

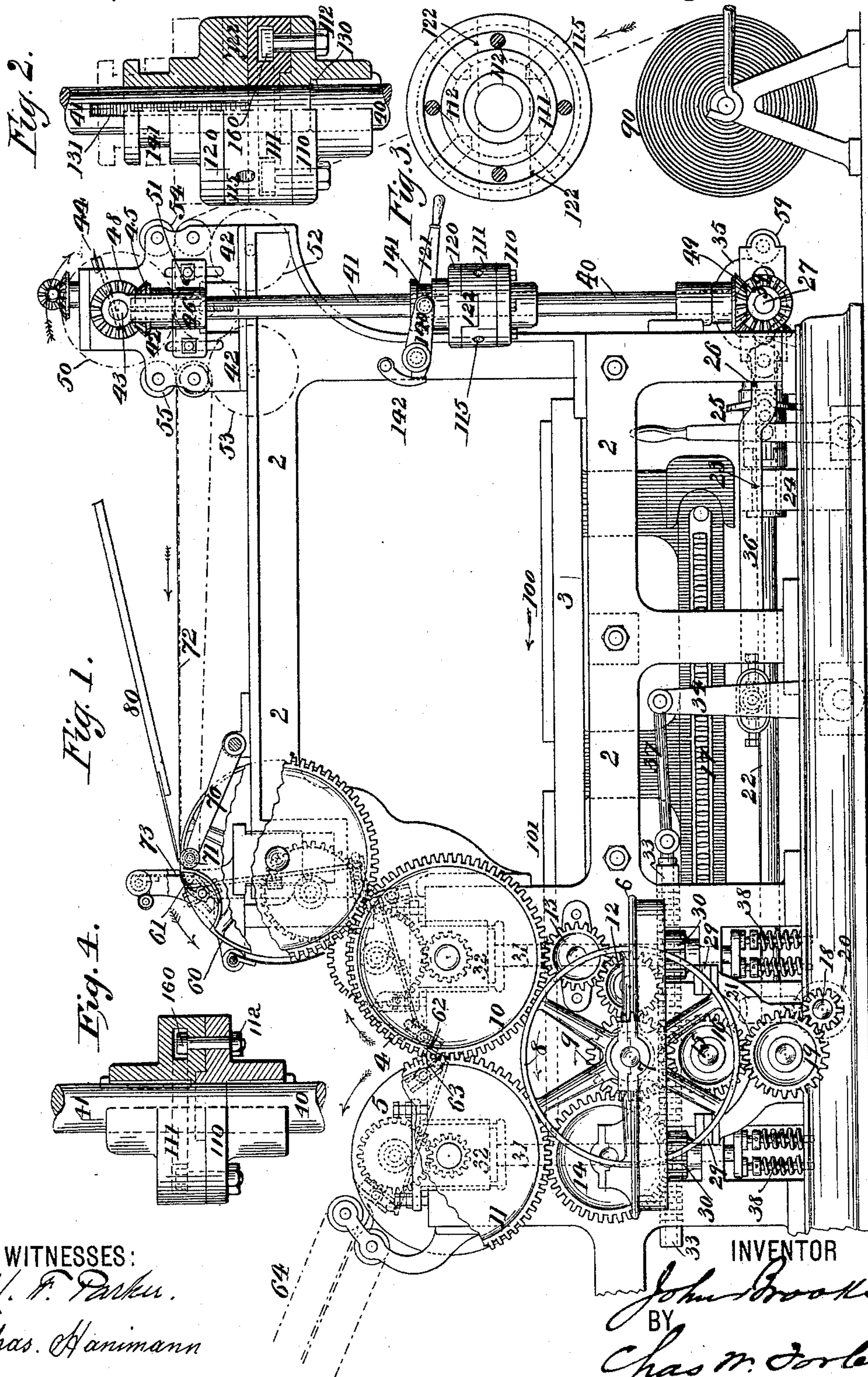
(No Model.)

J. BROOKS.

ROTARY PAPER CUTTER ADJUSTING DEVICE FOR PRINTING MACHINES.

No. 433,715.

Patented Aug. 5, 1890.



WITNESSES:

H. F. Parker.  
Chas. Hanemann

INVENTOR

John Brooks  
BY  
Chas M. Forbes  
ATTORNEY



# UNITED STATES PATENT OFFICE.

JOHN BROOKS, OF PLAINFIELD, NEW JERSEY.

ROTARY PAPER-CUTTER-ADJUSTING DEVICE FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 433,715, dated August 5, 1890.

Application filed October 3, 1889. Serial No. 325,894. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN BROOKS, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented a certain new and useful Improvement in Rotary Paper-Cutter-Adjusting Devices for Printing-Machines, of which the following is a specification.

My invention relates to cylinder-presses of the species described by me in a patent issued to me October 22, 1889, No. 413,491, in which a rotary cutter is driven from a shaft of the machine that is connective or disconnective from the impression-cylinder and form-bed driving mechanism when the knife is in an inactive position and invariably in a given relation to such driving mechanism.

My present invention consists in interposing in a shaft of the machine so connective or disconnective from the impression-cylinder and form-bed driving mechanism a division and a connection of such division so constructed that by its means the adjustment of the surface distance of the knife from the grippers of the first impression-cylinder, or from the grippers of a paper-feeding cylinder, or with relation to such timing mechanism as may be employed in conducting the sheets from the cutter to the said grippers, may be accomplished without moving the carriage bearing the cutter, and also whereby the cutter may be disengaged or re-engaged independently of the other mechanism in a given relation thereto.

Referring to the accompanying drawings, Figure 1 is a general side elevation of a machine to which my invention is applicable; Fig. 2, an enlarged detail side view, partly in section, of a preferred form of the shaft-connecting device; and Fig. 3 an inverted plan view of the middle or adjustable disk thereof. Fig. 4 is an enlarged detail side view, partly in section, of a modified form of the shaft-connecting device.

Referring to Fig. 1, the general features represented correspond to those described in the aforesaid patent application; but I will briefly describe the same herein for purposes of reference, and they consist as follows:

2 2 are the side frames, between which are

provided ways upon which the form-bed 3 reciprocates.

4 and 5 are the first and second impression-cylinders for perfecting.

6 is a gear-bearing frame projecting out from the side of the machine bearing the driving-shaft 7, carrying the driving-pulley 8 and driving-pinion 9. The spur-gears 10 11 of the impression-cylinders 4 and 5 receive their motion from the driving-pinion 9 through the transmitting-gears 12 13 14.

15 is an oscillating shaft bearing a gear 16, driven from the pinion 9, and which shaft oscillates on the trunnions 29, and bears on its inner movable end a pinion traveling upon an orbit of a double rack (indicated at 17) depending from the type-bed, thus reciprocating the latter at the surface speed of the impression-cylinder.

18 is a transverse shaft driven from the pinion 9, through the agency of the gears 16 19, and bearing a worm 20, (indicated by the dotted circle,) which engages with a worm-gear, (indicated at 21,) revolving the shaft 22, which terminates at the point 23 in the bearing 24.

25 is a clutch corresponding to that described by me in a patent application filed March 16, 1889, Serial No. 303,594, by means of which clutch the shaft 22 is connected or disconnected at a given relation to its separate section 26.

27 is a transverse shaft geared by beveled gears at equal speed to the shaft-section 26, and with it receives one rotation for every two rotations of the impression-cylinders, imparting to the cylinder-elevating mechanism and to the cutter corresponding periods of action.

The mechanism for moving the impression-cylinders vertically into or out of printing-contact with the form-bed consists substantially of that described by me in Letters Patent No. 274,558.

The shafts of the impression-cylinders 4 and 5 are journaled in boxes 32 32, that are vertically movable in guideways in the frames 2, as indicated. The boxes 32 32 are supported (when raised) by vertical rods 31 31, that are screw-threaded, the one with right and the other with left hand screw-threads,



at those portions which bear the toothed nuts 30 30. The nuts 30 are sustained against end-wise movement by the mortises in which they are located and support the rods 31 and the impression-cylinders thereon.

38 are springs that counterbalance the cylinders.

33 are racks at each side of the machine, reciprocating in suitable guideways and engaging with the toothed nuts 30 30.

34 represents rock-arms, also, at each side of machine, through which, by agency of the connecting-rods 36 and 37, the cams 35 (in duplicate) upon the shaft 27 reciprocate the racks 33. The connecting-rods 36 are broadened at the ends adjacent the cams 35, and are slotted so as to straddle the shaft 27 and be guided thereby. The rods 36 bear anti-friction rollers 59, upon which the cams act to impart reciprocation.

40 41 are successive shafts or sections of a shaft located in a common axis for imparting rotation to the cutter-shaft 43 from the shaft 27 through the equal beveled gears 39 49 and 45 48.

42 is the cutter-bearing frame, a similar one being located at either side of the machine, and which frames are fixed in a permanent position upon the side frames 2 of the machine.

The cutting-knife 44 is radially adjustable upon its shaft 43 to cut different lengths of sheets. To permit this adjustment, the journals of the shaft 43 are vertically movable, and the beveled gear 45 is also vertically movable on the shaft 41. The bearing 46 is vertically adjustable for like purposes.

The dotted circle 50 represents the path of the cutter, and also represents the pitch circle of the spur-gear on the cutter-shaft 43, which gear is changeable.

The dotted circle 51 indicates the female cutting-cylinder and the spur-gear thereon of corresponding size, which latter is driven by the gear 50, and drives the transmitting-gears 52 53, imparting rotation to the gears of the feed-rolls 54 55.

I have illustrated herewith a paper-feeding cylinder 60, having grippers 61, which receive the paper and transfer it to the grippers 62 of the first-impression cylinder.

The paper-feeding cylinder 60 is composed of a series of rims or flanges having circumferential spaces intervening between them, in which the arms 70, bearing idlers 71, are located, and carry the conveying-belts 72, the same being distended from the lower feed-roll 55, which drives the said belts.

80 is a paper-feed table, which may be brought into use, when desired, instead of the web-cutting mechanism.

The roll of paper web 90 is fed through the feed-rolls, and the cutter and the sheets subsequently conveyed by the belts 72 to the feed-gage 73, where the registering is performed. The sheet is then seized by the grippers 61 of

the paper-feeding cylinder 60 and transferred to the grippers 62 of the first-impression cylinder, thence passing thereunder, receiving the first impression from the form 100, moving in the direction indicated. The sheet is then transferred to the grippers 63 of the second-impression cylinder, passing over the same and under it, receiving the second impression from the form 101 on the return-stroke thereof, the sheet then passing again over the second-impression cylinder to be delivered to the conveying-belts 64.

The mechanism used for operating the grippers of the respective cylinders may be of any suitable construction well known to the art. That, however, indicated is more fully illustrated and described in a separate patent application filed by me simultaneously herewith, Serial No. 325,895.

In my said patent No. 413,491 I have described a movable carriage bearing the cutting mechanism as a means for compensating the difference in the time of cutting longer or shorter sheets from the web, so as to deliver the sheets at the proper time to the grippers that seize them. Herein the frame 42, corresponding to such carriage, is stationary, and in order to compensate that difference in the time of cutting I apply the adjustment to the cutter-driving shaft to enable the knife to be set forward or backward in its orbit, thereby changing its surface-distance from the seizing-point of the grippers 61. I prefer to apply this adjusting device between the sections or divisions 40 and 41 of the vertical shaft that connects the cylinder-elevating cam-shaft 27 with the cutter-shaft. I employ a clutch engageable at a single point of rotation in connection with the adjusting device. I am thereby enabled to disconnect or adjust the cutter independently of the shaft 27 and the printing mechanism, while the clutch 25 is employed to connect or release the cylinder and type-bed driving mechanism with the cylinder advancing and retracting mechanism at a single point of relation, as described in said Patent No. 413,491. The cutter, when engaged with the shaft 27, is likewise engageable at a single point of relation with the cylinder and type-bed driving mechanism.

My cutter-adjusting device, as herewith illustrated in Fig. 1 and also more fully by Figs. 2 and 3, consists as follows: The disk 110 is fixed to the shaft 40, which terminates at 130 within said disk, forming a step for the adjacent end of the shaft 41 to turn in loosely. The disk 111 is loose upon the shaft 41. 112 are bolts extending through holes in the disk 110. There is a circular T-shaped groove 160 concentric with the axis of the shafts in the face of the disk 111, adjacent the disk 110, into which groove the heads of the bolts 112 fit and permit the turning of the disk 111 upon the disk 110 to any point of adjustment when the bolts are loosened



and the retention of the two disks together at such point of adjustment when the bolts are tightened.

120 is a clutch-disk lengthwise movable upon a spline or feather 131, upon the shaft 41, to and from contact with the disk 111. The disks 120 and 111 have adjacent male and female clutch faces composed of a rib and groove at 122, intersecting the circle of the disks eccentrically thereto, whereby engagement of the clutch can be effected at a single point of rotation of the one shaft relatively to the other. I provide a lifting-lever 121 for the clutch-disk 120, which by means of a yoke 140, having pins fitting the grooved sleeve 141 of said disk 120, may be used to disengage the same from the disk 111. A pawl 142 or other equivalent device is used to retain the disk 120 in its elevated position when thrown out of gear.

When the clutch 120 is engaged and the bolts 112 loosened, the disk 111 may be turned independently of the printing mechanism, moving the cutter 44 with it, by the insertion of a handspike into the holes 115 provided therefor. When the desired adjustment of the cutter is established with a given relation to the printing mechanism, such relation will be maintained or re-established when the clutch is re-engaged after being thrown out of gear.

The clutch 120 may be omitted, and the disk 111 of the adjusting device be connected permanently to the section 41 of the vertical shaft, as illustrated in Fig. 4.

No claim is herein made to a sheet-receiving cylinder with two sources for the feed of sheets thereto, each approaching a common point adjacent to the cylinder, as the same forms the subject-matter of an application filed in the United States Patent Office by me May 8, 1890, Serial No. 351,052.

I claim as my invention—

1. The combination of a printing mechanism

having a rotary impression cylinder or cylinders and grippers for seizing the paper, a rotary paper cutting and feeding mechanism, a shaft, composed of adjacent sections end to end on a common axis, for transmitting motion from the printing mechanism to the cutting and feeding mechanism, and a two-part disk, the one part rotatively adjustable to the other, connected to respective members of said adjacent shaft-sections, for the purpose specified.

2. The combination of a printing mechanism having a rotary impression cylinder or cylinders and grippers for seizing the paper, a rotary paper-cutting and feeding mechanism, a shaft, composed of adjacent sections end to end on a common axis, for transmitting motion from the printing mechanism to the cutting and feeding mechanism, a clutch for connecting or releasing the said adjacent sections of the shaft at a single point of relation, and a two-part disk of said clutch, the one part rotatively adjustable to the other, for the purpose specified.

3. In a cylinder printing-press, the combination of the impression cylinder or cylinders, the type-bed, grippers for seizing the paper, mechanism whereby the impression-cylinders are advanced or retracted toward or from the type-bed, a rotary paper cutting and feeding mechanism, a clutch for connecting or releasing the cylinder and type-bed-driving mechanism and the cylinder advancing and retracting mechanism at a given point of relation, and a separate clutch for connecting or releasing the said cylinder and type-bed-driving mechanism and the cylinder advancing and retracting mechanism with or from the said cutting mechanism at a given point of relation.

JOHN BROOKS.

Witnesses:

CHAS. W. FORBES,  
H. F. PARKER.