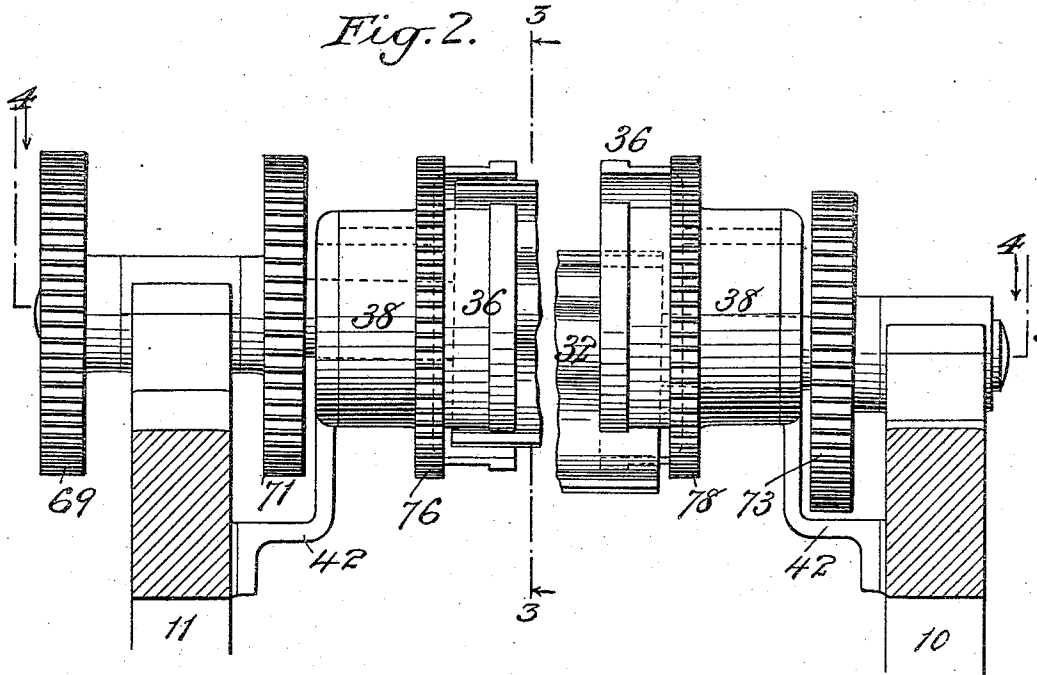
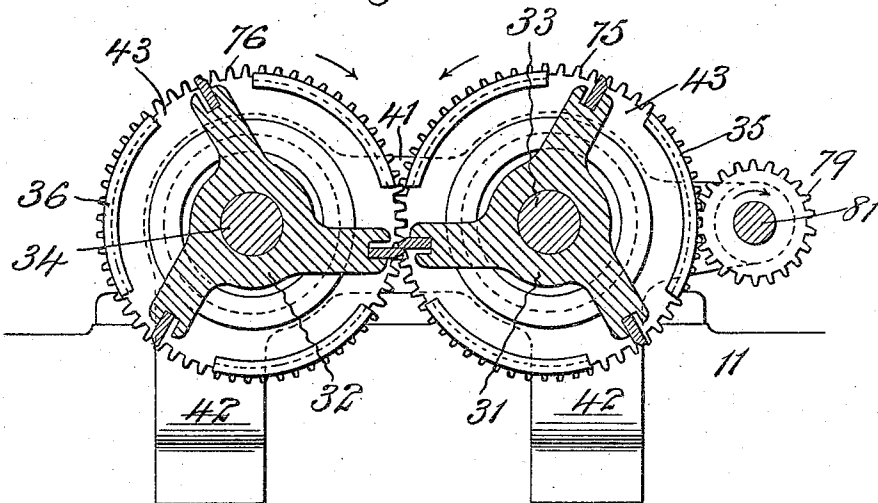


Fig. 3.



Witnesses:
 F. George Barry,
 Henry Thoms

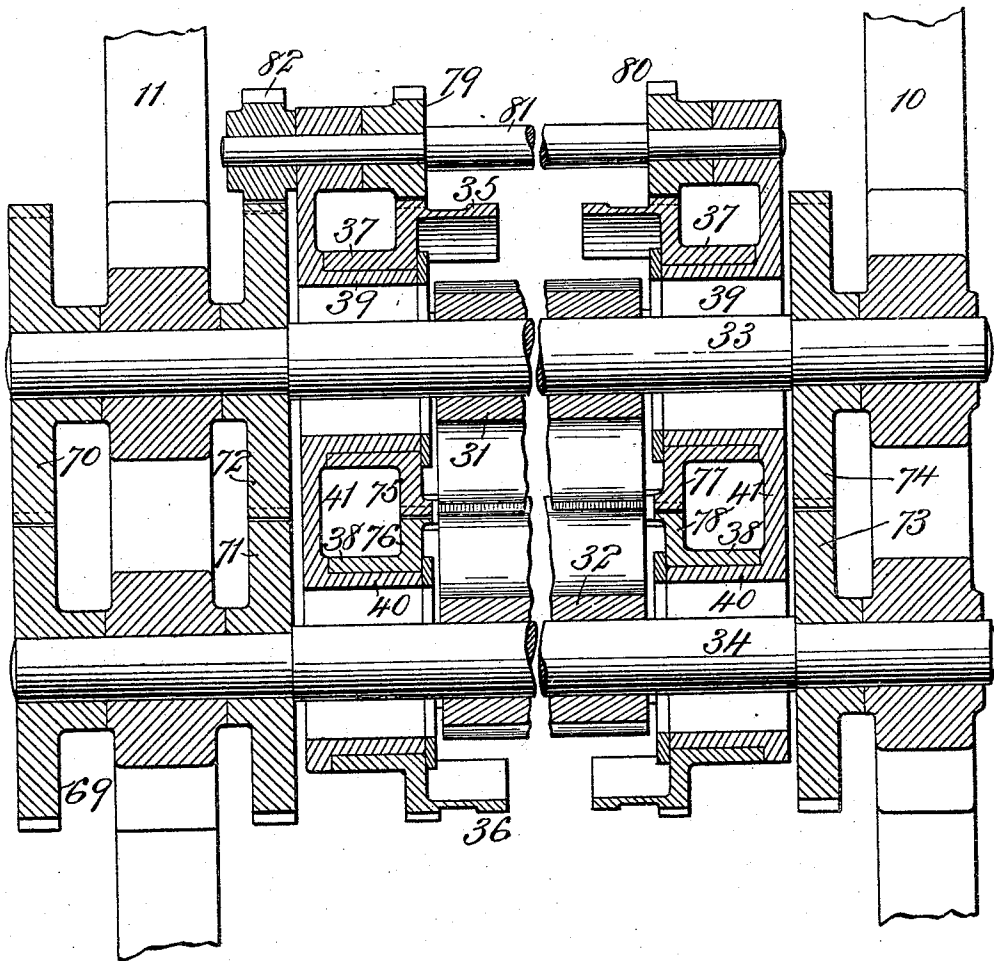
Inventor:
 Howard M. Barber
 by attorneys
 Brown & Howard

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 3 SHEETS—SHEET 3.

Fig. 4.



Witnesses:
J. George Barry,
Henry Thieme

Inventor:-
Howard M. Barber
by attorneys
Thomson & Ward

UNITED STATES PATENT OFFICE.

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

ROTARY PRINTING-PRESS.

No. 929,538.

Specification of Letters Patent.

Patented July 27, 1909.

Original application filed November 24, 1906, Serial No. 344,929. Divided and this application filed January 19, 1907. Serial No. 353,027.

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 Rotary Printing-Presses, of which the following is a specification.

This invention relates to improvements in rotary printing presses and has more particularly for its object to provide certain improvements in the construction, form and operation of the several parts of a sheet feeding and cutting mechanism.

My invention consists broadly in a sheet feeding and cutting mechanism comprising rotary cutters and feeding pulleys surrounding the cutters.

In the accompanying drawings, Figure 1 represents in detail vertical section so much of a sheet feed rotary printing press as will give a clear understanding of the location of my improved sheet feeding and cutting mechanism with reference to the other parts of the press. Fig. 2 is an enlarged detail view partially broken away, in side elevation of the sheet feeding and cutting mechanism, Fig. 3 is a transverse section taken in the plane of the line 3-3, of Fig. 2, looking in the direction of the arrows, and Fig. 4 is a horizontal section taken in the plane of the line 4-4, of Fig. 2, looking in the direction of the arrows.

The side frames of the machine are denoted by 10 and 11. A feeding board 12 is provided in position to feed sheets therefrom between the first plate and impression cylinders 13, 14 of the rotary printing press. The second plate and impression cylinders of the press are denoted by 15, 16. The respective shafts of these four cylinders are denoted by 17, 18, 19, 20. Feeding pulleys 21 are fixed to a shaft 22 and located in position to feed the sheets downwardly between fixed guides 23, 24, into engagement with the feeding pulleys 25, 26, carried by the shafts 27, 28.

The set of grippers on the first impression cylinder 14 are denoted by 29 and they are arranged to receive the sheets from the feeding board 12 and transfer them one at a time to the set of grippers 30 or 30* on the second impression cylinder 16. The set of

grippers 30 or 30* is arranged to release the advance edge of each sheet as it reaches the feeding pulleys 21 for permitting the sheet to be fed down between the guides 23, 24. A pair of rotary cutters 31, 32, of the three-bladed type are arranged in position to divide each sheet transversely as it is fed from the pulleys 25, 26, into smaller sheets. These rotary cutters are of the well known Cottrell type having their shafts 33, 34, at a slight inclination off a plane at right angles to the plane of travel of the sheet, whereby a shearing cut is imparted to the sheet at exactly right angles to its travel.

Coacting feeding pulleys 35, 36, surround the cutters 31, 32, the hubs 37, 38 of which pulleys are loosely mounted on hollow bosses 39, 40 of stationary spiders 41, supported from the side frames 10, 11, by brackets 42. There are two of the pulleys 35 and two of the pulleys 36 shown herein, one pair being at each end of the rotary cutters in position to engage the opposite edges of the sheet as it passes between the cutters. The shafts 33, 34, of the cutters pass through the hollow bosses 39, 40 of the spiders 41, thus permitting the axes of the feeding pulleys to be exactly at right angles to the travel of the sheet irrespective of the angular deflection of the said cutter shafts 33, 34. All of the pulleys 35, 36, are cut away as shown at 43, in line with the blades of the cutters so as to permit the cutters to engage the sheets from edge to edge thereof.

The sheets as they pass from between the rotary cutters are fed between stationary guides 44, 45, down into position to be engaged successively by the sets of grippers 46, 47, of the collecting cylinder 48, the shaft of which is denoted by 49. Rollers 50 mounted on a shaft 51 are arranged in position to cause the advance edges of the sheets to be engaged by their respective sets of grippers.

A delivery cylinder 52 is mounted on a shaft 53 and is provided with three sets of grippers 54, 55, 56, arranged to successively receive a collected group of sheets from the two sets of grippers 46, 47 on the collecting cylinder 48.

The spur gear 69 on the rotary cutter shaft 34 of the sheet feeding and cutting

mechanism is driven from any suitable source at the desired speed. This spur gear 69 meshes with a spur gear 70 on the rotary cutter shaft 33. These cutter shafts are also provided with intermeshing gears 71, 72, 73, 74. The sheet feeding pulleys of the rotary cutting mechanism are provided with intermeshing gears 75, 76, 77, 78 and the gears 75, 77 are driven from gears 79, 80, fixed to a shaft 81 mounted in the spiders 41. This shaft 81 is further provided with a gear 82 which meshes with a gear 72 on the rotary cutter shaft 33, whereby the said feeding pulleys are driven at the same surface speed as the cutters.

Pressure rollers 128 are arranged in position to hold the sheets on the periphery of the collecting cylinder as each sheet approaches the guides 44, 45, to permit the grippers to open to receive a second sheet. In operation, the sheets are fed one at a time from the feeding board 12 into position to have their advance edges engaged by the grippers 29 on the first impression cylinder. The sheet is then passed between the first impression cylinder and the first plate cylinder where it is printed upon one side. The grippers 29 then transfer the advance edge of the sheet to one of the two sets of grippers 30, 30* on the second impression cylinder. The sheet is then passed between the second impression cylinder and the second plate cylinder and thus printed on its opposite side. The grippers 30 or 30* then release the advance edge of the sheet after the sheet has been engaged by the feeding rollers 21, which feeding rollers will feed the sheet down between the guides 23, 24, into engagement with the feeding rollers 25, 26. These last named feeding rollers will feed the sheet into position to be engaged by the feeding pulleys 35, 36, of the cutting mechanism. The rotary cutters will then sever each sheet transversely into smaller sheets, the feeding pulleys 35, 36, serving to insure the positive feed of the sheets at the predetermined speed of the cutters. The arrangement of the parts is such that one of the sets of grippers 46, 47, of the collecting cylinder 48 will engage the advance edge of the sheet before the first cut of the cutter is accomplished. The arrangement of cams is such that each of the sets of grippers 46, 47, will collect two subdivided sheets fed from the cutting mechanism and will then transfer such collected group of sheets to one of the sets of grippers 54, 55, 56 of the delivery cylinder.

The parts shown and described but not claimed herein form the subject-matter of my copending application filed November 24, 1906, Serial No. 344,929, entitled rotary printing presses, of which application the present application is a division.

What I claim is:

1. A sheet feeding and cutting mechanism comprising a pair of coacting rotary cutters arranged to divide the sheet transversely and feeding pulleys surrounding the cutters and independent thereof.

2. A sheet feeding and cutting mechanism comprising a pair of coacting rotary cutters arranged to divide the sheet transversely and feeding pulleys arranged in pairs, surrounding the cutters and independent thereof.

3. A sheet feeding and cutting mechanism comprising a pair of coacting rotary cutters arranged to divide the sheet transversely and sheet feeding pulleys arranged in pairs, surrounding the ends of the cutters and independent thereof for engaging the side edges of the sheet.

4. A sheet feeding and cutting mechanism comprising a pair of coacting rotary cutters arranged to divide the sheet transversely and sectional feeding pulleys surrounding the cutters and independent thereof.

5. A sheet feeding and cutting mechanism comprising a pair of coacting rotary cutters arranged to divide the sheet transversely and sectional sheet feeding pulleys arranged in pairs, surrounding the cutters and independent thereof.

6. A sheet feeding and cutting mechanism comprising a pair of coacting rotary cutters arranged to divide the sheet transversely and sectional feeding pulleys arranged in pairs and surrounding the ends of the cutters and independent thereof for engaging the side edges of the sheet.

7. A sheet feeding and cutting mechanism comprising rotary cutters having their axes at a slight inclination off a plane at right angles to the plane of travel of the sheet and feeding pulleys surrounding and independent of the cutters and having their axes parallel with the line of cut.

8. A sheet feeding and cutting mechanism comprising rotary cutters geared together and feeding pulleys surrounding the cutters also geared together.

9. A sheet feeding and cutting mechanism comprising rotary cutters geared together and feeding pulleys surrounding the cutters also geared together and driven by the cutter gear.

10. A sheet feeding and cutting mechanism comprising rotary cutters geared together, feeding pulleys surrounding the cutters, also geared together, pulley supports and a rotary shaft mounted in the supports having driving gears for the feeding pulleys and a gear driven from a cutter gear.

11. A sheet feeding and cutting mechanism comprising rotary cutters geared together having their axes oblique to the line of cut, feeding pulleys surrounding the cutters having their axes parallel with the line of cut, said pulleys being also geared together, pulley supports and a rotary shaft

mounted in the supports having driving gears for the feeding pulleys and a gear driven from a cutter gear.

extended obliquely through the bosses and pairs of feeding pulleys mounted on the bosses and surrounding the cutters.

15

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this 17th day of January 1907.

HOWARD M. BARBER.

Witnesses:

A. R. STILLMAN,
G. BURDECK.

5 12. A sheet feeding and cutting mechanism comprising pulley supports having hollow bosses, rotary cutters having their shafts extended through the bosses and pairs of feeding pulleys mounted on the bosses and surrounding the cutters.

10 13. A sheet feeding and cutting mechanism comprising pulley supports having hollow bosses, rotary cutters having their shafts