

(No Model.)

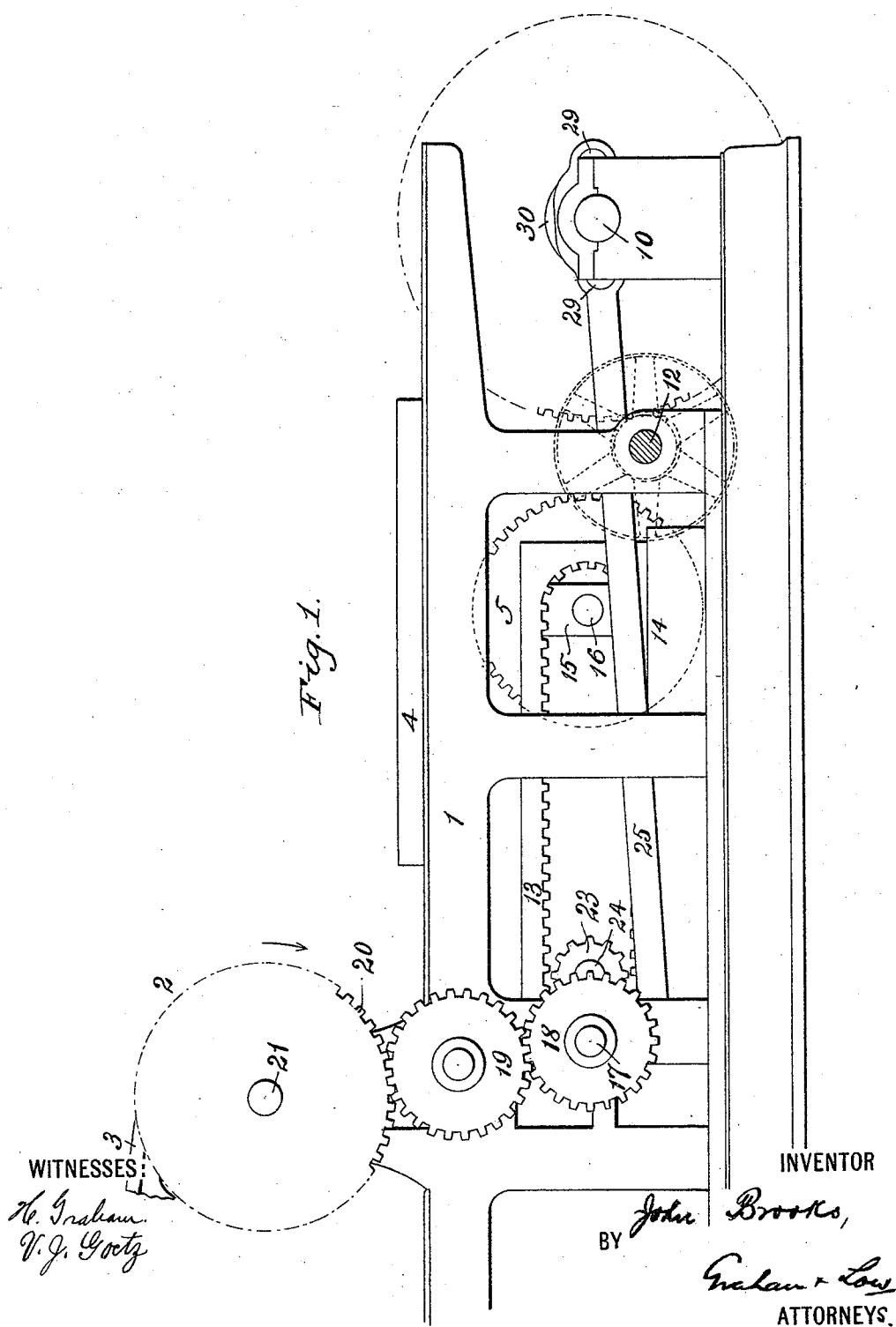
2 Sheets—Sheet 1.

J. BROOKS.

BED AND CYLINDER PRINTING MACHINE.

No. 529,850.

Patented Nov. 27, 1894.



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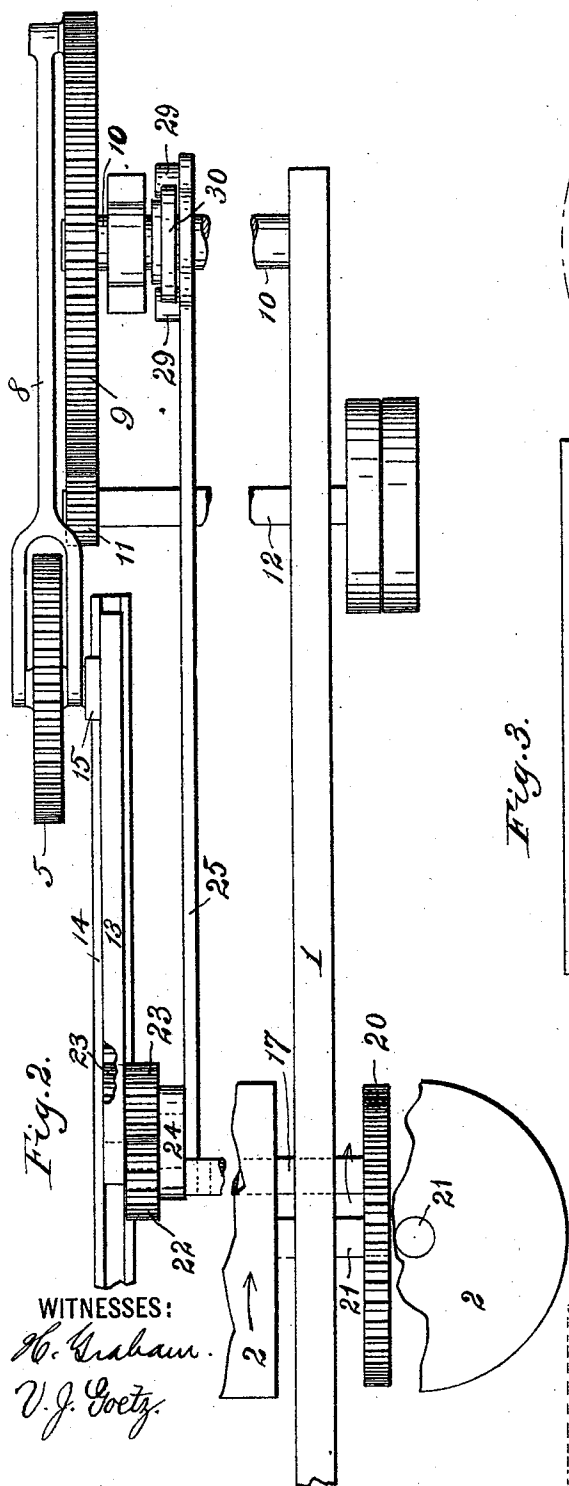
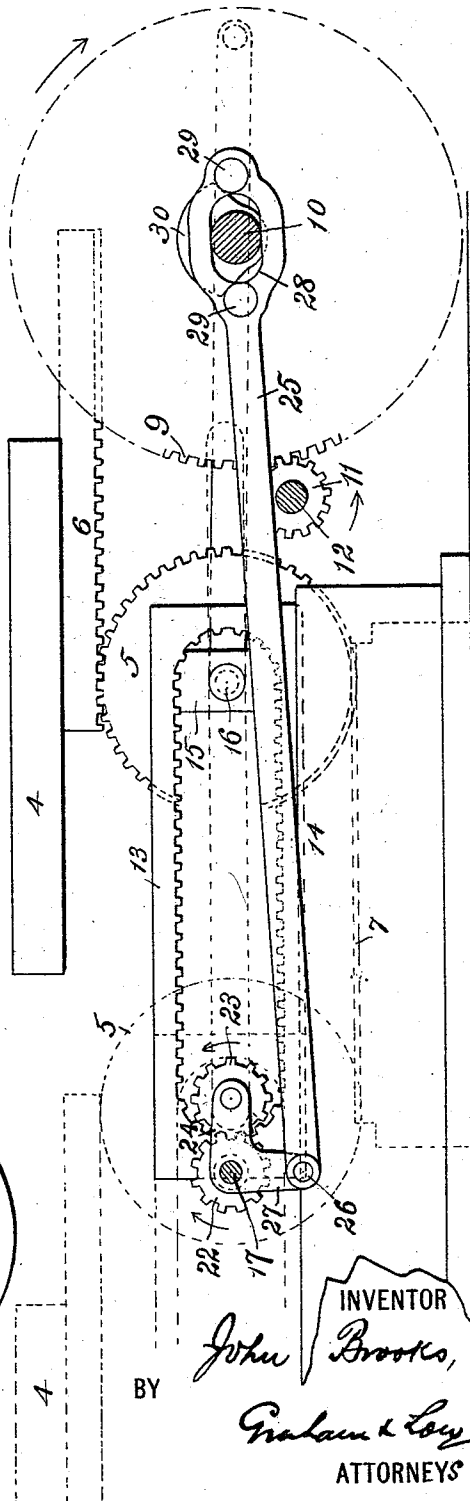


Fig. 3.



UNITED STATES PATENT OFFICE.

JOHN BROOKS, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO THE POTTER
PRINTING PRESS COMPANY, OF SAME PLACE.

BED AND CYLINDER PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 529,850, dated November 27, 1894.

Application filed April 13, 1894. Serial No. 507,421. (No model.)

To all whom it may concern:

Be it known that I, JOHN BROOKS, a citizen of the United States of America, residing at Plainfield, county of Union, State of New Jersey, have invented certain new and useful Improvements in Bed and Cylinder Printing-Machines, of which the following is a specification.

My invention relates to bed and cylinder printing machines, and more particularly to the means for operating and controlling the motion of the impression cylinder or cylinders with respect to the bed.

It has for its object, among other things, to provide an improved means whereby the impression cylinder is driven at the same surface speed as the bed during the taking of the impression and thereby obtain accurate register of the sheets and prevent any blurring of the impression.

With such object in view my invention consists in an impression cylinder having a reciprocating bed and a continuous reciprocating rack, connected with the impression cylinder for driving it.

It further consists in a cylinder press having a reciprocating bed, a rack independent of the bed and connected with and driven by the bed-actuating mechanism and power devices connecting the rack and impression cylinder.

It further consists in a cylinder printing press having a reciprocating bed, a continuous rack, a train of gearing or other power transmitting devices from said rack to the impression cylinder, and means for causing the constant engagement of said gearing with the rack.

Such being the general nature of my invention, in order to make the same more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect, without limiting my improvements in their useful applications to the particular construction which, for the sake of illustration, I have delineated.

In said drawings:—Figure 1 is a side view of so much of a bed and cylinder printing machine embodying my invention as is necessary for an understanding of the latter. Fig. 2 is a plan view of the bed and cylinder op-

erating mechanism. Fig. 3 is an elevation of the said mechanism, the frame being removed.

Referring to the drawings, 1 is the supporting frame of the machine carrying an impression cylinder 2, feed-board 3, and reciprocating bed 4 of any usual or preferred character. The latter may be driven in a well-known manner by a traveling gear 5 engaging a rack 6 on the bed and a fixed rack 7, the gear being reciprocated by a pitman 8 connected with its axis and driven in turn by a wrist pin on a gear 9. The latter is mounted on a counter shaft 10 and is engaged and actuated by a pinion 11 on a main power shaft 12. The speed of the bed 4 is directly proportional to the reciprocating movement of the traveling gear, and I obtain the desired corresponding speed of the surface of the impression cylinder 2 by connecting it with and driving it from the gear 5 or from a part moving therewith. This I effect by a continuous rack 13 formed preferably as seen in Fig. 3 with straight sides and semi-circular ends, mounted to reciprocate longitudinally of the machine in a guide 14 and actuated by the axis of the gear 5 or by the pitman 8. The rack 13 may be connected with its actuating mechanism by a plate or box 15 cast with the rack and having a bearing in which fits a stud 16 constituting a continuation of the axis of the traveling gear.

17 is a counter-shaft having a gear 18 connected by an idler gear 19 with a gear wheel 20 on the axis 21 of the impression cylinder. The shaft 17 carries on its inner end a pinion 22 adapted to be connected with the rack 13 in such manner as to be rotated thereby in the same direction during the entire reciprocation of the rack. In the construction illustrated such connection is effected by a pinion 23 engaging the pinion 22 and situated partly within the rack so as to be capable of engaging either side of the rack in case the latter should be moved toward the pinion or if the pinion should be moved toward the rack. If the pinion be made movable for this purpose I mount it on the end of a link 24 the other end of which is connected with the axis of the pinion 22 whereby the pinions are kept in engagement notwithstanding any

change of relative position, and provide mechanism whereby the link may be automatically oscillated at the proper times, when the direction of movement of the rack 13 is changed, to carry the pinion 23 from one side of the rack to the other and keep it in continuous engagement therewith. The link 24 may be moved for this purpose by a rod 25 pivoted at 26 to an arm 27 extending from the link and forming preferably with the latter a bell-crank lever as seen in Fig. 3. The rod 25 has at its end a guiding slot 28 which engages the shaft 10 and is further provided with projections or rollers 29 which are alternately engaged by a cam 30 of suitable shape fixed on the shaft 10, thereby shifting the rod 25 and the pinion 23 twice during each revolution of the shaft. The cam is so shaped (as best seen in Fig. 3) and timed as to cause said shifting to take place as the pitman 8 passes the dead center and the bed is changing its direction of travel.

I claim—

1. In a bed and cylinder printing machine, the combination with a reciprocating bed and impression cylinder, of mechanism for reciprocating the bed, a continuous endless cylinder-driving rack reciprocated by said mechanism in a constant plane, and connections whereby the rack drives the impression cylinder continuously, as set forth.

2. The combination with the impression cylinder and reciprocating bed, of a continuous endless internal cylinder-driving rack moving in a constant plane, and connections whereby the rack drives the cylinder continuously, as set forth.

3. The combination with the impression cylinder and reciprocating bed, of a continuous internal cylinder-driving rack moving in a constant plane, a pinion constantly engaging the same, and connections between the pinion and said cylinder for continuously rotating the latter, as set forth.

4. The combination with the impression cylinder, and reciprocating bed, of mechanism for actuating the latter, a double internal rack driven with said mechanism in a constant horizontal plane, a pinion, means for shifting the latter from one side to the other of the rack, and connections between said pinion and the impression cylinder, for rotating the latter continuously substantially as set forth.

5. The combination with the impression cylinder and bed, of reciprocating mechanism for the latter, a double internal rack connected with said mechanism and driven in a constant horizontal plane, a pinion, a movable support for the same, power transmitting devices between said pinion and impression cylinder, for rotating the latter continuously and a cam driven with said mechanism and connected with the support, substantially as set forth.

6. The combination of the impression cylinder, a double reciprocating rack, a pinion for engaging the latter, a second pinion engaging the first, an angle lever connecting the axes of the pinions, a reciprocating rod connected with the lever, a cam for actuating the rod, and connections between said second pinion and the impression cylinder for rotating the latter, substantially as set forth.

7. The combination with the impression cylinder and bed, of the traveling gear for driving the latter, a double internal rack connected with the axis of said gear to move in a constant horizontal plane, and connections between said rack and the impression cylinder, for rotating the latter continuously substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two witnesses.

JOHN BROOKS.

Witnesses:

A. T. GALLUP,
FRANK. H. SMITH.